FOR CONTRACT NO.: 04-264134

ADDED PER ADDENDUM No. 1 TO:

INFORMATION HANDOUT

WATER POLLUTION CONTROL

CONCEPTUAL STORM WATER POLLUTION PREVENTION PLAN

AGREEMENTS

REVISED UNITED STATES FISH AND WILDLIFE SERVICE (Biological Opinion)
81420-2008-F-0827-R001-2
DATED JUNE 14, 2011

ROUTE: 04-Nap-12-0.0/3.2

WASTE DISCHARGE IDENTIFICATION (WDID) NUMBER: TBD

STORMWATER POLLUTION PREVENTION PLAN

for

STATE ROUTE 12 JAMESON CANYON ROAD WIDENING VEGETATION CLEARING WORK

CONTRACT NO.: 04-264134
CALTRANS Project Identifier NUMBER: 0400002022

RISK LEVEL: 2

Prepared for:
California Department of Transportation
370 Chadbourne Road, Suite A
Fairfield, CA 94534
Elias Moussa
(707) 436-2200

Submitted by:
California Department of Transporation
111 Grand Street
Oakland CA 94612
(510)286-4776
Arick Bayford

Project Site Address
State Route 12/Jameson Canyon Road
SR-29/12 interchange (PM 0.00) to 0.1 mile west of Solano County line (PM 3.2)

Contractor's Water Pollution Control (WPC) Manager/Qualified S WPPP Developer(QSD)
To Be Determined
(xxx) xxx-xxxx

Contractor's Qualified SWPPP Developer (QSD) (if SWPPP not developed by WPC Manager)
Ben Nguyen
(408)453-5373

Contractor's Qualified S WPPP Practitioner (QSP) (if different from WPC Manager)

To Be Determined
(xxx) xxx-xxxx

SWPPP Developed by:

Mark Thomas and Company, INC.
1960 Zanker Road
San Jose, CA 95112
408-453-5373
Ben Nguyen

SWPPP Date
11-03-2011

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Appendix F ..... CEM-2024 Stormwater Training Log Form
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Appendix I ..... CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary
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Appendix L ..... CEM-2045, CEM-2046, CEM-2047 Rain Event Action Plan Forms
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Appendix Q ..... CEM-2056 Stormwater Turbidity Meter Calibration Record Form
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Appendix T ..... CEM-2050 Sample Information, Identification, and Chain-of-Custody Record Form
Appendix U ..... CEM-2051 Stormwater Sampling and Testing Activity Log
Appendix V ..... CEM-2052 Stormwater Sample Field Test Report Form
Appendix W ..... CEM-2054 Stormwater Sample Laboratory Test Report Form
Appendix X ..... CEM-2062 Numeric Action Level Exceedance Report Form
Appendix Y ..... CEM-2063 Numeric Effluent Limitation Violation Report Form
Appendix Z ..... CEM-2065 Discharge Reporting Log Form

SWPPP Files

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File Category 20.90 ..... Notice of Termination

SECTION 100
SWPPP Certifications and Approval

100.1 Legally Responsible Person Certification and Caltrans Approval

The California Department of Transportation (Caltrans) District Director, as the Legally Responsible Person (LRP), has authorized the Caltrans RE to be the authorized Approved Signatory of Caltrans for approving, signing, and certifying the Stormwater Pollution Prevention Plan (SWPPP) in conformance with Section H, Provision 8.b; and Section M, Provision 10 of the Caltrans Permit (CAS000003, Order No. 99-06-DWQ) and Section IV.I of the Construction General Permit (CGP) (CAS000002, Order No. 2009-0009-DWQ). The LRP authorization for the RE to be the Approved Signatory is provided as Attachment A. The SWPPP was developed by the Contractor and submitted for review and approval to the RE, pursuant to the Special Provisions, the SWPPP / Water Pollution Control Program (WPCP) Preparation Manual, and the Standard Specifications Section 7-1.01G – Water Pollution. The Contractor is responsible and liable at all times for compliance with applicable requirements of the CGP (CAS000002, Order No. 2009-009- DWQ) for which compliance is ultimately determined by the Regional Water Quality Control Board (RWQCB), the State Water Resources Control Board (SWRCB), and/or the U.S. Environmental Protection Agency (USEPA). Copies of the SWRCB-issued Waster Discharge Identification Number and Notice of Intent form are provided as Attachment B.

For Caltrans Use Only
RE's Approval and
Caltrans Certification of the
Stormwater Pollution Prevention Plan

Project Name:	**STATE ROUTE 12 JAMESON CANYON ROAD WIDENING VEGETATION CLEARING WORK**
Caltrans Contract Number:	**04-264134**
Caltrans Project Identification Number:	**0400002022**

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

RE's Signature	Date
Elias Moussa	**(707) 436-2200**
RE's Name	RE's Telephone Number

100.2 Contractor and QSD SWPPP Certification

Contractor's Certification of SWPPP

Project Name: **STATE ROUTE 12 JAMESON CANYON ROAD WIDENING VEGETATION CLEARING WORK**

Caltrans Contract Number: **04-264134**

Caltrans Project Identification Number: **0400002022**

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

Contractor's Signature	Date
Contractor's Name	Telephone Number
Contractor's Title	

QSD's Certification of SWPPP

Project Name: **STATE ROUTE 12 JAMESON CANYON ROAD WIDENING VEGETATION CLEARING WORK**

Caltrans Contract Number: **04-264134**

Caltrans Project Identification Number: **0400002022**

"I certify under penalty of law that I relied upon available project and site information, current watershed and basin plan maps and available soil data to develop this SWPPP so that Best Management Practices (BMPs) were designed and placed in accordance with industry standards and best professional judgment to reduce pollutants from leaving the job site. All other sources relied upon to gain information for this project's SWPPP were appropriate and dependable, based on my best professional judgment. To the best of my knowledge and belief, the information submitted in this SWPPP is in compliance with all requirements of the Construction General Permit (CAS000002, Order No. 2009-009-DWQ)."

QSD's Signature	11/14/2011 Date
Ben Nguyen QSD's Name	(408)453-5373 QSD's Telephone Number
Senior Project Engineer QSD's Title	

100.3 Amendments

100.3.1 SWPPP Amendments Certification and Approval

This SWPPP is meant to be a "living document," therefore, updated and additional information is expected to be added to the SWPPP as the project progresses, including information regarding changes in the field that do not require an amendment, such as the following:

- adding BMPs as required by a *Rain Event Action Plan.*
- increasing or decreasing the quantity of BMPs in the field that are already part of the erosion control plan in the SWPPP,
- moving BMPs shown on the WPCDs to protect water quality during different phases of construction,
- updating WPCDs to reflect actual site conditions, and
- maintenance and repairs to BMPs.

This SWPPP shall be amended when:

- a change in construction or operations affects the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm sewer system (MS4);
- a contract change order includes additional water pollution control practices, not already specified in the approved SWPPP;
- deemed necessary by the RE;
- SWPPP objectives to reduce or eliminate pollutants in stormwater discharges have not been achieved; or
- a CGP violation has occurred; when the RWQCB determines that a CGP violation has occurred, the SWPPP shall be amended and corrective actions implemented within 14 calendar days after notification by the RWQCB.

The following information shall be included in each amendment:

- who requested the amendment;
- the location of proposed change;
- the reason for the change;
- the original BMP proposed, if any;
- the new BMP proposed; and
- any existing implemented BMP(s).

Approved and certified amendments shall be inserted into the appropriate section or attachment of the SWPPP. All SWPPP amendments prepared by the WPC Manager and approved by the Contractor shall be accepted and certified by the LRP or Approved Signatory. A blank copy of the CEM-2008 SWPPP/WPCP Amendment Certification and Approval form is in Appendix A. For approved amendments, the signed SWPPP Amendment Certification and Approval form shall be attached to the SWPPP amendment.

A copy of each approved and certified amendment shall be inserted into Attachment AA. All SWPPP amendments shall be listed in the SWPPP Amendment Log, available in Appendix B. The Amendment Log shall be kept in SWPPP File Category 20.02 and a copy shall be inserted into Attachment AA.

The SWPPP will be completely revised if either the number of amendments or the amount of information contained in the amendments makes implementation of the SWPPP confusing, as determined by the RE, or the Contractor requests to revise the SWPPP based on planned changes in activities that would require a major SWPPP amendment.

100.3.2 Amendment Log

All approved and certified SWPPP amendments shall be shown on the SWPPP Amendment Log. A blank Amendment Log is available in Appendix B. The SWPPP Amendment Log shall include the following information:

- amendment number;
- amendment date;

- brief description of the amendment;
- name of individual requesting amendment; and
- approval date.

All SWPPP amendment(s) prepared and approved as discussed in Section 100.3.1 shall be documented in the Amendment Log and kept in SWPPP File Category 20.02: Stormwater Pollution Prevention Plan Amendments. A copy of the Amendment Log shall also be inserted into Attachment AA.

100.4 Annual Compliance and Approval

By July 15 of each year, the Contractor shall submit the Contractor's Annual Certification of Compliance to the RE stating that the project is in compliance with the terms and conditions of the Permits and the SWPPP. By August 1 of each year, the Caltrans LRP, or RE as authorized Approved Signatory, will complete an Annual Certification of Compliance stating that the project is in compliance with the terms and conditions of the Permits and the SWPPP. A blank copy of the CEM-2070 SWPPP/WPCP Annual Certification of Compliance form is included in Appendix C. Completed Annual Certification of Compliance forms will be filed in SWPPP File Category 20.70: Annual Certification of Compliance.

SECTION 200
OBJECTIVES

This SWPPP has five (5) main objectives, which are listed below.

1. All pollutants and their sources, including sources of sediment associated with construction, construction site erosion, and all other activities associated with construction activity, are controlled.

2. Where not otherwise required to be under a California Regional Water Quality Control Board (RWQCB) permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated.

3. Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non- stormwater discharges from the construction activity to the best available technology (BAT) / best conventional technology (BCT) standard.

4. Calculations and design details for site run-on, as well as BMP controls, are complete and correct.

5. Stabilization BMPs designed to eliminate or reduce pollutants after construction is complete have been installed.

This SWPPP was developed to conform to the required elements of the Caltrans Permit (SWRCB Order No. 99-06-DWQ, NPDES No. CAS000003) and with the required elements of the CGP (CAS000002, Order No. 2009-0009-DWQ) issued by the SWRCB.

This SWPPP is designed to be a useful document for those who must implement the SWPPP on a daily basis in the field. Most of the information necessary for the daily implementation of the SWPPP is contained in Attachment BB: Water Pollution Control Drawings, Attachment CC: Water Pollution Control Best Management Practices List, and Attachment DD: Water Pollution Control Schedule.

This SWPPP is also a “living document” because updated and additional information is added to the SWPPP file categories as the project progresses, including:

- SWPPP Amendments
- Subcontractor and Material Supplier Information;
- Contractor Personnel Training Documentation;
- Site Inspection Reports;
- Weekly Status Reports;
- Rain Event Action Plans;
- Sampling and Analysis Results;
- Equipment Maintenance and Calibration Records; and
- Notice of Discharge Reports.
- The SWPPP shall be readily available on site for the duration of the project.

SECTION 300
PROJECT AND CONTRACTOR INFORMATION

300.1 Project Description

The length of the project is approximately 3 miles and limits on Route 12 are from PM 0.0 to 3.2 in Napa County. This project will clear all vegetation from areas where work is planned to occur between February 15th and August 15th when vegetation removal is restricted by the Migratory Bird Treaty Act. Vegetation and trees shall be cleared or at minimum, topped and limbed and removed from the project site in order to prevent nesting of migratory birds. Trees shall be topped 4 feet from the ground. Grubbing work or other soil disturbing activities is strictly prohibited under this CSWPPP. Contractor shall submit a new SWPPP for all other work performed, for the State Route 12 Jameson Canyon Road Widening project, including the remaining vegetation and tree clearing

The direct receiving water bodies for the Project are Fagan Creek which cross SR 12 within the Project limits. This creek receive water through unlined ditches and pipes or from their tributaries that cross SR 12 within the Project limits. Many of these unnamed tributaries are identified as Waters of the United States. This creek is tributary to the Napa River, which drains into the Carquinez Strait and eventually into the San Pablo Bay.

300.2 Project Risk Level

The risk level assessment of the project site was calculated to be Risk Level **2**. This risk level will determine the minimum level of BMPs that will be acceptable based on the project site for vegetation removal activities. The risk level is the basis for the minimum level of site-specific monitoring and reporting that will be required. The risk level is based on project duration, proximity to impaired receiving waters, and soil conditions. The Risk Level Determination is discussed in Section 500.1.3 and the calculations are included in Attachment C.

300.3 Construction Sites Estimates

The following are estimates of the construction site.

- Construction site area: 34.67 acres
- Percentage impervious area before construction: 36%
- Runoff coefficient before construction: 0.42
- Percentage impervious area after construction: 36%
- Runoff coefficient after construction: .42

Run-on from off-site areas anticipated: ☐ Yes ☒ No

Anticipated stormwater run-on flow rate to the construction site:

Anticipated drainage patterns following the completion of grading activities are shown on the WPCDs from Attachment BB.

300.4 Vicinity and Site Map

The construction project vicinity map showing the project location, surface water boundaries, geographic features, construction site perimeter, and general topography, is located in Attachment D. The project contract plan Title Sheet provides additional detail regarding the project location and is also included in Attachment D.

The State Route 12, Jameson Canyon Road Widening Project is located between the intersection of SR 29/SR 12 in Napa County (PM 0.0), and just west of the Napa/Solano County (PM R2.6).

300.5 Unique Site Features

Project has Fill Material: ☐ Yes ☒ No

Project has Native Material: ☐ Yes ☒ No

Hydrologic Soil Group: ☐ A (high infiltration rate) ☐ B (moderate infiltration rate) ☒ C (slow infiltration rate) ☒ D (very slow infiltration rate

Soil Erodibility: ☐ Slight ☒ Moderate ☐ Severe

Unique Features Onsite: ☐ Water Bodies ☐ Wetlands ☒ Endangered or Protected Species ☒ Environmentally Sensitive Areas ☐ Other ☐ None

The project site is potentially a California red-legged frog habitat.

300.6 Contact Information for Responsible Parties

The following parties are responsible for this SWPPP:

WPC Manager

Name: **To Be Determined**

Title: Water Pollution Control Manager

Company: **(To Be Determined)**

Address:	**(To Be Determined)**
	(To Be Determined)
Phone Number:	**(To Be Determined)**
Emergency Phone Number (24/7):	**(To Be Determined)**
Email address:	**(To Be Determined)**

Resident Engineer

Name:	**Elias Moussa**
Title:	Resident Engineer
Agency:	**California Department of Transportation**
Address:	**370 Chadbourne Road, Suite A**
	Fairfield, CA 94534
Phone Number:	**(707) 436-2200**
Emergency Phone Number (24/7):	**To Be Determined**
Email Address:	**elias_moussa@dot.ca.gov**

Contractor

Name:	**To Be Determined**
Title:	Contractor
Company:	**To Be Determined**
Address:	**To Be Determined**
	To Be Determined
Phone Number:	**To Be Determined**
Emergency Phone Number (24/7):	**To Be Determined**
Email Address:	**To Be Determined**

Contractor Site Manager

Name:	**(To Be Determined)**
Title:	**(To Be Determined)**
Company:	**(To Be Determined)**
Address:	**(To Be Determined)** **(To Be Determined)**
Phone Number:	**(To Be Determined)**
Emergency Phone Number (24/7):	**(To Be Determined)**
Email Address:	**(To Be Determined)**

Qualified SWPPP Practitioner (QSP)

Name:	**To Be Determined**
Title:	**QSP**
Company:	**(To Be Determined)**
Address:	**(To Be Determined)** **(To Be Determined)**
Phone Number:	**(XXX) XXX-XXXX**
Emergency Phone Number (24/7):	**(To Be Determined)**

Qualified SWPPP Developer (QSD)

Name:	**Ben Nguyen**
Title:	**QSD**
Company:	**Mark Thomas and Company**
Address:	**1960 Zanker Road** **San Jose, CA 95112**
Phone Number:	**(408)453-5373**
Emergency Phone Number (24/7):	**(To Be Determined)**

Erosion and Sediment Control Provider

Name:	**(To Be Determined)**
Title:	**(To Be Determined)**
Company:	**(To Be Determined)**
Address:	**(To Be Determined)** **(To Be Determined)**
Phone Number:	**(To Be Determined)**
Emergency Phone Number (24/7):	**(To Be Determined)**
Email Address:	**(To Be Determined)**

Stormwater Sampling and Testing Agent

Name:	**(To Be Determined)**
Title:	**Biologist**
Company:	**(To Be Determined)**
Address:	**(To Be Determined)** **(To Be Determined)**
Phone Number:	**(To Be Determined)**
Emergency Phone Number (24/7):	**(To Be Determined)**
Email Address:	**(To Be Determined)**

300.7 List of Subcontractor and Materials Suppliers

The following subcontractors will be working on this project:

1. **Insert Subcontractor Name/Company**

   SWPPP Responsibility: (To Be Determined)

2. **Insert Subcontractor Name/Company TBD**

SWPPP Responsibility: (To Be Determined)

3. **Insert Subcontractor Name/Company TBD**

   SWPPP Responsibility: (To Be Determined)

Contact information for each subcontractor will be provided in the SWPPP Notification log in SWPPP File Category 20.21: Subcontractor Contact Information and Notification Letters. Contact information shall include subcontractor name, type of work performed, contact name, phone number and emergency telephone number (24/7).

The following materials suppliers will be delivering materials to the project site and must comply with pertinent SWPPP requirements:

1. **(To Be Determined)**

2. **(To Be Determined)**

3. **(To Be Determined)**

4. **(To Be Determined)**

Contact information for each material supplier will be provided in the SWPPP Notification log in SWPPP File Category 20.22: Material Supplier Contact Information and Notification Letters. Contact information shall include company name, type of material supplied, contact name and phone number.

All subcontractors and material suppliers shall be notified that the project is covered by the following permits issued by the SWRCB.

- SWRCB Order No. 99-06-DWQ, NPDES No. CAS000003, National Pollutant Discharge Elimination System (NPDES) Permit, Statewide Storm Water Permit and Waste Discharge Requirements (WDRs) for the State of California, Department of Transportation. July 15, 1999.

- SWRCB Order No. 2009-0009-DWQ, NPDES General Permit No. CAS000002, National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, September 02, 2009 (Construction General Permit).

Each subcontractor and material supplier shall also be notified that the project has a SWPPP and the pertinent water pollution control BMPs with which the subcontractor or material supplier must comply. If subcontractors or material suppliers are added during the project, appropriate notification that the project has a SWPPP and the pertinent water pollution control BMPs shall be given to the subcontractor or materials supplier prior to working or supplying materials on the project site.

A SWPPP Notification Letter shall be sent to all subcontractors and material suppliers. A sample notification letter and notification letter log is provided in Appendix D. A copy of SWPPP Notification Letters sent to subcontractors and material suppliers are in SWPPP File Category 20.21: Subcontractor Contact Information and Notification Letters or 20.22 Material Supplier Contact Information and Notification Letters. Notification letter logs and contact information are filed in SWPPP File Category 20.21: Subcontractor Contact Information and Notification Letters and File Category 20.22: Material Supplier Contact Information and Notification Letters.

300.8 Training

The Contractor's WPC Manager is a QSD.To Be **Determined**, the WPC Manager for this project, meets the qualifications and certification requirements of Section VII, Training Qualifications and Certification Requirements, of the CGP based on:

- (To Be Determined)

The WPC Manager has received the following training.

- (To Be Determined)

The WPC Manager has the following SWPPP development and implementation experience.

- (To Be Determined)

The SWPPP for this project was developed by a QSD. Ben Nguyen developed the SWPPP and meets the qualifications and certification requirements of Section VII, Training Qualifications and Certification Requirements, of the CGP based on:

- Extensive experience with Caltrans' storm water requirement on various projects

The QSD has received the following training.

- 3 days QSD/QSP training, by WGR Southwest Inc, in Stockton CA, October 2010
- QSD/QSP certified on December 2010. Certificate # 00308.

The QSD has the following SWPPP development experience**.**

- Contractor SWPPP development support for: Mathilda Avenue Project, Sunnyvale, CA, I-580/Isabel Avenue, Livermore, CA, I-880 Widening Project, San Jose, CA, Route 92 Widening Project, Half Moon Bay, CA, Highway 101 Widening, Sonoma, CA

A QSP will be assisting the WPC Manager to ensure that: required BMPs are implemented; non-stormwater and stormwater visual observations and sampling and analysis are performed; BMP maintenance is completed; and weekly training is provided. By September 2, 2011, To Be **Determined**, the QSP for this project, must meet the qualifications and certification requirements of Section VII, Training Qualifications and Certification Requirements, of the CGP based on:

(To Be Determined)

The QSP has received the following training.

- (To Be Determined)

The QSP has the following SWPPP implementation experience.

- (To Be Determined)

Ongoing, formal training sessions for individuals responsible for SWPPP development and implementation shall be selected from one of the following organizations.

- City of Los Angeles Storm Water Program
- County of Los Angeles Storm Water Program
- State of California RWQCB

- IECA-, ABAG- and/or AGC-sponsored training
- USEPA-sponsored training
- Recognized municipal stakeholder organizations throughout California
- Professional organizations and societies in the building and construction field
- (To Be Determined)

Contractor or subcontractor employees responsible for water pollution control BMP installation, maintenance and repair have received the following training.

- (To Be Determined)

Contractor and subcontractor employees shall be trained prior to working on the site in the following subjects:

- water pollution control rules and regulations
- implementation and maintenance for:
    - temporary soil stabilization,
    - temporary sediment control,
    - tracking control,
    - wind erosion control,
    - material pollution prevention control,
    - waste management, and
    - non-stormwater management
- identification and handling of hazardous substances
- potential dangers to humans and the environment from spills and leaks or exposure to toxic or hazardous substances

Informal employee training shall include tailgate site meetings to be conducted weekly; tailgate meetings should address the following topics:

- water pollution control BMP deficiencies and corrective actions;
- BMPs that are required for work activities during the week;
- spill prevention and control;
- material delivery, storage, use, and disposal;
- waste management; and

- non-stormwater management procedures.

A summary of formal and informal training of various personnel is shown in Attachment E. A copy of all training certificate(s) (e.g., Caltrans 24-Hour Training Class and CGP Training) for the WPC Manager and the Qualified SWPPP Developer are included in Attachment E.

Training records for project personnel shall be updated by completing the CEM-2023 Stormwater Training Record form, available in Appendix E, and the CEM-2024 Stormwater Training Log form, available in Appendix F. Records of training, with training certificates attached, when applicable, and the training log will be kept in SWPPP File Category 20.23: Contractor Personnel Training Documentation. Personnel training records, with required documentation attached and an updated training log, shall be submitted to the RE within five (5) days of completion of training.

Training information, consisting of the following items, shall be provided in the Stormwater Annual Report:

- documentation of all training for individuals responsible for all activities associated with compliance with CGP,
- documentation of all training for individuals responsible for BMP installation, inspection, maintenance, and repair, and
- documentation of all training for individuals responsible for overseeing, revising, and amending the SWPPP.

SECTION 400
REFERENCES, OTHER PLANS, PERMITS AND AGREEMENTS

The documents listed below are made a part of this SWPPP by reference.

- Standard Plans and Specifications, dated May 2006.
- Contract Plans and Special Provisions for Contract No.04-264134, dated 10/17/2011, prepared by California Department of Transportation.
- SWRCB Order No. 99-06-DWQ, NPDES No. CAS000003, National Pollutant Discharge Elimination System (NPDES) Permit, Statewide Storm Water Permit and Waste Discharge Requirements (WDRs) for the State of California, Department of Transportation (Caltrans), July 1999
- SWRCB-Order No. 2009-0009-DWQ, NPDES General Permit No. CAS000002, National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities (Construction General Permit), September 2009
- *Caltrans Statewide Storm Water Management Plan* (SWMP), dated May 2003
- *Caltrans SWPPP/WPCP Preparation Manual,* dated June 2011
- *Caltrans Construction Site Monitoring Program Guidance Manual,*
- Clean Water Act Section 401 Water Quality Certification for the State Route 101 HOV Lanes Project, issued by the San Francisco Bay RWQCB, dated 06/30/10.
- Clean Water Act Section 404 Nationwide Permit issued by the U.S. Army Corps of Engineers, dated 03/29/10.
- Department of Fish and Game 1602, dated 04/14/10.
- Drainage and Watershed plans from the Storm Water Information Handout, dated October 2010.

Attachment F includes copies of the Caltrans Statewide Permit, the CGP, and other local, state, and federal plans and permits. A list of the other local, state, and federal plans and permits included in Attachment F is provided below.

SECTION 500
DETERMINATION OF CONSTRUCTION SITE BEST MANAGEMENT PRACTICES

500.1 Pollutant Sources

500.1.1 Inventory of Materials and Activities that May Pollute Stormwater

The following table contains a list of construction activities that have the potential to contribute pollutants, including sediment, to stormwater discharges. All potential pollutants, except sediment, and their locations shall be listed in this section, and, where possible, the locations shall be shown on the WPCDs from Attachment BB. Details for controlling these pollutants using soil stabilization and sediment control BMPs are discussed in Sections 500.3.1 through 500.3.5. Potential non-storm water and waste management-related discharges are further described in Sections 500.4.1 and 500.4.2, respectively.

TABLE 500.1.1
ANTICIPATED CONSTRUCTION SITE ACTIVITIES WITH THE POTENTIAL TO DISCHARGE POLLUTANTS

☐ Demolition	☐ Pavement Removal (asphalt concrete, concrete) ☐ Structure Demolition/Removal over or Adjacent to Water ☐ Building Demolition (Structure, HVAC, insulation) ☐ Hardscape Demolition (Parking areas, curbs, gutters, sidewalks)
☒ Earthwork	☒ Clearing ☐ Grading Activities ☐ Soil Import and Export ☐ Stockpiling ☐ Excavation ☐ Disturbance of Contaminated Soil ☐ Dewatering ☐ Temporary Stream Crossing ☐ Drainage Construction ☐ Dredging ☐ Pile Driving ☐ Utilities ☐ Line Flushing (hydrostatic test water, pipe flushing) ☐ Landscaping, Planting and Plant Maintenance, Amending of Soil and Mulching ☐ Material and Equipment Use over Water
☐ Masonry, Concrete, Asphalt Work	☐ Saw Cutting (cement and brick dust, saw cut slurries) ☐ Paving and Grinding ☐ Concrete Placement (colored chalks) ☐ Concrete Curing (curing and glazing compounds)

TABLE 500.1.1 ANTICIPATED CONSTRUCTION SITE ACTIVITIES WITH THE POTENTIAL TO DISCHARGE POLLUTANTS	
	☐Concrete Finishing (surface cleaners) ☐Concrete Waste Management
☐Building Construction	☐Paint Preparation, Painting, Stenciling, and Etching ☐Material Use ☐Material Delivery and Storage ☐Adhesives (glues, resins, epoxy synthetics, caulks, sealers, putty, sealing agents and coal tars) ☐Cleaning, Polishing (metal, ceramic, tile), and Sandblasting Operations ☐Plumbing [solder (lead, tin), flux (zinc chloride), pipe fitting] ☐Framing (sawdust, particle board dust and treated woods) ☐Interior Construction (tile cutting, flashing, saw-cutting drywall, galvanized metal in nails and fences, and electric wiring)
☒Equipment Use	☒Vehicle and Equipment Cleaning ☒Vehicle and Equipment Fueling ☒Vehicle and Equipment Maintenance
☒Waste Management	☐Hazardous Waste Management ☐Solid Waste Management (litter, trash, and debris) ☐Liquid Waste Management (wash water) ☒Sanitary Septic Waste Management (portable toilets, disturbance of existing sewer lines)

The WPC Manager shall update the list of potential pollutants in accordance with onsite conditions, documenting all materials or equipment that have been received or produced onsite that are not designed to be outdoors and are potential sources of stormwater contamination.

Materials Management Plan

A list of construction materials that will be on site and have the potential to contribute pollutants, other than sediment, to stormwater runoff, which has been prepared to prevent or minimize the off-site discharge of those pollutants, are provided below.

The following stockpiles will be covered and bermed prior to likely precipitation events.

- Not Applicable

The following materials will be kept off the ground or bermed and covered prior to likely precipitation events.

- Not Applicable

The following materials will be properly stored according to Material Safety Data Sheet requirements.

- Vehicle fluids, including oil, grease, petroleum and coolant

The following dumpsters shall be covered prior to likely precipitation events.

- Not Applicable

The following areas will be inspected for leaks or spills prior to likely precipitation events.

- Portable toilets

Potential pollutants shall not be stored within 50 feet of stormwater conveyance features or concentrated flow paths. In addition, non-stormwater discharges shall not be made within 50 feet of potential pollutants.

500.1.2 Potential Pollutants from Site Features or Known Contaminates

Former site usage or known site contamination may contribute pollutants to stormwater discharges from the site. Based on information available for the project site, the following site usage and historical contamination has been determined:

Former Industrial Operations: ☐ Yes ☒ No

Description of Former Industrial Operations:

Historical Contamination: ☐ Yes ☒ No

- Not Applicable

The following contaminants are known to exist at the project site locations identified:

- Not Applicable

500.1.3 Risk Level Determination

A risk assessment was done for the State Route 12 (SR 12)/Jameson Canyon Widening Project in Napa County, and based on a number of factors set forth in the CGP, it was determined to be RL 2 for the entire widening project. For the work covered by this CSWPPP, clearing trees and vegetation, it is at RL 1.

500.2 Pre-Construction Existing Stormwater Control Measures

The following are existing (pre-construction) control measures encountered within the project site.

- Slopes within the construction site are protected with native vegetation.
- There are vegetated ditches within the construction site.

500.3 BMP Selection for Erosion and Sediment Control

The Contractor shall control construction site erosion through the implementation of effective erosion and sediment control measures in accordance with the CGP. The Contractor and the WPC Manager shall develop a schedule that includes the sequencing of construction activities and the implementation of effective erosion control BMPs while taking

local climate (rainfall, wind, etc.) into consideration, thereby reducing the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking. The SWPPP schedule shall: describe when work activities will be performed that could cause the discharge of pollutants in stormwater; describe the water pollution control practices associated with each construction phase; and identify the soil stabilization and sediment control practices for all disturbed soil areas. Effective soil cover shall be provided for:

- Not Applicable (No Soil Distrubance)

Additional erosion and sediment control BMPs may be required in other locations on the project site as work progresses in order to prevent sediment from leaving the construction site. These measures shall be determined by the Contractor and the WPC Manager in the field. As long as the water pollution control measures consist of additions to the BMPs already selected in the approved SWPPP, then these additional measures do not require a SWPPP amendment and the WPC Manager shall simply show the additional measures on the WPCDs. If erosion control or sediment control BMPs must be changed because of field conditions or because they are determined to be ineffective, the SWPPP must be amended. Once deemed necessary, corrective actions/design changes to the SWPPP shall be reviewed and signed by the WPC Manager, implemented within 72 hours of identification, and completed as soon as possible. Immediate corrective action is required for numeric action level (NAL) exceedances. Routine BMP maintenance or the implementation of an additional quantity of a BMP included in the SWPPP as recommended by the WPC Manager does not require an amendment to the SWPPP.

A more concise listing of the BMP control measures to be implemented and maintained at the project site are denoted in the BMP selection tables in the following sub-sections.

500.3.1 Temporary Run-on Control BMPs

The NPDES CGP states that sites with low risk of impacting water quality are not subject to run-on and runoff control requirements unless an evaluation deems them necessary or visual inspections show that such controls are required. Therefore, temporary diversion BMPs shall be implemented when deemed necessary by the WPC Manager to protect the site from run-on.

Since additional stormwater on the construction site can adversely impact construction activities and the deployment of other BMPs, thereby increasing costs, the methods for managing run-on have been addressed fully in this CSWPPP. The implementation strategy is described in this section and the locations of temporary diversion BMPs are shown on the Watershed Map from Attachment.

TABLE 500.3.1
TEMPORARY RUN-ON CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	
SS-1	Scheduling		☐	☐	☒	
SS-2	Preservation of Property/ Preservation of Existing Vegetation		☐		☒	
SS-9	Earth Dikes / Drainage Swales & Lined Swales		☐	☐	☒	

TABLE 500.3.1 TEMPORARY RUN-ON CONTROL BMPs						
CONSTRUCTION BMP ID NO.(1)	**BMP NAME**	**CONTRACT MINIMUM REQUIRE-MENT(2)**	**CONTRACT BID ITEM**	**BMP USED**		**IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON**
				YES	**NO**	
SS-10	Outlet Protection / Velocity Dissipation Devices		☐	☐	☒	
SS-11	Slope Drains		☐	☐	☒	
SS-12	Streambank Stabilization		☐	☐	☒	
SC-4	Temporary Check Dam		☐	☐	☒	
SC-5	Fiber Rolls		☐	☐	☒	
SC-6	Temporary Gravel Bag Berm		☐	☐	☒	
SC-8	Temporary Sandbag Barrier		☐	☐	☒	
ALTERNATIVE SEDIMENT CONTROL BMPs USED(3) ☐ Yes ☒ No						IF USED, STATE REASON
CONSTRUCTION BMP ID NO.(1)	**BMP NAME**					

Notes:
(1) The BMP designations (SS-1, SC-5, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the *Construction Site BMP Reference Manual* is a required contract document.
(2) Minimum requirements are based on the required Contract Provisions, Standard Special Provisions, Plans and Specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) Use of alternative BMPs will require written approval by the RE.

Implementation of Temporary Run-on Controls BMPs

- Not Applicable

500.3.2 Soil Stabilization (Erosion Control)

Soil stabilization, also referred to as erosion control, consists of source control measures that are designed to prevent soil particles from detaching and becoming transported in stormwater runoff. Soil stabilization BMPs protect the soil surface by covering and/or binding soil particles. This project will incorporate *SWPPP/WPCP Preparation Manual* minimum temporary soil stabilization requirements, temporary soil stabilization measures required by the contract documents, and

other measures selected by the Contractor.

- Not Applicable

Sufficient soil stabilization materials will be maintained on site to allow implementation in conformance with Caltrans requirements and as described in this SWPPP. This includes implementation requirements for active and non-active areas that require deployment before the onset of rain.

The following soil stabilization BMP selection table indicates the BMPs that shall be implemented to control erosion on the construction site. Temporary soil stabilization BMPs are listed by location in the WPCBMPL in Attachment CC and are shown on the WPCDs from Attachment BB. Any details for temporary soil stabilization BMPs are shown in Attachment BB.

TABLE 500.3.2
TEMPORARY EROSION CONTROL BMPs

CONSTRUCTION BMP ID NO(1)	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	
SS-1	Scheduling	√	☐	☒	☐	
SS-2	Preservation of Property/ Preservation of Existing Vegetation	√	☐	☒	☐	
SS-3	Temporary Hydraulic Mulch (Bonded Stabilized Fiber Matrix)		☐	☐	☒	
	Temporary Hydraulic Mulch (Polymer Stabilized Fiber Matrix)		☐	☐	☒	
SS-4	Temporary Erosion Control (With Temporary Seeding)		☐	☐	☒	
SS-5	Temporary Soil Stabilizer		☐	☐	☒	
SS-6	Temporary Erosion Control (Straw Mulch with Stabilizing Emulsion)		☐		☒	

TABLE 500.3.2
TEMPORARY EROSION CONTROL BMPs

CONSTRUCTION BMP ID NO[1]	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT[2]	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	
SS-7	Temporary Erosion Control Blanket (On Slope)		☐	☐	☒	
	Temporary Erosion Control Blanket (In swale or ditch)		☐	☐	☒	
SS-7	Temporary Cover (Geotextiles and Mats)		☐	☐	☒	
SS-8	Temporary Mulch (Wood)		☐	☐	☒	
SS-9	Earth Dikes / Drainage Swales & Lined Swales		☐	☐	☒	
SS-10	Outlet Protection/ Velocity Dissipation Devices		☐	☐	☒	
SS-11	Slope Drains		☐	☐	☒	
SS-12	Streambank Stabilization		☐	☐	☒	
SS-13	Polyacrylamide		☐	☐	☒	
ALTERNATIVE SEDIMENT CONTROL BMPs USED[3] ☐ Yes ☒ No						IF USED, STATE REASON
CONSTRUCTION BMP ID NO [1]	**BMP NAME**					

TABLE 500.3.2 TEMPORARY EROSION CONTROL BMPs						
CONSTRUCTION BMP ID NO(1)	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	

Notes:
(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2) Minimum requirements are based on the required Contract Provisions, Standard Special Provisions, Plans and Specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) Use of alternative BMPs will require written approval by the RE.

The BMPs selected for the project are listed below along with an explanation of how they will be incorporated into the project.

- SS-1 Scheduling- The Contractor/WPC Manager will schedule vegetation clearing work imidately after award.

- SS-2 Preservation of Existing Vegetation – The vegetation not required to be cleared for tree clearing will be protected in place.

500.3.3 Sediment Control

Sediment controls are structural measures that are intended to complement and enhance the selected soil stabilization (erosion control) measures and reduce sediment discharges from construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water. This project will incorporate *SWPPP/WPCP Preparation Manual* minimum temporary sediment control requirements, temporary sediment control measures required by the contract documents, and other measures selected by the Contractor.

Sediment control BMPs will be installed at all appropriate locations along the site perimeter and at all operational internal inlets to storm drain systems at all times.

Throughout the duration of the project, temporary sediment control materials, equivalent to 10 percent of the materials installed on site, will be maintained on site for implementation in event of predicted rain, or the need for rapid response to failures or emergencies, in conformance with other Caltrans requirements, and as described in the SWPPP. This includes implementation requirements for active areas and non-active areas before the onset of rain.

The following sediment control BMP selection table indicates the BMPs that shall be implemented to control sediment on the construction site. Temporary sediment control BMPs are listed by location in the WPCBMPL in Attachment CC and are shown on the WPCDs from Attachment BB. Any details for temporary sediment control BMPs are shown in Attachment BB.

TABLE 500.3.3 TEMPORARY SEDIMENT CONTROL BMPs						
CONSTRUCTION BMP ID NO(1)	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	

TABLE 500.3.3
TEMPORARY SEDIMENT CONTROL BMPs

CONSTRUCTION BMP ID NO(1)	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	
SC-1	Temporary Silt Fence		☐	☐	☒	
SC-2	Temporary Sediment Basin		☐	☐	☒	
SC-4	Temporary Check Dam		☐	☐	☒	
SC-5	Temporary Fiber Rolls		☐	☐	☒	
SC-6	Temporary Gravel Bag Berm		☐	☐	☒	
SC-7	Street Sweeping	√	☒	☒	☐	
SC-8	Temporary Sandbag Barrier		☐	☐	☒	
SC-9	Temporary Straw Bale Barrier		☐	☐	☒	
SC-10	Temporary Drain Inlet Protection	√	☒	☒	☐	
SC-11	Temporary Chemical Treatment		☐	☐	☒	
ALTERNATIVE SEDIMENT CONTROL BMPs USED(3) ☐ Yes ☒ No						IF USED, STATE REASON

Notes:
(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the *Construction Site BMP Reference Manual* is a required contract document.
(2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) Use of alternative BMPs will require written approval by the RE.

The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

SC-7 Street Sweeping -Street sweeping is described in Section 500.3.4.

SC-10 Temporary Drain Inlet Protection -Storm drain inlet protection will be used at all operational internal inlets to the storm drain system, as shown on the WPCD.

500.3.4 Tracking Control

Tracking control BMPs are be implemented to reduce sediment tracking from the construction site onto private or public roads. This project will incorporate *SWPPP/WPCP Preparation Manual* minimum temporary tracking control requirements, temporary tracking control measures required by the contract documents, and other measures selected by the Contractor.

The following tracking control BMP selection table indicates the BMPs that shall be implemented to reduce sediment tracking from the construction site onto private or public roads. Temporary tracking control BMPs are listed by location in the WPCBMPL in Attachment CC and shown on the WPCDs from Attachment BB. Any details for temporary tracking control BMPs are shown in Attachment BB.

TABLE 500.3.4
TEMPORARY TRACKING CONTROL BMPs

CONSTRUCTION BMP ID NO(1)	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	
SC-7	Street Sweeping		☒	☒	☐	
TC-1	Temporary Construction Entrance		☒	☒	☐	
TC-2	Stabilized Construction Roadway		☐	☐	☒	
TC-3	Temporary Entrance / Outlet Tire Wash		☐	☐	☒	
ALTERNATIVE SEDIMENT CONTROL BMPs USED(3) ☐ Yes ☒ No						IF USED, STATE REASON

Notes:
(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the *Construction Site BMP Reference Manual* is a required contract document.
(2) Minimum requirements are based on the required Contract Provisions, Standard Special Provisions, Plans and Specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) Use of alternative BMPs will require written approval by the RE.

The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the

project.

SC-7 Street Sweeping
Road sweeping and vacuuming will occur during soil hauling and as necessary to keep streets clear of tracked material and debris. Washing of sediment tracked onto streets into storm drains will not occur.

TC-1 Temporary Construction Entrance
A stabilized construction entrance/exit will be constructed and maintained at construction site entrances and exits, equipment yard, water filling area for water trucks, and the project office location as shown on the site map. The site entrance/exit will be stabilized to reduce tracking of sediment as a result of construction traffic. The entrance will be designated and graded to prevent runoff from leaving the site. Stabilization material will be 3- to 6-inch crushed aggregate. The entrance will be flared where it meets the existing road to provide an adequate turning radius. A site entrance/exit shall only be installed to reduce tracking of sediment during activities that extend over a one-week time period.

Implement BMPs to prevent the off-site tracking of loose construction and landscape materials.

500.3.5 Wind Erosion Control

Wind erosion control BMPs will be implemented to prevent sediment from leaving the construction site. This project will incorporate *SWPPP/WPCP Preparation Manual* minimum temporary wind erosion control requirements, temporary wind erosion control measures required by the contract documents, and other measures selected by the Contractor.

The following temporary wind erosion control BMP selection table indicates the BMPs that shall be implemented to reduce wind erosion at the construction site. Temporary wind erosion control BMPs are listed by location in the WPCBMPL in Attachment CC and shown on the WPCDs from Attachment BB. Any details for temporary wind erosion control BMPs are shown in Attachment BB.

TABLE 500.3.5
TEMPORARY WIND EROSION CONTROL BMPs

CONSTRUCTION BMP ID NO(1)	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	
WE-1	Wind Erosion Control	√	☐	☐	☒	No Ground Disturbance
TC-1	Temporary Construction Entrance		☒	☒	☐	
TC-2	Stabilized Construction Roadway		☐	☐	☒	
----	All Soil Stabilization Measures included in Section 500.3.2		☐	☐	☒	
ALTERNATIVE SEDIMENT CONTROL BMPs USED(3) ☐ Yes ☒ No						**IF USED, STATE REASON**

TABLE 500.3.5 TEMPORARY WIND EROSION CONTROL BMPs						
CONSTRUCTION BMP ID NO(1)	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	

Notes:
(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the *Construction Site BMP Reference Manual* is a required contract document.
(2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) Use of alternative BMPs will require written approval by the RE.

The following list of BMPs and narrative explain how the selected BMPs shall be incorporated into the project.

TC-1 Temporary Construction Entrance

A stabilized construction entrance/exit will be constructed and maintained at construction site entrances and exits and the project office location.

500.4 BMP Selection for Construction Site Management

Construction site management shall consist of controlling potential sources of water pollution before they come in contact with stormwater systems or watercourses. The Contractor shall control material pollution and manage waste and non-stormwater discharges at the construction site by implementing effective handling, storage, use, and disposal practices.

500.4.1 Non-Stormwater Site Management

Non-stormwater discharges into storm drainage systems or waterways, which are not authorized under the Caltrans Permit or authorized under a separate NPDES permit, shall be prohibited. The selection of non-stormwater BMPs is based on whether construction activities with a potential for non-stormwater discharges will be conducted, as discussed in the Materials Management Plan and in Section 500.4. This project will incorporate *SWPPP/WPCP Preparation Manual* minimum non-stormwater pollution control requirements, non-stormwater pollution temporary wind erosion control measures required by the contract documents, and other measures selected by the Contractor.

The following non-stormwater control BMP selection table indicates the BMPs that shall be implemented to prevent non-stormwater discharges from construction activities conducted at the project site. Non-stormwater pollution control BMPs are listed by location in the WPCBMPL in Attachment CC and shown on the WPCDs from Attachment BB. Any details for non-stormwater pollution control BMPs are shown in Attachment BB.

TABLE 500.4.1 TEMPORARY NON-STORMWATER POLLUTION CONTROL BMPs						
CONSTRUCTION BMP ID NO(1)	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	

TABLE 500.4.1
TEMPORARY NON-STORMWATER POLLUTION CONTROL BMPs

CONSTRUCTION BMP ID NO[1]	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT[2]	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	
NS-1	Water Control and Conservation		☐	☐	☒	
NS-2	Dewatering[3]		☐	☐	☒	
NS-3	Paving, Sealing, Sawcutting, and Grinding Operations		☐	☐	☒	
NS-4	Temporary Stream Crossing [3]		☐	☐	☒	
NS-5	Clear Water Diversion [3]		☐	☐	☒	
NS-6	Illegal Connection and Illegal Discharge Detection Reporting	√	☐	☒	☐	
NS-7	Potable Water / Irrigation		☐	☐	☒	
NS-8	Vehicle and Equipment Cleaning	√	☐	☒	☐	
NS-9	Vehicle and Equipment Fueling	√	☐	☒	☐	
NS-10	Vehicle and Equipment Maintenance	√	☐	☒	☐	
NS-11	Pipe Driving Operations		☐	☐	☒	
NS-12	Concrete Curing		☐	☐	☒	
NS-13	Material and Equipment Used Over Water		☐	☐	☒	
NS-14	Concrete Finishing		☐	☐	☒	
NS-15	Structure Demolition / Removal Over or		☐	☐	☒	

TABLE 500.4.1 TEMPORARY NON-STORMWATER POLLUTION CONTROL BMPs						
CONSTRUCTION BMP ID NO(1)	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	
	Adjacent to Water					
ALTERNATIVE SEDIMENT CONTROL BMPs USED(4) ☐ Yes ☒ No						IF USED, STATE REASON
CONSTRUCTION BMP ID NO (1)	BMP NAME					

Notes:
(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the *Construction Site BMP Reference Manual* is a required contract document.
(2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) The BMPs listed above are incidental and do not include operations listed as separated line items in the contract.
(4) Use of alternative BMPs will require written approval by the RE.

The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

NS-6 Illegal Connection and Illegal Discharge Detection Reporting

The contractor will implement the Illegal Connection/Illegal Discharge Detection Reporting BMP throughout the duration of the project.

Store chemicals in watertight containers (with appropriate secondary containment to prevent any spillage or leakage) or in a storage shed (completely enclosed).

The job site and the site perimeter will be inspected before starting work for evidence of illegal connections, discharges, or dumping. After starting work, the job site and perimeter will be inspected on a daily schedule. When illegal connections, discharges, or dumping are discovered, the Engineer will be notified immediately. No further action will be taken unless ordered by the Engineer. Unlabeled or unidentifiable material will be assumed hazardous.

NS-8, NS-9, NS-10 Vehicle and Equipment Operations

Vehicle and equipment cleaning or washing at the job site will be limited, except that which is necessary to control vehicle tracking or hazardous waste. The Engineer will be notified before cleaning vehicles and equipment at the job site with soap, solvents, or steam. Waste will be contained and recycled, or disposed of, under "Liquid Waste" or "Hazardous

Waste" of the Special Provisions, whichever is applicable. Diesel will not be used to clean vehicles or equipment, and the use of solvents will be minimized.

Vehicle and equipment washing will occur in a structure equipped with disposal facilities. If using a structure is not possible, vehicles and equipment must be cleaned or washed at an outside area:

1. Paved with AC, HMA, or portland cement concrete
2. Surrounded by a containment berm
3. Equipped with a sump to collect and dispose of wash water
4. If within the floodplain, located at least 30m (100 feet) from concentrated flows of stormwater, drainage courses, watercourses, or storm drain inlets unless approved
5. If outside the floodplain, located at least 15m (50 feet) from concentrated flows of stormwater, drainage courses, watercourses, or storm drain inlets unless approved

When washing vehicles or equipment with water, water use will be minimized. Hoses will be equipped with a positive shut-off valve.
Liquid from wash racks will be discharged to a recycle, or other approved, system. Liquids and sediment will be removed as necessary. The WPCM will inspect vehicle and equipment cleaning facilities daily, when vehicle and equipment cleaning occurs daily, and weekly when vehicle and equipment cleaning does not occur daily.

Several types of vehicles and equipment will be used onsite throughout the project, including graders, scrapers, excavators, loaders, paving equipment, rollers, trucks and trailers, backhoes, forklifts, generators, compressors, and traffic control equipment.

Vehicle and Equipment Fueling, and Vehicle and Equipment Maintenance BMPs will be utilized to prevent discharges of fuel and other vehicle fluids. Except for concrete washout, which is addressed in Section 500.4.2, vehicle cleaning will not be performed onsite.

All wheeled vehicles shall be fueled offsite or at the temporary fueling area. Fuel trucks, each equipped with absorbent spill clean-up materials, shall be used for all onsite fueling, whether at the temporary fueling area or for mobile fueling elsewhere on the site. Drip pans shall be used during all mobile fueling. The fueling truck shall be parked on the paved fueling area during overnight storage.

Drip pans or absorbent pads shall be used during all vehicle and equipment maintenance activities that involve grease, oil, solvents, or other vehicle fluids.

All vehicle maintenance and mobile fueling operations shall be conducted at least 50 feet away from operational inlets and drainage facilities and on a level graded area.

When practicable, maintenance on vehicles and equipment will be performed off-site. If fueling or maintenance must be done on-site, areas will be designated, which will be on level ground and protected from stormwater run-on. If within the floodplain, these areas will be located at least 30m (100 feet) from concentrated flows of stormwater, drainage courses, watercourses, or storm drain inlets, or if outside the floodplain, these areas will be located at least 15m (50 feet) from concentrated flows of stormwater, drainage courses, watercourses, or storm drain inlets.

Containment berms or dikes will be used around the fueling and maintenance area. Adequate quantities of absorbent spill cleanup material and spill kits will be kept in the fueling and maintenance area and on fueling trucks. After use, spill clean-up material and kits will be disposed of immediately. Drip pans or absorbent pads will be used during fueling or maintenance. Fueling or maintenance activities will not be left unattended. Fueling nozzles will be equipped with an automatic shut-off control.

The WPCM will inspect vehicle and equipment maintenance and fueling areas daily, when vehicle and equipment maintenance and fueling occurs daily, and weekly when vehicle and equipment maintenance and fueling does not occur daily.

The WPCM will inspect vehicles and equipment at the job site for leaks and spills on a daily schedule. Operators will inspect vehicles and equipment each day of use. If leaks cannot be repaired immediately, the vehicle or equipment must be removed from the job site.

500.4.2 Waste Management and Materials Pollution Control

An inventory of construction activities, materials, and wastes is provided in Section 500.1.1. The following BMP consideration checklist lists the BMPs that have been selected to control construction site wastes and materials. Locations and details of applicable materials handling and waste management BMPs are shown on the WPCDs from Attachment BB. In the narrative description, a list of waste disposal facilities and the type of waste to be disposed at each facility is also provided. The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

TABLE 500.4.2
TEMPORARY WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPs

CONSTRUCTION BMP ID NO(1)	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	
WM-1	Material Delivery and Storage	√	☐	☐	☒	Not Applicable
WM-2	Material Use	√	☐	☐	☒	Not Applicable
WM-3	Stockpile Management	√	☐	☐	☒	Not Applicable
WM-4	Spill Prevention and Control	√	☐	☒	☐	
WM-5	Solid Waste Management	√	☐	☒	☐	
WM-6	Hazardous Waste Management (3)		☐	☒	☐	
WM-7	Contaminated Soil Management (3)		☐	☐	☒	
WM-8	Concrete Waste Management		☐	☐	☒	
	Temporary Concrete Washout Facility		☐	☐	☒	
	Temporary Concrete Washout (Portable)		☐	☐	☒	
WM-9	Sanitary/Septic Waste	√	☐	☒	☐	

TABLE 500.4.2 TEMPORARY WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPs						
CONSTRUCTION BMP ID NO(1)	BMP NAME	CONTRACT MINIMUM REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				YES	NO	
	Management					
ALTERNATIVE SEDIMENT CONTROL BMPs USED(4) ☐ Yes ☒ No						IF USED, STATE REASON
CONSTRUCTION BMP ID NO (1)	BMP NAME					

Notes:
(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the *Construction Site BMP Reference Manual* is a required contract document.
(2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) The BMPs listed above are incidental and do not include operations listed as separated line items in the contract.
(4) Use of alternative BMPs will require written approval by the RE.

WM-4 Spill Prevention and Control
BMP WM-4, Spill Prevention and Control shall be implemented to contain and clean-up spills and prevent material discharges to the storm drain system.

WM-5, WM-6 Waste Management
BMP WM-5, Solid Waste Management and BMP WM-6, Hazardous Waste Management BMPs shall be implemented to minimize stormwater contact with waste materials and prevent waste discharges. Solid wastes shall be loaded directly onto trucks for offsite disposal. When onsite storage is necessary, solid wastes shall be stored in watertight dumpsters in the general storage area of the contractor's yard. Liquid hazardous wastes shall be stored in the covered containment area discussed above for materials storage. Solid hazardous waste shall be stored in the shipping container or in the covered containment area. Hazardous wastes shall be appropriate and clearly marked containers and segregated from other non-waste materials. Wastes shall be stored in sealed containers constructed of a suitable material and shall be labeled as required by Title 22 CCR, Division 4.5 and 49 CFR Parts 172, 173, 178, and 179. All hazardous waste shall be stored, transported, and disposed as required in Title 22 CCR, Division 4.5 and 49 CFR 261-263.

WM-9 Sanitary and Septic Wastes
The contractor shall implement Sanitary and Septic Waste Management BMP. Portable toilets shall be located and maintained by the contractors for the duration of the project. Weekly maintenance shall be provided and wastes shall be disposed offsite.

500.5 Water Pollution Control Drawings

The WPCDs are the component of the project SWPPP that show the BMPs, by project phase/stage, that are necessary for the project to be in compliance with the CGP. The construction activity phases used in this SWPPP are the preliminary phase, grading phase, highway construction phase, and the highway planting / erosion control establishment phase.

These phases are defined below.

Preliminary Phase (Pre-Construction Phase – Part of the Grading Phase)

Includes rough grading/or disking, clearing and grubbing operations, or any soil disturbance prior to mass grading.

Grading Phase

Includes reconfiguring the topography for the highway, including excavation for roadway (e.g., necessary blasting of hard rock), highway embankment construction (fills); mass grading, and stockpiling of select material for capping operations.

Highway Construction Phase

Encompasses both highway and structure construction. Highway construction includes final roadway excavation, placement of base materials and highway paving, finish grading, curbs, gutters and sidewalks, public utilities, public water facilities including fire hydrants, public sanitary sewer systems, storm drain systems and/or other drainage improvements, highway lighting, traffic signals and/or other highway electrical work, guardrail, concrete barriers, sign installation, pavement markers, traffic striping and pavement markings. Structure construction includes structure footings, bridges, retaining walls, major culverts, overhead sign structures and buildings.

Highway Planting / Erosion Control Establishment Phase

Includes clearing and grubbing operations, soil preparation (grading, incorporation of soil amendments, and placement of topsoil), irrigation (trenching, installation and trench backfilling), minor grading (top dressing and fine grading of lawn and ground cover areas), planting (seeding and planting of vegetation), mulching (application of wood chips or other mulches) and plant establishment (weeding, plant replacement, and, if needed, fertilizer application, irrigation maintenance, and reapplication of mulch). Erosion control includes placement of permanent erosion control materials and maintenance of temporary sediment controls during the erosion control establishment period.

The WPCDs provide field staff with the information on where to install BMPs so that they are effective. The WPCDs, WPCBML and Water Pollution Control Schedule provide the necessary tools for a Contractor to plan and implement BMPs to meet the requirements of the project SWPPP.

The WPCD cover sheet(s) shall include a listing of the BMPs that will be used along with the associated BMP symbols used on the WPCDs.

WPCDs are provided for all areas that are directly related to the construction activity, including but not limited to staging areas, storage yards, material borrow areas and storage areas, access roads, etc., whether or not they reside within the Caltrans rights-of-way.

The WPCDs shall show the construction project site in detail, including:

- the construction site perimeter;
- geographic features within or immediately adjacent to the site; include surface waters such as lakes, streams, springs, wetlands, estuaries, ponds, and the ocean;
- site topography before and after construction; include roads, paved areas, buildings, slopes, drainage facilities, and areas of known or suspected contamination; and
- permanent (post-construction) BMPs.

The WPCDs shall show the following site information:

- discharge points from the project to off-site storm drain systems or receiving waters;
- tributary areas and drainage patterns across the project area (show using flow arrows) into each on-site stormwater inlet or receiving water;
- tributary areas and drainage patterns to each on-site stormwater inlet, receiving water or discharge point;
- off-site tributary drainage areas that generate run-on to the project;
- temporary on-site drainage(s) to carry concentrated flows;
- drainage patterns and slopes anticipated after major grading activities are completed;
- outlines of all areas of existing vegetation, soil cover, or native vegetation that will remain undisturbed during the project;
- outlines of all areas of planned soil disturbance (disturbed soil areas, DSAs);
- known location(s) of contaminated or hazardous soils;and
- any potential non-stormwater discharges and activities, such as dewatering operations, concrete saw-cutting or coring, pressure washing, waterline flushing, diversions, cofferdams, and vehicle and equipment cleaning; if operations can't be located on the WPCDs, a narrative description should be provided.

The WPCDs show proposed locations of all construction site BMPs. Additional detail drawings are provided if necessary to convey site-specific BMP configurations. The WPCDs shall show construction site BMPs including the following:

- temporary soil stabilization and temporary sediment control BMPs that will be used during construction; any temporary on-site drainage(s) to carry concentrated flows, BMPs implemented to divert off-site drainage around or through the construction site, and BMPs that protect stormwater inlets;
- construction entrances used for site ingress and egress points and any proposed temporary construction roads;
- BMPs to mitigate or eliminate non-stormwater discharges;
- BMPs for waste management and materials pollution control, including, but not limited to storage of soil or waste; construction material loading, unloading, storage and access areas; and areas designated for waste handling and disposal; and
- BMPs for vehicle and equipment storage, fueling, maintenance, and cleaning.

The WPCDs can be found in Attachment BB of the SWPPP.

500.6 Water Pollution Control BMP List

The Water Pollution Control Best Management Practices List (WPCBMPL) provides, by location and project phase/stage, the BMPs necessary for the project to be in compliance with the CGP. The WPCBMPL provides field staff both with a list of necessary BMPs and with an estimated quantity for each BMP by location and phase/stage of

the project. The construction activity phases are typically the Preliminary Phase, Grading Phase, Highway Construction Phase, and the Highway Planting / Erosion Control Establishment Phase. The construction activity phases are defined in Section 500.5.

The WPCBMPL, water pollution control drawings and water pollution control schedule provide the tools necessary for the Contractor to plan and implement BMPs to meet the requirements of the project SWPPP. The BMPs listed on the WPCBMPL are the base line for site inspections and visual monitoring.

The WPCBMPL cover sheet includes a list of all BMPs to be used on the project based on Section 500 Determination of Construction Site Best Management Practices.

The names and number of locations listed on the WPCBMPL were established so that field staff and inspectors can easily identify where BMPs need to be located. The WPCBMPL includes all locations that are directly related to the construction activity, including but not limited to staging areas, storage yards, material borrow areas and storage areas, access roads, etc., whether or not they reside within Caltrans rights-of-way.

Necessary additional information to convey site-specific BMP configurations or BMP modifications are noted on the WPCBMPL.

All construction site BMPs are listed on the WPCBMPL including the following:

- temporary soil stabilization and temporary sediment control BMPs that will be used during construction; include temporary on-site drainage(s) to carry concentrated flows
- BMPs implemented to divert off-site drainage around or through the construction site, and BMPs that protect stormwater inlets
- BMPs to mitigate or eliminate non-stormwater dischargesBMPs for waste management and materials pollution control, including, but not limited to storage of soil or waste; construction material loading, unloading, storage and access areas; and areas designated for waste handling and disposal
- BMPs for vehicle and equipment storage, fueling, maintenance, and cleaning
- permanent BMPs that are a component of the project SWPPP

The WPCBMPL can be found in Attachment CC of the SWPPP.

500.7 Water Pollution Control Schedule

The Water Pollution Control Schedule (WPCS) is the component of the project SWPPP that shows the timeline for when BMPs will be installed so that the project is in compliance with the CGP. The WPCS provides field staff with the information necessary to plan for adequate materials and crews to install BMPs at the right time so that they are effective. The WPCS, WPCBMPL, and WPCDs provide the necessary tools for the Contractor to plan and implement BMPs to meet the requirements of the project SWPPP.

The WPCS shall contain an adequate level of detail to show major activities sequenced with the implementation of construction site BMPs, including:

- project start and finish dates, including each stage of the project
- SWPPP review and approval

- annual certifications
- mobilization dates
- mass clearing and grubbing/roadside clearing dates
- major grading/excavation dates
- dates named in other permits such as Fish and Game and Army Corps of Engineers Permits
- dates for submittal of SWPPP amendments as required in the contract specifications

The WPCS shall show by location the dates for the deployment of:

- temporary soil stabilization BMPs
- temporary sediment control BMPs
- wind erosion control BMPs
- tracking control BMPs
- non-stormwater BMPs
- waste management and materials pollution control BMPs

The WPCS shall include:

- paving, saw-cutting, and any other pavement-related operations;
- major planned stockpiling operations;
- dates for other significant long-term operations or activities that may cause non-stormwater discharges, such as dewatering, grinding, etc; and
- final stabilization activities for each disturbed soil area of the project.

The WPCS shall be updated quarterly and the quarterly updates shall be filed in SWPPP File Category 20.03: Water Pollution Control Schedule Updates.

The Water Pollution Control Schedule can be found in Attachment DD of the SWPPP.

SECTION 600
PROJECT SITE IMPLEMENTATION PROGRAM

600.1 Water Pollution Control Manager Responsibilities

The WPC Manager shall have primary responsibility and authority to implement the SWPPP and ensure the project is in compliance with the CGP. The WPC Manager is responsible for implementing the SWPPP and amending the SWPPP when any of the conditions specified in Section 100.3 are met. The Contractor has assigned authority to the WPC Manager to mobilize crews and subcontractors, as necessary, for SWPPP and CGP compliance. The WPC Manager will be available at all times throughout duration of the project.

Duties of the Contractor's WPC Manager include but are not limited to the following

- ensuring full compliance with the SWPPP and the CGP
- implementing all elements of the SWPPP, including but not limited to implementing:
  - prompt and effective erosion and sediment control measures
  - all non-stormwater management, and materials and waste management activities such as: monitoring discharges (dewatering, diversion devices); performing general site cleanup; cleaning vehicles and equipment, performing fueling and maintenanceactivities; providing spill control; ensuring that no materials other than stormwater are discharged in quantities that will have an adverse effect on receiving waters or storm drain systems, etc.
- overseeing and ensuring that the following site inspections and visual site monitoring are conducted:
  - daily required BMP inspectections
  - weekly routine stormwater site BMP inspections
  - quarterly non-stormwater site inspections
  - pre-storm inspections prior to forecasted storm events
  - daily inspections during extended forecasted storm events
  - post-storm inspections for qualifying rain events
- mobilizing crews to repair, replace, and/or implement additional BMPs due to deficiencies, failures or other shortcomings identified during inspections, to be completed within 72 hours of identification (the contractor's WPC Manager shall be assigned authority by the Contractor to mobilize crews)
- coordinating with the RE to assure that if design changes to BMPs are required due to deficiencies, failures or other shortcomings identified during inspections, the changes are completed as soon as possible and the SWPPP is revised accordingly
- monitoring NWS Forecast Office forecasts for both forecasted storm events and qualifying rain events; these events are defined as follows:
  - a forecasted storm event is defined as a 50% or greater likelihood that 0.10 inch or more of precipitation

will fall within a 24-hour period

- o a qualifying rain event is defined as a rain event that may produce or has produced ½ inch or greater of precipitation at the time of discharge, with a 72-hour dry period between events

- monitoring weather at the project site
- preparing and implementing qualifying rain event sampling and analysis plans
- preparing amendments to the SWPPP when required
- preparing contractor's SWPPP Annual Compliance Certification
- preparing the Stormwater Annual Reports
- ensuring elimination of all unauthorized discharges
- preparing and submitting Notice of Discharge reports to the RE
- preparing and submitting reports of illicit connections or illegal discharges to the RE

600.2 Site Inspections

Stormwater site inspections and visual monitoring are necessary to ensure that the project is in compliance with the requirements of the CGP. Project site visual monitoring requirements are covered in Section 700 Construction Site Monitoring Program. Project site inspections of stormwater BMPs are conducted to identify and record:

- that BMPs are properly installed
- what BMPs need maintenance to operate effectively
- what BMPs have failed
- what BMPs could fail to operate as intended.

Routine stormwater site inspections shall be conducted by the contractor's WPC Manager or other 24-hour trained staff at the following minimum frequencies:

- daily inspections of;

  - o storage areas for hazardous materials and waste
  - o hazardous waste disposal and transporting activities
  - o hazardous material delivery and storage activities
  - o vehicle and equipment cleaning facilities if vehicle and equipment cleaning occurs daily
  - o vehicle and equipment maintenance and fueling areas if vehicle and equipment maintenance and fueling occurs daily
  - o vehicles and equipment at the job site to verify that operators are inspecting vehicles and equipment each day of use.

  - demolition sites within 50 feet of storm drain systems and receiving waters
  - pile driving areas for leaks and spills if pile driving occurs daily
  - temporary concrete washouts if concrete work occurs daily
  - paved roads at job site access points for street sweeping if earthwork and other sediment or debris generating activities occur daily
  - dewatering work if dewatering work occurs daily
  - temporary active treatment system if temporary active treatment system activities occur daily
  - work over water if work over water occurs daily
- daily inspections for projects within the Lake Tahoe Hydrologic Unit
- weekly inspection of site BMPs

Stormwater site inspections shall be documented on CEM-2030 Stormwater Site Inspection Report, in Appendix G. Completed stormwater inspection reports shall be submitted to the RE within 24 hours after completion of the inspection. Copies of completed inspection reports will be kept in SWPPP File Category 20.31: Contractor Stormwater Site Inspection Reports,

Deficiencies identified during site inspections and correction of deficiencies will be tracked on the CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary, in Appendix I. Corrective Action Summary forms shall be submitted to the RE when corrections are completed but must be submitted within five (5) days after completion of the site inspection. Completed Stormwater Site Inspection Report Corrective Actions Summary forms shall be filed in SWPPP File Category 20.35: Corrective Actions Summary. A copy of the completed Corrective Actions Summary form will also be attached to the corresponding Stormwater Site Inspection Report that generated the need for the CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary

600.3 Weather Forecast Monitoring

The WPC Manager shall have primary responsibility to monitor the National Weather Service Forecast Office for forecasted precipitation based on project site location. Precipitation forecast information shall be obtained from the National Weather Service Forecast Office accessible at: http://www.srh.noaa.gov/.

The project site location to be used for obtaining forecast from National Weather Forecast Office website is State **Route 12/Jameson Canyon Road**.

The WPC Manager shall monitor the weather forecast on a daily basis for predicted precipitation within the following 96 hours. The WPC Manager shall monitor the forecast for the next 24, 48, 72 and 96 hours to determine if the forecast for precipitation is 50 percent or greater for any 6-hour period. If the forecast for precipitation is 50 percent or greater, the WPC Manager shall calculate the amount of precipitation forecasted for each 24-hour period and the total precipitation for the forecasted storm event and record the information. Weather forecast monitoring shall be recorded on CEM-2040 Weather Forecast Monitoring Form, in Appendix J. The completed CEM-2040 Weather Forecast Monitoring forms shall be filed in File Category 20.40: Weather Monitoring Logs. Within 2 working days of the last date shown on a completed Weather Forecast Monitoring Log form, a copy of the completed log will be submitted to the RE.

When the forecast for precipitation is 50 percent or greater and the forecasted amount of precipitation is 0.10 inch or more for any 24-hour period within the next 72 hours, the WPC Manager shall perform a pre-storm site inspection and ensure that the site is prepared for the likely forecasted storm event.

Forecasted storm event site preparation shall include, but is not limited to, the installation of soil stabilization and sediment BMPs on active disturbed soil areas and stockpiles.

600.4 Weather Monitoring

The WPC Manager shall have primary responsibility to monitor weather at the project site. The WPC Manager, on a daily basis, shall monitor the weather and record the weather conditions on the CEM-2041 Weather Monitoring Log form.

When there is precipitation, the WPC Manager shall ensure that storm precipitation data is obtained from the project site rain gauge. Precipitation monitoring will be performed at least every two hours during normal working hours and will include recording the time, amount of precipitation measured in the project site rain gauge, amount of precipitation within a 24-hour period, and total cumulative amount of precipitation for the forecasted storm event.

If no pre-storm visual site monitoring was performed, and the amount of precipitation for any 24-hour period is 0.10 inch or greater, the WPC Manager will implement during storm visual site monitoring, as discussed in Section 700.1.

Weather monitoring will be documented daily on the CEM-2041 Weather Monitoring Log form, available in Appendix K. Completed weather monitoring log forms shall be kept in File Category 20.40: Weather Monitoring Logs. Within 2 working days of the last date shown on a completed weather monitoring log, a copy of the completed log will be submitted to the RE.

600.5 Best Management Practices Status Report

The WPC Manager shall prepare a weekly status report of the water pollution control BMPs (site BMPs) installed on the project site and BMPs that will be deployed during the following week. The weekly BMP status report will be based on the progress of the work and the WPCBMPL for the project, with any additional BMPs the WPC Manager has determined are necessary based on the stage of construction and construction activities.

Because the SWPPP, including the WPCBMPL and WPCDs, are based on the entire project site and all construction activities, the weekly BMP status report should be a “snapshot” of which BMPs are deployed on the project site and which BMPs will be deployed the following week, so a project inspector or reviewer can easily determine what could be expected to be seen on the project site that week. The weekly status report will be used by stormwater inspectors and contractor pesonnel to ensure SWPPP compliance.

The weekly status report will be used to ensure that weekly training meetings cover BMPs that are required for work activities during the week. The weekly status report will be provided to regulatory agency staff who visit the project site to indicate which BMPs should be in place and which are schedueled to be implemented during the coming week.

The weekly status of stormwater BMPs will be documented on CEM-2034 Stormwater Best Management Practices Status Report form, in Appendix H. Completed weekly status reports shall be submitted to the RE 48 hours prior to the beginning of the work week. Copies of the completed reports will be kept in SWPPP File Category 20.34: Best Management Practices Weekly Status Reports.

600.6 Rain Event Action Plans

A risk assessment was done for the State Route 12 (SR 12)/Jameson Canyon Widening Project in Napa County, and based on a number of factors set forth in the CGP, it was determined to be RL 2 for the entire widening project.

REAPs will be prepared by the WPC Manager when there is a forecasted storm event. A forecasted storm event is any weather pattern that is forecasted to have a 50 percent or greater probability of producing precipitation of 0.10 inch or more within any 24-hour period at the project site location. The WPC Manager will prepare the REAP for the forecasted storm event based on the current construction activity phase of the project. For REAPs, the construction

activity phases are the Highway Construction Phase, Highway Planting / Erosion Control Establishment Phase or Inactive Project Phase. The construction activity phases are defined in Section 500.5.

When the NWS forecast for 72 hours and greater predicts a forecasted storm event, the WPC Manager will prepare a REAP using the REAP form appropriate to the current project stage. REAP forms are available in Appendix L. Prepared REAPs shall be submitted to the RE at least 48 hours prior to a forecasted stormevent. If the NWS forecast changes and astorm event is forecasted to occur within 24-72 hours then a REAP must be prepared. If the NWS forecast changes and a storm event is forecasted to occur within the next 24 a REAP will not be prepared and the WPC Manager will take immediate actions to ready the project site for the forecasted storm event.

The WPC Manager shall implement a REAP within the 48 hours prior to the forecasted storm event. A copy of the REAP shall be available on the job site at least 48 hours prior to the forecasted storm event. Copies of REAPs will be maintained in SWPPP File Category 20.45: Rain Event Action Plans in reverse chronologic order.

SECTION 700
CONSTRUCTION SITE MONITORING PROGRAM

700.1 Site Visual Monitoring Inspection

This Construction Site Monitoring Program includes conducting site visual monitoring inspections of the project site to address the following objectives:

- determine whether non-visible pollutants are present at the construction site and are causing or contributing to exceedances of water quality objectives
- determine whether BMPs included in the SWPPP are effective in preventing or reducing pollutants in stormwater dischagres and authorized non-stormwater discharges
- determine whether BMPs included in the REAP are effective in preventing or reducing pollutants in stormwater dischagres and authorized non-stormwater discharges
- demonstrate that the site is in compliance with the discharge prohibitions and applicable NALs and NELs of the CGP
- determine whether immediate corrective actions, additional BMP implementation, or SWPPP amendments are necessary to reduce pollutants in stormwater and authorized non-stormwater discharges
- demonstrate that the site is in compliance with the discharge prohibitions
- document the presence or evidence of any non-stormwater discharge (authorized or unauthorized), pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.), and source, if applicable, and the response taken to eliminate unauthorized non-stormwater discharges and to reduce or prevent pollutants from contacting non-stormwater discharges

700.1.1 Visual Monitoring Locations

Locations of Visual Monitoring Prior To A Storm Event

Visual monitoring (a pre-storm inspection) of the project site is required when the forecast for precipitation is greater than 50 percent within the next 24, 48, 72, 96 hours, and the amount of precipitation forecasted for any 24-hour period is 0.10 inch or greater. Within 48 hours of a forecasted storm event, a stormwater visual monitoring site inspection shall be performed and shall include observations of:

- stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources
- BMPs to identify whether they have been properly implemented
- any stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard

22 drainage area(s) on the project site and the Contractor's yard, staging areas, and storage areas have been identified as required forecasted storm event visual observation location(s), according to Section I.3.e of Attachments C, D, and E of

the CGP. Drainage area(s) are shown on the WPCDs in Attachment BB and are listed by drainage area location number and location description in Table 700.1.1.1: Drainage Areas.

TABLE 700.1.1.1
DRAINAGE AREAS

Drainage Area No.	Location
S1	Station 91+00 Lt
S2	Station 104+90 Lt
S3	Station 118+30 Lt
S4	Station 127+50 Lt
S5	Station 140+00 Rt
S6	Station 147+30 Rt
S7	Station 150+05 Rt
S8	Station 152+80 Rt
S9	Station 155+50 Rt
S10	Station 173+05 Rt
S11	Station 179+50 Rt
S12	Station 186+50 Rt
S13	Station 190+30 Rt
S14	Station 198+30 Rt
S15	Station 203+50 Rt
S16	Station 211+20 Rt
S17	Station 219+70 Rt
S18	Station 225+10 Rt
S19	Station 238+00 Rt
S20	Station 246+40 Rt
S21	Station 252+05 Rt
S22	Station 254+50 Rt

0 stormwater storage or containment area(s) are located on the project site. These stormwater storage and containment area(s) have been identified as required forecasted storm event visual observation location(s). Stormwater storage or containment area(s) are shown on the WPCDs from Attachment BB and are listed by storage or containment area location number and location description in Table 700.1.1.2: Stormwater Storage and Containment Areas.

TABLE 700.1.1.2 STORMWATER STORAGE AND CONTAINMENT AREAS	
Location No.	**Location**

Locations of Visual Monitoring during Extended Forecasted Storm Events and within 48 Hours After a Qualifying Rain Event

During any extended forecasted storm events and within 48 hours after a qualifying rain event (a rain event that has produced ½ inch or more of precipitation), a stormwater visual monitoring site inspection is required to observe:

- stormwater discharges at all discharge locations
- BMPs to identify and record those that need maintenance to operate effectively, those that have failed, and those that could fail to operate as intended
- the discharge of stored or contained stormwater

22 discharge location(s) are located on the project site. These stormwater discharge location(s) have been identified as required visual observation location(s). Stormwater discharge location(s) are shown on the WPCDs in Attachment BB and and are listed in Table 700.1.1.3: Stormwater Discharge Locations.

TABLE 700.1.1.3 STORMWATER DISCHARGE LOCATIONS	
Unique Sampling Location Identifier	**Location**
S1	Station 91+00 Lt
S2	Station 104+90 Lt
S3	Station 118+30 Lt
S4	Station 127+50 Lt
S5	Station 140+00 Rt
S6	Station 147+30 Rt
S7	Station 150+05 Rt
S8	Station 152+80 Rt
S9	Station 155+50 Rt
S10	Station 173+05 Rt
S11	Station 179+50 Rt
S12	Station 186+50 Rt
S13	Station 190+30 Rt
S14	Station 198+30 Rt
S15	Station 203+50 Rt

S16	Station 211+20 Rt
S17	Station 219+70 Rt
S18	Station 225+10 Rt
S19	Station 238+00 Rt
S20	Station 246+40 Rt
S21	Station 252+05 Rt
S22	Station 254+50 Rt

BMP locations shown on the WPCDs in Attachment BB and are listed on the WPCBMPL in Attachment CC.

0 stormwater storage or containment area(s) are located on the project site. Stormwater storage or containment area(s) are shown on the WPCDs in Attachment BB and are listed on Table 700.1.1.2: Stormwater Storage and Containment Areas.

Locations of Visual Monitoring for Non-Stormwater Discharges

A visual monitoring site inspection for non-stormwater discharges requires that each drainage area be observed for the presence of or indications of prior unauthorized and authorized non-stormwater discharges.

0 drainage area(s) are located on the project site and in the contractor's yard, staging areas, and storage areas that have been identified as observation location(s) for non-stormwater discharges. Drainage area(s) are shown on the WPCDs in Attachment BB and are listed in Table 700.1.1.1: Drainage Areas.

700.1.2 Visual Monitoring Schedule

On a daily basis contractor personnel will visual monitor the project site for discharges and report any discharges to the WPC Manager.

Stormwater site visual monitoring inspections shall be conducted at a minimum:

- within 48 hours prior to a forecasted storm event (any weather pattern that is forecasted to have a 50 percent or greater probability of producing 0.1 inches or more of precipitation in the project area within a 24 period)
- at 24-hour intervals during any extended forecasted storm event
- within 48 hours after a qualifying rain event (a rain event that has produced ½ inch or more of precipitation)

Non-stormwater discharge site visual monitoring inspections shall be conducted, at a minimum, during each of the following periods: January-March, April-June, July-September, and October-December.

If visual monitoring of the site for stormwater is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the site inspector shall document the conditions that prevented the inspection. The documentation of the site visual monitoring inspection shall be filed in SWPPP File Category 20.33: Site Visual Monitoring Inspection Reports.

700.1.3 Visual Monitoring Procedures

Site visual monitoring inspections shall be overseen by the contractor's WPC Manager. Stie visual monitoring will be conducted by the WPC Manager , appointed QSP or stormwater inspector.

The name(s) and contact number(s) of the site visual monitoring inspection personnel are listed below and their training qualifications are provided in Attachment E:

- Assigned inspector: To Be Determined Contact phone: To Be Determined
- Alternate inspector: To Be Determined Contact phone: To Be Determined

Daily Visual Monitoring of the Site

On a daily basis, the contractor personnel on the site shall be observant of any discharges or evidence of a prior discharge. If a discharge or evidence of a prior discharge is discovered by the contractor, the WPC Manager or contractor shall immediately notify the RE, and shall file a written report on the CEM-2061 Notice of Discharge form with the RE within 24 hours of the discharge or discovery of evidence of a prior discharge. Corrective measures shall be implemented immediately following the discovery of the discharge. Form CEM-2061 for reporting discharges is available in Appendix M.

Caltrans will notify the owner/operator of the MS4 and the RWQCB as soon as practicable, but no later than 24 hours after onset of or threat of discharge which can cause adverse conditions to the storm sewer system or the receiving water. This applies to any such discharge that is not covered by Office of Emergency Services (OES) procedures for discharges from a highway to a storm sewer system subject to a MS4 permit.

Discharges requiring reporting include:

- stormwater from a DSA discharged to a waterway without treatment by an effective combination of temporary erosion and sediment control BMPs
- non-stormwater, except conditionally exempted discharges, discharged to a waterway or a storm drain system, without treatment by an approved control measure (BMP)
- stormwater discharged to a waterway or a storm drain system where the control measures (BMPs) have been overwhelmed or not properly maintained or installed
- discharge of hazardous substances above the reportable quantities, as provided in 40 CFR 110.3, 117.3 or 302.4
- stormwater runoff containing hazardous substances from spills discharged to a waterway or storm drain system

The initial notification to the RWQCB of a discharge or threat of discharge will be made immediately for any discharge that can cause adverse conditions to the storm sewer system or the receiving water, with a followup in writing within 24 hours. Adverse conditions include, but are not limited to, serious violations or serious threatened violations of Waste Discharge Requirements (WDRs), significant spills of petroleum products or toxic chemicals, or serious damage to control facilities that could affect compliance. Caltrans shall perform follow-up monitoring of major spills and/or perform confirmation sampling to ensure that threats to waters of the U.S. have been eliminated as determined by the local RWQCB.

Visual Monitoring Prior To A Forecasted Storm Event

Visual monitoring of the project site is required when the forecast for precipitation is greater than 50 percent within the next 24, 48, 72, or 96 hours and the amount of precipitation forecasted for any 24-hour period during the storm event is 0.10 inch or greater within a 24-hour period. Site visual monitoring shall be conducted within 48 hours prior to a forecasted storm event. The pre-storm site visual monitoring shall include observations of:

- all drainage areas identified in Table 700.1.1.1 to identify any spills, leaks, or uncontrolled pollutant sources;

- all stormwater storage and containment areas identified in Table 700.1.1.2 to detect leaks and ensure maintenance of adequate freeboard

- all BMPs for proper installation and adequate maintenance.

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced in the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, implemented prior to the forecasted storm event.

Any corrective actions identified by a pre-storm visual monitoring site inspection shall be included in the REAP for the forecasted storm event.

Visual Monitoring during Extended Forecasted Storm Events

Stormwater visual monitoring site inspections shall be conducted at least once each 24-hour period during any extended forecasted storm events. During any extended forecasted storm event, the site visual monitoring inspector shall visually observe:

- stormwater discharges at all discharge locations (Table 700.1.1.3)

- all stored or contained stormwater that is derived from and discharged subsequent to the qualifying rain event producing precipitation of ½ inch or more at the time of discharge; stored or contained stormwater that will likely discharge after working hours, due to anticipated precipitation, shall be observed prior to the discharge during working hours

Stormwater discharges and stored or contained stormwater will be observed for the presence or absence of floating and suspended materials, sheens on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

During any forecasted storm event, stormwater visual monitoring site inspections will include the observation of all site BMPs for:

- proper installation

- achievement of maintenance requirements

- possible failure

- BMPs that could fail to operate as intended

- effectiveness, so that design changes can be implemented as soon as feasible if needed

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced on the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, implemented within 72 hours of identification and completed as soon as possible. If BMPs require design changes, the changes shall be implemented and the SWPPP shall be amended to includethe changes.

Visual Monitoring Within 48 Hours after a Qualifying Rain Event

Site visual monitoring post-qualifying rain events shall be conducted within 48 hours after the qualifying rain event. The post-storm site visual monitoring inspection shall include observations of:

- discharges of stormwater that have not been processed by a BMP or evidence of stormwater that has not been processed by a BMP at all discharge locations

- evidence of a breach at stored or contained stormwater that is derived from and discharged subsequent to the qualifying rain event producing precipitation of ½ inch or more at the time of discharge; stored or contained stormwater that will likely discharge after working hours, due to anticipated precipitation, shall be observed prior to the discharge during working hours

Stormwater discharges and stored or contained stormwater will be observed for the presence or absence of floating and suspended materials, sheens on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

Post-qualifying rain event stormwater visual monitoring site inspections will include observation of all site BMPs to determine if BMPs have failed to operate as intended because of:

- improper installation

- lack of maintenance

- lack of effectiveness

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced on the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, implemented within 72 hours of identification and completed as soon as possible. If BMPs require design changes, the changes shall be implemented and the SWPPP shall be amended to include the changes.

Visual Monitoring of Non-Stormwater Discharges

For non-stormwater site visual monitoring, each drainage area will be monitored quarterly for the presence or prior indications of unauthorized and authorized non-stormwater discharges, and their sources. The presence or absence of non-stormwater discharges based on site observations will be documented in the CEM-2030 Stormwater Site Inspection Report. Documentation of observed non-stormwater discharges will include presence or absence of floating and suspended materials, sheens on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

Site observations of the site and any recommended corrective actions will be documented. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, implemented within 72 hours of identification and completed as soon as possible. If BMPs require design changes, the changes shall be implemented and the SWPPP shall be amended to include the changes. Corrective actions shall be documented in the CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary. Any photographs used to document observations will be referenced in the CEM-2030 Stormwater Site Inspection Report.

700.1.4 Visual Monitoring Followup and Tracking Procedures

For deficiencies identified during visual monitoring (site inspections), the required repairs or maintenance of BMPs shall begin and be completed as soon as possible, while taking into consideration worker safety. For deficiencies identified during visual site inspections that require design changes, including additional BMPs, the implementation of changes will begin within 72 hours of identification of the deficiency and be completed as soon as possible. When design changes to BMPs are required, the SWPPP shall be amended, including the WCBMPL and WPCDs. If NALs are exceeded, corrective actions shall be approved by the WPC Manager and implemented immediately.

Deficiencies identified on site inspection reports, as well as corrections of deficiencies, will be tracked on the CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary, in Appendix I. Corrective action summaries shall be submitted to the RE when corrections are completed, but must be submitted within five (5) days of a site inspection.

700.1.5 Data Management and Reporting

The results of site visual monitoring (pre-storm, during storm, post-storm, and quarterly inspections) shall be recorded on the CEM-2030 Stormwater Site Inspection Report, in Appendix G. A copy of each report shall be kept in SWPPP File Category 20.33: .

All reports shall be provided to the RE within 24 hours of the site inspection.

Deficiencies identified during visual monitoring (site inspections) and correction of deficiencies will be tracked on the CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary, in Appendix I. Corrective Action Summary forms shall be submitted to the RE when corrections are completed, but must be submitted within five (5) days of the site inspection. Completed Stormwater Site Inspection Report Corrective Actions Summary forms shall be filed in SWPPP File Category 20.35: Corrective Actions Summary. A copy of the completed Corrective Actions Summary form will also be attached to the corresponding inspection report and shall be kept in the SWPPP Category 20.33.

If a discharge or evidence of a prior discharge is discovered by the Contractor, the WPC Manager or Contractor shall immediately notify the RE, and will file a written report to the RE within 24 hours of the discovery of evidence of a prior discharge. The written report to the RE will contain:

- the date, time, location, and type of unauthorized discharge;
- The nature of the operation that caused the discharge;
- An initial assessment of any impacts caused by the discharge;
- the BMPs deployed before the discharge;
- the date of deployment and type of BMPs deployed after the discharge, including additional measures installed or planned to reduce or prevent re-occurrence
- steps taken or planned to reduce, eliminate and/or prevent recurrence of the discharge

Reporting of discharges shall be documented on the CEM-2061 Notice of Discharge form, in Appendix M. Completed Notice of Dischage reports shall be submitted to the RE within 24 hours of discovery of evidence of a discharge. Copies of the Notice of Discharge reports will be kept in SWPPP File Category 20.61: Notice of Discharge Reports.

700.2 Sampling and Analysis Plans

700.2.1 General SAP

A sampling and analysis plan (SAP) describes how samples will be collected, under what conditions, where and when the samples will be collected, what the sample will be tested for, what test methods and detection limits will be used, and what methods/procedures will be performed to ensure the integrity of the sample during collection, storage, shipping and testing (i.e., quality assurance/quality control protocols). Therefore, a SAP shall include the components listed below.

1. Scope of Monitoring Activities
2. Monitoring Preparation
3. Monitoring Strategy

4. Sample Collection and Handling
5. Sampling Analysis
6. Quality Control and Assurance
7. Data Management and Reporting
8. Data Evaluation
9. Change of Conditions

This SWPPP contains a non-visible pollutants SAP. The SWPPP may also contain four additional specific SAPS based on the project risk level, project dewatering requirements, RWQCB sampling and analysis requirements, and a SAP for monitoring an active treatment system.

Sampling and analysis for Risk Level 1 projects will be documented on the CEM-2048 Storm Event Sampling and Analysis Plan, available in Appendix N. For Risk Level 2 and Risk Level 3 projects, sampling and analysis will be documented on the CEM-2049 Qualifying Rain Event Sampling and Analysis Plan, available in Appendix O.

700.2.1.1 Scope of Monitoring Activities

For specific details with regard to monitoring activities, refer to the specific SAP identified below.

- Non-visible Pollutants (Section 700.2.2.1)
- Non-Stormwater Discharges (Section 700.2.3.1)
- Stormwater pH and Turbidity (Section 700.2.4.1)
- Monitoring required by the Regional Board (Section 700.2.5.1)
- Monitoring for Active Treatment Systems (ATS) (Section 700.2.6.1)

700.2.1.2 Monitoring Preparation

To ensure an effective construction site monitoring program, the following monitoring preparation activities are required:

- identifying qualified sampling personnel
- ensuring the availability of an adequate quantity of monitoring supplies
- ensuring the availability of field instruments; field instruments must be properly maintained and calibrated prior to sampling events
- identifying a qualified testing laboratory that is capable of performing stormwater and non-stormwater analysis for those constituents that must be tested in a laboratory

700.2.1.2.1 Qualified Sampling Personnel

Sampling personnel shall be trained to collect, maintain, and ship samples in accordance with the Surface Water Ambient Monitoring Program (SWAMP) *2008 Quality Assurance Program Plan* (QAPrP).

- Stormwater sampling and field analysis will be performed by the following primary and alternative stormwater samplers: To Be Determined

- To Be Determined

The primary stormwater sampler has received the following stormwater sampling training:

- To Be Determined

The primary stormwater sampler has the following stormwater sampling experience:

- To Be Determined

The alternate stormwater sampler has received the following stormwater sampling training:

- To Be Determined

The alternate stormwater sampler has the following stormwater sampling experience:

- To Be Determined

Training records of designated contractor sampling personnel are provided in Attachment E, Contractor Personnel Stormwater Training.

Safety practices for sample collection will be in accordance with the (To Be Determined).

700.2.1.2.2 Monitoring Supplies

700.2.1.2.3 Field Instruments

The field instrument(s) shown in Table 700.2.1.2.3: Field Instruments will be used to analyze the constituents shown:

TABLE 700.2.1.2.3
FIELD INSTRUMENTS

Field Instrument	Constituent

The instrument(s) shall be maintained in accordance with manufacturer's instructions.

The instrument(s) shall be calibrated before each sampling and analysis event.

A Standard Operating Procedure (SOP) for calibration and maintenance of field instruments shall be implemented based on the meter manufacturer's instructions. A copy of the manufacture's instructions shall be attached to the SOP so that they are readily available.

Instrument maintenance shall be documented on the CEM-2055 Stormwater Equipment Maintenance Log, in Appendix P. Instrument calibration shall be documented using the following forms:

- CEM-2056 - Stormwater Turbidity Meter Calibration Record (Appendix Q)
- CEM-2057 - Stormwater pH Meter Calibration Record (Appendix R)
- CEM-2058 - Stormwater Meter Calibration Record (Appendix S)

Maintenance and calibration records shall be maintained in SWPPP File Category 20.55: Field Testing Equipment Maintenance and Calibration Records.

700.2.1.2.4 Testing Laboratory

Samples collected on the project site that require laboratory testing will be tested by a laboratory certified by the State Department of Health Services. Samples collected on the project site will be analyzed by:

Laboratory Name:	**(To Be Determined)**
Address:	**(To Be Determined)** **(To Be Determined)**
Contact Name:	**(To Be Determined)**
Title:	**(To Be Determined)**
Phone Number:	**(To Be Determined)**
Emergency Phone Number (24/7:	**(To Be Determined)**
Email Address:	**(To Be Determined)**

700.2.1.3 Monitoring Strategy

The monitoring strategy includes identifying analytical constituents, potential sampling locations, identification of actual sampling locations, and sampling schedule,

700.2.1.3.1 Analytical Constituents

Stormwater and non-stormwater discharges shall be monitored for the analytical constituents specified in the specific SAP(s) in this SWPPP.

700.2.1.3.2 Potential Sampling Locations

Potential sampling locations must be representative of the stormwater and non-stormwater discharges from the

construction site. Existing conditions and associated construction activities within each drainage area form the basis for determining representative stormwater sampling locations.

Project drainage areas and potential sampling locations have been determined by:

- reviewing project plans
- visiting project site
- reviewing topography maps

The WPCDs show the demarcation of all drainage areas that are either:

- within the project site
- cover part of the project site

The QSD must identify potential sampling locations where concentrated run-off:

- leaves the Caltrans right-of-way
- drains into an MS4
- discharges into a receiving water

Potential run-on sampling locations were determined where concentrated run-on:

- enters the right-of-way
- combines with the stormwater on site and then discharges into an MS4, including the location(s) of discharge into the MS4

The following locations were determined when runoff discharges directly into receiving water bodies:

- the discharge location(s) into the receiving water
- a potential sampling location upstream of all discharge locations
- a potential sampling location downstream from all discharge location(s) into the receiving water.

Necessary potential sampling locations were determined when:

- there are potential sources of non-visible pollutants, as discussed in Section 500.1, and discharge locations are downgradient
- run-on locations are present that may contribute non-visible pollutants
- there are potential non-stormwater discharges and corresponding discharge locations are downgradient
- there are proposed dewatering construction activities

If an ATS is used on site, then sample locations must be included in Section 700.2.6.

Potential stormwater and non-stormwater sampling locations must be shown on the WPCDs in Attachment BB and listed in Attachment EE: Stormwater Sample Locations. The QSD has identified each of the potential sampling locations with a unique sample location identification code, as shown below. The identification code must start with a number and must be different for each location. If the construction site lies in a west-to-east orientation, starting with one (01) from the east, the potential sampling locations shall be numbered toward the west. If the construction site lies in a south-to-north orientation, the potential sampling locations shall be numbered toward the north.

To further distinguish among the locations, each potential sampling location has been identified with one of the following abbreviations based on the sampling location type:

- discharge locations leaving Caltrans right-of-way: DL
- discharge locations from areas with known non-visible pollutants: NVP
- discharge locations upgradient of areas with known non-visible pollutants: UNVP
- discharge locations to an MS4: MS
- run-on locations: RO
- discharge locations into a receiving water: RW
- downstream of all discharge locations: RWD
- upstream of all discharge locations: RWU
- dewatering discharge locations: DDL
- contained stormwater discharge locations: CSDL
- discharge locations for ATS: ATS

The unique sample location identification code shall follow this format, **SSSTTTTXX**, where:

SSS	=	sampling location identifier number (e.g., 010)
TTTT	=	sampling location type (e.g. DL)
XX	=	identifier number for the type of sampling location

For example, the sampling location identification for the 15th sampling location based on starting from the south end of the project for a stormwater discharge location that has been identified to be the ninth discharge location would be **015DL09.**

Potential sampling locations shown on the WPCDs shall be identified with unique sampling location identifiers. Each potential sample location must be listed on Stormwater Sample Locations in Attachment EE. The unique identification of each potential sampling location based on its number and abbreviation of type shall be used on all sampling documentation.

The WPC Manager may have to revise and/or add additional sampling locations during the course of construction as

conditions dictate.

700.2.1.3.3 Identification of Actual Sampling Locations

For each forecasted storm event, actual sampling locations will be determined by the WPC Manager based on the strategy described in each specific SAP. Sampling and analysis locations for Risk Level 1 projects will be documented on the CEM-2048 Storm Event Sampling and Analysis Plan, in Appendix N. For Risk Level 2 and Risk Level 3 projects, sampling and analysis locations will be documented on CEM-2048 Storm Event Sampling and Analysis Plan, in Appendix N, or CEM-2049 Qualifying Rain Event Sampling and Analysis Plan, in Appendix O, based on the forecasted storm event.

700.2.1.3.4 Sampling Schedule

For the sampling schedule, see the specific SAPs in this CSMP. If a scheduled sampling activity is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the stormwater sampler shall document why an exception to performing the sampling was necessary.

700.2.1.4 Sample Collection and Handling

Sample collection procedures shall be used to ensure that representative samples are collected and that the potential for contamination of samples is minimized. Sample handing procedures are followed to ensure that samples are identified accurately and that the required analysis is clearly documented. Chain-of-custody requirements for samples are necessary to trace the possession of the sample from collection through analysis.

700.2.1.4.1 Sample Collection Procedures

Samples shall be collected, maintained and shipped in accordance with the SWAMP's 2008 QAPrP.

Grab samples shall be collected and preserved in accordance with the methods identified in each specific SAP. Only personnel trained in proper water quality sampling shall collect samples.

Samples from areas of sheet flow shall be collected using the collection procedures described below to concentrate the flow in order to collect a sample or follow other procedures approved by the RE.

- Place several rows of sandbags in a half circle directly in the path of the sheet flow to pond water, and wait for enough water to spill over. Then place a cleaned or decontaminated flexible hose along the top, and cover with another sandbag so that ponded water will only pour through the flexible hose and into sample bottles. Do not reuse the same sandbags during future sampling events as they may cross-contaminate future samples.

- Place a cleaned or decontaminated dustpan with open handle in the path of the sheet flow so that water will pour through the handle and into sample bottles.

For receiving water sampling, upstream samples shall be collected to represent the water body upgradient of the construction site. Downstream samples shall be collected to represent the water body mixed with direct discharge from the construction site. Samples shall not be collected directly from ponded, sluggish, or stagnant water.

Receiving water upstream and downstream samples shall be collected using one of the following methods:

- placing a sample bottle directly into the stream flow in or near the main current upstream of sampling personnel and allowing the sample bottle to fill completely;

  OR

- placing a decontaminated or sterile bailer or other sterile collection devise in or near the main current to collect the sample and then transferring the collected water to appropriate sample bottles allowing the sample bottle to fill completely.

To maintain sample integrity and prevent cross-contamination, sampling collection personnel shall follow the procedures listed below.

- Wear a clean pair of surgical gloves donned prior to the collection and handling of each sample at each location.
- Decontaminate sampling equipment prior to sample collection using a TSP-soapy water wash, distilled water rinse, and final rinse with distilled water. Dispose of decontamination water/soaps appropriately (i.e., do not discharge to the storm drain system or receiving water).
- Do not allow the inside of the sample bottle to come into contact with any material other than the run-off sample.
- Discard sample bottles or sample lids that have been dropped onto the ground prior to sample collection.
- Do not leave the cooler lid open for an extended period of time once samples are placed inside.
- Do not sample near a running vehicle where exhaust fumes may impact the sample.
- Do not touch the exposed end of a sampling tube, if applicable.
- Avoid allowing rainwater to drip from rain gear or other surfaces into sample bottles.
- Do not eat, smoke, or drink during sample collection/field measurement.
- Do not sneeze or cough in the direction of an open sample bottle.
- Minimize the exposure of the samples to direct sunlight, as sunlight may cause biochemical transformation of the sample.

700.2.1.4.2 Sample Handling Procedures

Immediately following collection, sample bottles to be forwarded for laboratory analytical testing shall be capped, labeled, documented on the Stormwater Sampling Information, Identification, and Chain-of-Custody Record form, sealed in a re-sealable storage bag, placed in an ice-chilled cooler, at 0 ±4 degrees Celsius, and delivered within 24 hours to the laboratory shown in sub-section 700.2.1.2.4.

Immediately following collection, samples used for field analysis shall be tested in accordance with the field instrument manufacturer's instructions and results recorded on the CEM-2052 Stormwater Sample Field Test Report form.

700.2.1.4.3 Sample Documentation Procedures

All original data documented on sample bottle identification labels, the CEM-2050 Stormwater Sample Information, Identification and Chain-of-Custody Record form, and the CEM-2051 Stormwater Sampling and Testing Activity Log, shall be recorded using waterproof ink. These shall be considered accountable documents. If an error is made on an accountable document, the individual shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be obliterated. All corrections shall be initialed and dated.

The following forms, used for sample documentation, are provided in the SWPPP appendices:

- CEM-2050 Stormwater Sampling Information, Identification, and Chain-of-Custody Record, in Appendix T
- CEM-2051 Stormwater Sampling and Testing Activity Log, in Appendix U

Duplicate samples shall be identified in a manner consistent with the numbering system for other samples to prevent the laboratory from identifying duplicate samples. Duplicate samples shall be identified in the CEM-2051 Stormwater Sampling and Testing Activity Log.

Sample Bottle Identification Labels: Sampling personnel shall attach an identification label to each sample bottle, which shall include, at a minimum, the following information:

- project name
- contract number and/or project identifier number
- unique sample identification code, which shall follow this format, **SSSSSYYMMDDHHmmTT**, where:

SSSSS	=	sampling location identifier number (e.g., 01MS1)
YY	=	last two digits of the year (e.g. 11)
MM	=	month (01-12)
DD	=	day (01-31)
HH	=	hour sample collected (00-23)
mm	=	minute sample collected (00-59)
TT	=	Type or QA/QC Identifier (if applicable)
G	=	grab
FS	=	field duplicate

  For example, the sample number for a grab sample collected at Station 01MS1, collected at 4:15PM on December 8, 2011 would be **01MS11112081615G**.

- constituent to be analyzed
- initials of person who collected the sample

Stormwater Sampling and Testing Activity Log: A log of sampling events and test results shall include:

- sampling date
- separate times for collected samples and QA/QC samples, recorded to the nearest minute
- unique sample identification number and location
- constituent analyzed

- names of sampling personnel
- weather conditions (including precipitation amount)
- test results
- other pertinent data

Sample Information, Identification and Chain-of-Custody Record Forms: All samples to be analyzed by a laboratory will be accompanied by a CEM-2059 Sample Information, Identification and Chain-of-Custody Record form. The samplers will sign the Sample Information, Identification and Chain-of-Custody Record form when samples are turned over to the testing laboratory. Chain-of-custody procedures will be strictly adhered to for QA/QC purposes.

700.2.1.5 Sample Analysis

For the analytical methods to be used to determine the presence of pollutant(s), see the specific SAPs in this CSMP.

700.2.1.6 Quality Assurance/Quality Control

For verification of laboratory or field analysis, duplicate samples shall be collected at a rate of 10 percent or 1 minimum duplicate per sampling event. The duplicate sample shall be collected, handled, and analyzed using the same protocols as primary samples. A duplicate sample shall be collected immediately after the primary sample has been collected. Duplicate samples shall not influence any evaluations or conclusions; however, they shall be used as a check on laboratory or field analysis quality assurance.

700.2.1.7 Data Management and Reporting

All test results shall be documented on either the CEM-2052 Stormwater Sample Field Test Report form, or the CEM-2054 Stormwater Sample Laboratory Test Report form, and entered on the CEM-2051 Stormwater Sampling and Testing Activity Log. These shall be considered accountable documents. If an error is made on an accountable document, the individual shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be obliterated. All corrections shall be initialed and dated.

For field tests, the submitted information shall include a signed copy of the CEM-2050 Sample Information, Identification and Chain-of-Custody Record form and CEM-2052 Stormwater Sample Field Test Report form. Appendix V contains the CEM-2052 Stormwater Sample Field Test Report form , which must accompany the Sample Information, CEM-2050 Identification and Chain-of-Custody Record form from Appendix T. The test results shall be recorded on the CEM-2051 Stormwater Sampling and Testing Activity Log, in Appendix U.

For laboratory testing, all laboratory analysis results shall be reported on CEM-2054 Stormwater Sample Laboratory Test Result form, in Appendix W. If the CEM-2054 Stormwater Sample Laboratory Test Report form is not completed by the testing laboratory, then the laboratory report used to complete the CEM-2054 Stormwater Sample Laboratory Test Report form shall be attached to the completed CEM-2054 Stormwater Sample Laboratory Test Report form. For each test report, the CEM-2054 Stormwater Sample Laboratory Test Report and CEM-2050 Sample Information, Identification and Chain-of-Custody Record form shall be reviewed for consistency among laboratory methods, sample identifications, dates, and times for both primary samples and QA/QC samples. The test results shall be recorded on the CEM-2051 Stormwater Sampling and Testing Activity Log form.

All sampling and testing documentation, including CEM-2050 Sample Information, Identification, and Chain-of-Custody Record forms, CEM-2051 Stormwater Sampling and Testing Activity Logs, CEM-2052 Stormwater Sample Field Test Reports, and CEM-2054 Stormwater Sample Laboratory Test Reports shall be kept in the appropriate SWPPP file category. Sampling and testing documentation shall be filed in the appropriate following SWPPP file category based

on the specific SAP that required the sampling and analysis:

- non-visible pollutant sampling and testing – SWPPP File Category 20.51;
- non-stormwater discharge sampling and testing – SWPPP File Category 20.50
- turbidity, pH, and SSC sampling and testing – SWPPP File Category 20.52
- required RWQCB sampling and testing – SWPPP File Category 20.53
- ATS sampling and testing – SWPPP File Category 20.54

If corrective actions are taken as a result of the data evaluation, a copy of the completed CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary shall be filed in File Category 20.35: Corrective Actions Summary.

A copy of completed sampling records and reports and an updated CEM Stormwater Sampling and Testing Log shall be submitted to the RE. All water quality analytical results, including QA/QC data, shall be submitted to the RE within 48 hours of sampling for field analyzed samples, and within 30 days for laboratory analyses.

In addition to a paper copy of the water quality test results, the test results shall be submitted electronically in Microsoft Excel (.xls) format, and shall include, at a minimum, the following information from the lab: Sample ID Number, Contract Number, Constituent, Reported Value, Laboratory Name, Method Reference, Method Number, Method Detection Limit, and Reported Detection Limit. Electronic copies of stormwater data shall be forwarded by email to Elias Moussa at elias_moussa@dot**.ca.gov** for inclusion into a statewide database.

700.2.1.8 Data Evaluation

For data evaluation of stormwater sample test results, see specific SAPs.

700.2.1.9 Change of Conditions

Whenever stormwater visual monitoring site inspections indicate a change in site conditions that might affect the appropriateness of sampling locations, sampling and testing protocols shall be revised accordingly. All such revisions shall be implemented as soon as feasible, and the SWPPP updated or amended.

700.2.2 Sampling and Analysis Plan for Non-Visible Pollutants

The following construction materials, wastes, or activities, as identified in Section 500.1.1, are potential sources of nonvisible pollutants to stormwater discharges from the project. Storage, use, and operational locations are shown on the WPCDs in Attachment BB.

- Vehicle Batteries

700.2.2.1 Scope of Monitoring Activities

The scope of monitoring for discharges of non-visible pollutants from the construction site is based on the construction materials and construction activities to be performed on the project site, potential for the presence of non-visible pollutants, based on the historical use of the site, and potential non-visible pollutants in run-off from areas where soil amendments have been used on the project site.

The construction materials, wastes or activities listed below, and identified in Section 500.1.1, are potential sources of non-visible pollutants to stormwater discharges from the project. Storage, use, and operational locations are shown on the WPCDs in Attachment BB.

- Vehicle fluids, including oil, grease, petroleum, and coolant;

The existing site features listed below, and identified in Section 500.1.2, are potential sources of non-visible pollutants to stormwater discharges from the project.

- Not Applicable

The soil amendments listed below have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil and will be used on the project site.

- Not Applicable

700.2.2.2 Monitoring Preparation

Refer to the general requirements in General SAP Section 700.2.1.2 for monitoring preparation.

700.2.2.2.1 Qualified Sampling Personnel

Refer to the general requirements in General SAP Section 700.2.1.2.1 for Qualified Sampling Personnel.

700.2.2.2.2 Monitoring Supplies

Refer to the general information in General SAP Section 700.2.1.2.2 regarding monitoring supplies.

700.2.2.2.3 Field Instruments

Refer to the general information in General SAP Section 700.2.1.2.3 regarding field instruments.

700.2.2.2.4 Testing Laboratory

Refer to the contact information found in General SAP Section 700.2.1.2.4 for the Testing Laboratory.

700.2.2.3 Monitoring Strategy

The monitoring strategy for non-visible pollutants in stormwater discharges is to identify all potential non-visible

pollutants that may be on the project site, non-visible pollutant sources, and water quality indicators that will indicate the presence of the non-visible pollutant in stormwater discharges. Locations will be identified where sources of non-visible pollutants will be used, stored or exist because of historical use of the project site so that these areas are monitored prior to and during forecasted storm events.

Non-visible pollutant monitoring is only required where a discharge can cause or contribute to an exceedance of a water quality standard based on one of the following triggers:

- construction materials are waste are exposed
- the site contains historical non-visible pollutants
- construction activity has occurred or material has been placed within the past 24 hours that may cause an exceedance of a water quality standard
- there is run-on to the site that may contains non-visible pollutants
- there is a breach, malfunction, leak or spill from a BMP

When one of the triggers that indicates a non-visible pollutant source may have come in contact with stormwater is discovered during a site inspection conducted prior to, during or after a forecasted storm event, the WPC Manager will require that sampling and analysis of the stormwater discharge be conducted for the applicable non-visible pollutant water quality indicator(s).

For the forecasted storm event in which a trigger for a non-visible pollutant sampling and analysis has occurred, the WPC Manager will also require the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. The WPC Manager will perform an evaluation of the analysis results from the non-visible pollutant stormwater discharge sampling location and the analysis results from the uncontaminated run-off sampling location to determine if there is an increased level of the tested non-visible pollutant analyte in the stormwater discharge.

700.2.2.3.1 Analytical Constituents

Identification of Potential Non-Visible Pollutants

The following table lists the specific sources and types of potential non-visible pollutants on the project site and the applicable water quality indicator constituent(s) for that pollutant.

TABLE 700.2.2.3.1
POTENTIAL NON-VISIBLE POLLUTANTS AND WATER QUALITY INDICATOR CONSTITUENTS

Pollutant Source	Pollutant	Water Quality Indicator Constituent
Vehicle	Antifreeze, Batteries, Fuels, Lubricants	Lead, pH, Sulfuric Acid

TABLE 700.2.2.3.1 POTENTIAL NON-VISIBLE POLLUTANTS AND WATER QUALITY INDICATOR CONSTITUENTS		
Pollutant Source	**Pollutant**	**Water Quality Indicator Constituent**

700.2.2.3.2 Potential Sampling Locations

Using the criteria in Section 700.2.1.3.2, the potential sampling locations on the project site for monitoring non-visible pollutants were identified. Sampling locations are based on: proximity to planned non-visible pollutant storage; occurrence or use; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the *Caltrans Construction Site Monitoring Program Guidance Manual*, latest edition. Sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

22 sampling location(s) on the project site and the contractor's support facilities have been identified as potential locations for the collection of samples of runoff from planned material and waste storage areas and areas where non-visible pollutant producing construction activities are planned. Potential non-visible pollutant sampling locations are listed in the Table 700.2.2.3.2.1: Potential Non-Visible Pollutant Sampling Locations.

TABLE 700.2.2.3.2.1 POTENTIAL NON-VISIBLE POLLUTANT SAMPLING LOCATIONS	
Sampling Location Identifier	**Location Description**
S1	Station 91+00 Lt
S2	Station 104+90 Lt
S3	Station 118+30 Lt
S4	Station 127+50 Lt
S5	Station 140+00 Rt
S6	Station 147+30 Rt
S7	Station 150+05 Rt
S8	Station 152+80 Rt
S9	Station 155+50 Rt
S10	Station 173+05 Rt
S11	Station 179+50 Rt
S12	Station 186+50 Rt
S13	Station 190+30 Rt
S14	Station 198+30 Rt
S15	Station 203+50 Rt
S16	Station 211+20 Rt
S17	Station 219+70 Rt

S18	Station 225+10 Rt
S19	Station 238+00 Rt
S20	Station 246+40 Rt
S21	Station 252+05 Rt
S22	Station 254+50 Rt

Potential non-visible pollutant sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

0 sampling location(s) has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. This location(s) was selected such that the sample will not have come in contact with (1) operational or storage areas associated with the materials, wastes, and activities identified in Section 500.1.1; (2) potential non-visible pollutants due to historical use of the site, as identified in Section 500.1.2; (3) areas in which soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied; or (4) disturbed soils areas. Potential non-visible pollutant uncontaminated sampling locations are listed in Table 700.2.2.3.2.2: Potential Uncontaminated Non-visible Pollutant Sampling Locations.

TABLE 700.2.2.3.2.2
POTENTIAL UNCONTAMINATED NON-VISIBLE POLLUTANT SAMPLING LOCATIONS

Sampling Location Identifier	Location Description

Potential non-visible pollutant uncontaminated sampling locations shall be shown on the WPCDs from Attachment BB and listed on Stormwater Sampling Locations in Attachment EE.

700.2.2.3.3 Actual Sampling Locations

Sampling for non-visible pollutants at any potential non-visible pollutant sampling location will be based on any of the conditions listed below having been identified during the visual monitoring site inspections.

- Locations where materials or wastes containing potential non-visible pollutants are not stored under watertight conditions. Watertight conditions are defined as (1) storage in a watertight container, (2) storage under a watertight roof or within a building, or (3) protected by temporary cover and containment that prevents stormwater contact and runoff from the storage area.

- Locations where materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up

prior to the forecasted storm event, and (3) the potential exists for discharge of non-visible pollutants to surface waters or a storm drain system.

- Locations where a construction activity (including but not limited to those identified in Section 500.1.1) with the potential to contribute non-visible pollutants (1) was occurring during or within 24 hours prior to the forecasted storm event, (2) involved the use of applicable BMPs that were observed to be breached, malfunctioning, or improperly implemented, and (3) resulted in the potential for discharge of non-visible pollutants to surface waters or a storm drain system.

- Locations where soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied, and the potential exists for discharge of non-visible pollutants to surface waters or a storm drain system.

- Locations where stormwater runoff from an area contaminated by historical usage of the site has been observed to combine with stormwater runoff from the site, and the potential exists for discharge of non-visible pollutants to surface waters or a storm drain system.

If the presence of a material storage, waste storage, or operations area where spills have been observed or the potential for the discharge of non-visible pollutants to surface waters or a storm drain system was noted during a site inspection conducted prior to or during a forecasted storm event and such an area has not been identified on the list of potential non-visible pollutant sampling locations, the WPC Manager must identify the corresponding discharge location and the corresponding upgradient sampling location as actual non-visible sampling locations. The additional sampling location for non-visible pollutant monitoring shall be shown on the WPCDs from Attachment BB and added to Attachment EE: Stormwater Sampling Locations.

For forecasted storm events, the selection of the actual sampling locations for non-visible pollutants by the WPC Manager will be documented on the CEM-2048 Storm Event Sampling and Analysis Plan form, in Appendix N. The completed SAP for each storm event will be filed in File Category 20.46: Storm/Rain Event Action, Sampling and Analysis Plans. Within 24 hours prior to a storm event, a copy of the storm event SAP shall be submitted to the RE.

For qualifying rain events, the selection of the actual sampling locations for non-visible pollutants by the WPC Manager will be documented on the CEM-2049 Qualifying Rain Event Sampling and Analysis Plan, in Appendix O. The completed SAP for each qualifying rain event will be filed in File Category 20.46: Storm/Rain Event Sampling and Analysis Plans. Within 24 hours prior to a storm event, a copy of the SAP shall be attached to the REAP and submitted to the RE.

700.2.2.3.4 Sampling Schedule

In addition to the general scheduling requirements in General SAP Section 700.2.1.3.4, samples for non-visible pollutant monitoring, including both the non-visible pollutants samples and uncontaminated background samples, shall be collected during the first two hours of discharge from storm events that result in a sufficient discharge for sample collection. Samples shall be collected during working hours.

700.2.2.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.2.4.1 Sample Collection Procedures

Refer to the general procedures for sample collection in General SAP Section 700.2.1.4.1.

700.2.2.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.2.4.3 Sample Documentation Procedures

In addition to the general sample documentation procedures provided in General SAP Section 700.2.1.4.3, when applicable, the contractor's stormwater inspector will document in the CEM-2030 Stormwater Site Inspection Report, that samples for non-visible pollutants were taken during a storm event, based on the criteria for non-visible pollutant sampling described in Section 700.2.2.3.3.

700.2.2.5 Sample Analysis

For samples collected for field analysis, collection, analysis and equipment calibration shall be in accordance with the field instrument manufacturer's specifications.

Refer to General SAP Section 700.2.1.2.3 for general information regarding field instrument identification and requirements.

700.2.2.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in General SAP Section 700.2.1.6.

700.2.2.7 Data Management and Reporting

Refer to general requirements for data management and reporting in Section General SAP 700.2.1.7.

700.2.2.8 Data Evaluation

Water quality sample analytical results for non-visible pollutants shall be compared to the uncontaminated background sample results. Should the discharge (downgradient) sample show an increased level of the tested non-visible pollutant analyte relative to the background sample, the BMPs, site conditions, and surrounding influences shall be assessed to determine the probable cause for the increase.

As determined by the site and data evaluation, appropriate BMPs shall be repaired or modified to mitigate discharges of non-visual pollutant concentrations. Once deemed necessary, corrective actions shall be implemented within 72 hours of identification, completed as soon as possible, and documented on the CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary. Revisions/design changes to BMPs required as a result of data evaluation and site assesment shall be implemented based on an amendment to the SWPPP.

700.2.2.9 Change of Conditions

Refer to the general requirements for change of conditions in General SAP Section 700.2.1.9.

700.2.3 Sampling and Analysis Plan for Non-Stormwater Discharges

This SAP has been prepared for monitoring non-stormwater discharges from the project site and off-site activities directly related to the project, in accordance with the requirements of the CGP and applicable requirements of the *Caltrans Construction Site Monitoring Program Guidance Manual,* **Error! Reference source not found.**. This SAP for monitoring non-stormwater discharges includes all of the components listed in Section 700.2.1.

700.2.3.1 Scope of Monitoring Activities

Non-stormwater discharges can be authorized by a separate NPDES permit or conditional exemption. For non-stormwater discharges that are unauthorized or non-exempt where runoff is discharged off site, sampling and testing of the discharge must be conducted in compliance with the CGP and Caltrans Permit.

Conditionally exempt non-stormwater discharges include: water line and fire hydrant flushing, irrigation water, landscape irrigation, uncontaminated ground water dewatering, and other discharges not subject to a separate general NPDES permit adopted by a region. Conditionally exempt discharges are not prohibited (i.e., they are authorized) if they are identified as not being sources of pollutants to receiving waters, or if appropriate control measures (BMPs) to minimize the adverse impacts of such sources are developed and implemented.

Examples of unauthorized non-stormwater discharges common to construction activities include:

- vehicle and equipment wash water, including concrete washout water
- slurries from concrete cutting and coring operations, or grinding operations
- slurries from concrete or mortar mixing operations
- residue from high-pressure washing of structures or surfaces
- wash water from cleaning painting equipment
- runoff from dust control applications of water or dust palliatives

- sanitary and septic wastes
- chemical leaks and/or spills of any kind, including but not limited to, petroleum, paints, cure compounds, etc

When an unauthorized non-stormwater discharge is discovered, the WPC Manager will require sampling and analysis of the effluent to detect whether non-visible pollutants are present in the discharge. Sampling and analysis of non-stormwater discharges shall be performed in accordance with Section 700.2.2, the SAP for non-visible pollutants.

Non-stormwater from dewatering operations or impounded stormwater may be discharged off site during this project. Stored stormwater isdefined as rain collected in trenches, foundation excavations, and excavations for pavement structural sections. Non-stormwater dewatering discharges or discharges of impounded stormwater shall be monitored for turbidity, pH and potential non-visible pollutants.

Sampling and analysis for pH and turbidity of stored or impounded stormwater discharges subsequent to a qualifying rain event (a rain event that has produced ½ inch or more of precipitation at the time of discharge) shall be performed in accordance with Section 700.2.4, the SAP for stormwater pH and turbidity.

700.2.3.2 Monitoring Preparation

Refer to the general requirements for monitoring preparation in General SAP Section 700.2.1.2.

700.2.3.2.1 Qualified Sampling Personnel

Refer to the general requirements for Qualified Sampling Personnel in General SAP Section 700.2.1.2.1.

700.2.3.2.2 Monitoring Supplies

Refer to the general information regarding monitoring supplies in General SAP Section 700.2.1.2.2.

700.2.3.2.3 Field Instruments

Refer to the general information regarding field instruments in General SAP Section 700.2.1.2.3.

700.2.3.2.4 Testing Laboratory

Refer to the contact information for the testing laboratory found in General SAP Section 700.2.1.2.4.

700.2.3.3 Monitoring Strategy

Non-stormwater discharges from the construction site will be monitored for exceedances of water quality standards.

700.2.3.3.1 Analytical Constituents

For non-stormwater dewatering discharges and discharges of stored stormwater, samples shall be analyzed for the following constituents:

- turbidity
- pH

700.2.3.3.2 Potential Sampling Locations

Using the criteria in Section 700.2.1.3.2, potential sampling locations on the project site for monitoring dewatering discharges, discharges of impounded stormwater, and other non-stormwater discharges were identified. Sampling locations were based on: proximity to planned non-stormwater dewatering; non-stormwater occurrence or use; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the *Caltrans Construction Site Monitoring Program Guidance Manual*. Sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

0 sampling location(s) on the project site have been identified as potential locations for the collection of non-stormwater dewatering samples and the sampling location(s) are listed in Table 700.2.3.3.2.1: Potential Non-stormwater Dewatering Sampling Locations.

TABLE 700.2.3.3.2.1
POTENTIAL NON-STORMWATER DEWATERING SAMPLING LOCATIONS

Sampling Location Identifier	Location Description

0 sampling location(s) on the project site been identified as potential locations for the collection of discharge samples of impounded stormwater and the sampling location(s) are listed in Table 700.2.3.3.2.2: Potential Impounded Stormwater Discharge Sampling Locations.

TABLE 700.2.3.3.2.2
POTENTIAL IMPOUNDED STORMWATER DISCHARGE SAMPLING LOCATIONS

Sampling Location Identifier	Location Description

700.2.3.3.3 Actual Sampling Locations

Actual sampling locations will be determined by the WPC Manager when dewatering activities are in progress based on the potential dewatering discharge sample locations initially selected.

When stormwater is impounded in excavations on the project site and the impounded stormwater has the pontential to create runoff from the project site, the WPC Manager will determine the actual sampling location for collecting impounded stormwater discharge samples.

If new locations for dewatering discharges or impounded stormwater discharges that have not been identified on the list of potential stormwater and non-stormwater sampling locations are identified during the course of construction, the WPC Manager must create sampling location identifiers for the dewatering discharge sampling location. The additional sampling location for dewatering discharge monitoring shall be shown on the WPCDs in Attachment BB and added to Attachment EE: Stormwater Sampling Locations.

700.2.3.3.4 Sampling Schedule

Whenever there are dewatering discharges or impounded stormwater discharges, sampling will be performed daily during discharging. Sampling will be performed upon commenment of the dewatering discharge or impounded stormwater discharge, and then a minimum of three (3) samples per day will be collected for analysis.

700.2.3.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.3.4.1 Sample Collection Procedures

Refer to the general procedures for sample collection in General SAP Section 700.2.1.4.1.

700.2.3.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.3.4.3 Sample Documentation Procedures

In addition to the general procedures for sample documentation in General SAP Section 700.2.1.4.3, when applicable, the contractor's stormwater inspector will document on the CEM-2030 Stormwater Site Inspection Report that samples for non-stormwater discharge pollutants were taken based on a visual monitoring site inspection.

700.2.3.5 Sample Analysis

Samples from non-stormwater discharges shall be analyzed for pH and turbidity.

The WPC Manager may determine that samples of non-stormwater discharges, need to be analyzed for non-visible pollutants. If the WPC Manager determines that non-visible pollutants may have contaminated the discharge, the samples shall be analyzed for the suspected pollutants. Sampling and analysis for non-visible pollutants in non-stormwater discharges shall be performed following the guidance in Section 700.2.2, the SAP for non-visible pollutants.

Samples shall be analyzed for the constituents indicated in the following table, titled "Sample Collection, Preservation and Analysis for Monitoring Water Extracted by Dewatering or Impounded Stormwater Discharges."

TABLE 700.2.3.5
SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING WATER EXTRACTED BY DEWATERING OR IMPOUNDED STORMWATER DISCHARGES

Parameter	Test Method	Sample Preservation	Minimum Sample Volume(1)	Sample Bottle	Maximum Holding Time	Detection Limit (min)
Turbidity	Field test with calibrated portable instrument	Store at 4˚ C (39.2˚ F)	100 mL	Polypropylene or Glass	48 hours	1 NTU
pH	Field test with calibrated portable instrument	Store at 4˚ C (39.2˚ F)	100 mL	Polypropylene	48 hours	0.2

TABLE 700.2.3.5
SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING WATER EXTRACTED BY DEWATERING OR IMPOUNDED STORMWATER DISCHARGES

Parameter	Test Method	Sample Preservation	Minimum Sample Volume[1]	Sample Bottle	Maximum Holding Time	Detection Limit (min)

Notes: [1] Minimum sample volume recommended. Specific volume requirements will vary by instrument; check instrument manufacturer instructions.
°C – degrees Celsius
°F – degrees Fahrenheit
L – liter
Ml – milliliters
NTU – Nephelometric Turbidity Unit

For samples collected for field analysis, collection, analysis and equipment calibration shall be in accordance with the field instrument manufacturer's specifications.

Refer to general information for field instrument identification and requirements in General SAP Section 700.2.1.2.3.

700.2.3.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in Section General SAP 700.2.1.6. For samples analyzed for turbidity and pH the following replaces the requirements for QA/QC in Section 700.2.1.6:

The contractor shall coordinate with the Caltrans RE on sampling locations and timing for quality assurance verification of field sampling and analysis. The contractor shall notify the RE at least 24 hours prior to dewatering discharge or impounded stormwater discharge sampling events.

700.2.3.7 Data Management and Reporting

Refer to the general requirements for data management and reporting in General SAP Section 700.2.1.7.

700.2.3.8 Data Evaluation

An evaluation of the water quality sample analytical results, including sampling locations and the QA/QC data, shall be submitted to the RE for every day that the water from dewatering is discharged. Should the dewatering discharge concentrations exceed applicable water quality standards, discharging will be stopped and the WPC Manager or other personnel shall evaluate the dewatering BMPs to determine the probable cause for the exceedance.

Samples of non-stormwater collected during discharge shall be evaluated by determining if suspected contaminants are present. Unauthorized discharges will be stopped as soon as possible and a report of discharge shall be completed and submitted to the RE. Authorized discharges shall be sampled for pH and Turbidity and all suspected pollutants. For pH and turbidity, sample results shall be compared to the NAL and NELs.

As determined by the data evaluation and project site assesment, appropriate BMPs shall be repaired or modified to mitigate the exceedances. Corrective actions taken shall be documents on the CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary. Any revisions/design changes to BMPs shall be implemented based on an amendment to the SWPPP.

700.2.3.9 Changes of Conditions

Refer to the general requirements for changes of conditions in General SAP Section 700.2.1.9.

700.2.4 Sampling and Analysis Plan for Stormwater pH and Turbidity

This project is Risk Level 2 and does not require a SAP for pH and turbidity because the work covered by this CSWPPP does not allow for any ground disturbance.

700.2.4.1 Scope of Monitoring Activities

The scope of monitoring for this SAP includes monitoring for pH and turbidity in stormwater discharges from the project site and, run-on to the project site.

This project discharges into Fagen Creek, a water body that is sediment-sensitive. Monitoring of the receiving water will be required when direct discharges to the receiving water.

700.2.4.2 Monitoring Preparation

Refer to the general requirements for monitoring preparation in General SAP Section 700.2.1.2.

700.2.4.2.1 Qualified Sampling Personnel

Refer to the general requirements for Qualified Sampling Personnel in General SAP Section 700.2.1.2.1.

700.2.4.2.2 Monitoring Supplies

Refer to the general information regarding monitoring supplies in General SAP Section 700.2.1.2.2.

700.2.4.2.3 Field Instruments

Refer to the general information regarding field instruments in General SAP Section 700.2.1.2.3.

700.2.4.2.4 Testing Laboratory

Refer to the contact information for the testing laboratory found in General SAP Section 700.2.1.2.4.

700.2.4.3 Monitoring Strategy

Monitor representative stormwater discharges from the project site for pH and turbidity during qualifying rain events (a rain event that has produced ½ inch or more of precipitation at the time of discharge).

700.2.4.3.1 Analytical Constituents

Stormwater discharge samples are to be analyzed for pH and turbidity.

700.2.4.3.2 Potential Sampling Locations

Using the criteria in Section 700.2.1.3.2, the potential sampling locations on the project site for monitoring pH and turbidity were identified. Potential sampling locations for monitoring stormwater discharges for pH and turbidity are based on drainage areas; run-on and runoff locations; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the *Caltrans Construction Site Monitoring Program Guidance Manual*,. Stormwater discharge locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sample Locations in Attachment EE:

The stormwater discharge locations on the project site are listed in Table 700.2.4.3.2.1 "Stormwater Discharge Locations."

TABLE 700.2.4.3.2.1
STORMWATER DISCHARGE LOCATIONS

Sampling Location Identifier	Location

The project receives run-on with the potential to combine with stormwater discharges at the locations listed in Table 700.2.4.3.2.4 "Run-on Locations With Potential to Combine With Stormwater Discharges."

TABLE 700.2.4.3.2.4
RUN-ON LOCATIONS WITH POTENTIAL TO COMBINE WITH STORMWATER DISCHARGES

Sampling Location Identifier	Location
N-A1	Station 91+42 Rt
N-A2	Station 104+49 Rt
N-A3	Station 118+26 Rt
N-A4	Station 127+61 Rt
N-A5	Station 160+00 Rt
N-A6	Station 160+10 Rt
N-A7	Station 160+51 Rt
N-A8	Station 162+84 Lt
N-A9	Station 157+04 Lt

N-A10	Station 152+84 Lt
N-A11	Station 147+24 Lt
N-A12	Station 140+00 Lt
N-A13	Station 173+03 Lt
N-A14	Station 180+03 Lt
N-A15	Station 186+53 Lt
N-A16	Station 190+19 Lt
N-A17	Station 198+78 Lt
N-A18	Station 193+58 Lt
N-A19	Station 209+75 Lt
N-A20	Station 211+56 Lt
N-A21	Station 214+90 Lt
N-A22	Station 218+87 Lt
N-A23	Station 226+13 Lt
N-A24	Station 233+60 Lt
N-A25	Station 246+44 Lt
N-A26	Station 247+74 Lt
N-A27	Station 249+70 Lt
N-A28	Station 252+13 Lt
N-A29	Station 255+00 Lt
N-A30	Station 258+74 Lt
N-A31	Station 263+15 Lt

Potential run-on sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

700.2.4.3.3 Actual Sampling Locations

The WPC Manager shall select sampling locations from the list of potential sampling locations for stormwater discharge sampling shown on the WPCDs from Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:. If the construction activity has not started within the drainage area at a sampling location, and there is no disturbed soil within a drainage area, sampling from the stormwater discharge location from that drainage area is not required.

Within 72 to 48 hours prior to each qualifying rain event, the WPC Manager must identify the drainage areas that must be sampled. To identify these drainage areas, the WPC Manager must refer to the WPCDs and consider the conditions described below and activities within each drainage area that could have an effect on the stormwater discharge pH or turbidity.

1. Turbidity: The area of the disturbed soil at the time of precipitation could have an impact on the stormwater run-off turbidity. The area of the disturbed soil at the time of predicted precipitation must be expressed as a percentage of the total drainage area. It is reasonable to assume that a larger percentage of disturbed soil area could result in a more turbid run-off.

2. pH: The type of construction activities that could have an impact on stormwater run-off pH (for example, concrete work and saw cutting, lime stabilization work, use of crushed concrete, etc).

For representative sampling of construction site discharges, 20 percent of the drainage areas with disturbed soil areas and 20 percent of the drainage areas where activities that could potentially have an impact on the discharge pH must be sampled. At least five (5) drainage area discharge locations for each qualifying rain event must be sampled. If there are five (5) or fewer drainage area sampling locations in a project, then all drainage area sampling locations must be sampled. The drainage areas with the largest percentage of disturbed soil area must be included in the selected drainage areas to be sampled. The drainage areas where the most extensive activities (activities that potentially can alter discharge pH) are in progress must be included in the selected drainage areas to be sampled.

This representative monitoring strategy for stormwater discharges requires collection of additional samples based upon the preceding sampling event stormwater discharge pH or turbidity analysis results when the:

- turbidity analysis results – even in one sampling location – in the previous sampling event have exceeded 200 NTU, the number of drainage areas with disturbed soil areas requiring sampling will be raised to 50 percent.

- turbidity analysis results – even in one sampling location – in the previous sampling event have exceeded 250 NTU, the number of drainage areas with disturbed soil areas requiring sampling will be raised to 100 percent.

- pH analysis results – even in one sampling location – in the previous sampling event have not fallen within 6.5 to 8.5 pH unit range, the number of drainage areas requiring sampling where construction activities could have an impact on the discharge pH readings will be raised to 50 percent.

- pH analysis results – even in one sampling location – in the previous sampling event have not fallen within 6.0 to 9.0 pH unit range, the number of drainage areas requiring sampling where construction activities could have an impact on the discharge pH readings will be raised to 100 percent.

The selection of additional sampling locations, based on turbidity results, will involve drainage areas with the highest percentage of disturbed soil area. The selection of additional sampling locations, based on pH results, will be involve drainage areas with construction activities that are most likely to affect stormwater discharge pH. Selection of stormwater discharge sampling locations shall be documented on the CEM-2049 Qualifying Rain Event Sampling and Analysis Plan, in Appendix O. Completed qualifying rain event SAPs shall be kept in SWPPP File Category 20.46: Storm/Rain Event Sampling and Analysis Plans.

This project receives run-on from surrounding area that may contribute to exceedances of NALs or NELs. Potential sampling locations have been selected from locations where run-on enters the Caltrans right-of-way.

31 potential sampling location(s) have been identified for the collection of samples of run-on with the potential to

combine with runoff from the construction site, which discharge either to an MS4 or to a sediment-sensitive water body. Run-on samples taken from these locations will be analyzed to identify potential turbidity and pH that originates off the project site and contributes directly to stormwater discharges from the construction site to the MS4 or sediment-sensitive water body.

The selection of run-on sampling locations will be made by the WPC Manager. Run-on sampling locations will be selected based on stormwater discharge locations. If there is an NAL or NEL exceedance at a stormwater discharge location, any stormwater run-on location that contributes to the stormwater discharges from the construction site shall be selected for sampling. The selection of stormwater run-on sampling locations shall be documented on the CEM-2049 Qualifying Rain Event Sampling and Analysis Plan by the WPC Manager for every forecasted qualifying rain event. Completed CEM-2049 plans shall be kept in SWPPP File Category 20.45: Storm/Rain Event Action and Sampling and Analysis Plans.

700.2.4.3.4 Sampling Schedule

Discharge samples shall be collected for turbidity and pH for qualifying rain events that result in a discharge from the project site. When applicable, upstream, downstream, and run-on samples shall be collected for analysis of turbidity and pH. Sampling and testing for turbidity and pH will be performed daily during all qualifying rain events. Samples shall be collected during working hours.

At least 48 hours prior to each qualifying rain event, the WPC Manager must prepare the CEM-2049 Qualifying Rain Event Sampling and Analysis Plan that includes a list of sampling locations that must be sampled for the qualifying rain event.

The Qualifying Rain Event Sampling and Analysis Plan shall include all of the following sampling location types:

- discharge locations from the drainage areas with the largest percentage of disturbed soil areas,
- discharge locations from the drainage areas where construction activities that could have an impact on stormwater run-off pH are in progress, and
- if applicable, at least one sampling location from drainage areas where the disturbed soil areas have been stabilized.

For the purposes of the sampling schedule, the sampling locations must be arranged in the following order: starting with the sampling location on the northwest corner of the WPCDs as the first entry, move clockwise on the WPCDs and enter all the sampling location identifiers on the Qualifying Rain Event SAP schedule.

Within 48 to 24 hours prior to a qualifying rain event, the Qualifying Rain Event SAP shall be distributed to the individual collecting stormwater samples, and to the RE.

The Caltrans stormwater site inspector and contractor inspector must coordinate and select the sampling locations and the time to meet and collect simultaneous samples for the purposes of QA/QC.

Every reasonable attempt has to be made to collect at least three grab samples per day from each sampling location identified on the Qualifying Rain Event SAP during the qualifying rain event.

Sampling must start immediately after the flow begins or as soon as possible thereafter. The individual responsible for collecting samples must begin sampling with the first sampling location identified on the Qualifying Rain Event SAP and move on to the next sampling location until all locations are sampled. It is preferable that the three rounds of sampling are performed over the first three hours of the flow; however, depending on the time of the day or other dictating conditions in the field, the three rounds of sampling could be performed over a shorter period of time to ensure that three samples per location are collected.

If stormwater sampling is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the stormwater sampler shall document the conditions resulting in the sampling not being performed as planned. The documentation for the sampling exception shall be filed in SWPPP 20.52, Turbidity and pH Sampling and Test Results.

700.2.4.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.4.4.1 Sample Collection Procedures

In addition to the general procedures for sample collection in General SAP Section 700.2.1.4.1, the procedures described below apply to sample collection for monitoring of pH and turbidity.

- Grab samples shall be collected and preserved in accordance with the methods identified in Table 700.2.4.5.1: Sample Collection, Preservation and Analysis for Monitoring Turbidity and pH, provided in Section 700.2.4.5.
- Only personnel trained in proper water quality sampling shall collect samples.

700.2.4.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.4.4.3 Sample Documentation Procedures

Refer to the general procedures for sample documentation in General SAP Section 700.2.1.4.3.

700.2.4.5 Sample Analysis

Samples shall be analyzed for the constituents indicated in Table 700.2.4.5.1: "Sample Collection, Preservation and Analysis for Monitoring Turbidity and pH."

TABLE 700.2.4.5.1
SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING TURBIDITY AND PH

Parameter	Test Method	Sample Bottle	Minimum Sample Volume(1)	Sample Preservation	Maximum Holding Time	Detection Limit (min)
Turbidity	Field test with calibrated portable instrument	Polypropylene or Glass	100 mL	Store at 4˚ C (39.2˚ F)	48 hours	1 NTU
pH	Field test with calibrated portable instrument	Polypropylene	100 mL	Store at 4˚ C (39.2˚ F)	15 minutes	0.2

TABLE 700.2.4.5.1
SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING TURBIDITY AND PH

Parameter	Test Method	Sample Bottle	Minimum Sample Volume[1]	Sample Preservation	Maximum Holding Time	Detection Limit (min)

Acronyms/Notes:

C = Celsius

F = Fahrenheit

Min = minutes

mL = milliliter

NTU = Nephelometric Turbidity Units

[1] Minimum sample volume recommended. Specific volume requirements will vary by instrument; check instrument manufacturer instructions.

Samples collected for field analysis shall meet the requirements of the field instrument manufacturer's instructions.

Refer to the general information regarding field instruments in General SAP Section 700.2.1.2.3, which includes field instrument calibration and maintenance documentation requirements.

700.2.4.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in General SAP Section 700.2.1.6. The following replaces the requirements for QA/QC in Section 700.2.1.6 for turbidity and pH quality assurance testing. However, Section 700.2.1.6 requirements apply for SSC quality assurance testing: The contractor shall coordinate with Caltrans RE on sampling locations and timing for quality assurance verification of field sampling and analysis activities. The contractor shall notify the RE at least 24 hours prior to sampling events.

Contractor shall coordinate with Caltrans Resident Engineer on sampling locations and timing for quality assurance verification of field sampling and analysis. Contractor shall notify the Resident Engineer at least 24 hours prior to dewatering sampling events.

700.2.4.7 Data Management and Reporting

Refer to general requirements for data management and reporting in General SAP Section 700.2.1.7.

TABLE 700.2.4.7.1
NALs FOR MONITORING pH AND TURBIDITY

Parameter	Test Method	Detection Limit (Min)	Unit	Numeric Action Level
pH	Field test with calibrated portable instrument	0.2	pH units	Lower NAL = 6.5 Upper NAL = 8.5
Turbidity	Field test with calibrated portable instrument	1	NTU	250 NTU

Acronyms:

NAL = numeric action level

NTU = Nephelometric Turbidity Units

If an NAL is exceeded, then form CEM-2062 NAL Exceedance Report will be completed and submitted to the RE within 48 hours after the sampling and analysis event. The NAL Exceedance Report will include:

- test results, analytical methods, reporting units, and detection limits
- date, sampling location, time of sampling, and visual observations
- predicted quantity of precipitation of the forecasted storm event, and estimated quantity of precipitation at the time of sampling
- description of BMPs
- corrective actions taken to manage the NAL exceedance

Once deemed necessary, corrective actions shall be immediately implemented and documented. Appendix I contains the CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary form and Appendix X contains the CEM-2062 NAL Exceedance Report form. NAL exceedance reports will be filed in SWPPP File Category 20.62: Numeric Action Level Exceedance Reports.

700.2.4.8 Data Evaluation

An evaluation of the water quality sample analytical results, including sampling locations and the QA/QC data, shall be submitted to the RE for every day of stormwater sampling. If the stormwater discharge concentrations exceed applicable water quality standards, the WPC Manager or other personnel shall evaluate the project site BMPs to determine the probable cause for the exceedance.

As determined by the data evaluation and project site assesment, appropriate BMPs shall be repaired or modified to mitigate the exceedances. Corrective actions taken shall be documented on the CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary. Any revisions/design changes to BMPs shall be implemented based onan amendment to the SWPPP.

700.2.4.9 Change of Condition

Refer to the general requirements for changes of conditions in General SAP Section 700.2.1.9.

700.2.5 Sampling and Analysis Plan for Monitoring Required by Regional Board

700.2.5.1 Scope of Monitoring Activities

700.2.5.2 Monitoring Preparation

Refer to the general requirements for monitoring preparation in General SAP Section 700.2.1.2.

700.2.5.2.1 Qualified Sampling Personnel

Refer to the general requirements for Qualified Sampling Personnel in General SAP Section 700.2.1.2.1.

700.2.5.2.2 Monitoring Supplies

Refer to the general information regarding monitoring supplies in General SAP Section 700.2.1.2.2.

700.2.5.2.3 Field Instruments

Refer to the general information regarding field instruments in General SAP Section 700.2.1.2.3.

700.2.5.2.4 Testing Laboratory

Refer to the contact information for the testing laboratory found in General SAP Section 700.2.1.2.4.

700.2.5.3 Monitoring Strategy

This section describes the sampling and analysis strategy and schedule for monitoring levels in an impaired water body or in the stormwater discharges from the project site.

700.2.5.3.2 Potential Sampling Locations

This project discharges into a water body that is impaired. The stormwater discharge sampling locations for this project that the RWQCB has requested be monitored are listed in Table 700.2.5.3.2.1: Stormwater Discharge Locations Required To Be Monitored By RWQCB.

TABLE 700.2.5.3.2.1
STORMWATER DISCHARGE LOCATIONS REQUIRED TO BE MONITORED BY RWQCB

Sampling Location Identifier	Location

Stormwater discharge sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE.

This project discharges intoa water body that is impaired. The project has the potential for direct (concentrated) stormwater discharges to xxxxxxxxxxxxxxxx. The RWQCB has requested monitoring of the receiving water based on the stormwater discharge locations locations listed in Table 700.2.5.3.2.2: Stormwater Discharge Locations To Receiving Water.

TABLE 700.2.5.3.2.2
STORMWATER DISCHARGE LOCATIONS TO RECEIVING WATER

Discharge Location Identifier	Location

Stormwater discharge locations to a receiving water shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE.

The RWQCB has requested monitoring of the receiving waters based on the stormwater discharge locations. To monitor the receiving water for this project, sampling will be conducted at the receiving water sampling locations listed in Table 700.2.5.3.2.3: Receiving Water Sampling Locations Requied To Be Monitored By RWQCB.

TABLE 700.2.5.3.2.3
RECEIVING WATER SAMPLING LOCATIONS REQUIRED TO BE MONITORED BY RWQCB

Sampling Location Identifier	Location

Receiving water sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE.

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The project receives run-on with the potential to combine with stormwater discharges that discharges to 700.2.5.3.2.4: Run-on Locations With Potential To Combine With Stormwater Discharges.

TABLE 700.2.5.3.2.4
RUN-ON LOCATIONS WITH THE POTENTIAL TO COMBINE WITH STORMWATER DISCHARGES

Sampling Location Identifier	Location

TABLE 700.2.5.3.2.4 RUN-ON LOCATIONS WITH THE POTENTIAL TO COMBINE WITH STORMWATER DISCHARGES	
Sampling Location Identifier	**Location**

Potential run-on sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

700.2.5.3.3 Actual Sampling Locations

Prior to qualifying rain events, the WPC Manager shall identify all stormwater discharge sampling locations that the RWQCB has requested be monitored, as shown on Table 700.2.5.3.2.1: Stormwater Discharge Locations Required To Be Monitored By RWQCB. If construction activity has not started within the drainage area at a sampling location, and there is no disturbed soil within the drainage area, sampling from the stormwater discharge location from that drainage area is not required.

Within 72 to 48 hours prior to each qualifying rain event, the WPC Manager must identify the drainage areas that must be sampled. Selection of stormwater discharge sampling locations shall be documented on the CEM-2049 Qualifying Rain Event Sampling and Analysis Plan by the WPC Manager for every qualifying rain event. Completed CEM-2049 Qualifying Rain Event SAPs shall be kept in SWPPP File Category 20.46: Storm/Rain Event Sampling and Analysis Plans.

700.2.5.3.4 Sampling Schedule

Samples shall be collected for xxxxxxxxxxxxxxxxxx for qualifying rain events that result in a discharge from the project site. Sampling and testing for xxxxxxxxxxxxxxxxxxxxxx will be performed daily during all qualifying rain events. Samples shall be collected during working hours.

Within 48 to 24 hours prior to a qualifying rain event, the CEM-2049 Qualifying Rain Event SAP showing the sampling schedule shall be distributed to the individual collecting stormwater samples and the RE. A qualifying rain event is any storm event that produces precipitation of ½ inch or more at the time of discharge. In conformance with the USEPA definition, a minimum of 72 hours of dry weather will be used to distinguish between separate qualifying rain events.

700.2.5.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.5.4.1 Sample Collection Procedures

Refer to the general procedures for sample collection in General SAP Section 700.2.1.4.1.

700.2.5.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.5.4.3 Sample Documentation Procedures

Refer to the general procedures for sample documentation in General SAP Section 700.2.1.4.3.

700.2.5.5 Sample Analysis

Samples shall be analyzed for the constituents indicated in Table 700.2.5.5: Sample Collection, Preservation and Analysis for Monitoring.

TABLE 700.2.5.5
SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING [SPECIFY PARAMETERS]

Parameter	Test Method	Sample Bottle	Minimum Sample Volume(1)	Sample Preservation	Maximum Holding Time	Detection Limit (min)

Notes: (1) Minimum sample volume recommended. Specific volume requirements will vary by instrument; check instrument manufacturer instructions.

°C – degrees Celsius
°F – degrees Fahrenheit
l – liter
min – minutes
mL – milliliters

Samples collected for field analysis shall meet the requirements of the field instrument manufacturer's instructions.

Refer to the general information regarding field instruments of SAPs in Section 700.2.1.2.3, which includes field instrument calibration and maintenance documentation requirements.

700.2.5.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in General SAP Section 700.2.1.6.

700.2.5.7 Data Management and Reporting

Refer to general requirements for data managementment and reporting in General SAP Section 700.2.1.7.

700.2.5.8 Data Evaluation

An evaluation of the water quality sample analytical results, including sampling locations and the QA/QC data, shall be submitted to the RE for every day of stormwater sampling. If the stormwater discharge concentrations exceed applicable

water quality standards or parameter limitations set by the RWQCB, the WPC Manager or other personnel shall evaluate the project site BMPs to determine the probable cause for the exceedance.

As determined by the data evaluation and project site assesment, appropriate BMPs shall be repaired or modified to mitigate the exceedances. Corrective actions taken shall be documented on the CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary. Any revisions/design changes to BMPs shall be implemented based on an amendment to the SWPPP.

700.2.5.9 Change of Condition

Refer to the general requirements for changes of conditions in General SAP Section 700.2.1.9.

700.2.6 Sampling and Analysis Plan for Monitoring of Active Treatment System

700.2.6.1 Scope of Monitoring Activities

This SAP is for monitoring the discharges of ATS for compliance with the requirements in Attachment F: Active Treatment System (ATS) Requirements of the CGP. The purpose of this monitoring of the ATS is to provide quality assurance that the ATS instrumentation, which automatically measures and records effluent water quality data, is working properly.

700.2.6.2 Monitoring Preparation

Refer to the general requirements for monitoring preparation in General SAP Section 700.2.1.2.

700.2.6.2.1 Qualified Sampling Personnel

Refer to the general requirements for Qualified Sampling Personnel in General SAP Section 700.2.1.2.1.

700.2.6.2.2 Monitoring Supplies

Refer to the general information regarding monitoring supplies in General SAP Section 700.2.1.2.2.

700.2.6.2.3 Field Instruments

Refer to the general information regarding field instruments in General SAP Section 700.2.1.2.3.

700.2.6.2.4 Testing Laboratory

Refer to the contact information for the testing laboratory found in General SAP Section 700.2.1.2.4.

700.2.6.3 Monitoring Strategy

The strategy for monitoring ATS stormwater discharges is to sample ATS effluent daily and analyze the samples for compliance with water quality standards for turbidity, pH and residual additive/chemical. In addition, the ATS monitoring test results shall be compared to the automatically recorded water quality test results for the ATS to provide quality assurance for ATS discharges.

700.2.6.3.1 Analytical Constituents

Stormwater discharge samples are to be analyzed for turbidity, pH and residual chemical/additive.

The constituent(s) that indicate residual chemical/additive are shown in Table 700.2.6.3.1: ATS Chemical/Additive and Water Quality Indicator Constituents.

TABLE 700.2.6.3.1 ATS CHEMICAL/ADDITIVE AND WATER QUALITY INDICATOR CONSTITUENTS	
Chemical/Additive	**Water Quality Indicator Constituent**

700.2.6.3.2 Potential Sampling Locations

Potential sampling locations on the project site for monitoring ATS stormwater discharges are listed in Table 700.2.6.3.2: ATS Stormwater Discharge Locations.

TABLE 700.2.6.3.2 ATS STORMWATER DISCHARGE LOCATIONS	
Sampling Location Identifier	**Location**

Potential ATS sampling locations shall be shown on the WPCDs from Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

700.2.3.3.3 Actual Sampling Locations

Actual sampling locations for ATS will be determined by the WPC Manager based on how the ATS is set up. The sampling locations for ATS effluent will be from the ATS discharge pipe or sampling valve that is representative of the nature of the discharge.

If potential ATS stormwater discharge sampling locations are not identified during the course of construction, the WPC Manager must create an identifier for the discharge sampling location. The actual sampling location for ATS discharge monitoring will be shown on WPCDs in Attachment BB and added to Attachment EE: Stormwater Sampling Locations.

700.2.6.3.4 Sampling Schedule

The requirements in General SAP Section 700.2.1.3.4 do not apply to ATS sampling.

When ATS is discharging water from the project site, effluent samples shall be collected and analyzed for turbidity, pH and residual chemical/additive on a daily basis. For turbidity and pH, a minimum of three samples shall be collected

daily during working hours. Effluent samples for residual chemical/additive shall be collected within one hour of ATS start-up; a minimim of one sample for every 8 hours of ATS operation shall be collected.

700.2.6.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.6.4.1 Sample Collection Procedures

In addition to the general requirements for Sample Collection Procedures in General SAP Section 700.2.1.4.1, the following procedures apply to ATS sample collection.

- Grab samples shall be collected and preserved in accordance with the methods identified in Table 700.2.6.5: Sample Collection, Preservation and Analysis for ATS Monitoring, found in Section 700.2.6.5.
- Only personnel trained in proper water quality sampling shall collect samples.
- ATS grab samples shall be collected using one of the following methods:
    - placing a sample bottle directly into the discharge flow and allowing the sample bottle to fill completely
    - collecting the sample from the valve provided for sample collection.

700.2.6.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.6.4.3 Sample Documentation Procedures

Refer to the general procedures for sample documentation in General SAP Section 700.2.1.4.3.

700.2.6.5 Sample Analysis

ATS samples shall be analyzed for turbidity, pH and chemical/additive residue. The chemical/additive residue can be detected based on the following.

Samples shall be analyzed for the constituents indicated in Table 700.2.6.5: Sample Collection, Preservation and Analysis for ATS Monitoring.

TABLE 700.2.6.5
SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR ATS MONITORING

Parameter	Test Method	Sample Preservation	Minimum Sample Volume(1)	Sample Bottle	Maximum Holding Time	Detection Limit (min)

TABLE 700.2.6.5
SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR ATS MONITORING

Parameter	Test Method	Sample Preservation	Minimum Sample Volume[1]	Sample Bottle	Maximum Holding Time	Detection Limit (min)
Turbidity	Field test with calibrated portable instrument	Store at 4˚ C (39.2˚ F)	100 mL	Polypropylene or Glass	48 hours	1 NTU
pH	Field test with calibrated portable instrument	Store at 4˚ C (39.2˚ F)	100 mL	Polypropylene	48 hours	0.2

Notes: [1] Minimum sample volume recommended. Specific volume requirements will vary by instrument; check instrument manufacturer instructions.

°C – degrees Celsius
°F – degrees Fahrenheit
l – liter
Min – minutes
mL – milliliters
NTU – Nephelometric Turbidity Unit

For samples collected for field analysis, collection, analysis and equipment calibration shall be in accordance with the field instrument manufacturer's specifications.

See General SAP Section 700.2.1.2.3 for field instrument identification and requirements for field instruments.

700.2.6.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in General SAP Section 700.2.1.6. The following replaces the requirements for QA/QC in Section 700.2.1.6 for turbidity and pH quality assurance testing. However, Section 700.2.1.6 requirements apply for SSC quality assurance testing: Contractor shall coordinate with Caltrans RE on sampling timing for quality assurance verification of field sampling and analysis. Contractor shall notify the RE at least 24 hours prior to ATS sampling events.

700.2.6.7 Data Management and Reporting

Refer to general requirements for data managementment and reporting in General SAP Section 700.2.1.7.

700.2.6.8 Data Evaluation

An evaluation of the ATS water quality sample analytical results shall be submitted to the RE with the water quality analytical results and the QA/QC data for every event that samples are collected. The ATS monitoring test results shall be compared to the daily recorded water quality test results for the ATS. If the monitoring test results are not verifying the ATS daily recorded test results, then the WPC Manager or other personnel shall evaluate and determine the probable cause for the non-verification.

As determined by the data and evaluation, appropriate actions shall be taken so that the ATS is operating effectively. Corrective actions taken shall be documented on the CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary.

700.2.6.9 Change of Condition

Refer to the general requirements for changes of conditions in General SAP Section 700.2.1.9.

SECTION 800
POST-CONSTRUCTION CONTROL PRACTICES

800.1 Post-Construction Control Practices

No post construction activities required. Contractor shall submit new SWPPP for remaining widening work.

SECTION 900
SWPPP REPORTING REQUIREMENTS

900.1 Recordkeeping

To manage the various documents required by the SWPPP and to provide easy access to the documents, the following SWPPP file categories will be used to file SWPPP compliance documents:

File Category 20.01 ..... Stormwater Pollution Prevention Plan (SWPPP)
File Category 20.02 ..... Stormwater Pollution Prevention Plan Amendments
File Category 20.03 ..... Water Pollution Control Schedule Updates
File Category 20.05 ..... Notice of Construction or Notice of Intent
File Category 20.06 ..... Legally Responsible Person Authorization of Approved Signatory
File Category 20.10 ..... Correspondence
File Category 20.21 ..... Subcontractor Contact Information and Notification Letters
File Category 20.22 ..... Material Supplier Contact Information and Notification Letters
File Category 20.23 ..... Contractor Personnel Training Documentation
File Category 20.31 ..... Contractor Stormwater Site Inspection Reports
File Category 20.32 ..... Caltrans Stormwater Site Inspection Reports
File Category 20.33 ..... Site Visual Monitoring Inspection Reports
File Category 20.34 ..... Best Management Practices Weekly Status Reports
File Category 20.35 ..... Corrective Actions Summary
File Category 20.40 ..... Weather Monitoring Logs
File Category 20.45 ..... Rain Event Action Plans
File Category 20.46 ..... Storm/Rain Event Sampling and Analysis Plans
File Category 20.50 ..... Non-Stormwater Discharge Sampling and Test Results
File Category 20.51 ..... Non-Visible Pollutant Sampling and Test Results
File Category 20.52 ..... Turbidity, pH and SSC Sampling and Test Results
File Category 20.53 ..... Required Regional Water Board Monitoring Sampling and Test Results
File Category 20.54 ..... ATS Monitoring Sampling and Test Results
File Category 20.55 ..... Field Testing Equipment Maintenance and Calibration Records
File Category 20.61 ..... Notice of Discharge Reports
File Category 20.62 ..... Numeric Action Level Exceedance Reports
File Category 20.63 ..... Numeric Effluent Limitation Violation Reports
File Category 20.70 ..... Annual Certification of Compliance
File Category 20.80 ..... Stormwater Annual Reports
File Category 20.90 ..... Notice of Termination

Records shall be retained for a minimum of three years for the following items:

- approved SWPPP document and amendments
- Stormwater Site Inspection Reports
- Site Inspection Report Corrections Summary
- Rain Event Action Plans (REAPs)
- Notice of Discharge Reports
- Numeric Action Limit (NAL) Exceedance Reports
- Numeric Effluent Limitaion (NEL) Violation Reports
- sampling records and analysis reports
- Annual Compliance Certifications
- copies of all applicable permits

900.2 Stormwater Annual Report

A Stormwater Annual Report will be prepared for this project to document the stormwater monitoring information and training information.

The stormwater monitoring information listed below shall be included in the Stormwater Annual Report.

- A summary and evaluation of all sampling and analysis results, including copies of laboratory reports.
- The analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter.
- A summary of all corrective actions taken during the compliance year.
- Identification of any compliance activities or corrective actions that were not implemented.
- A summary of all violations of the CGP.
- The names of individual(s) who performed site inspections, sampling, site visual monitoring inspections and/or measurements.
- The date, place, and time of site inspections, sampling, site visual monitoring inspections, and/or measurements, including precipitation (rain gauge).
- Any site visual monitoring inspection and sample collection exception records.

The stormwater training information listed below shall be included in the Stormwater Annual Report.

- Documentation of all training for individuals responsible for all activities associated with compliance with the CGP.
- Documentation of all training for individuals responsible for BMP installation, inspection, maintenance, and repair.
- Documentation of all training for individuals responsible for overseeing, revising and amending the SWPPP.

900.3 Discharge Reporting

If an unauthorized discharge is discovered or evidence of a previously unseen discharge is discovered, the Contractor shall notify the RE within 6 hours of the discovery, and will file a written report with the RE within 48 hours after the discovery. The written report to the RE will contain the following items:

- date, time, location, and type of unauthorized discharge
- nature of operation that caused the discharge
- initial assessment of any impacts caused by the discharge
- BMPs deployed before the discharge event and date(s) of deployment
- BMPs deployed after the discharge event, including re-installation, maintenance or repair of initial BMPs
- steps taken or planned to reduce, eliminate and/or prevent recurrence of the discharge

Reporting of discharges shall be documented on the CEM-2061 Notice of Discharge form in Appendix M. A log of all reportable discharges shall be documented onCEM-2065 Discharge Reporting Log form in Appendix Z. Completed CEM-2061 Notice of Discharge forms shall be submitted to the RE within 24 hours after the discharge event or discovery of evidence of a prior discharge. Copies of completed forms will be kept in File Category 20.61: Notice of Discharge Reports.

900.4 Regulatory Agency Notice or Order Reporting

If a written notice or order is issued to the project by any regulatory agency, the Contractor will notify the RE within 6 hours of receiving the notice or order and will file a written report to the RE within 48 hours of receiving the notice or order. Corrective measures will be implemented immediately following receipt of the notice or order.

The report to the RE will contain the following items:

- the date, time, location, and cause or nature of the notice or order
- the BMPs deployed prior to receiving the notice or order
- the date of deployment and type of BMPs deployed after receiving the notice or order, including additional BMPs installed or planned to reduce or prevent reccurrence
- an implementation and maintenance schedule for any affected BMPs

900.5 Illicit Connection/Illegal Discharge Reporting

If the Contractor discovers an illicit connection to a storm drain system or any pipe discharging onto the project site, not shown on the project plans, the Contractor shall notify the RE within 6 hours of the discovery and shall file a written report to the RE within 48 hours of the discovery.

If the Contractor discovers any illegal discharge, including illegal disposing of material on the project site, the Contractor shall immediately notify the RE and shall file a written report to the RE within 3 days of discovery.

The report to the RE will contain the following items:

- the date, time, and location of the discovery
- the details for the illicit connection or illegal discharge, including any photographs taken
- any actions taken to contain the illegal discharge
- any sampling and testing performed on material that was illegally disposed of or discharged

Attachment A

Attachment B

Attachment 2

State Water Resources Control Board

NOTICE OF INTENT

TO COMPLY WITH THE TERMS OF THE
GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY (WQ ORDER No. 99-08-DWQ)

I. NOI STATUS (SEE INSTRUCTIONS)

MARK ONLY ONE ITEM 1. [X] New Construction 2. [ ] Change of Information for WDID#

II. PROPERTY OWNER

Name: California Department of Transportation	Contact Person: Kelly Hirschberg		
Mailing Address: 111 Grand Avenue	Title: Regional Project Manager		
City: Oakland	State: CA	Zip: 94612	Phone: (510) 286-4925

Owner Type (*check one*) 1.[ ] Private Individual 2.[ ]Business 3.[ ]Municipal 4.[x]State 5.[ ]Federal 6.[ ]Other

III. DEVELOPER/CONTRACTOR INFORMATION

Developer/Contractor	Contact Person		
Mailing Address	Title		
City	State	Zip	Phone

IV. CONSTRUCTION PROJECT INFORMATION

Site/Project Name: State Route 12 / Jameson Canyon	Site Contact Person		
Physical Address/Location: Intersection of SR 12 and SR 29	Latitude: 38.22 °	Longitude: -122.2[illegible] °	County: Napa
City (or nearest City): American Canyon	Zip: 94503	Site Phone Number	Emergency Phone Number

A. Total size of construction site area: 57.51 Acres

B. Total area to be disturbed: 34.67 Acres (% of total 60)

C. Percent of site imperviousness (including rooftops):
Before Construction: 36 %
After Construction: 36 %

D. Tract Number(s): _____, _____

E. Mile Post Marker: 0.0/3.2

F. Is the construction site part of a larger common plan of development or sale?
[X] YES [ ] NO

G. Name of plan or development: SR 12/Jameson Canyon Widening

H. Construction commencement date: 01 / 16 / 12

I. % of site to be mass graded: _____

J. Projected construction dates:
Complete grading: ____/____/____ Complete project: 02 / 15 / 12

K. Type of Construction (Check all that apply):

1. [ ] Residential 2. [ ] Commercial 3. [ ] Industrial 4. [ ] Reconstruction 5. [X] Transportation

6. [ ] Utility Description: _____ 7. [ ] Other (Please List): _____

V. BILLING INFORMATION

SEND BILL TO: [ ] OWNER (as in II. above)	Name	Contact Person	
[ ] DEVELOPER (as in III. above)	Mailing Address	Phone/Fax	
[ ] OTHER (enter information at right)	City	State	Zip

VI. REGULATORY STATUS

A. Has a local agency approved a required erosion/sediment control plan? ☒ YES ☐ NO

Does the erosion/sediment control plan address construction activities such as infrastructure and structures? ☒ YES ☐ NO

Name of local agency: California Department of Transportation Phone: (510) 286-5664

B. Is this project or any part thereof, subject to conditions imposed under a CWA Section 404 permit of 401 Water Quality Certification? ☒ YES ☐ No

If yes, provide details: Hydromodification Report submitted, awaiting review by RWQCB

VII. RECEIVING WATER INFORMATION

A. Does the storm water runoff from the construction site discharge to (Check all that apply):

1. ☒ **Indirectly to waters of the U.S.**
2. ☒ **Storm drain system - Enter owner's name:** California Department of Transportation
3. ☒ **Directly to waters of U.S. (e.g. , river, lake, creek, stream, bay, ocean, etc.)**

B. Name of receiving water: (river, lake, creek, stream, bay, ocean): Sheehy Creek, Fagan Creek, Unnamed Creek(s)

VIII. IMPLEMENTATION OF NPDES PERMIT REQUIREMENTS

A. STORM WATER POLLUTION PREVENTION PLAN (SWPPP) (check one)

☐ A SWPPP has been prepared for this facility and is available for review: Date Prepared: ____/____/____ Date Amended: ____/____/____

☐ A SWPPP will be prepared and ready for review by (enter date): ____/____/____

☒ A tentative schedule has been included in the SWPPP for activities such as grading, street construction, home construction, etc.

B. MONITORING PROGRAM

☐ A monitoring and maintenance schedule has been developed that includes inspection of the construction BMPs before anticipated storm events and after actual storm events and is available for review.

If checked above: A qualified person has been assigned responsibility for pre-storm and post-storm BMP inspections to identify effectiveness and necessary repairs or design changes. ☐ YES ☐ NO

Name: _____ Phone: _____

C. PERMIT COMPLIANCE RESPONSIBILITY

A qualified person has been assigned responsibility to ensure full compliance with the Permit, and to implement all elements of the Storm Water Pollution Prevention Plan including:

1. Preparing an annual compliance evaluation. ☐ YES ☐ NO

Name: _____ Phone: _____

2. Eliminating all unauthorized discharges. ☐ YES ☐ NO

IX. VICINITY MAP AND FEE (must show site location in relation to nearest named streets, intersections, etc.)

Have you included a vicinity map with this submittal? ☒ YES ☐ NO

Have you included payment of the annual fee with this submittal? ☐ YES ☐ NO

X. CERTIFICATIONS

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. In addition, I certify that I have read the entire General Permit, including all attachments, and agree to comply with and be bound by all of the provisions, requirements, and prohibitions of the permit, including the development and implementation of a Storm Water Pollution Prevention Plan and a Monitoring Program Plan will be complied with."

Printed Name: _____

Signature: _____ **Date:** _____

Title: _____

Attachment C

State Route 12/Jameson Canyon Widening
Napa County, California
EA 04-264134
October 2010

Storm Water Information Handout for Resident Engineer File

Prepared for:

Prepared by:

3 CONSTRUCTION GENERAL PERMIT

To minimize the potential effects of construction runoff on the quality of the receiving water bodies, the State requires that any construction activity affecting one acre or more must obtain coverage under the CGP. Permit applicants are required to prepare a Storm Water Pollution Prevention Plan (SWPPP) and implement BMPs to reduce construction effects on receiving water quality.

Because this Project disturbs 34.67 ac of soil, a SWPPP is required to be submitted by the Contractor.

3.1 Risk Assessment

The new CGP requirements include a risk assessment to determine the Project's impact risk to receiving water bodies. The risk assessment uses measurements of the Project's potential sediment risk and the sensitivity of the receiving water bodies to sediment to determine the RL of the Project. This Project has a Medium Site Sediment Risk Factor and a High Receiving Water Risk Factor; the combined risk is Level 2. The risk factors are detailed in the following sections.

3.1.1 Sediment Risk

The sediment risk is based on the following equation from the CGP "Fact Sheet" (Section J.1.a pg. 28):

Equation 1. Sediment Risk Equation

$A = (R)(K)(LS)(C)(P)$

Where:

R = Runoff erosivity factor
K = Soil erodibility factor
LS = Length-slope
C = Cover
P = Management operations and support practices
A = Rate of sheet and rill erosion (tons per acre)

The rainfall runoff erosivity factor (R) was determined from the United States Environmental Protection Agency (EPA) "Rainfall Erosivity Factor Calculator for Small Construction Sites." The erosivity index value for the Project was determined to be 42.08 (see Figure 3).

The soil erodibility factor (K) was determined from the United States Department of Agriculture Natural Resources Conservation Services "Web Soil Survey." The weighed average K value was calculated to characterize the soils within the limits of the Project; this value is 0.31 (see Figure 4).

The length-slope factor (LS) was determined by examining the original grade delineated on the Typical Cross Sections included in the Contract Project Plans. Using these cross sections an LS value of 1.54 was derived (see Figure 5).

The cover factor (C) and management operations and support practices (P) are given values of 1.0 by the NPDES permit to simulate bare ground conditions.

Based on these factors, the rate of sheet and rill erosion (A) is 20 tons per acre. Because this value is above 15 tons per acre, but is less than 75 tons per acre, the Project is classified as having a medium sediment risk.

Figure 6 shows the final assessment of the Project Sediment Risk.

Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

Facility Name: EA 04-26413 SR-12/Jameson Napa
Start Date: 05/01/2011
End Date: 05/31/2012
Latitude: 38.2188
Longitutde: -122.2305

Erosivity Index Calculator Results

AN EROSIVITY INDEX VALUE OF **42.08** HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **05/01/2011 - 05/31/2012**.

A rainfall erosivity factor of 5.0 or greater has been calculated for your site and period of construction. **You do not qualify for a waiver from NPDES permitting requirements**.

Figure 3. Rainfall Runoff Erosivity Factor (R)

Source: EPA (http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm)

Tables — K Factor, Rock Free — Summary By Map Unit

Summary by Map Unit — Napa County, California

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
116	Clear Lake clay, drained	.24	33.3	26.4%
131	Fagan clay loam, 5 to 15 percent slopes	.32	27.3	21.6%
132	Fagan clay loam, 15 to 30 percent slopes	.32	20.6	16.3%
134	Fagan clay loam, 30 to 50 percent slopes, slipped	.32	10.3	8.2%
146	Haire loam, 2 to 9 percent slopes	.37	33.4	26.5%
DbEso	Dibble-Los Osos loams, 9 to 30 percent slopes	.37	1.3	1.0%
Totals for Area of Interest			**126.1**	**100.0%**

Figure 4. Soil Erodibility Factor (K)

Source: USDA NRCS (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx)

	Average Watershed Slope (%)											
Sheet Flow Length (ft)	5.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0	25.0	30.0	40.0	50.0
<3	0.23	0.26	0.32	0.35	0.36	0.38	0.39	0.41	0.45	0.48	0.53	0.58
6	0.23	0.26	0.32	0.37	0.41	0.45	0.49	0.56	0.64	0.72	0.85	0.97
9	0.23	0.26	0.32	0.38	0.45	0.51	0.56	0.67	0.80	0.91	1.13	1.31
12	0.23	0.26	0.32	0.39	0.47	0.55	0.62	0.76	0.93	1.08	1.37	1.62
15	0.23	0.26	0.32	0.40	0.49	0.58	0.67	0.84	1.04	1.24	1.59	1.91
25	0.31	0.36	0.45	0.57	0.71	0.85	0.98	1.24	1.56	1.86	2.41	2.91
50	0.46	0.54	0.70	0.91	1.15	1.40	1.64	2.10	2.67	3.22	4.24	5.16
75	0.58	0.69	0.91	1.20	1.54	1.87	2.21	2.86	3.67	4.44	5.89	7.20
100	0.68	0.82	1.10	1.46	1.88	2.31	2.73	3.57	4.59	5.58	7.44	9.13
150	0.86	1.05	1.43	1.92	2.51	3.09	3.68	4.85	6.30	7.70	10.35	12.75
200	1.02	1.25	1.72	2.34	3.07	3.81	4.56	6.04	7.88	9.67	13.07	16.16
250	1.16	1.43	1.99	2.72	3.60	4.48	5.37	7.16	9.38	11.55	15.67	19.42
300	1.28	1.60	2.24	3.09	4.09	5.11	6.15	8.23	10.81	13.35	18.17	22.57
400	1.51	1.90	2.70	3.75	5.01	6.30	7.60	10.24	13.53	16.77	22.95	28.60
600	1.91	2.43	3.52	4.95	6.67	8.45	10.26	13.94	18.57	23.14	31.89	39.95
800	2.25	2.89	4.24	6.03	8.17	10.40	12.69	17.35	23.24	29.07	40.29	50.63
1000	2.55	3.30	4.91	7.02	9.57	12.23	14.96	20.57	27.66	34.71	48.29	60.84

LS Factors for Construction Sites. *Table from Renard et. al., 1997.*

Figure 5. Length Slope Factor (LS)

Source: Adopted NPDES No. CAS000002

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	**R Factor Value**		42.08
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		0.31
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		1.54
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**	20	
16	**Site Sediment Risk Factor**	**Medium**	
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

Figure 6. Sediment Risk Assessment

3.1.2 Receiving Water Body Risk

A receiving water body can be classified as either low or high risk. The risk receiving water body is classified as high if it is on the 303(d) List as impaired for sediment or has the beneficial uses of SPWN, COLD and MIGR.

As stated in Section 2.4 the direct receiving water bodies for this Project are Fagan Creek, Sheehy Creek and various other unnamed tributaries. None of these direct receiving water bodies are listed on the 303(d) List for sediment nor do they have any beneficial uses identified on the 2007 "Water Quality Control Plan" (Basin Plan) for the San Francisco Bay Basin.

However as also stated in Section 2.4, the Project is within the Napa River watershed. This is confirmed using GIS data provided by the SWRCB; Figure 7 shows the boundaries of the Napa River watershed. Napa River is listed on the 303(d) list of impaired water bodies for sediment/siltation, so the Project receiving water risk is designated as high, see Figure 8.

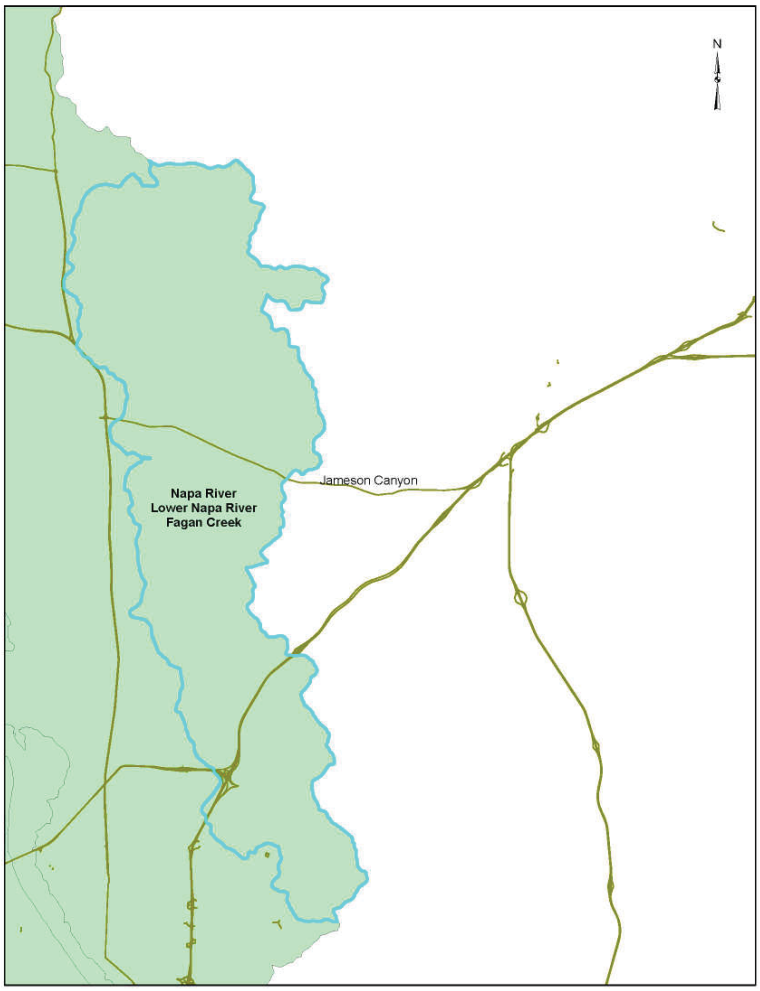


Figure 7. Sensitive Watershed Map

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	yes/no	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment**? For help with impaired waterbodies please check the attached worksheet or visit the link below: 2006 Approved Sediment-impared WBs Worksheet http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml **OR** A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? http://www.ice.ucdavis.edu/geowbs/asp/wbquse.asp	YES	High

Figure 8. Receiving Water Risk Assessment

Figure 9 shows the matrix for determining the combined RL using the Sediment Risk and Receiving Water Risk.

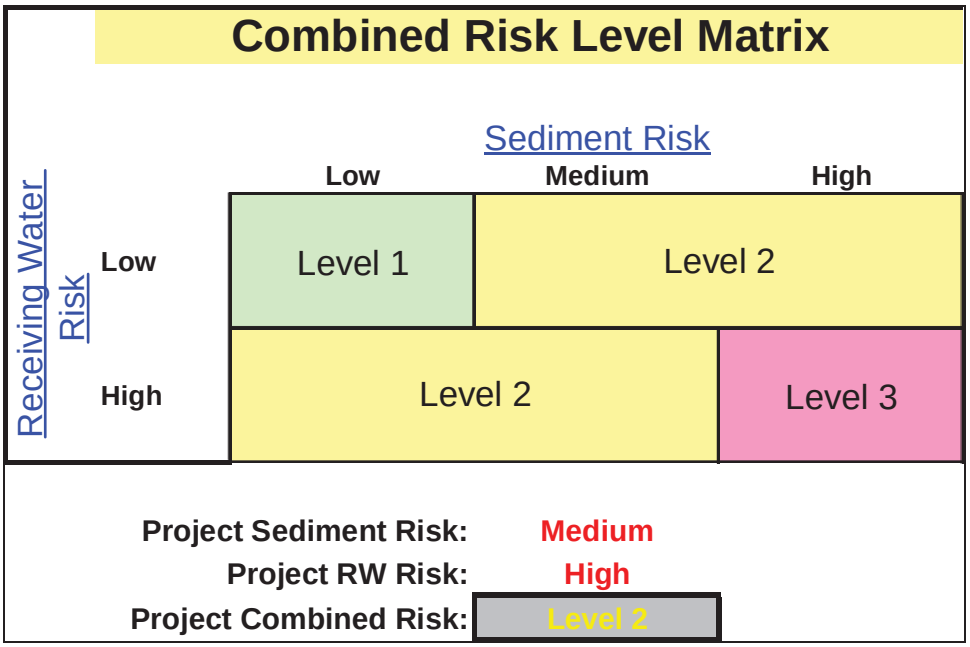


Figure 9. Combined Risk Level Assessment

3.2 Monitoring and Sampling Requirements

RL 2 assessments trigger a suite of site evaluation requirements, including mandatory monitoring and numeric limits for pH and turbidity. Sampling is required after storm events, and results must be reported to the State and Regional Water Boards. Exceedance of numeric limitations triggers requirements for additional BMPs or adjustments to BMPs.

The monitoring requirements are shown in Table 4 and summarized in Section 3.2.1 and the reporting requirements are shown in Table 5 and summarized in Section 3.2.2.

Table 4. Monitoring Requirements

Risk Level	Construction Site Monitoring Program (CSMP)	Visual Inspections								Sample Collection		
		Weekly Best Management Practices (BMPs)	Daily Inspection of Access Roads	Pre-storm Event		During Storm Event	Post Storm	Quarterly Non-storm Water Discharge	Non-visible Pollutant	Storm Water Discharge	Receiving Water Body	Bioassessments (>30 ac)
				Baseline 48hr Prior to Qualifying Rain Event	Rain Event Action Plan (REAP)	Once each 24hr Period	48hr after to qualifying rain event		During Breach Malfunction Leakage or Spill			
2	X	X	X	X	X	X	X	X	As-needed for all levels	X		

Table 5. Reporting Requirements

Risk Level	NAL Exceedance Report		
	pH <6.5 pH >8.5	Turbidity >250 NTU	Information to State and Regional Water Boards
2	X	X	Sampling results to SMARTS No later than 10 days after the conclusion of the storm event. NAL Exceedance Report if requested by the RWQCB

3.2.1 Monitoring

Monitoring includes weekly visual BMP site inspections, quarterly non-storm water monitoring that includes record keeping of the presence of unauthorized or authorized non-storm water discharge. Monitoring also involves inspections to ensure proper implementation of BMPs two business days prior to and two days after each qualifying rain event. A qualifying rain event is defined as precipitation producing 0.5 inches or more of discharge.

A Rain Event Action Plan (REAP) should be prepared 48 hours prior to any likely rain event; a likely rain event is described as a rain event that is forecasted by the National Oceanic and Atmospheric Administration (NOAA) as having a 50% or greater probability of producing precipitation. The REAP would specify for each likely rain event, at each construction phase, the anticipated construction activity, suggested actions to be taken during the rain event and provide appropriate contact information for the site storm water manager, erosion and sediment control provider and storm water sampling agent.

For the sampling and analysis of storm water, the Project would be required to obtain three grab samples from pre-determined sampling locations during each day of a qualifying rain event. All collected samples are to be either tested onsite by approved monitoring equipment or received by a certified testing laboratory within 48 hours of the physical sampling and tested at minimum for both pH and turbidity.

Plans showing monitoring and sampling locations are included Appendix E. These locations are located at discharge points where construction storm water runoff has the potential to impact downstream water bodies. Sampling locations upstream of the discharge points are also proposed to allow for a background comparison.

3.2.2 Reporting

The SWPPP is required to include a Construction Site Monitoring Program (CSMP) prepared prior to the start of construction. The CSMP must be revised to meet ongoing construction activities. For RL 2, the CSMP is required to include the procedures and methods related to the visual monitoring and sampling and analysis plans for non-visible pollutants, sediment and turbidity, and pH.

Discharge samples collected for RL 2 projects must comply with the numeric action levels (NAL) shown in Table 5.

The SWPPP document would also be used to keep record of all field and analytical data related to non-visible pollutants.

If an effluent sample exceeds either the pH or turbidity NAL, then all sampling results are to be electronically submitted to the SWRCB no later than 10 days after the conclusion of the rain event. For all NAL exceendances, Caltrans requires a NAL Exceedance Report from the discharger documenting the exceedance, the analytical methods and corrective actions taken, to be submitted 48 hours after the conclusion of the storm event. The SFBRWQCB does not

require a report for every NAL exceedance, but has the authority to require the NAL Exceedance Report be submitted for their review.

A copy of all documents and results are to be retained on-site during construction and be retained a minimum of three years after the conclusion of construction.

3.3 Cost

The quantities and costs equations for items related to the CGP were calculated based on the *Estimating Guidance for CGP* (Caltrans, September 2010). The cost estimate for these items is summarized in Table 6.

The cost for RL 2 projects include labor, materials and purchasing of approved monitoring equipment or laboratory testing associated with the sampling and analysis requirements. These costs encompass the sampling and analyses of three grab samples per day of a qualifying rain event at the specified sampling locations. The costs would increase if the samples do not meet the NAL because a NAL Exceedance Report must be drafted, submitted and retained.

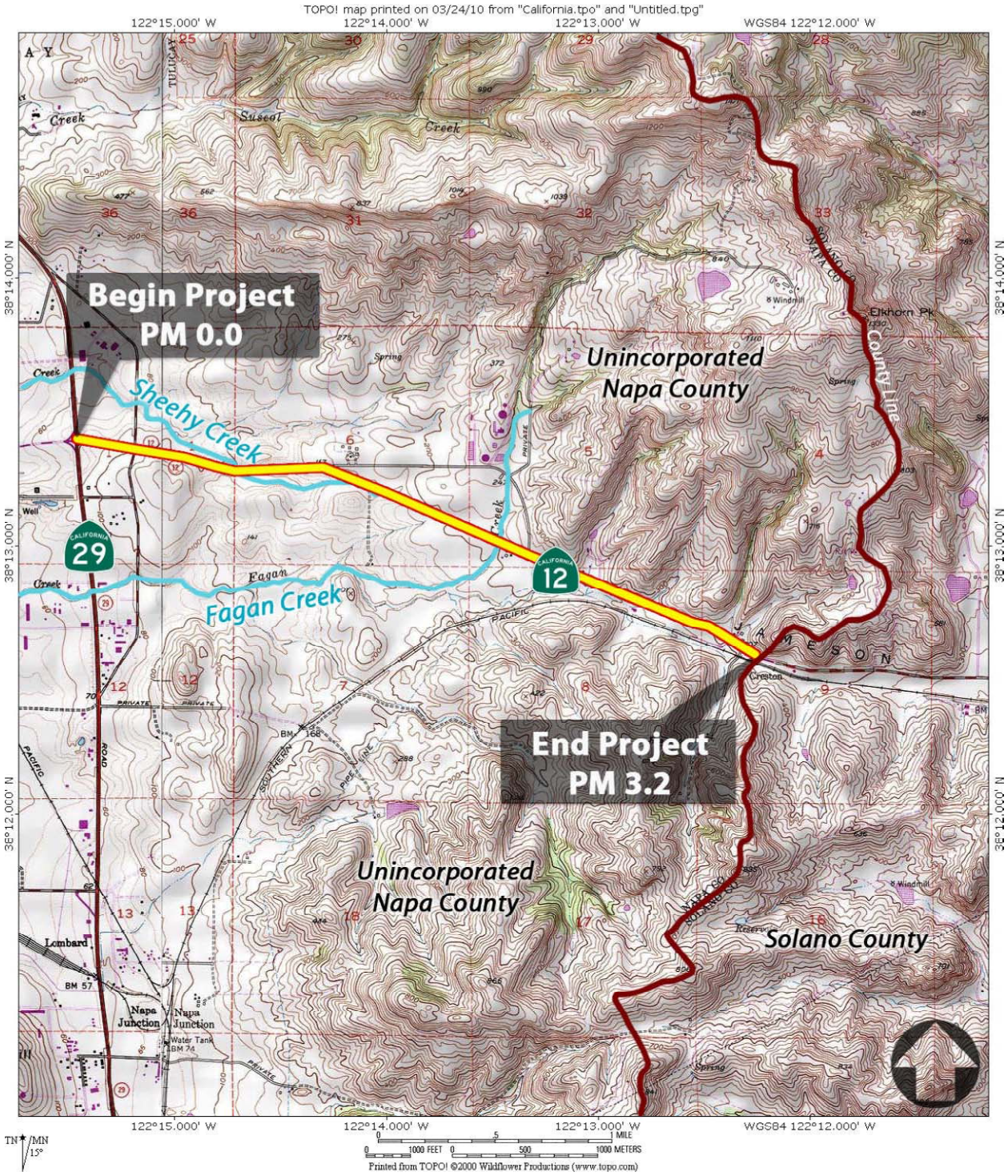
Based on climate information obtained from NOAA for a weather station located approximately 4 mi northeast of the Project, the Project area has an average of 44.7 rainy days per year and an average of 19 days per year when the precipitation is 0.5 inches or greater. (see precipitation information in Figure 10).

3.4 Notice of Termination (NOT)

The CGP provides both revised and new requirements for completion and approval of the NOT. The NOT requirements are presented in Section II.D of the new CGP permit "Order." These requirements include demonstrating through photos, computational proof or other "custom methods," such as results of testing and analysis, that the terms of the NOT have been satisfied.

While these methods of demonstrating compliance are at the option of the contractor, should the RWQCB determine that the visual photos do not adequately show compliance, further computational efforts may be required. This computational proof is obtained through the use of the Revised Universal Soil Loss Equation 2 (RUSLE2) program.

Attachment D



State Route 12 / Jameson Canyon Widening

Vicinity Map

Attachment E

CERTIFICATE OF TRAINING

CALIFORNIA CONSTRUCTION GENERAL PERMIT

QUALIFIED SWPPP DEVELOPER (QSD)
AND
QUALIFIED SWPPP PRACTITIONER (QSP)

Ben Nguyen

December 22, 2010 – December 22, 2012

Certificate # 00308

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION®

California Stormwater Quality Association and
California Construction General Permit Training Team

Attachment F

U.S. Army Corps of Engineers

Section 404 Permit

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

MAR 29 2010

Regulatory Division (1145b)

SUBJECT: File Number 2008 00429N

Mr. Jeffrey G. Jensen
California Department of Transportation
Office of Biological Sciences & Permit
PO Box 23660
Oakland, California 94623-0660

Dear Mr. Jensen:

This letter is written in response to your submittal of July 21, 2009 concerning Department of the Army authorization to widen State Route 12 (Jameson Canyon Road), permanently fill approximately 0.2 acre of waters of the U.S. wetland, permanently impact approximately 0.12 acre of waters of the U.S. other waters, temporarily impacting approximately 0.1 acre of waters of the U.S. wetland, and temporarily impacting approximately 0.08 acre of waters of the U.S. other waters. The project is located on Highway 12, Post Mile (PM) 0.0 - 3.314 in Napa County and on State Route 12 PM 0.0 – 2.48 in Solano County. This State highway connects Interstate 80 near Cordelia to State Route 29 near the Napa County Airport.

Based on a review of the information you submitted and an inspection of the project site conducted by Corps personnel on December 8 and 9, 2010 , your project qualifies for authorization under Department of the Army Nationwide Permit 14 – Linear Transportation Project (72 Fed. Reg. 11092, March 12, 2007), pursuant to (choose) Section 404 of the Clean Water Act (33 U.S.C. Section 1344). See Enclosure 1. All work in Napa County shall be completed in accordance with the plans and drawings titled "*Department of Transportation Project Plans for Construction on State Highway in Napa County Near Napa on Route 12 From Route 29 to 0.1 Miles West of Solano County Line, Layout L-1 through L-14 and Typical Cross Sections X-1 through X-12*", dated12/31/2009. All work in Solano County shall be completed in accordance with the plans and drawings titled "*Department of Transportation Project Plans for Construction on State Highway in Solano County on Route 12 From 0.5 Miles West of Napa County Line to Red Top Road, Layout L-1 through L-12 and Typical Cross Sections X-1 through X-15*", dated 12/31/2009.

The project must be in compliance with the General Conditions cited in Enclosure 2 for this Nationwide Permit authorization to remain valid. Non-compliance with any condition could result in the suspension, modification or revocation of the authorization for your project, thereby requiring you to obtain an Individual Permit from the Corps. This Nationwide Permit authorization does not obviate the need to obtain other State or local approvals required by law.

This authorization is valid until the NWP is modified, reissued, or revoked. All of the existing NWPs are scheduled to be modified, reissued, or revoked prior to March 18, 2012. It is incumbent upon you to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant nationwide permit is modified or revoked, you will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this nationwide permit.

Upon completion of the project and all associated mitigation requirements, you shall sign and return the Certification of Compliance, Enclosure 3, verifying that you have complied with the terms and conditions of the permit.

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

To ensure compliance with this Nationwide Permit authorization, the following special conditions shall be implemented:

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) BO dated January 31, 2008 (# 81420-2008-F-0827) contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the BO. Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take authorized by the attached BO, whose terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO, 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 is the appropriate authority to determine compliance with the terms and conditions of its BO and with the ESA.

2. Caltrans shall adhere to the conditions of the 401 certification from the RWQCB.

3. Caltrans shall mitigate for wetland loss by purchasing a minimum of 0.22 acre of wetland creation credit at either Elsie Gridley Mitigation Bank or the North Suisun Mitigation

Bank. For this authorization to be effective, prior to construction, Caltrans shall provide to the Corps of Engineers legal documentation indicating that Caltrans has purchased a minimum of 0.22 acres of wetland creation credits. The legal documentation Caltrans is required to present to the Corps is a copy of the sales or purchase agreement which indicates the type and amount of credits purchased and a copy of the signed check used to purchase the credits.

4. Caltrans shall restore all wetlands and other waters of the US that sustained temporary impacts during construction of this project. All sites that sustained temporary impacts must be restored back to their pre-construction conditions or better. Restoration will occur as described in a Caltrans document entitled "*Draft Mitigation and Monitoring Plan for On-Site Restoration Activities, dated March 2010*".

5. Caltrans shall compensate for permanent loss of approximately 376 linear feet of waters of the U.S. by restoring a minimum of 752 linear feet of a degraded creek channel on the South Fork Lynch Creek or within the Benicia Hydrologic Sub-Area. Caltrans' partner in the restoration project, Solano County Resource Conservation District, will complete a Final Mitigation and Monitoring Plan for the off-site mitigation by October 31, 2011. Caltrans will submit this mitigation plan to the Corps for approval by November 25, 2011.

Should you have any questions regarding this matter, please call Hal Durio of our Regulatory Division at 415 503 6785. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

ORIGINAL SIGNED
BY Laurie Monarres
CHIEF, REG. BR., NORTH SECTION
FOR

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copy furnished:

Copy furnished (w/o enclosures):

US FWS, Sacramento, CA
CA RWQCB, Oakland, CA

CA Department of Fish and Game
1602 Streambed Alteration Agreement

California Natural Resources Agency
DEPARTMENT OF FISH AND GAME
Bay Delta Region
Post Office Box 47
Yountville, California 94599
(707) 944-5520
www.dfg.ca.gov

ARNOLD SCHWARZENEGGER, Governor

February 3, 2010

Jeffrey G. Jensen
California Department of Transportation
111 Grand Avenue
Oakland, CA 94623

Subject: Final Lake or Streambed Alteration Agreement
Notification No. 1600-2009-0271-R3
STATE ROUTE 12 JAMESON CANYON WIDENING PROJECT

Dear Mr. Jensen:

Enclosed is the final Streambed Alteration Agreement ("Agreement") for the State Route 12 Jameson Canyon Widening Project ("Project"). Before the Department of Fish and Game (Department) may issue an Agreement, it must comply with the California Environmental Quality Act ("CEQA"). In this case, the Department, acting as a responsible agency, filed a notice of determination ("NOD") on the same date it signed the Agreement. The NOD was based on information contained in Mitigated Negative Declaration the lead agency prepared for the Project.

Under CEQA, filing a NOD starts a 30-day period within which a party may challenge the filing agency's approval of the project. You may begin your project before the 30-day period expires if you have obtained all necessary local, state, and federal permits or other authorizations. However, if you elect to do so, it will be at your own risk.

If you have any questions regarding this matter, please contact Staff Environmental Scientist, Melissa Escaron at (707)339-0334 or mescaron@dfg.ca.gov.

Sincerely,

for

Scott Wilson
Habitat Conservation Program Manager

cc: Melissa Escaron, Staff Environmental Scientist

California Natural Resources Agency
DEPARTMENT OF FISH AND GAME
BAY DELTA REGION
(707) 944-5520
Mailing address:
POST OFFICE BOX 47
YOUNTVILLE CALIFORNIA 94599
Street address:
7329 SILVERADO TRAIL
NAPA CALIFORNIA 94558

ARNOLD SCHWARZENEGGER, GOVERNOR

February 3, 2010

Notification Number: 1600-2009-0271-3

Mr. Jeffrey G. Jensen
California Department of Transportation, District 4
111 Grand Avenue
Oakland, CA 94623

1602 STREAMBED ALTERATION AGREEMENT

This agreement is issued by the Department of Fish and Game pursuant to Division 2, Chapter 6 of the California Fish and Game Code:

WHEREAS, the Applicant Mr. Jeffrey G. Jensen/California Department of Transportation (Caltrans) submitted a signed NOTIFICATION proposing to substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of, or use material from the streambed of the following water: tributaries to Fagan Creek, located in Napa county, State of California; and

WHEREAS, the Department has determined that such operations may substantially adversely affect existing fish and wildlife resources including water quality, hydrology, aquatic or terrestrial plant or animal species; and

WHEREAS, the project has undergone the appropriate review under the California Environmental Quality Act; and

WHEREAS, the Applicant shall undertake the project as proposed in the signed PROJECT DESCRIPTION and PROJECT CONDITIONS (attached). If the Applicant changes the project from that described in the PROJECT DESCRIPTION and does not include the PROJECT CONDITIONS, this agreement is no longer valid; and

WHEREAS, the agreement shall expire on December 31, 2014; with the work to occur between June 15 and October 31; and

WHEREAS, nothing in this agreement authorizes the Applicant to trespass on any land or property, nor does it relieve the Applicant of the responsibility for compliance with applicable Federal, State, or local laws or ordinances. Placement, or removal, of any material below the level of ordinary high water may come under the jurisdiction of the U. S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act;

THEREFORE, the Applicant may proceed with the project as described in the PROJECT DESCRIPTION and PROJECT CONDITIONS. A copy of this agreement, with attached PROJECT DESCRIPTION and PROJECT CONDITIONS, shall be provided to contractors and subcontractors and shall be in their possession at the work site.

Failure to comply with all conditions of this agreement may result in legal action.

This agreement is approved by:

Scott Wilson
Environmental Program Manager
Bay Delta Region

cc: Melissa Escaron
Warden Shelton
Lieutenant Riske
Warden Jones
Lieutenant Mason

California Natural Resources Agency
DEPARTMENT OF FISH AND GAME
BAY DELTA REGION
(707) 944-5520
Mailing address:
POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
Street address:
7329 SILVERADO TRAIL
NAPA, CALIFORNIA 94558

ARNOLD SCHWARZENEGGER, GOVERNOR

Fish & Game
JAN 21 2010
Yountville

Notification Number: 1600-2009-0271-3
Jameson Canyon Creek and Fagan Creek, Solano and Napa Counties

Mr. Jeffrey Jensen
California Department of Transportation District 4
111 Grand Ave.
Oakland, Ca
94623

PROJECT DESCRIPTION and PROJECT CONDITIONS

Description

The California Department of Transportation (Caltrans) proposes to widen State Route (SR) 12 along a 5.9 mile stretch between post mile (PM) 0.0 and PM 3.3 in Napa county, and PM 0.0 and PM 2.6 in Solano county (Project). East of Kelly Road, the Project will expand the existing two-lane highway to a four-lane highway. The Project will improve safety and reduce traffic congestion by increasing the capacity of SR 12. The Project will also minimize head-on accidents by adding a median barrier. The California Department of Fish and Game (Department) is issuing this Streambed Alteration Agreement #1600-2009-0271-3, for the project described herein.

To accommodate the Project, Caltrans will improve five major cross culverts greater than 36 inches in diameter. Fagan Creek and associated tributaries in Napa county, as well as tributaries to Jameson Canyon Creek in Solano county will be affected.

At PM .5 (Napa county) the 6x6-foot concrete box culvert crossing at Fagan Creek will be extended by 35 feet to the north. A new head wall will be required on the upstream side along with rock slope protection (RSP). Replacement and extension of RSP will also be installed on the outlet side of the culvert.

At PM 2.3 (Napa county) the corrugated steel pipe culvert and 4x4-foot concrete box culvert will be replaced with a 6x4-foot concrete box culvert at an improved angle to the stream. New headwalls and RSP will be placed both up and downstream of the new culvert.

At PM 2.5 (Napa county) where SR 12 crosses a tributary to Fagan Creek the 58x36-inch

corrugated metal pipe arch culvert will be extended by 85 feet to the north. A new head wall and RSP will be required. At the outfall a 48-inch culvert will be added to direct the flow away from an adjacent residence, a new headwall and RSP will be needed for this extension.

Runoff from a tributary to Fagan Creek located at PM 2.94 (Napa county) is collected and travels under SR 12 in a 10x6-foot concrete box culvert. This culvert also receives flow from another culvert. This existing concrete box culvert is going to be extended by 65 feet to the north and the contributing culvert will be replaced with a new pipe culvert.

At PM 1.02 (Solano county) a tributary to Jameson Canyon Creek is conveyed under SR 12 in a 4x4-foot concrete box culvert. This culvert will not be changed, however, a new 12x12-foot concrete box culvert will be installed next to the existing culvert to serve as a wildlife crossing.

At PM 1.31 (Solano county) runoff from the tributary to Jameson Canyon Creek is conveyed under SR 12 in a double 6x3-foot concrete box culvert. This culvert will be extended to the north by 35 feet and a third concrete box will be added to increase capacity.

Caltrans and/or its designee shall comply with the following conditions:

1. Caltrans and/or its Designees shall conduct all work according to the project description stated above as well as the plans submitted to the Department that are not in conflict with the above stated project description. Caltrans shall notify the Department of any modifications made to the plans submitted to the Department that pertain to impacts to the creek or the riparian corridor.

2. A Caltrans Designated On-site Biologist, approved by the Department, shall monitor weather forecasts for rain events in coordination with the Department. The Designated On-site Biologist and Caltrans Water Quality staff shall work together to ensure protection of aquatic resources before and during rain events. Storm Water Pollution Prevention Plan measures shall be monitored for proper installation and maintained to prevent sediment transport into the creek. The Resident Engineer shall make corrections suggested by the Designated On-site Biologist to ensure compliance with this Agreement.

3. Caltrans and/or its Designees shall only work within the stream zone between June 15 and October 15.

4. Caltrans shall submit an Off-site Riparian Mitigation Plan to the Department for approval including success criteria for percent cover and percent survival by October 31, 2011. All required mitigation planting shall be in place within 1 planting season following approval of the Offsite Riparian Mitigation Plan, mitigation area shall be increased by 15% for every year of delay. Compensation for permanent impacts shall be mitigated at a 3:1 ratio for loss of linear feet within the riparian zone. Compensation for permanent loss of native trees within the riparian zone shall be at a rate of 3:1, and 5:1 for riparian oaks. Off-site mitigation lands shall be

approved by the Department and shall be protected and managed in perpetuity.

5. Caltrans shall mitigate temporary riparian impacts at a 1:1 ratio through on-site restoration to achieve pre-construction habitat functions. On-site riparian mitigation design shall be informed by photos documenting pre-construction conditions.

6. Caltrans and/or its Designee shall be in compliance with Migratory Bird Treaty Act (MBTA) and Fish and Game Code 3503. To avoid potential impacts to nesting birds, Caltrans and/or its Designee shall remove vegetation or install exclusion measures during the time period of August 15 to February 15. If construction activities that have the potential to violate MBTA and Fish and Game Code 3503 are scheduled during the nesting season, focused surveys for active nests shall be conducted within 72 hours of said construction activities. If active nests are identified, a 50-foot no-work buffer for non-raptors and a 300-foot no-work buffer for raptors shall be established. If active nests are found, Caltrans shall consult with the Department and the United States Fish and Wildlife Service (USFWS) regarding appropriate action to comply with the MBTA of 1918 and the Fish & Game Code of California.

7. Within 48 hours prior to construction, the active work area, within the riparian zone, shall be surveyed by the Caltrans Designated On-site Biologist for California red-legged frog (CRLF). If any CRLF are found, work shall not start until the Department and USFWS have been contacted and have given their approval for work to continue. If any CRLF are found, the Department shall be contacted within two hours at (707) 944-5520. The results of the survey shall be emailed to Melissa Escaron, Staff Environmental Scientist, at mescaron@dfg.ca.gov. Refer to Notification Number 1600-2007-0217-3 when submitting the survey to the Department.

8. Within 48 hours prior to construction, the active work area, within the riparian zone, shall be surveyed by the Caltrans Designated On-site Biologist, at the appropriate time of day for presence of the western pond turtle (WPT), *Clemmys marmorata*. If any individuals are found, the biologist shall email Melissa Escaron, Staff Environmental Scientist, at mescaron@dfg.ca.gov, to incorporate protection measures into the project.

9. Caltrans and/or its Designee shall allow any wildlife encountered during the course of construction to leave the construction area unharmed.

10. If any state or federal listed species, or state species of special concern, are observed during project surveys, Caltrans shall submit California Natural Diversity Data Base (CNDDB) forms to the CNDDB for all preconstruction survey data within five working days of the sightings, and provide DFG Region 3 with copies of the CNDDB forms and survey maps.

11. Caltrans and/or its Designee shall install and maintain high-visibility Environmentally Sensitive Area fencing to protect sensitive resources. Caltrans and/or its Designee shall remove as little vegetation as is necessary to conduct construction activities.

12. Caltrans shall conduct an employee orientation program for all persons who will work

on-site during construction and landscape establishment activities. The program shall consist of a brief presentation from the Caltrans Designated On-site Biologist about the biology of the species listed in this agreement, their habitat needs, and their status.

13. The Designated On-site Biologist shall be present during initial ground disturbing activities within the riparian zone. The Resident Engineer shall stop work at the request of the Designated On-site Biologist to ensure protection of CRLF and WPT. Any individual handling CRLF and WPT shall hold valid State and Federal Scientific Collecting Permits.

14. Caltrans and/or it Designee shall have readily available plastic sheeting or visquine and will cover exposed spoil piles and exposed areas to prevent these areas from losing loose soil into the stream. These covering materials shall be applied when it is evident rainy conditions threaten to erode loose soils into the stream.

15. Caltrans and/or its Designee shall not commence construction within the riparian zone if the work and its associated erosion control measures cannot be completed prior to the onset of a storm event. 72-hour weather forecasts from the National Weather Service shall be consulted prior to start up of any phase of the project.

16. Caltrans and/or its Designee shall not operate equipment or vehicles in water-covered portions of the stream, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, except as otherwise provided for in this Agreement and as necessary to complete authorized work.

17. Caltrans and/or its Designee shall locate staging and storage areas for equipment, materials, fuels, lubricants and solvents, outside of the stream channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the stream will be positioned over drip pans. Any equipment or vehicles driven and/or operated within or adjacent to the stream will be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life. Vehicles will be moved away from the stream prior to refueling and lubrication.

18. Caltrans and/or its Designee shall prevent raw cement/concrete or washings thereof, asphalt, straw, paint or other coating material, oil or other petroleum products, or any other substances related to project activities which could be hazardous to aquatic life, wildlife, or riparian habitat from contaminating the soil and/or entering the waters of the State. Caltrans and/or its Designee may be subject to a citation for placing materials where they may enter a stream or lake.

19. Caltrans and/or its designee shall not dump any litter or construction debris within the riparian/stream zone. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site.

20. Any materials placed in seasonally dry portions of a stream or lake, that could be washed

downstream or could be deleterious to aquatic life, wildlife, or riparian habitat shall be removed by Caltrans and/or its Designee prior to inundation by high flows.

21. Caltrans shall submit to the Department for approval, any stream diversion plans at least 3 weeks prior to installation.

22. A copy of this Agreement shall be provided to all contractors, subcontractors and all Resident Engineers. Copies of this Agreement shall be available at the project site during all periods of active work and must be presented to Department personnel upon demand. Department personnel shall be allowed onto the work site at any time during and after construction of the project for the purposes of establishing compliance with this Agreement.

23. Caltrans and/or its Designee are liable for compliance with the terms of this Agreement, including violations committed by the contractors and/or subcontractors. The Department reserves the right to suspend construction activity described in this Agreement if the Department determines any of the following has occurred:

A) Failure to comply with any of the conditions of this Agreement

B) Information provided in support of the Agreement is determined by the Department to be inaccurate

C) Information becomes available to the Department that was not known when preparing the original conditions of this Agreement (including, but not limited to, the occurrence of State or federally listed species in the area or risk to resources not previously observed)

D) The project as described in the Agreement has changed or conditions affecting fish and wildlife resources change.

To the extent that any provisions of this Agreement provide for activities that require Caltrans to traverse another owner's property, such provisions are agreed to with the understanding that Caltrans possesses the legal right to so traverse. In the absence of such right, any such provision is void.

In the event that the project scope, nature, or environmental impact is altered by the imposition of subsequent permit conditions by any local, state or federal regulatory authority, Caltrans shall notify the Department of any imposed project modifications that interfere with compliance to Department conditions.

If Caltrans needs more time to complete the authorized activity, the work period may be extended on a day-to-day basis by Melissa Escaron, Staff Environmental Scientist, at (707) 339-0334 or the Yountville office at (707) 944-5520.

A copy of this agreement must be provided to the contractor and all subcontractors who work within the stream zone and must be in their possession at the work site.

Amendments and Extensions

Caltrans shall notify the Department before any modifications are made in the project plans submitted to the Department. Project modifications may require an amendment or a new notification.

This Agreement is transferable to subsequent owners of the project property by requesting an amendment.

To extend the Agreement beyond the expiration date, a written request or completed "Request to Extend Lake or Streambed Alteration Agreement" form, with an appropriate fee, must be submitted to the Department (1600 Program, Post Office Box 47, Yountville, California 94599) for consideration at least 30 days before the Agreement expiration date. An extension requires a fee. The Fee Schedule and Extension form can be obtained at www.dfg.ca.gov/habcon/1600/Forms.html or by phone at (707) 944-5520. Extensions of the original Agreement are issued at the discretion of the Department.

To modify the project, a written request for an amendment or a completed "Request to Amend Lake or Streambed Alteration Agreement" form, with an appropriate fee, must be submitted to the Department (1600 Program, Post Office Box 47, Yountville, California 94599). An amendment requires a fee. The Fee Schedule and Amendment form can be obtained at www.dfg.ca.gov/habcon/1600/Forms.html or by phone at (707) 944-5520. Amendments to the original Agreement are issued at the discretion of the Department.

Please note that you may not proceed with construction until your proposed project has undergone CEQA review and the Department signs the Agreement.

I, the undersigned, state that the above is the final description of the project I am submitting to the Department for CEQA review, leading to an Agreement, and agree to implement the conditions above required by the Department as part of that project. I will not proceed with this project until the Department signs the Agreement. I also understand that the CEQA review may result in the addition of measures to the project to avoid, minimize, or compensate for significant environmental impacts:

Applicant's name (print): Jeffrey G Jensen

Applicant's signature: Jeffrey G Jensen

Signed the 19th **day of** January**, 2010**

Applicant's initials JGJ

1600-2009-0271-3

JARPA

CK #082-323433
$5,200.00
CA Dept of Transportation

SAN FRANCISCO BAY AREA
JOINT AQUATIC RESOURCE PERMIT APPLICATION

Escaron
Shelton
Riske
Jones
Mason

This form is for use in San Francisco, Contra Costa, Alameda Counties, Marin County (except Estero San Antonio watershed), **San Mateo County** (except Gazos Creek Watershed), **and the portions of the following counties that drain to San Francisco Bay: Sonoma, Napa, Solano, Santa Clara**

Please consult JARPA Instructions before completing the form

Fish & Game
JUL 22 2009
Yountville

Copies of this form are being submitted to the following agencies:

Agency	Contact	Phone	Type of Application	Application/ Permit #	Status
☒ San Francisco Bay Regional Water Quality Control Board (RWQCB)	Brendan Thompson	510-622-2506	CWA Section 401 Permit and/or Waste Discharge Requirements		In Review
☒ US Army Corps of Engineers (Corps)	Hal Durio	510-715-9014	Section 404 Nationwi	2008-004-29; HED-0017-N	In Review
☒ CA Dept of Fish and Game (DFG)	Melissa Escaron	707-944-5577	Water Application		In Review
☐ US Environmental Protection Agency (EPA)			CWA 404 Individual		Select One
☐ US Fish and Wildlife Service (FWS)			As suggested by US EPA for Sec. 7 consultation		Approved
☐ National Marine Fisheries Service (NMFS)					Select One
☐ US Coast Guard			Section 9 Bridge		Select One
☐ San Francisco Bay Conservation and Development Commission (BCDC)			Select One		Select One
☐ CA Lands Commission			Select One		Select One
☐ Federal Funding Agency					Select One
☒ Caltrans	Melanie Brent		CEQA		Approved
☐ Other Local Agency			Local Permit		Select One
☐ Other Local Agency			Local Permit		Select One

SECTION ONE – TO BE COMPLETED BY ALL APPLICANTS

Attach additional sheets, if needed

Box 1 Project Name	**Applicant Name**
Jameson Canyon Roadway Widening Project	**Jeffrey Jensen**

Business/Agency
California Department of Transportation

Mailing Address
111 Grand Avenue, Oakland, CA 94612

Work Phone	Home Phone	Fax #	E-mail Address
510-622-8729		510-286-5600	Jeffrey_Jensen@dot.ca.gov

Relationship of applicant to property:
☒ Owner ☐ Purchaser ☐ Lessee ☒ Other ___State Agency _____

Application is hereby made for a permit or permits to authorize the activities described herein. I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief, such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities. I hereby grant to the agencies to which this application is made, the right to enter the above-described location to inspect the proposed, in-progress or completed work. I agree to start work only after all necessary permits have been received.

Signature of applicant	Date
6/23/09	

Box 2 Authorized Agent/Operator Name and Signature (*If an agent is acting for the applicant during the permit process)*

Christopher States

Mailing Address
111 Grand Avenue, Oakland, CA 94612

E-mail Address
christopher_states@dot.ca.gov

Work Phone	Home Phone	Fax #	Cell Phone #
510-286-7185		510-286-5600	510-715-8980

I hereby designate the above named authorized agent to act as my agent in matters related to this application for permit(s). I understand that I am bound by the actions of my agent and I understand that if a federal or state permit is issued, I, or my agent, must sign the permit.

Signature of applicant	Date mo/date/year
6/23/09	

I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief, such information is true, complete, and accurate.

Signature of authorized agent	Date mo/date/year

Box 3 Name of property owner(s), if other than applicant.
Refer to supplemental information in attached document.

Mailing Address

E-mail Address

Work Phone	Home Phone	Fax #	Cell Phone #

I understand I am bound by actions of authorized agent and/or the applicant.

Signature of property owner (except public entity landowners)	Date mo/date/year

Box 4 Location, including street address, city, county, zip code where proposed activity will occur The project area extends 5.9 miles along SR 12 from Napa PM 0.25 to PM 3.3 to the Solano Realignment (R) PM R2.6, just east of Red Top Road.	
Waterbody (if known): Fagan Creek and the unnamed creek draining Jameson Canyon Tributary to: Fagan Creek carries runoff from much of the Napa County portion of the project area into the Napa River, while the unnamed creek carries runoff from the Solano County portion of the project area into Cordelia Slough.	
Latitude & longitude if known: LAT 38.125 LONG -122.250 to approximately LAT 38.125 LONG -122.125	Zoning Designation:
Assessors parcel number: Refer to Appendix D in the attached document.	Section, Township, Range, USGS Quadrangle Map, Latitude/Longitude: The projects are located in the Cordelia and Cuttings Wharf U.S. Geologic Survey (USGS) 7.5 minute quadrangles in Township 4 North, Range 4 West, Sections 1 and 2, and in Township 4 North, Range 3 West, Sections 5 and 6 and Sections 8 through 11. The latitude and longitude of the project ranges from LAT 38.125, LONG -122.250 to approximately LAT 38.125, LONG -122.125

Box 5 Existing site conditions: Describe the existing condition of the site, including wetlands, channels, streams, ponds, seeps and ditches, and other jurisdictional features. Include information on elevations, vegetation, property use, and structures. Use additional pages if necessary. **If any portion of the proposed activity has already been initiated or completed on this property, indicate type of activity and month and year of completion, if applicable:**

Refer to Chapter 2 in the attached document.

Box 6 Proposed project starting date: 04/2010

Estimated duration of activity: 3 years Estimated completion date: 09/2013

Will the project be constructed in stages? ☒ Yes ☐ No

Describe any anticipated activities that will take place during the rainy season (October to April)? Refer to the project description in Chapter 1.2 of the attached document.

Box 7 Description of the proposed project: Use as many pages as necessary to describe the project as completely as possible. Describe the area within the project site that will be used each for development features and open space. Include construction plans pertaining to the project. For additional guidance on what to include, refer to the instructions.

East of Kelly Road, the proposed SR 12 road widening would expand the existing two-lane highway to a four-lane conventional highway. The eastbound lanes will primarily utilize the existing two lane alignment, and two new additional lanes will be added, primarily on the north side of the existing roadway, for the westbound direction. The eastbound lanes will be designed to highway standards, with a design speed of 55.9 miles per hour (mph). The westbound lanes will be designed to expressway standards, with a design speed of 68.4 mph, with the exception of a 0.6-mi section in Solano County that will be designed to highway standards at 55.9 mph to minimize environmental effects. All travel lanes will be 12 feet (ft.) wide. The median width will also be 12 ft. The concrete median barrier will be approximately 3.0 ft. high (Appendix A). One median opening with acceleration and deceleration lanes is proposed, which is located approximately 2,625 ft. east of the Solano/Napa County line. The median break will facilitate "U" turn movements for the traffic along SR 12. All shoulders throughout the project will have a minimum width of 5 ft. for inside shoulder and 8 ft. for outside shoulder, except outside shoulder width will be 10 ft. between SR 29 and Kelly Road. At seven locations within the new westbound roadway retaining walls will be constructed to reduce the overall footprint and to minimize environmental impacts.

Temporary construction impacts are expected to occur within the current and proposed right-of-way, where staging, laydown and access roads will be placed.

For more details on the project description, refer to Chapter 1.2 of the attached document.

Specify the equipment and machinery to be used to complete the project

Refer to the project description in Chapter 1.2 of the attached document.

Will water be present in the waterbody during the proposed work period?

☐ Yes ☒ No

Will the proposed project require work in the wetted portion of the channel?

☒ Yes (enclose a plan to divert water around the worksite) ☐ No

Purpose of the proposed project:

Population and commercial business growth in Napa and Solano Counties and throughout the region have resulted in increased traffic congestion and delays throughout the SR 12 corridor in Jameson Canyon. Continued residential development in the Fairfield/Suisun Valley area, along with industrial and commercial development in Napa County, are expected to further contribute to this congestion. The Metropolitan Transportation Commission notes in the North Bay Corridor Study (March 1998) that "travel demand is diverse and includes not only weekday commuting, but weekend tourism, truck traffic from agricultural operations, and traffic generated by major events."

The existing roadway currently operates at full capacity. Between 1997 and 2000, there were 138 accidents within the interchange area, 2.5 times more than the average rate for similar facilities. Of these accidents, 1 was a fatality, 74 resulted in injuries, and 63 resulted in property damage (Caltrans, 2000).
The existing SR 12 Jameson Canyon Road provides insufficient capacity for current traffic volumes, and routine rehabilitation, restoration, and resurfacing improvements cannot sufficiently address the problem (Caltrans, 2000).

Caltrans proposes to improve safety and reduce traffic congestion by increasing the capacity of SR 12 between the intersections with SR 29 and Interstate 80 (Jameson Canyon Road). Caltrans proposes to minimize head-on accidents in the project area east of the interchange by constructing a concrete median barrier. Roadway safety and operations will be improved as SR 12 is upgraded to expressway standards.

Environmental Documents (non-CEQA): List any environmental studies, surveys, etc. that have been prepared for the project and/or the project site. Provide the date of the document and the name of the individual, firm, or agency that prepared it. Attach additional pages as needed. See instructions.

Refer to Chapter 1.6 in the attached document.

See special section of the instructions on drawings. figures and photographs. Attach figures, maps, and directions to the project site. One set of original or good quality reproducible drawings must be attached to applications to each agency. Applicants are encouraged to submit photographs of the project site, but these do not substitute for drawings. BCDC, the Corps Of Engineers and Coast Guard require at least one set of drawings on 8-1/2 x 11 inch sheets.

Box 8A Placement of Structures And/Or Fill Material in Waters under Army Corps Jurisdiction

- Will fill be placed below the ordinary high water line for fresh waters? ☒ Yes ☐ No
- Will rock, fill, bulkhead, pilings, structures or other material be placed waterward of the mean high water line for tidal waters? ☐ Yes ☒ No
- Will fill be placed below the high tideline in tidal waters? ☐ Yes ☒ No

If applicable, number of linear feet of impact _____ feet Refer to Appendix I in the attached document.
Amount of **total** fill - _____ cubic yards, _____ square feet, _____ acreage Refer to Appendix I in the attached document.
Amount of fill **below the ordinary high water mark or high tide line** N/A cubic yards _____ acreage
Type of fill clean structural fill or rock, or new culvert materials
Material source roadway cut

Box 8B Waterway Impacts: Placement of Structures and/or Fill in Waters of the State

Will the project or activity involve work in the bed, bank or channel of a river, stream (including seasonal streams), or lake? ☐ No ☒ Yes

If yes, describe both temporary and permanent impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

Refer to Chapter 3.8 in the attached document.

Will the project affect any vegetation? ☐ No ☒ Yes. If yes, complete Box 17-FG11

Box 9 Impacts on Wetlands

- Will the proposed project have temporary or permanent impacts to wetlands, including isolated wetlands, seasonal wetlands, managed wetlands or on tide or submerged lands (i.e. fill, flooding, draining)? ☒ Yes ☐ No

If yes, please describe the wetlands, using additional pages as necessary. Provide one or more photographs of the existing conditions.

Refer to Appendix G in the attached document.

- If a wetlands delineation has been completed, please submit it with application. ☒ Yes, Attached ☐ No
- If a geology or soils report has been prepared, please submit with application. ☒ Yes, Attached ☐ No

Box 10 Potential for Impacts to Threatened and Endangered Species

Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site? ☒ Yes ☐ No ☐ Unknown

If yes, list here

Federally listed as threatened vernal pool fairy shrimp (*Branchinecta lynchi*),
Federally listed as threatened California red-legged frog (*Rana aurora draytonii*)

Identify the source(s) of information that supports a "yes" or "no" answer above:
Biological Assessment

Have surveys, using US Fish and Wildlife Service protocols, for possible listed species been conducted?
☒ Yes, Attached ☐ No

If a federal or state listed species is being impacted, a biological assessment or study may be required to evaluate potential project impacts on biological resources. Has such a study been completed?
☒ Yes, Attached ☐ No

Has a hydrological study been completed for the project or project site? ☒ Yes, Attached ☐ No

Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.

Box 11 Avoidance of Impacts

Provide a full, technically accurate description of the entire activity and associated environmental impacts, including areas outside of jurisdictional waters. (90 percent of applications to the Regional Board require an Alternatives Analysis.) See instructions.

Refer to Chapter 5 in attached document.

Box 12 Mitigation

Describe the size, type, location, function, and values of the proposed mitigation and a time line for implementation. Describe success criteria, monitoring, and long-term funding, management, and protection of the mitigation site. Attach A Mitigation Plan, if needed. Attach additional pages as needed. See instructions and contact APPROPRIATE AGENCY staff for additional assistance.

Refer to Chapter 6 in the attached document.

Box 13 Excavation And/Or Dredging

For Non-Navigational Dredging Projects (construction, flood control, remediation, etc.) that do not propose disposal or reuse of dredged materials in aquatic environments [Navigational Dredging Projects or Dredging Projects that Propose Aquatic Placement of Dredged Material for which Testing may be Needed should be completed through the Dredged Material Management Office (DMMO)**]**.

Will excavation or dredging be required in water or wetlands? ☐ Yes ☒ No

If dredging or excavation:

- Volume: _____ (cubic yards)/area_____ (acres)/_____ (linear feet of channel)
- Composition of material to be removed:_____
- Disposal location for excavated material:_____
- Method of dredging:_____

- Purpose of the dredging: _____
- Estimated future maintenance dredging required annually: _____ cubic yards
- Additional information to be provided in an attachment ☐ Yes ☒ No

Box 14 Environmental Impact Documentation
Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)?
☒ Yes (*Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each*)

☐ No (*Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared*)

☐ Notice of Exemption ☒ Mitigated Negative Declaration ☒ NEPA document (*type*): _EA with FONSI___

☒ Initial Study ☐ Environmental Impact Report ☐ CESA document (*type*): _____

☐ Negative Declaration ☐ Notice of Determination (*Enclose*) ☒ ESA document (*type*): ___BA and BO_____

☐ THP/ NTMP ☐ Mitigation, Monitoring, Reporting Plan

State Clearinghouse Number (*if applicable*) 2007082158

Has a CEQA lead agency been determined? ☒ Yes ☐ No
If yes, CEQA Lead Agency California Department of Transportation
Contact Person Howell Chan
Telephone Number 510-286-6350

If the project described is part of a larger project or plan, briefly describe the larger project or plan.

The SR 12 Jameson Canyon Road Widening project was originally combined with the SR 12/SR 29 Interchange Improvement Project. These two projects were proposed to improve safety and reduce traffic congestion by improving the interchange of SR 12 and SR 29 in Napa County and by increasing the capacity of SR 12 between the intersections with SR 29 and Interstate 80 (Jameson Canyon Road). Roadway safety and operations will be improved as SR 12 is upgraded to expressway standards. At this point, only the SR 12 Jameson Canyon Road Widening project will be constructed. The SR 12/SR 29 Interchange Improvement Project is pending additional funding and has been put on hold.

Box 15 Public Notice Has a federal agency or the applicant provided public notice of this application for water quality certification?

Federal Agency ☐ Yes If yes, date, , and ☒ No

Applicant ☐ Yes If yes, date, , and ☒ No

Other ☐ Yes If yes, date, , and ☒ No

If public notice has not been made, please provide the names, addresses and telephone numbers of adjoining property owners, lessees, etc. *(Note that local governments may require additional notice – consult your local government agency.)*

Name	Address	Phone number
Refer to Appendix D in the attached document.		

Box 16 Site Inspection

☐ In the event that public agencies determines that a site inspection is necessary, I hereby authorize public agency representatives to enter the property where the project described in this application will take place at any reasonable time, and hereby certify that I am authorized to grant public agency representatives such entry.

☒ I request agencies first contact **Christopher States** at **510-286-7185** to schedule a date and time to enter the property where the project described in this application will take place. I understand that this may delay the issuance of project permits.

End of Section One

Section Two – Agency Specific Requirements for Project Permitting

Box 17 Department of Fish and Game – Projects Adjacent to Creeks, Streams, Lakes, and the Bay

☐ **This project does not involve this agency (no additional questions completed)**

FG4. AGREEMENT TERM REQUESTED

☒ Regular (5 Years or less) ☐ Long Term (greater than 5 years)

Project Term		Seasonal Work Period		Number of
Beginning (year)	Ending (year)	Start Date (month/day)	End Date (month/day)	work days
2010	2013	June 15	October 15	Approx. 3 years

FG5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.

A.	☒ Standard *(Most construction projects, excluding the categories listed below)*
B.	☐ Gravel/Sand/Rock Extraction (*Attachment A*) *Mine I.D. Number:* _____
C.	☐ Timber Harvesting (*Attachment B*) THP *Number:* _____
D.	☐ Water Diversion/Extraction/Impoundment (*Attachment C*) *SWRCB Number:* _____
E.	☐ Routine Maintenance (*Attachment D*)
F.	☐ DFG Fisheries Restoration Grant Program (FRGP) *FRGP Contract Number:* _____
G	☐ Master
H.	☐ Master Timber Harvesting

FG6. FEES

	A. Project	B. Project Cost	C. Project Fee
1	Jameson Canyon Road Widening Project	$45,000	$750
2	Refer to Appendix L in the attached document for itemized costs per culvert.	$134,400	$1,100
3		$106,400	$1,100
4		$89,600	$750
5		$27,200 and $29,500	$750 and $750
		D. Base Fee *(if applicable)*	N/A

E. TOTAL FEE ENCLOSED	$5,200

FG7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?

☐ Yes (*Provide the information below*) ☒ No

Applicant: _____ Notification Number: _____ Date: _____

B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?

☒ No ☐ Yes (*Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.*)

☐ *Continued on additional page(s)*

FG8. PROJECT LOCATION

Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway

D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts? ☐ Yes ☒ No ☐ Unknown

E. County: Napa and Solano

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Cuttings Wharf	4N	4W	1 and 2	
Cordelia	4N	3W	8-11	

K. Meridian (*check one*) ☐ Humboldt ☒ Mt. Diablo ☐ San Bernardino

L. Assessor's Parcel Number(s)

Refer to supplemental information in attached document.

M. Coordinates (*If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes*)

Latitude/Longitude	*Latitude:* LAT 38.125 to approximately LAT 38.125	*Longitude:* LONG -122.250 to approximately LONG -122.125
	☐ Degrees/Minutes/Seconds ☒ Decimal Degrees ☐ Decimal Minutes	
UTM	*Easting:*	*Northing:* ☐ Zone 10 ☐ Zone 11
Datum used for Latitude/Longitude or UTM	☐ NAD 27	☒ NAD 83 or WGS 84

FG9. PROJECT CATEGORY AND WORK TYPE *(Check each box that applies)*

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	☐	☐	☐
Bank stabilization – rip-rap/retaining wall/gabion	☐	☐	☐
Boat dock/pier	☐	☐	☐
Boat ramp	☐	☐	☐
Bridge	☐	☐	☐
Channel clearing/vegetation management	☐	☐	☐
Culvert	☐	☒	☐
Debris basin	☐	☐	☐
Dam	☐	☐	☐
Diversion structure – weir or pump intake	☐	☐	☐
Filling of wetland, river, stream, or lake	☐	☐	☐
Geotechnical survey	☐	☐	☐
Habitat enhancement – revegetation/mitigation	☐	☐	☐
Levee	☐	☐	☐
Low water crossing	☐	☐	☐
Road/trail	☐	☐	☐
Sediment removal – pond, stream, or marina	☐	☐	☐
Storm drain outfall structure	☐	☐	☐
Temporary stream crossing	☐	☐	☐
Utility crossing : Horizontal Directional Drilling	☐	☐	☐
Jack/bore	☐	☐	☐
Open trench	☐	☐	☐
Other *(specify)*:	☐	☐	☐

FG11 PROJECT IMPACTS

B. Vegetation Type	Temporary Impact	Permanent Impact
Riparian	Linear feet: 1.541 ft Total area: 6,743 square feet	Linear feet: 4.116 ft Total area: 28,263 square feet
	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____

C. Tree Species	Number of Trees to be Removed	Trunk Diameter (range)
Refer to Appendix A in attached document.		

☐ *Continued on additional page(s)*

FG12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

Refer to Chapter 6 in the attached document.

FG 13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

A _____401 Water Quality Certification _____ ☒ Applied ☐ Issued

B. _____404 Nationwide Permit #14_____ ☒ Applied ☐ Issued

C. ___ Biological Opinion and Incidental Take Statement _____ ☐ Applied ☒ Issued

D. Unknown whether ☐ local, ☐ state, or ☐ federal permit is needed for the project. (*Check each box that applies*)

FG 14 ENVIRONMENTAL REVIEW

Has an environmental filing fee (DFG Code section 711.4) been paid?

☒ Yes (Enclosed) ☐ No (Explain why it has not been paid)

FG 16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

☒ Yes (Please enclose the information via digital media with the completed notification form)

☐ No

FG 17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

Signature of Applicant or Applicant's Authorized Representative — Date 6/23/04

Jeffrey Jensen

Print Name

End of BOX 17

Box 18 Bay Conservation and Development Commission – Projects on the Shore of the San Francisco Bay or Other BCDC Areas of Jurisdiction

☒ **This project does not involve this agency (no additional questions completed)**

Does the project involve development within the primary management area of the Suisun Marsh? ☐ Yes ☐ No If "Yes", provide any relevant Duck Club number(s):	Does the project involve development within the 100-foot shoreline band around San Francisco Bay? ☐ Yes ☐ No San Francisco Bay Plan Shoreline Designation
Length of shoreline on the project site, in feet:	Length of shoreline of any adjacent property owned by the owner of the project site, in feet:
Area reserved for non-public access uses: Sq. Feet	Area reserved for public access: Sq. Feet
Total size of underwater and tidal areas of the project site: Sq. Feet	ID Number(s) of previous BCDC permit(s) issued for work on this site:

Total cost of project. (This means the fair market value of the project, including materials, labor, machine rentals, etc.) $_____ Processing Fee _____

Bay Fill Information - Fill means earth or any other substance or material, including pilings or structures placed on pilings, and structures floating at some or all times and moored for extended periods such as houseboats and floating docks.

- Total Volume of solid fill to be placed in water or marsh areas: _____ cubic feet
- Area to be covered with solid fill: _____square feet
- Area to be covered with floating fill: _____sq feet
- Area to be covered with pile-supported fill: _____sq feet
- Area to be covered with cantilevered fill: _____ sq feet
- Salt pond area to be filled: _____sq feet
- Managed wetland area in the primary management
- Area of the Suisun Marsh to be filled:_____sq feet
- Area on new fill to be reserved for private, commercial, or other uses: _____ sq feet
- Area on new fill to be reserved for public access: _____ sq feet
- What is the basic purpose of the new fill in the Bay, salt pond, managed wetland, or certain waterway?

Information on Fill to be provided in an attachment

- Please specify the area of fill, in square feet, proposed to be covered in structures; used for roads; used for parking; used for pathways and sidewalks; covered with landscaping; used for piers, docks, and other maritime related purposes; placed for shoreline protection; and used for other purposes (specify uses).
- Please provide dimensions of portions of all structures to be built on new fill, including length, width, area, height and number of stories.
- Please provide one or more photographs of existing shoreline conditions.

Provide the following information to justify the proposed fill in an attachment:

BCDC can approve new fill for only five purposes: (1) accommodating a water-oriented use; (2) improving shoreline appearance; (3) providing new public access to the Bay; (4) accommodating a project that is necessary to the health, safety, or welfare of the public in the entire Bay Area; and (5) accommodating a project that is consistent with either: (1) the Suisun Marsh Preservation Act and the Suisun Marsh Protection Plan; or (2) the Suisun Marsh Local Protection Program. Please explain how the project is consistent with one or more of these purposes.

- If the fill is to be used for improving shoreline appearance or providing new public access to the Bay, please explain why it is physically impossible or economically infeasible to accomplish these goals without filling the Bay.
- Please explain how the fill will result in a stable and permanent shoreline.
- Please explain the steps that will be taken to assure that the project will provide reasonable protection to persons and property against hazards of unstable geologic or soil conditions or of flood or storm waters.
- Please provide the names, addresses, and telephone numbers of any licensed geologists, engineers, or architects involved in the project design who can provide technical information and certify to the safety of the project.

BOX 18 (CONTINUED)

- Please explain:
  1. What possible effects the proposed fill would have on the Bay Area, such as (1) any impact on the volume of Bay waters, on Bay surface area, or on the circulation of Bay water; (2) any impact on water quality; (3) any impact on the fertility of marshes or fish and wildlife resources; and (4) any impact on other physical conditions that exist within the area which would be affected by a proposed project, including land, air, water, minerals, flora, fauna, noise, or objects of historic or aesthetic significance; and
  2. How the nature, location, and extent of the proposed fill would minimize any possible harmful conditions or effects.
- Please explain how the public benefits of the project would exceed the public detriment from the loss of water or marshlands.
- For marina projects, please indicate how many berths, if any, are to be made available for live-aboard boats and explain how these live-aboard boats will contribute to public trust purposes.
- Please identify any other specific policies of the McAteer-Petris Act (California Government Code Title 7.2, especially Section 66605), the Suisun Marsh Preservation Act (California Public Resources Code Sections 29000-29612), the San Francisco Bay Plan and the Suisun Marsh Preservation Plan, and BCDC's regulations regarding minor fill for improving public access and shoreline appearance, that are relevant to and offer support for the project and explain how the project is consistent with these policies.

Shoreline Band Information - Shoreline band means the land area lying between the bay shoreline and a line drawn parallel to and 100 feet from the bay shoreline. The bay shoreline is the mean high water line, or five feet above mean sea level in marshlands.

- Types of activities to be undertaken or materials to be placed within the shoreline band
- Will the project be located within a water-oriented priority use area that is designated in the San Francisco Bay Plan? ☐ Yes ☐ No If "yes", please attach an explanation of how the project can be approved despite this inconsistency. If no, complete the questions below:
  - Total shoreline band area within project site:_____ sq feet
  - Area within shoreline band to be reserved for non-public uses:_____ sq feet
  - Area within shoreline band to be reserved for public access: _____ sq feet
- Information about the shoreline work to be provided in an attachment:
  - Please describe the area, in square feet, to be covered by structures; used for roads; used for parking; used for pathways and sidewalks; covered with landscaping; used for shoreline protection; and used for other purposes (specify uses).
  - Please identify the total number of parking spaces in the project and within the shoreline band.
  - Please provide dimensions of portions of all structures to be built within the shoreline band, including length, width, area, height, and number of stories.

Environmental Impact Documentation

- Is the project statutorily exempt from the need for environmental documentation? ☐ Yes ☐ No If "yes", please attach a statement supporting this exemption.
- Is the project categorically exempt from the need for environmental documentation? ☐ Yes ☐ No If "yes", please attach a statement supporting this exemption.
- Has a government agency other than the lead agency certified a "negative declaration" on the project? ☐ Yes ☐ No If "yes", please attach a copy of the certified negative declaration. If "no", please provide sufficient information to allow agencies to make the necessary findings regarding all applicable policies.

Has a government agency other than the lead agency, certified an environmental impact document on the project? ☐ Yes ☐ No If "yes", please attach copies of the certification and the document. also, please provide a summary of the document if it is longer than 10 pages. If "no", please provide sufficient information to allow agencies to make the necessary findings regarding all applicable policies. the certified document must be submitted prior to action on the permit.

BOX 18 (CONTINUED)

Public Access Information

- Does public access to the shoreline or views to the bay presently exist on the site of a property contiguous to the project? ☐ Yes ☐ No

  If "yes", please attach a description of the public access. If "no", explain what is preventing public access to the shoreline.

- Will the project block public views of the bay or adversely impact present or future public access to the shoreline? ☐ Yes ☐ No

Please describe why the project will or will not affect public views or public access to the shoreline. For most large projects, identify: (1) the existing number of people or employees using the site; and (2) the existing number of cars, bicycles, and pedestrians visiting the site and the level of service of all nearby roads leading to the site. Please describe how the project will change these factors. Please describe the impact the project is expected to have on the existing use of the site and on existing public views or physical public access at the site. Please describe the impact the project is expedted to have on the public's use of existing nearby parks, public access, public parking and other recreational areas on the shoreline and the roads leading to the site.

- Do public safety considerations or significant use conflicts make it infeasible to provide new public access to the shoreline on the project site? ☐ Yes ☐ No

If "yes", please attach a description of the public safety considerations or significant use conflicts which make it infeasible to provide public access at the project site and either (1) identify an offsite area where public access to the shoreline is to be provided as part of the project and describe the proposed public access at a specified offsite location, or (2) provide an explanation as to why no offsite public access is proposed as part of the project.

- Summarize the public access to be provided as part of the total project:
- Total amount of public access _____ sq feet
- Length of waterfront public access area _____ feet
- Number of parking spaces for public access area _____
- Area and width reserved for view corridor (s) _____ sq feet

Detailed information about public access to be provided in an attachment: Please describe, in square feet, length and width, when appropriate, the existing and proposed public access areas and improvements, including areas used for decks, piers, pathways, sidewalks, landscaping, parking, and other public features. Please describe how the public access area facilities would be accessible to handicapped persons. Please describe the connections to existing public streets or offsite public pathways. Specify how the public access will be permanently guaranteed (e.g. dedication, deed restriction, etc.).

Disclosure Of Campaign Contributions

The following contributions of $250 or more were made by the applicant or applicant's agent to a BCDC commissioner or commissioner's alternate in the preceding twelve months to support the commissioner's or alternate's campaign for election to a local, state or federal office:

Contribution made to:_____ Contribution made by: _____ Date of contribution: _____

☐ No such contributions have been made

END OF FORM

State of California – The Natural Resources Agency **ARNOLD SCHWARZENEGGER**, *Governor*
DEPARTMENT OF FISH AND GAME
Bay Delta Region
Post Office Box 47
Yountville, California 94599
(707) 944-5520
www.dfg.ca.gov

April 14, 2010

Jeffrey G. Jensen
California Department of Transportation
Environmental Planning
111 Grand Avenue
Oakland, CA 94623

Subject: Amendment of Lake or Streambed Alteration Agreement
Notification No. 1600-2009-0271-R3
Jameson Canyon Creek and Fagan Creek

Dear Mr. Jensen:

The Department of Fish and Game ("Department") has received your request to amend Lake or Streambed Alteration Agreement 1600-2009-0271-3 ("Agreement") for a minor amendment. Your request to amend the Agreement includes:

The temporary placement of a railroad boxcar bridge spanning a small unnamed tributary at post mile 3.2. The abutments will be placed outside of the banks of the creek and the bridge will freespan the creek. The span of the bridge is approximately 37 feet. No trees will be removed to construct this temporary bridge.

Culverts will be constructed, replaced, or extended at the following post mile locations in Napa county: .25, .5, .7, 1.25, 1.35, 1.6, 1.75, 1.9

Culverts will be constructed, replaced, or extended at the following post mile locations in Solano county: 2.15, 2.25, 3.15

The Department hereby agrees to amend the agreement as requested. All other conditions in the Agreement remain in effect unless otherwise noted herein.

Please sign and return one copy of this letter to acknowledge the amendment. Copies of the Agreement and this amendment must be readily available at project worksites and must be presented when requested by a Department representative or agency with inspection authority.

If you have any questions regarding this matter, please contact Melissa Escaron, Staff Environmental Scientist at (707) 339-0334 or mescaron@dfg.ca.gov.

Sincerely,

Scott Wilson

Scott Wilson
Environmental Program Manager
Bay Delta Region

cc: Melissa Escaron
Warden Shelton
Lieutenant Riske
Warden Jones
Lieutenant Mason

ACKNOWLEDGEMENT

I hereby agree to the above-referenced amendment.

Print Name: Jeffrey G. Jensen Date: 4/20/10

Signature: _____

Regional Water Quality Control Board
CWA 401 Certification

California Regional Water Quality Control Board
San Francisco Bay Region

Linda S. Adams
Secretary for Environmental Protection

1515 Clay Street, Suite 1400, Oakland, California 94612
(510) 622-2300 • Fax (510) 622-2460
http://www.waterboards.ca.gov/sanfranciscobay

Arnold Schwarzenegger
Governor

July 30, 2010
Site No. 02-28-C0350 (BT)
CIWQS Place No. 742494

California Department of Transportation
Attn: Ms. Kelly Hirschberg
Kelly_Hirschberg@dot.ca.gov
111 Grand Avenue
Oakland, CA 94612

Subject: Water Quality Certification for the Jameson Canyon State Route 12 Widening Project, unincorporated Napa and Solano Counties

Department Project No.: EA 04-26411

Dear Ms. Hirschberg:

San Francisco Bay Regional Water Quality Control Board (Water Board) staff have reviewed the 401 water quality certification application submitted by the California Department of Transportation (the Department) for the Jameson Canyon Roadway Widening Project (Project). The Department is seeking a permit for the Project from the U.S. Army Corps of Engineers (ACOE) pursuant to Clean Water Act (CWA) Section 404 Nationwide Permit No. 14 (*Maintenance*). You applied to this office under Section 401 of the CWA for water quality certification verifying that the Project does not violate State water quality standards.

Project: The Department proposes to widen an approximately six-mile segment of State Route 12 (SR 12) through Napa and Solano Counties. This segment will be converted from a 2-lane to a 4-lane highway with shoulders. The Project area extends between SR 12 post-miles 0.00 and 3.3 in Napa County, and between post-miles 0.00 and 2.6 in Solano County. Widening will occur primarily on the north side of the existing roadway.

Other Project activities include installation of eleven retaining walls, modifications to the intersections of SR 12 with Kelly, Kirkland Ranch, and Lynch Roads, and construction of a median opening with acceleration and deceleration lanes.

Impacts: Because the Project involves roadway widening and drainage modifications over an approximately 3.3-mile length, there are several, relatively small areas of impact. Refer to

Attachment A, Summary of Impacts, for a detailed inventory of impact locations, area, and linear footage.

The proposed Project will result in permanent impacts to approximately 0.10 acres of jurisdictional wetlands and approximately 1,489 linear feet (0.12 acres) of jurisdictional waters. All permanent impacts are the result of either cut and fill associated with roadway widening, placement of rock slope protection, or culvert extensions.

The proposed Project will result in temporary impacts to approximately 0.30 acres of jurisdictional wetlands and approximately 1,809 linear feet (0.11 acres) of jurisdictional waters due to use of construction access areas. Temporary impacts are defined as all jurisdictional areas not disturbed from more than one construction season and can be re-vegetated post-construction and within the next growing season.

The proposed Project will also result in permanent and temporary impacts to approximately 0.90 (376 linear feet) and 0.81 acres (737 linear feet), respectively, of riparian habitat at ten discrete locations.

Hydromodification impacts: Added impervious areas may result in alterations to existing hydrologic regimes, resulting in erosion and/or changes of sediment transport in receiving waters (hydromodification). Project implementation would result in approximately 28.0 acres of added impervious area and therefore the Department is required to evaluate and mitigate potential hydromodification impacts. As detailed in a Hydromodification Report dated April 2010, and as amended July 2010, the Department evaluated susceptibility for hydromodification impacts to all receiving waters within the Project limits. The Department has identified receiving waters susceptible to hydromodification impacts and has proposed mitigation as appropriate (see Hydromodification Mitigation, below).

Jurisdictional Wetlands and Waters Mitigation: To compensate for permanent impacts to approximately 0.1 acres of jurisdictional wetlands, the Department shall purchase 0.1 acres of seasonal wetland credits at the Elsie Gridley mitigation bank.

Mitigation of temporary impacts to jurisdictional waters, wetland, and riparian habitat shall be achieved on-site by, among other measures, implementation of permanent erosion control using native plants and seed. To address these temporary impacts, the Department has drafted a "Mitigation and Monitoring Plan for On-Site Restoration Activities" that shall be finalized and implemented. The Department shall restore functions and values to all areas of temporary impact (see certification condition no. 8).

To mitigate for 1,489 linear feet (0.12 acres) of permanent fill to jurisdictional waters, and for 0.90 acres (376 linear feet) of permanent impact to riparian habitat, the Department has proposed to partner with the Solano County Resource Conservation District to fund riparian restoration

activities along 4,460 linear feet of the South Fork of Lynch Creek, in unincorporated Solano County. Implementation shall include construction of rock vane and step-pool structures at two locations, construction of two floodplain insets, planting of native trees and shrub vegetation, invasive plant removal, removal of culverts, and restoral of a creek channel segment to its historical alignment.

Roadway Pollutant Mitigation: As mitigation for increased pollutant loads associated with impervious areas, the Department shall provide treatment of stormwater runoff from approximately 32.3 acres of impervious area using 30 compost-amended biofiltration strips and 21 bioswales and biofiltration swales.

The following biofiltration strips and corresponding locations will mitigate water quality impacts resulting from Project implementation:

Strip No.	County	Eastbound/ Westbound	From Post Mile	To Post Mile	Treated Impervious Area (ac)
1	Napa	EB	0.04	0.24	0.86
2	Napa	WB	0.29	0.37	0.31
3	Napa	WB	0.47	0.53	0.27
4	Napa	EB	0.83	0.86	0.03
5	Napa	EB	0.87	0.94	0.17
6	Napa	EB	1.05	1.22	1.00
7	Napa	EB	1.26	1.31	0.40
8	Napa	EB	1.33	1.43	0.60
9	Napa	WB	1.39	1.45	0.40
10	Napa	EB	1.53	1.58	0.26
11	Napa	EB	1.60	1.69	0.43
12	Napa	EB	1.79	1.85	0.27
13	Napa	EB	1.91	2.02	0.54
14	Napa	EB	2.21	2.27	0.28
15	Napa	EB	2.31	2.45	0.65
16	Napa	EB	2.45	2.55	0.47
17	Napa	EB	2.55	2.64	0.44
18	Solano	EB	0.46	0.53	0.40
19	Solano	EB	0.54	0.57	0.16
20	Solano	EB	0.83	0.86	0.16
21	Solano	EB	0.86	0.96	0.47
22	Solano	EB	0.97	0.98	0.10
23	Solano	EB	1.02	1.09	0.29
24	Solano	EB	1.10	1.15	0.23
25	Solano	EB	1.17	1.19	0.13
26	Solano	EB	1.20	1.30	0.48
27	Solano	EB	1.56	1.62	0.25
28	Solano	EB	1.75	1.82	0.32
29	Solano	EB	2.45	2.53	0.36
30	Solano	EB	2.53	2.56	0.13

Strip No.	County	Eastbound/ Westbound	From Post Mile	To Post Mile	Treated Impervious Area (ac)
				total:	10.86

The following biofiltration swales and corresponding locations will mitigate water quality impacts resulting from Project implementation:

Drainage Item No*.	County	Eastbound/ Westbound	From Post Mile	To Post Mile	Treated Impervious Area (ac)
3h	Napa	EB	0.50	0.53	0.82
4g	Napa	WB	0.55	0.56	1.67
9g	Napa	EB	0.72	0.75	1.39
12g*	Napa	EB	0.94	0.96	0.56
13l*	Napa	EB	0.96	0.99	0.39
22i*	Napa	EB	1.24	1.26	1.14
34e	Napa	WB	1.89	1.98	0.94
36h*	Napa	EB	2.05	2.11	1.07
43f	Napa	WB	2.30	2.35	0.84
52a	Napa	WB	2.55	2.62	1.40
56i*	Napa	EB	2.78	2.80	1.28
63e*	Napa	EB	3.12	3.12	0.18
63g*	Napa	EB	3.12	3.13	0.18
4c*	Solano	WB	0.28	0.29	0.29
14g*	Solano	EB	0.98	1.00	0.74
16k	Solano	EB	1.09	1.10	0.27
17c*	Solano	WB	1.17	1.18	0.38
20g	Solano	EB	1.30	1.33	0.47
23i*	Solano	EB	1.46	1.48	0.89
28a*	Solano	EB	1.64	1.66	0.56
37l*	Solano	EB	2.47	2.52	6.00
				total:	21.46
				Napa and Solano Mitigated Impervious Area, strips and swales:	32.3

Hydromodification Mitigation: To mitigate for catchments susceptible to hydromodification impacts, the Department shall implement the following mitigation measures:

Mitigation Measure	Swale No(s).†	Mitigated Impervious Area (ac)
Biofiltration swales	3h, 4g	0.12
Biofiltration swale	9g	0.04
Biofiltration swale with berm for detention	34e	0.32
Biofiltration swale with berm for detention	52a	0.58

* Denotes swale with underdrain
† Refer to *Roadway Pollutant Mitigation*, above, for swale information.

Mitigation Measure	Swale No(s).†	Mitigated Impervious Area (ac)
Underground Detention Pipe with weir at post-mile 2.96	n/a	0.73
Underground Detention Pipe with weir at post mile 0.11	n/a	0.16
Biofiltration swale	4c	0.02
Underground Detention Pipe with weir at post-mile 3.8	n/a	0.38
Underground Detention Pipe with weir at post-mile 0.86	n/a	0.68
Biofiltration swale	36h	0.61
Biofiltration swale with berm for detention, two Underground Detention Pipes with weirs between post-miles 2.30 and 2.35	43f	0.13
Biofiltration swale	14g	0.04
Biofiltration swale with berm for detention	16k	0.07
Biofiltration swale	17c	0.03
Biofiltration swale with berm for detention	20g	0.65
Underground Detention Pipe with weir between post-miles 1.26 and 1.33	n/a	
Biofiltration swale	23i	0.09
Biofiltration swale	28a	0.05
Biofiltration swale with berm for detention	37l	1.55
Underground Detention Pipe with weir between post-miles 2.10 and 2.19	n/a	
	total:	6.3

California Wetlands Portal. It has been determined through regional, state, and national studies that tracking of mitigation/restoration projects must be improved to better assess the performance of these projects, following monitoring periods that last several years. In addition, to effectively carry out the State's No Net Loss Policy for wetlands, the State needs to closely track wetland losses, gains, and mitigation/restoration project success. Therefore, we require that the Department use the California Wetlands Standard Form to provide Project information related to impacts and mitigation/restoration measures (see Condition No. 15 of this Certification). An electronic copy of the form and instructions can be downloaded at: http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml. Project information concerning impacts and mitigation/restoration will be made available at the web link: http://www.californiawetlands.net.

CEQA Compliance: On January 31, 2008, the Department filed a Mitigated Negative Declaration for the Project.

Certification: I hereby issue an order certifying that any discharge from the referenced project will comply with the applicable provisions of 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) of the Clean Water Act, and with other applicable requirements of State law. This discharge is also regulated under State Water Resources Control Board Order No. 2003 - 0017 – DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification" which requires compliance with all conditions of this Water Quality Certification. The following conditions are associated with this certification:

1. The Department shall adhere to the Standard and Regional conditions imposed by Nationwide Permit No. 14 (File No. 2008 00429N) and the 1602 Streambed Alteration Agreement, issued to the Department by the California Department of Fish and Game;

2. Erosion control measures shall be utilized throughout all phases of construction where sediment runoff from disturbed areas threatens to enter waters of the State, regardless of date. At no time shall silt-laden runoff be allowed to enter waters of the State;

3. Caltrans shall not commence Project construction within the riparian corridor if the work and its associated erosion control measures cannot be completed prior to the onset of a 72-hour storm event. 72-hour weather forecasts from the National Weather Service shall be consulted prior to beginning any Project phase;

4. The Department shall install thirty biofiltration strips and twenty-one biofiltration swales to treat stormwater contaminants from no less than 32.3 acres of impervious area. Swale and strips shall be installed and consistent with the information summarized above in "Roadway Pollutant Mitigation;"

5. No later than sixty days from issuance of this certification, the Department shall submit typical biofiltration swale cross-sections and soil mix details for all proposed swales. Project construction shall not commence until the cross-sections and soil mix have been found acceptable by Water Board staff;

6. The Department shall mitigate potential hydromodification impacts by implementation of the hydromodification measures inventoried above in the section, *Hydromodification Mitigation*;

7. Certification is conditioned upon submission to the Water Board of a Bill of Sale of 0.1 acres of seasonal freshwater wetland mitigation credits at the Elsie Gridley Mitigation Bank, to be submitted to the Water Board prior to Project construction;

8. The Department shall submit a final Mitigation and Monitoring Plan for On-Site Restoration Activities (On-Site Plan), to mitigate for temporary impacts to 0.30 acres of jurisdictional wetlands, 1,809 linear feet (0.11 acres) of jurisdictional waters, and 0.81 acres of riparian

habitat. The On-Site Plan shall be found acceptable by Water Board staff prior to initiation of Project construction. The On-Site Plan shall include:

a. A mitigation goal to restore all areas of temporary impact (noted above) to pre-construction habitat function and values;
b. A plan to provide permanent erosion control to all temporarily impacted areas, which includes native grass and forb seed, fertilizer, compost, and mulch;
c. A plan to provide 1.07 acres of on-site native riparian plantings, using a planting palette that includes, among other native plant species, hoary manzanita, toyon, big-leaf maple, basket rush, coast live oak, California sycamore and laurel, valley oak, white alder, and willow;
d. A commitment to conduct detailed pre-construction site assessments of each area where impacts to jurisdictional habitat are anticipated. The site assessments shall include documentation of the species present and percent cover of the herbaceous, shrub and tree canopy layers using the point-intercept method. The assessments shall be conducted before construction activities in these areas commence. Results of the assessments will be included in the Year 0 report to be submitted to the Water Board;
e. A planting plan and success criteria for willows planted within rock-slope protection. Success criteria for these willows shall include 35 and 70 percent cover after three and five years, respectively;
f. Success criteria for riparian trees, excluding willows planted in rock-slope protection. Success criteria for trees shall include 90, 80, and 70 percent survival after the 3rd, 5th, and 10th full growing seasons after planting;
g. Success criteria for shrubs shall include 75 percent survival, three years after planting, and 80 percent cover, of the original canopy cover, five full growing seasons after planting;
h. Success criteria for wetland plantings. Success criteria for wetland plantings shall include 51 and 80 percent total cover after the 2nd and 5th years, respectively;
i. A plan to stockpile and reuse all topsoil in areas of temporary impact;
j. An invasive plant control plan;
k. A plan to report percent cover, health, vigor, and mortality within each mitigation area;
l. A proposal to submit site maps with photo-documentation points. Prior to implementing the Project, the Department shall photographically document the condition of the Project site. Following installation of the mitigation, the immediate post-construction condition of the site shall be photo-documented and a report shall be submitted to the Water Board including the pre-construction photographs, the post-construction photographs, and the map with the locations of the photo-documentation points clearly marked (Year 0 report). The same photo-documentation points shall be used in future monitoring reports; and
m. A plan to submit, at a minimum, years 0, 1, 3, 5, 7, and 10, monitoring reports to the Water Board.

9. All temporarily disturbed areas shall be restored to pre-construction or enhanced conditions, using only native plant species, within the first growing season following cessation of construction activities in those areas;

10. The Department shall fund and implement a riparian restoration project in partnership with the Solano County Resource Conservation District (SCRCD). The restoration project shall be implemented in the South Fork of Lynch Creek or other location within the Benicia Hydraulic Sub Area. The riparian restoration project shall include the following:

    - Implementation of a restoration plan that shall restore riparian habitat and functions along no less than 4,400 linear feet of creek and be protected and managed in perpetuity;

    - A final off-site Mitigation and Monitoring Plan (Off-site MMP) shall be submitted and found acceptable to the Water Board Executive Officer no later than March 31, 2011. The accepted Off-site MMP shall be implemented. The Off-site MMP shall include:

        i. A detailed plan for restoration of riparian habitat and functions along 4,400 linear feet of creek, including:
            - Construction of rock vane and step-pool structures at two locations;
            - Construction of two floodplain insets;
            - Planting of native tree and shrub vegetation, with planting to be done between October 15 and March 31;
            - Invasive species management plan;
            - Establishment of a riparian buffer area;
            - A grazing management plan that is implemented in the context of a spatially-defined riparian buffer area;
            - An adaptive management plan;
            - Culvert removal; and
            - Restoration of the historical channel alignment at selected locations.

        ii. A monitoring plan. The monitoring plan shall include:
            - Performance standards and success criteria for the proposed work;
            - A proposal to submit annual monitoring reports for no less than 10 years. The Department may limit submittal of annual monitoring reports to years 0, 1, 2, 3, 5, 7, and 10; and
            - Site maps with photo-documentation points. Prior to implementing the Project, the Department shall photographically document the condition of the Project site. Following installation of the mitigation, the immediate post-construction condition of the site shall be photo-

documented and a report shall be submitted to the Water Board including the pre-construction photographs, the post-construction photographs, and the map with the locations of the photo-documentation points clearly marked (Year 0 report).

11. Any planting established as part of a Project on- or off-site mitigation plan shall not be considered successfully established until supplemental irrigation systems have been terminated for two or more full growing seasons;

12. All on- and off-site mitigation shall not be considered to satisfy the conditions of this certification until final mitigation success reports have been submitted to the Water Board and found acceptable by the Executive Officer;

13. Construction of all on- and off-site mitigation shall be completed prior to completion of Project construction. Failure to meet this deadline shall result in violation of this certification and the Department shall provide additional mitigation, subject to the acceptance of the Executive Officer;

14. Project construction within waters of the State shall occur only between June 15 and October 15. Regardless of date, Project construction within waters of the State is prohibited during rain events capable of mobilizing sediment;

15. Not later than 30 days prior to the beginning of construction of any Project component, the Department shall submit, acceptable to the Executive Officer, a final SWPPP to address the Project's expected construction stage impacts, prepared pursuant to the State Water Resources Control Board Water Quality Order No. 99-06-DWQ, the NPDES Statewide Permit for Storm Water Discharges From the State of California City of Transportation Properties, Facilities, and Activities;

16. Not later than 20 days prior to any dewatering and diversion activities, the Department shall submit a dewatering and/or diversion plan, subject to the acceptance of Water Board staff. The plan shall present a time schedule for dewatering activities and include a commitment to have all diversion structures removed from waters of the State, including final stabilization and restoration in areas where diversion occurred, prior to October 15;

17. This Certification applies to the Project as proposed in the application materials. Please be advised that failure to implement the Project as proposed is a violation of this water quality certification;

18. The Department shall maintain a copy of this water quality certification at the Project site so as to be available at all times to site operating personnel. It is the responsibility of the

Department to assure that all personnel (employees, contractors, and subcontractors) are adequately informed and trained regarding the conditions of this certification;

19. The Department is required to use the California Wetlands Standard Form to provide project information describing impacts and mitigation/restoration measures within 60 days from the date of this certification. An electronic copy of the form can be downloaded at: http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml. The completed California Wetlands form shall be submitted electronically to habitatdata@waterboards.ca.gov or shall be submitted as a hard copy to both: 1) The Water Board (see the address on the letterhead), to the attention of California Wetlands Portal; and 2) San Francisco Estuary Institute, 7770 Pardee Lane, Oakland, CA 94621-1424, to the attention of Mike May;

20. This certification does not allow for the take, or incidental take, of any special status species. The City shall use the appropriate protocols, as approved by the California Department of Fish and Game and the U.S. Fish and Wildlife Service, to ensure that Project activities do not impact the Beneficial Use of the Preservation of Rare and Endangered Species;

21. No fueling, cleaning, or maintenance of vehicles or equipment shall take place within any areas where an accidental discharge to waters of the State may occur; construction materials and heavy equipment must be stored outside waters of the State;

22. Except as expressly allowed in this Certification, the discharge, or creation of the potential for discharge, of any soil materials including fresh concrete, cement, silts, clay, sand and other organic materials to waters of the State is prohibited;

23. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the California Water Code (CWC) and Section 3867 of Title 23 of the California Code of Regulations(23 CCR);

24. This certification action does not apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license, unless the pertinent certification application was filed pursuant to California Code of Regulations (CCR) Title 23, Subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought; and,

25. Certification is conditioned upon total payment of the full fee required in State regulations (23 CCR Section 3833). Water Board staff received full payment of $1,961.00 on July 20, 2009.

We anticipate your cooperation in implementing these conditions. However, please be advised that any violation of water quality certification conditions is a violation of State law and subject to

administrative civil liability pursuant to California Water Code (CWC) section 13350. Failure to respond, inadequate response, late response, or failure to meet any condition of this certification may subject you to civil liability imposed by the Water Board to a maximum of $5,000 per day per violation or $10 for each gallon of waste discharged in violation of this certification.

Conditions 5, 7, 8, 10, 15, 16, and 19 are requirements for information or reports. Any requirement for a report made as a condition to this action is a formal requirement pursuant to CWC section 13267, and failure or refusal to provide, or falsification of such required report is subject to civil liability as described in CWC section 13268.

Should new information come to our attention that indicates a water quality problem with this project, the Water Board may issue Waste Discharge Requirements pursuant to 23 CCR Section 3857.

If you have any questions, please contact Brendan Thompson at (510) 622-2506, or via e-mail to BThompson@waterboards.ca.gov.

Sincerely,

Bruce H. Wolfe
Executive Officer

cc (via e-mail):

Mr. Bill Orme SWRCB-DWQ
Mr. Hal Durio, USACE
Ms. Jane Hicks, USACE
Ms. Laurie Monarres, USACE
Mr. Jerry Roe, USFWS
Mr. Dale Bowyer, Water Board
Mr. Jason Brush, USEPA
Mr. Hardeep Takhar, Caltrans
Mr. Cyrus Vafai, Caltrans
Ms. Andrea Meier, USACE

Attachment A
Summary of Impacts

Summary of Impacts to Waters of the U.S. and Waters of the State (Including Wetlands)

Based on 100% Designs for Napa County and 95% Designs for Solano County

			Permanent Impacts						Temporary Impacts					
Feature Name	Map Number[1]	Stationing	Reason for Impact	Type of Material Discharged	Area (ft^2)	Area (ac)	Volume (ft^3)	Length (lf)[11]	Reason for Impact	Type of Material Discharged	Area (ft^2)	Area (ac)	Volume (ft^3)	Length (lf)[11]
Waters of the U.S. (Other Waters)[10]														
Point 6[4]	2	128	Cut/fill	Roadway fill	87	0.002	87	49	Work area	Equipment	57	0.0013	57	22
AW19[9]	6 & 7	248	Culvert	Culvert	74	0.0017	296	6	Work area	Equipment	4	0.0001	17	0
AW9[2]	6 & 7	225	RSP	RSP	61	0.0014	183	39	Work area	Equipment	379	0.0087	1,137	21
CT13[6]	6 & 7	246+50	Culvert	Culvert	388	0.0089	3,489	61	Work area	Equipment	370	0.0085	3,332	62
CT14[6]	6 & 7	246+50	Culvert	Culvert	139	0.0032	1,255	19	Work area	Equipment	179	0.0041	1,607	17
CT15 (Cattle Creek)[3]	10	328	Culvert and RSP	Culvert and RSP	362	0.0083	723	52	Work area	Equipment	305	0.007	610	43
CT2[4]	5	211	RSP	RSP	244	0.0056	244	30	Work area	Equipment	205	0.0047	205	11
CT21 (Fagan Creek)[3]	4 & 5	190	Culvert and RSP	Culvert and RSP	645	0.0148	1,289	58	Work area	Equipment	13	0.0003	26	1
ies2[2]	8	285	Culvert	Culvert	479	0.011	1,437	96	-	-	-	-	-	-
ies4[2]	11	160	-	-	-	-	-	-	Work area	Equipment	274	0.0063	823	29
Point 16[4]	6	225	Culvert	Culvert	152	0.0035	152	29	Work area	Equipment	105	0.0024	105	15
Point 23[3]	6	227	Culvert	Culvert	301	0.0069	601	89	Work area	Equipment	30	0.0007	61	6
Point 30[2]	8	285	RSP	RSP	187	0.0043	562	29	Work area	Equipment	9	0.0002	26	1
Point 33[7]	11 & 12	376+50	Culvert and RSP	Culvert and RSP	279	0.0064	139	74	-	-	-	-	-	-
Point 59[2]	5	212	RSP and cut/fill	RSP and roadway fill	227	0.0052	680	73	Work area	Equipment	17	0.0004	52	6
Point 64[3]	9	310	Culvert	Culvert	122	0.0028	244	16	Two work areas	Equipment	854	0.0196	1,708	86
Point 74 (Cattle Creek)[2]	10	328	RSP	RSP	35	0.0008	105	2	Work area	Equipment	87	0.002	261	5
Point 75[8]	10	335+50	Culvert and RSP	Culvert, RSP and boulders	601	0.0138	7,815	183	Work area	Equipment	39	0.0009	510	17
Point 76[5]	10	343	Culvert and RSP	Culvert, RSP and boulders	492	0.0113	1,969	148	Work area	Equipment	105	0.0024	418	27
s2 (Fagan Creek)[2]	4 & 5	190	RSP	RSP	240	0.0055	719	29	Work area	Equipment	392	0.009	1,176	48
Sub-Total	-	-	-	-	**5,114**	**0.1174**	**21,989**	**1,082**	-	-	**3,424**	**0.0786**	**12,131**	**417**
Waters of the State (Other Waters)														
CT19[9]	11	369+50	-	-	-	-	-	-	Work area	Equipment	4	0.0001	2	6
Point 1[9]	1	93 to 103	-	-	-	-	-	-	Bioswale	Bioswale	884	0.0203	442	950
Point 11&26[9]	4	173	Culvert	Culvert	91	0.0021	46	37	Work area	Equipment	13	0.0003	7	5
Point 12[9]	4	180+50 to 187+50	Cut/fill	Roadway fill	100	0.0023	50	331	Work area	Equipment	100	0.0023	50	336
Point 27[9]	3 & 4	159+50	Cut/fill	Roadway fill	39	0.0009	20	27	Work area	Equipment	122	0.0028	61	91
Point 4[9]	1	104+50	RSP	RSP	39	0.0009	20	12	Work area	Equipment	22	0.0005	11	4
Sub-Total	-	-	-	-	**270**	**0.0062**	**135**	**407**	-	-	**1,146**	**0.0263**	**573**	**1,392**
Waters of the U.S. (Wetlands)[10]														
Wet Meadow1[2]	8	286 to 289	Cut/fill	Roadway fill	-	-	-	-	Work area	Equipment	13,068	0.30	39,204	-
Point 6[4]	2	127+50	Culvert and roadway	Culvert and roadway fill	436	0.01	436	-	-	-	-	-	-	-
Point 48[3]	3	154	Cut/fill	Roadway fill	3,062	0.0703	6,125	-	-	-	-	-	-	-
Point 5[2]	2	117+50 to 119	Cut/fill	Roadway fill	540	0.0124	1,620	-	-	-	-	-	-	-
Point 53[4]	2	118+50	-	-	-	-	-	-	Work area	Equipment	17	0.0004	17	-
Point 7[4]	2	127+50	-	-	-	-	-	-	Work area	Equipment	9	0.0002	9	-
Point 8[2]	2	118+50	Culvert and RSP	Culvert and RSP	192	0.0044	575	-	-	-	-	-	-	-
Point 27[2]	3 & 4	163	Cut/fill	Roadway fill	144	0.0033	431	-	-	-	-	-	-	-
Point 83[2]	12	390	Culvert and RSP	Culvert and RSP	78	0.0018	235	-	Work area	Equipment	292	0.0067	876	-
Sub-Total	-	-	-	-	**4,452**	**0.1022**	**9,422**	**-**	-	-	**13,386**	**0.3073**	**40,106**	**-**
Totals					**9,836**	**0.2258**	**31,546**	**-**			**17,955**	**0.4122**	**52,810**	**-**

April 13, 2010

Table is based on the Impacts to Waters of the US and Waters of the State dated March 22, 2010.

ac = acres; ft^2 = square feet; ft^3 = cubic feet; lf = linear feet

[1] Map Number refers to the Impacts to Waters of the US and Waters of the State maps in Attachment C

[2] The volume of Wet Meadow1 was calculated with an estimated depth of three feet.

[3] Volume was calculated with an estimated depth of two feet.

[4] Volume was calculated with an estimated depth of one foot.

[5] Volume was calculated with an estimated depth of four feet.

[6] Volume was calculated with an estimated depth of nine feet

[7] Volume was calculated with an estimated depth of half a foot.

[8] Volume was calculated with an estimated depth of thirteen feet.

[9] Ditches were assumed to have a depth of half a foot.

[10] The acres of impacts to waters of the U.S. were received from Hal Durio / ACOE March 11, 2010.

[11] Linear feet of impacts are derived using the direction of flow

United States Fish and Wildlife Service
Biological Opinion

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

IN REPLY REFER TO:
81420-2008-F-0827

JAN 31 2008

Mr. James Richards
Attn: Christopher States
California Department Transportation
P.O. Box 23660
Oakland, California 94623-0660

Subject: Biological Opinion for the State Route 12/State Route 29 Interchange Improvement and State Route 12 Jameson Canyon Road Widening Projects, Solano and Napa Counties, California (Caltrans EA 04-287900 and 04-264100) on the Threatened California Red-legged Frog

Dear Mr. Richards:

This is in response to your July 31, 2007, request for formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed State Route 12/State Route 29 Interchange Improvement and State Route 12 Jameson Canyon Road Widening Projects, Solano and Napa Counties, California. Your request was received in this office on August 31, 2007, and included the request for formal consultation on the threatened California red-legged frog (*Rana aurora draytonii*). This document represents the Service's biological opinion on the effects of the proposed action on this listed species. This document has been prepared in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*)(Act).

Protocol level surveys have not been completed in the action area due to scheduling issues and access problems for the endangered showy Indian clover (*Trifolium amoenum*), endangered Contra Costa goldfields (*Lasthenia conjugans*), endangered Conservancy fairy shrimp (*Branchinecta conservatio*), endangered vernal pool tadpole shrimp (*Lepidurus packardii*), and the threatened vernal pool fairy shrimp (*Branchinecta lynchi*). Suitable habitat is located within the action area for all of these listed species and there are records of them from the vicinity of the project. At this time, based on the preliminary and incomplete information provided to the Service, we concur that the proposed project may affect, but is not likely to adversely affect these five listed species. At a meeting with the Service on November 5, 2007, and in a letter and electronic mail message to the Service dated January 31, 2008, Caltrans stated that they will complete protocol level surveys within the action area for all of these listed species prior to

groundbreaking and reinitiate consultation pursuant to section 7 if any or all of these taxa are found, with the understanding that the presence of any or all of these plants or animals could lead to additional conservation measures that will be determined in conjunction with the Service, project delays, project redesign, or other significant effects on the Jameson Canyon project.

This biological opinion is based on: (1) an August 2007 Biological Assessment; (2) additional project information provided by the California Department of Transportation (Caltrans) on November 5, 2007; (3) a December 7, 2007 meeting between the Service, the Solano Transportation Authority, Napa County Transportation and Planning Agency, and Gray-Bowen; (4) December 13, 2007, letter from Caltrans regarding the phasing of the compensation for the proposed project; (5) a letter from Caltrans to the Service regarding the draft biological opinion that was dated December 245, 2007, that was received on December 31, 2007; (6) a meeting between Caltrans, the Service, and Terry Bowen and Bill Gray of Gray-Bowen on January 7, 2008; (7) a telephone discussion between the Service and Caltrans on January 28, 2008; (8) a telephone discussion between the Service and Caltrans on January 30, 2008; (9) a letter from Caltrans that was dated January 31, 2008, and was received by us on January 31, 2008, that statedthey are willing to accept the biological opinion; (10) a January 31, 2008, electronic mail message from Caltrans to the Service that requested issuance of the draft biological opinion; (11) miscellaneous correspondence and electronic mail concerning the proposed action between the Service and Caltrans, Solano Transportation Authority, Napa County Transportation and Planning Agency, and Gray-Bowen; and (12) other information available to the Service.

Consultation History

August 31, 2007	The Service received a letter dated July 31, 2007, from Caltrans requesting formal consultation for the proposed State Route 12/State Route 29 Interchange Improvement and State Route 12 Jameson Canyon Road Widening Projects, Solano and Napa Counties, California. The request was accompanied by a Biological Assessment dated August 2007. In the Biological Assessment, Caltrans determined that the proposed project would have no effect on the endangered Contra Costa goldfields and the endangered showy Indian clover, is not likely to adversely affect the endangered Conservancy fairy shrimp and the endangered vernal pool tadpole shrimp and, may adversely affect the threatened vernal pool fairy shrimp and the threatened California red-legged frog.
September 27, 2007	The Service sent Caltrans a request for additional information to adequately review the determination of the effects of the project on listed species (Service File: 1-1-07-I-1688). The letter included concerns associated with the Caltrans approach given that they did not have access to much of the proposed action area in order to submit an adequate biological assessment of the affects on listed species.

November 5, 2007	The Service met with Caltrans, Solano Transportation Authority, Napa County Transportation and Planning Agency, and Gray-Bowen to discuss the proposed project. It was agreed that they will complete protocol level surveys within the action area for Contra Costa goldfields, showy indian clover, Conservancy fairy shrimp, vernal pool fairy shrimp and vernal pool tadpole shrimp in the action area prior to groundbreaking and reinitiate consultation pursuant to section 7 if any or all of these taxa are found, with the understanding that the presence of any or all of these plants or animals could lead to additional conservation measures that will be determined in conjunction with the Service, project delays, project redesign, or other significant effects on the Jameson Canyon project. Caltrans also provide their written response to the September 27, 2007 request for additional information. In their response, Caltrans initiated formal consultation on the vernal pool tadpole shrimp but did not provide a revised assessment of the effects to this endangered species.
November 21, 2007	The Service visited the action area to review remaining project issues with Caltrans. The Service was given the Supplemental Response to Comments for the Completion of Consultation for the State Route 12/State Route 29 Interchange Improvement and State Route 12 Jameson Canyon Road Widening Projects from Caltrans. The supplemental response letter was dated November 19, 2007.
December 3, 2007	The Service received a revised project description from Caltrans via an electronic mail message.
December 7, 2007	The Service met with the Solano Transportation Authority, Napa County Transportation and Planning Agency, and Gray-Bowen to discuss local issues.
December 14, 2007	The Service received a letter from Caltrans dated December 13, 2007, via an electronic mail message phasing of compensation for the two proposed projects.
December 14, 2007	The Service sent a draft of the biological opinion for the proposed project to Caltrans, Solano Transportation Authority, Napa County Transportation and Planning Agency, and Gray-Bowen (Service File: 81420-2008-F-0530).
December 31, 2007	The Service received a letter from Caltrans regarding the draft biological opinion dated December 24, 2007.

January 7, 2008	The Service, Caltrans, and Terry Bowen and Bill Gray of Gray-Bowen had a meeting regarding the Jameson Project.
January 28, 2008	The Service and Caltrans discussed the proposed project on the telephone.
January 30, 2008	The Service and Caltrans discussed the proposed project on the telephone.
January 31, 2008	The Service received a letter from Caltrans dated January 31, 2008, that stated they are willing to accept the draft biological opinion.
January 31, 2008	The Service received an electronic mail message from Caltrans requesting the Service issue the draft biological opinion.

BIOLOGICAL OPINION

Description of the Proposed Action

Caltrans proposes to improve the State Route 12 and State Route 29 interchange in Napa County and to improve safety and reduce traffic congestion on State Route 12 between the intersections with State Route 29 and Interstate 80 (Jameson Canyon Road). Caltrans proposes to minimize head-on accidents in the project area east of the interchange by constructing a concrete median barrier.

Caltrans advanced the level of design for the State Route 12 Jameson Canyon Road Widening and State Route 12/29 Interchange Improvement Project because it is part of the Corridor Mobility Improvement Account (CMIA). To qualify for these funds, Caltrans advanced the design to include layout sheets and typical cross-sections as well as specific designs for horizontal alignments, profiles, super elevations, and roadway cross sections. Caltrans is in the process of developing the hydraulic, storm water, and utility design. Caltrans will be required to reinitiate consultation on these projects when and if there are changes to the project description.

General Scope of Work

The projects discussed in this Biological Opinion consist of a State Route 12/ State Route 29 Interchange Improvement Project component and a State Route 12 Jameson Canyon Road Widening project component. The combined projects are located along State Route 12 in Napa and Solano Counties from the State Route 12/ State Route 29 Interchange in Napa County to Red Top Road in Solano County, approximately 1,000 ft west of Interstate 80. The proposed project is planned in three phases; construction of eastbound lanes primarily south of the existing Jameson Canyon Road, horizontal and vertical curve corrections to westbound Jameson Canyon Road, and construction of an interchange at State Route 12 and State Route 29.

Construction Schedule and Funding

The proposed project is planned in three phases. Federal, state and local funding is currently available for the first phase of the project. Construction for the first phase is anticipated to begin in October 2010 and be completed in July 2013. Funding sources for the ultimate project are contingent upon local governments approving tax measures to fund roadway projects.

Construction Activities

The key elements of the proposed project are summarized as follows:

1. Construction of two additional lanes for eastbound traffic along the Jameson Canyon portion of the project.

2. Vertical and horizontal corrections of the existing westbound lanes of traffic.

3. Improving the State Route 12/ State Route 29 interchange. Effects of the interchange have been identified using the Single Point design.

4. Construction of a median barrier with two traffic breaks and design features for wildlife crossings.

5. Culvert modification to accommodate some passage of federally threatened wildlife and other non-listed species.

6. Construction of cut and mechanically stabilized earthen (MSE) walls.

The project would create about 86.5 acres of new pavement. Earth fill is estimated to be approximately 510,264 cubic yards. Roadway excavation is estimated to be 433,187 cubic yards. Eighty three acres of partial right-of-way acquisition is required at an estimated cost of $24,381,000.

State Route 12/ State Route 29 Interchange Improvement

The proposed State Route 12/ State Route 29 Interchange Improvement Project site spans 1.3 mile (mi) of State Route 29 from Napa Post Mile (PM) 4.2 to Napa PM 5.5. Also included in the State Route 12/ State Route 29 Interchange Improvement Project are areas west of the interchange along Airport Boulevard, including an area north of Airport Boulevard along Devlin Road, and areas east of the interchange along State Route 12, including an area north of State Route 12 along North Kelly Road.

Caltrans has quantified potential effects associated with the "Single Point" interchange upgrade design alternative. This design alternative considers the maximum potential effect to federally listed species.

With the Single Point design, all interchange approach ramps would be positioned on either fill or bridge structures with State Route 12 elevated over State Route 29, with a possible two-span bridge over State Route 29, and would establish an auxiliary lane on southbound State Route 29 between the State Route 29/ State Route 221 and State Route 12/ State Route 29 interchanges. State Route 12 and Airport Boulevard will be realigned through the intersection with State Route 29, and the roadway profiles for Devlin and Kelly Roads may be raised. State Route 12 and State Route 29 would have minimum 4.9 foot wide inside shoulders and 9.8 foot wide outside shoulders. State Route 29 would retain its four existing through lanes, two in each direction. An approximately 29.5 foot retaining wall will be used in fill areas. During construction, a detour for east-west traffic on State Route 12 and Airport Boulevard will be required south of the existing intersection.

The ramps in the south quadrants would have one exit lane splitting off into two lanes and two entrance lanes merging into one lane. At the northwest location, two lanes (including one auxiliary lane) exit from southbound State Route 29, splitting off into four lanes. At the end of the off-ramp, one lane turns west onto Airport Blvd while the other three lanes turn east onto State Route 12, merging to two lanes east of Kelly Road. At the northeast location, two lanes exit from westbound State Route 12 to northbound State Route 29.

Widening of State Route 12 and State Route 29 will require relocation of utilities, specifically electricity, gas, telephone, water lines, an aqueduct, and a control cable. Caltrans is in the process of developing the utility design.

State Route 12 Jameson Canyon Road Widening

The State Route 12 Jameson Canyon Road Widening project site extends 5.9 miles along State Route 12 from Napa PM 0.25 to Solano Realignment (R) PM 2.6, just east of Red Top Road.

East of Kelly Road, the proposed State Route 12 road widening would expand the existing two-lane highway to a four-lane conventional highway. The westbound lanes will be primarily constructed on the existing alignment, and two additional lanes will be added for the eastbound direction. The westbound and eastbound lanes will be designed to highway standards, with a design speed of 55.9 miles per hour (mph). All travel lanes will be 11.8 ft wide. The median width will also be 11.8 feet. The concrete median barrier will be approximately 3.0 feet high.

Two median openings with acceleration and deceleration lanes are proposed, one in Napa County and one in Solano County. For Napa County the median opening will be located at the intersection of Lynch Road and State Route 12. The other median break will be approximately 2,625 feet east of the Solano/Napa County line. The median breaks will facilitate "U" turn

movements for the traffic along State Route 12. All inside shoulders throughout the projects will have a minimum width of 4.9 feet. For the westbound direction, the outside shoulders will be 7.9 feet. The eastbound direction will have 9.8 ft shoulders.

Caltrans is incorporating standard wildlife crossing design features into the median barrier. This includes a "concrete barrier wildlife passageway (Type S)" approximately every 300 feet and a "concrete barrier wildlife passageway (Type M) approximately every 1200 feet. These design features will allow small mammals or amphibians to cross through the concrete median barrier (Type S) or medium size animals, such as raccoons (Type M). The Type S opening for concrete barrier wildlife passageway is a 6 inch radius, and the Type M opening is approximately two-feet.

At several locations within the new eastbound roadway retaining walls will be constructed to reduce the overall footprint and to minimize disturbance of riparian areas. Two types of retaining walls will be constructed; cut walls (also known as soil nail walls) and fill or MSE walls. Eight retaining walls are proposed for the State Route 12 widening project; six will be MSE walls and two will be cut walls. In Napa County retaining walls will be constructed along the north side of State Route 12 near the interchange PM 0.00 to 0.24 and from PM 2.16 to 2.21. MSE walls are proposed for fill areas in Solano County on the south side of State Route 12 from PM 1.06 to 1.11, from PM 1.24 to 1.47, from PM 1.58 to 1.86, from PM 2.04 to 2.22, and from PM 2.28 to 2.37. Cut walls are proposed for areas in Solano County north of State Route 12 from PM 0.50 to 0.58 and from PM 1.27 to 1.65, with a stepped retaining wall with cuts of approximately 85.3 feet from PM 1.5 to 1.56. Each step wall will have a maximum height of approximately 49.2 feet and a maximum length of 0.43 miles.

There will be minor modifications to the existing intersections of State Route 12 and Kelly, Kirkland Ranch, and Lynch Roads. Improvements to the intersection at Red Top Road are not part of this project. These modifications are included in the scope of the Red Top Truck Climbing Lane Project, Service file # 1-1-07-F-0073.

A new right turn pocket will be constructed in the westbound direction of State Route 12 at the intersection of Kelly Road. In the eastbound direction, a right turn lane will be added at the intersection of Kelly Road that will conform to the design of the State Route 12/ State Route 29 Interchange. No profile change is proposed for this intersection.

At the intersection of Kirkland Ranch Road, a right turn pocket will be constructed in the east and westbound direction of State Route 12. A possible profile adjustment for Kirkland Ranch Road to State Route 12 is also proposed.

At the intersection of Lynch Road and State Route 12, a left turn pocket is proposed for left turn movements to both east and westbound directions. One right turn movement pocket is proposed into Lynch Road from State Route 12. A possible profile adjustment is also proposed for this

intersection. A median opening for "U" turn movements is within the proximity of this intersection area.

Driveways at stations 156+80 and 180 +60 will be relocated to accommodate proposed new structural retaining walls, however no left turn pockets will be accommodated for any private property access.

Culverts

Caltrans proposes to upsize nine culverts to 36 inches. Table 1 lists the culverts that Caltrans will modify to improve California red-legged frog passage. The table includes the station, approximate post mile, existing diameter, proposed diameter, and culvert type.

Table 1: Proposed culvert modifications for California red-legged frog passage

W→E number*	**Station**	**Approximate Post Mile**	**Existing diameter (inches)**	**Proposed diameter (inches)**	**Type**
1	31+60	Nap 29 5.57	30	36	RCB/CMP
3	17+60	Nap 29 4.56	24	36	RCP/APC
6	114+00	Nap 12 0.94	18	36	CMPA
7	126+40	Nap 12 1.71	24/18	36	CMP
11	142+60	Nap 12 2.69	24	36	CMP
13	154+40	Sol 12 0.35	18	36	CMP
14	158+40	Sol 12 0.54	18	36	CMP
17	184+40	Sol 12 2.14		New 36	APC
18	191+00	Sol 12 2.42		New 36	APC

CMP = corrugated steel pipe; CMPA = corrugated metal pipe arch; RCB = reinforced concrete box; RCP = reinforced concrete pipe; APC = alternative pipe culvert
*Identifies the locations of the culverts from west to east along the project area in the Appendix B maps

The increased size of these nine culverts along with the existing large culverts (Table 2) will improve the crossing potential for California red-legged frog across State Route 12 and State Route 29.

Table 2: Existing large culverts along Jameson Canyon and 12/29 interchange area. Caltrans will extend these culverts to accommodate the two-lane highway.

W→E number*	Station	Approximate Post Mile	Size	Type
2	24+20	Nap 29 5.02	8-foot	RCB
4	107+60	Nap 12 0.53	3-foot	CMPA
5	110+40	Nap 12 0.69	3-foot	RCB
8	129+40	Nap 12 1.91	6-foot	RCB
9	136+00	Nap 12 2.32	4-foot	RCB
10	140+20	Nap 12 2.55	4.8-foot	CMPA
12	146+60	Nap 12 2.94	5x10-foot	RCB
15	166+00	Sol 12 1.02	4-foot	RCB
16	171+40	Sol 12 1.31	6-foot	RCB

*see Table 1

Caltrans proposed culverts based on their proximity to wetland or riparian areas. Caltrans excluded culverts based on particular design features that limit the suitability of culverts for passage, such as, retaining walls, or steep slopes. The maximum distance between two of these large culverts is approximately 1500 feet.

A temporary drainage bypass system may be used to divert flows around work areas in Sheehy Creek, Fagan Creek, Jameson Canyon Creek, and associated tributaries. The use, installation, and removal of the temporary drainage bypass system will be restricted to the period from June 15 to October 15. If dewatering is required during summer construction, Caltrans will establish a coffer dam using clean gravel or sand bags and pump water to the downstream side of the construction (Caltrans 2007b).

According to the Caltrans' Initial Study with Proposed Mitigated Negative Declaration (CEQA) and Environmental Assessment (NEPA) prepared for the proposed projects, the planed Bay Area Ridge Trail will cross the action area but will not be part of the current action (Caltrans 2007c). A large State Route 12 undercrossing designed to accommodate hikers, mountain bicyclists, equestrians, and outdoor enthusiasts is also likely to be important for California red-legged frog and other wildlife passage depending on the location.

Staging Locations

The temporary construction easement, located between the cut and fill lines and the project footprint, can be used for staging areas and access roads. While this entire area will likely not be utilized, identifying this large area allows for maximum flexibility for the contractor. Caltrans surveyed the potential effect area beyond the cut and fill line that included temporary effects along the highway that the contractor may use for equipment storage or staging. However, the contractor may have specific locations for off-site facilities such as storage areas or disposal that

they used for other projects and may utilize for this project as well. As stated in the Caltrans Standard Specification (May 2006), before disposing of materials outside the State right of way, the Contractor shall furnish satisfactory evidence that the Contractor has entered into agreements with the property owner of the site involved and has obtained the permits, licenses and clearances.

Staging locations for both projects will be used for temporary storage of heavy construction equipment and various construction materials such as shotcrete (a mixture of concrete, fine aggregate, and water blown pneumatically through a hose), equipment maintenance shops, stockpile areas, and field offices. If necessary, an access road linking staging areas and the work area will be cleared, graded, and re-established using equipment such as excavators, bobcats, and/or bulldozers.

Roadbed

Roadway excavation will be conducted using equipment such as a front-end loader and motor grader to excavate the area to be paved to the required grade. Excavated material may be hauled off-site using dump trucks. The location and type of excavated material disposal will be determined by the contractor. The contractor will be required to obtain any necessary environmental clearances associated with the disposal or reuse of these materials. Once the roadbed has been excavated, the soil will be rolled and vibrated with a sheepsfoot or drum roller to 95 percent relative compaction.

Structural Section

The layers making up the structural section of the roadway will be placed in short lifts of less than 6 inches. The material will be hauled in, dumped, spread with a motor grader or asphalt-paving machine, and compacted.

Overlay

For failed sections of existing pavement only, overlay will be adjusted by digging out the existing asphalt concrete to a maximum of 6 inches. The asphalt concrete overlay then will be dumped and spread using an asphalt-paving machine, and then rolled with a steel-tired compactor.

Cut Walls

A cut wall consists of steel tiebacks or large rebar drilled into an excavated cut slope as the excavation proceeds. Cut walls are designed by the engineer based on the properties of the soil, steel bar, and groundwater conditions. After the first bench is cut using a backhoe or loader, a track-mounted drill rig will drill horizontal holes into the cut. Large epoxy-coated rebar (soil nails) will then be inserted into the holes and cement grout is placed into the drilled hole to surround the rebar and provide a bond between the soil nail and the surrounding ground. Each

soil nail is grouted in place at each level as the excavation proceeds downward to stabilize the slope.

Drainage fabric, usually steel wire mesh, and reinforcement will be placed along the excavated face, and will then be covered in shotcrete. This process continues to the bottom of the wall. After all the nails and shotcrete are in place, reinforcing steel will be placed and forms erected so that a smooth, decorative wall will cover the soil nail system.

Temporary drainage bypass system

A temporary drainage bypass system (e.g. coffer dam and flume or pump system) may be used to divert flows around work areas in creeks. Use, installation, and removal of the temporary drainage bypass system will be restricted to the period from June 15 to October 15.

Action Area

The project's action area is the combined area of direct and indirect effects to federally listed species. For this project, the area of direct effects corresponds to the areas within the proposed cut and fill and temporary construction as based upon the following criteria: (1) the cut and fill line was determined as the necessary area for project construction; (2) an additional 15 feet for right of way was identified for temporary construction access; (3) an additional 30 feet of temporary construction easement has been identified for utility relocation; and (4) Caltrans identified specific locations within the 12/29 Interchange Project area to be utilized as temporary construction areas for detours and staging. Indirect effects will be avoided through the implementation of BMP's and other measures. As project designs are refined, Caltrans will work to identify sensitive areas for avoidance during construction. Caltrans is working with utility companies to develop specific relocation plans such that Caltrans can reduce the project footprint and avoid additional biological resources. When Caltrans defines the reduced footprint, consultation with the Service will be reinitiated.

According to Caltrans the combined action area for the two projects is 310.62 acres. Excluding the existing 55.25 acres of State12 and State Route 29 hardscape, the combined action area is 255.37 acres (State Route 12 Jameson Canyon Road Widening Project = 176.37 acres and State Routes 29/12 Interchange Project =79.00 acres).

Permanent vs. Temporary Effects

Temporary effects are defined as those construction areas that are restored to baseline habitat values or higher within one year following the initial disturbance. Given that the action for the State Route 12/State Route 29 Interchange Improvement and State Route 12 Jameson Canyon Road Widening projects will each require more than one year of construction it is unlikely that any areas of effects will be temporary in nature. This includes areas used for staging. Given the scope and duration of the project, the entire proposed action area will be permanently affected by the proposed project, Caltans has the option of reinitiating consultation for the purposes of

revising the amount habitat compensation if it can be documented that portions of the action area subject to construction have been successfully restored as determined by the Service. The Service does not consider areas that will be subjected to ongoing maintenance as areas of temporary effects even if they are restored within one year following the initial disturbance.

Construction Site Restoration

Caltrans plans to restore areas of temporary ground disturbances, including storage and staging areas, and temporary roads. These areas will be re-contoured, if appropriate, and revegetated with seeds and/or cuttings of appropriate plant species to promote restoration of the area to pre-project conditions. Caltrans defines areas of "temporary" disturbance to be any area that is disturbed during the project, but that after project completion will not be subject to further disturbance and has the potential to be revegetated. Caltrans will be developing a restoration plan that will be submitted to the Service for approval prior to initial ground breaking. According to Caltrans, to the maximum extent practicable (i.e., presence of natural lands), topsoil will be removed, cached, and returned to the site according to successful restoration protocols. Loss of soil from run-off or erosion will be prevented with straw bales, straw wattles, or similar means provided they do not entangle, block escape or dispersal routes of listed animal species.

Equipment

The equipment expected to be used to construct the project is typical of roadway and interchange construction and may include cranes, excavators, bobcats, bulldozers, roadheaders, hydraulic excavators or backhoes, rubber-tired dump trucks, front-end loaders, load-haul-dumps (LHD's), drill jumbos, front-end loaders and motor graders, sheepsfoot or drum rollers, and asphalt-paving machines.

Temporary construction areas will be cleared, graded, and reestablished using equipment such as excavators, bulldozers, and/or bobcats.

Compliance with Local Habitat Conservation Plan

According to the Caltrans' Initial Study with Proposed Mitigated Negative Declaration (CEQA) and Environmental Assessment (NEPA) prepared for the proposed projects, widening of State Route 12 will be consistent with Solano Multi-Species Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) (Caltrans 2007c). The conservation goals, objectives, and measures stated in the draft Solano HCP for the California red-legged frog places special emphasis on the Jameson Canyon-Lower Napa River Core Recovery Area (SCWA 2007). According to the draft HCP, Plan Participants shall, to the maximum extent practicable, limit additional development with this core recovery area. The stated goals relevant to the State Route 12 Jameson Canyon Road Widening Project include:

1. Sub-Goal RLF 1.1. Maintain water quality standards to the maximum extent practicable such that waters within the Jameson Canyon-Lower Napa River Core Recovery Area are restored to and maintain their chemical, physical and biological integrity.

2. Sub-Goal RLF 1.2. Maintain interconnected blocks of habitat that support natural movement patterns and metapopulation dynamics.

3. Sub-Goal RLF 1.3. Minimize direct and indirect effects to California red-legged frogs from Covered Activities.

4. Sub-Goal RLF 1.4. Manage preserves and reserves in order to minimize the effects of negative pressures on California red-legged frogs.

5. Sub-Goal RLF 1.5. Restore and create new breeding habitat that will be protected and managed in perpetuity.

The stated objectives designed to achieve the above goals relevant to the State Route 12 Jameson Canyon Road Widening Project include:

6. Objective RLF 1.1. Develop and implement a coordinated watershed management plan for the Jameson Canyon-Lower Napa River Core Recovery Area within 5 years of adopting the HCP.

7. Objective RLF 1.2. Document the status of the California red-legged frog population within the Jameson Canyon-Lower Napa River Core Recovery Area through the establishment and implementation of a scientifically-acceptable population monitoring program that includes at minimum one average precipitation cycle (a period when annual rainfall includes averages to 35 percent above-average through greater than 35 percent below-average and back to average or greater).

8. Objective RLF 1.3. Limit the cumulative permanent development and other incompatible land uses within the Jameson Canyon-Lower Napa River Core Recovery Area to the maximum extent practicable.

9. Objective RSM 1.4. Avoid and minimize impacts to existing California red-legged frog habitat to the maximum extent practicable.

10. Objective RLF 1.5. Provide for a net increase in the quantity and quality of aquatic habitat for California red-legged frogs within the Plan Area for the HCP.

11. Objective RLF 1.6. Protect and maintain upland habitat between suitable California red-legged frog breeding habitat within Core Recovery Areas.

12. Objective RLF 1.7. Develop and implement best management practices to prevent or minimize adverse impacts to California red-legged frogs during operation and maintenance activities on existing facilities.

13. Objective RLF 1.8. Minimize activities associated with urban and agricultural land use development projects that could lead to expansion of predator (bullfrog, crayfish, and warm water fish) populations (range and numbers) into undeveloped areas in the remainder of the western portion of the County.

Relevant Conservation Measures designed to meet the objectives and species recovery goals include:

1. Conservation Measure RLF 4 Minimize Development within Core Recovery Areas. The Plan Participants shall monitor development within the Jameson Canyon-Lower Napa River Core Recovery Area and limit the cumulative permanent development and other incompatible land uses to the maximum extent practicable. In addition, the Plan Participants shall not annex additional lands for urban development within the Jameson Canyon-Lower Napa River Core Recovery Area.

2. Conservation Measures RLF 5 Baseline Survey Requirements. Applicants seeking permission for HCP Covered Activities that will result in the loss or conversion of California red-legged frog habitat within the Inner Coast Range shall conduct appropriately-timed surveys, consistent with the baseline survey requirements.

3. Conservation Measure RLF 6 Barriers. To the maximum extent practicable, minimize development and construction of new roads in areas found to support California red-legged frogs.

4. Conservation Measure RLF 7 Aquatic Habitat Buffers. Applicants for development projects seeking coverage under the HCP shall provide a minimum average 300-foot wide buffer of associated upland between suitable California red-legged frog aquatic breeding habitat and urban development/active open space recreation areas to provide for protection of aquatic breeding habitats to the maximum extent practicable. Minimum buffer distances shall be no less than 300 feet in width.

5. Conservation Measure RLF 8 Corridors. Any avoided or retained aquatic habitat shall have corridors connecting to suitable aquatic habitat within 0.7 miles. The corridors shall be a minimum of 1320 feet in width. If the corridor is bisected by a new or existing road that will have a predicted nighttime volume of 20 cars per hour or greater, design measures such as culverts, underpasses, and roadside barriers to facilitate movement of small animals across the roadway shall be implemented.

6. Conservation Measure 9 Prevent the "Perennialization" of Ponds and Intermittent Creeks. Minimize activities associated with urban and agricultural land use development projects that could lead to expansion of predator (bullfrog, crayfish, and warm water fish) populations (range and numbers) into undeveloped areas in the remainder of the western portion of Solano County. Development activities shall avoid establishment of perennial ponds and small lakes and urban runoff shall be controlled to prevent "perennialization" of intermittent creeks.

7. Conservation Measure RLF 10 Promote Open Space Corridors. Encourage open space elements for development proposals that protect wetlands, enhance frog aquatic and upland habitats and provide corridors linking onsite and offsite aquatic habitats consistent with HCP reserve design and management standards. No new perennial water sources or net increases in mid to late summer base flows of intermittent creeks shall be permitted.

The draft HCP guidance for California red-legged frog compensation includes the following:

1. Conservation Measure RLF 11 Mitigation for Upland Habitat within the Core Recovery Area. All development within California red-legged frog James Canyon-Lower Napa River Core Recovery Area that results in the conversion of upland habitats shall provide an impact fee based on the gross acreage of the impacted upland habitat. Collected fees will be pooled and administered by the Solano County Water Agency (SCWA) to provide funding for land acquisition, aquatic predator control, habitat enhancement, and other activities benefiting the California red-legged frog within the Recovery Area, consistent with criteria specified in the Watershed Management Plan. The fee shall be based the cost of land at a 3:1 ratio and an endowment fund or other approved funding source to implement management plans for preserved lands to restore and enhance aquatic and upland habitats for the California red-legged frog and control nonnative species such as bullfrog, warm water fish, and crayfish.

2. Conservation Measure RLF 12 Mitigation for impacts to riparian, in-stream, pond, and freshwater marsh habitats within Recovery Areas. Compensatory mitigation for unavoidable impacts to riparian, in-stream, pond, and freshwater marsh habitats within the Recovery Area shall be provided through the construction and/or restoration of similar habitats at a prescribed ratio of acres restored to acres impacted consistent with Riparian and Freshwater Marsh Conservation Measure RSM 11.

3. Conservation Measure RLF 12.1. Permanent impacts to suitable breeding and essential hydration habitat (pond, open water and marsh, springs and seeps, and channel habitats). Impacted habitats shall be replaced by constructing new breeding habitat at a minimum of 4:1 ratio. All habitat restoration or creation shall also occur within the Recovery Area. An endowment fund or other approved funding source for long-term operation and maintenance of the features shall also be provided.

4. Conservation Measure RLF 12.2. Permanent impacts to other non-breeding riparian and aquatic habitats. Impacts to other riparian and wetland/aquatic habitats will be mitigated at either a) a 2:1 ratio if the aquatic habitats are constructed or recreated or b) a 3:1 ratio where enhancement measures for existing habitat areas are implemented and the affected habitat is replaced (constructed) at a minimum 1:1 ratio. The restoration of suitable habitat or construction of new riparian and aquatic habitats shall occur within the Recovery Area. An endowment fund or other approved funding source for long-term operation and maintenance of the features shall also be provided.

5. Conservation Measure RLF 13. Temporary impacts to marsh, pond/aquatic, and riparian habitats. Temporary or short-term impacts associated with the removal of vegetation associated with ordinary channel operations and maintenance activities by Plan Participants in their facilities or construction/installation of permanent features (e.g., outfalls, bridges, utility lines), shall not require direct compensation for the temporary loss of herbaceous vegetation or woody vegetation less than 1 inch in diameter provided the activities comply with the following conditions:

    a. Appropriate erosion control measures and best management practices are implemented for all disturbed areas above the waterbody's ordinary high water mark consistent with conservation measures outlined in the Riparian and Freshwater Marsh Conservation Strategy.

    b. All work is conducted in compliance with avoidance and protection measures described in the Solano Operations and Maintenance Manual.

    c. All native, woody riparian vegetation greater than 1 inch in diameter is replaced by planting sufficient new native riparian vegetation to achieve a 3:1 replacement ratio of new riparian vegetation after 5 years. No compensation is required for removal of non-native trees and shrubs.

Proposed Conservation Measures

According to the Biological Assessments, November 2007 response, January 31, 2008, letter from Caltrans to the Service, January 31, 2008, electronic mail message from Caltrans to the Service, Caltrans proposes to avoid, minimize, and compensate for effects to listed species by implementing the following measures:

1. The effects to 255.37 acres of California red-legged frog habitat for both projects shall be compensated at a 3:1 ratio (766.11 acres) of occupied California red-legged frog habitat. The compensation can be phased to coincide with the initiate of the individual projects. The State Route 12 Jameson Canyon Road Widening Project will have effects to 176.37 acres of California red-legged frog habitat and the State Route 12/State Route 29

Interchange Improvement project will affect 79.0 acres of California red-legged frog habitat.

Caltrans will expend the funds to either purchase credits at a Service-approved approved conservation bank, contribute to habitat acquisition, or contribute to an in-lieu fee program that complies with FHWA policy for Federal aid participation.

Caltrans under the NEPA 404 Delegation is providing the proposed compensatory mitigation for the anticipated impacts to Vernal pool (Wetland Habitat) and associated Natural habitat under the statutory authority provide under 23 CFR part 710.513 and 23 CFR part 777 outlined by the U.S. Department of Transportation, Federal Highways Administration, Office of Chief Counsel, Memorandum – Dated march 10th, 2005, HEPN-30.

2. A Service-approved biologist will be designated for the project. The qualified biologist(s) will be on-site during all activities that may result in the take of listed species. The qualifications of the biologist(s) will be presented to the Service for review and written approval prior to ground-breaking at the project site. The biologist(s) will be given the authority, through the Resident Engineer to stop any work that may result in take of listed species. Should the biologist(s) exercise this authority, the Service and the California Department of Fish and Game will be notified by telephone and electronic mail within one working day. The Service contact will be Chris Nagano, Deputy Assistant Field Supervisor, Endangered Species Program at the Sacramento Fish and Wildlife Office at telephone 916/414-6600.

3. The resident engineer will halt work immediately and contact the Service-approved, project biologist and the Service in the event that a California red-legged frog gains access to a construction zone. The resident engineer will suspend all constriction activities in the immediate construction zone until the animal leaves the site voluntarily or is removed by the biologist to a release site using Service-approved transportation techniques.

4. A qualified biologist will conduct employee education training for construction employees working on ground disturbing activities that may result in the take of listed species. All constriction crews will be required to attend a presentation that addresses listed species that have the potential to occur within the project limits, avoidance and minimization measures, terms of the biological opinion, and other related matters. The program will consist of a brief presentation by persons knowledgeable about Contra Costa goldfields, showy indian clover, listed branchiopods, and the California red-legged frog. The program will included the following: a description of the species and their habitat needs; photographs of these species; an explanation of the legal status of these species and their protection under the Act; and a list of measures taken to reduce effects to these species during project construction.

5. Caltrans will avoid effects to pools beyond the project footprint by employing permanent and temporary best management practices (BMPs), including a storm water pollution prevention plan (SWPPP), and erosion control BMPs. In areas that flow hydrologically from the project footprint to vernal pool crustacean and California red-legged frog habitat, Caltrans will erect linear sediment barriers (such as silt fences or coir rolls) to prevent effects to vernal pools. Caltrans intends this measure to limit effects to vernal pool crustacean and California red-legged frog aquatic habitat within 300 feet of the project footprint (Caltrans 2007b).

6. To minimize temporary disturbances, all project-related vehicle traffic will be restricted to established roads, construction areas, and other designated areas. These areas also should be included in pre-construction surveys and, to the maximum extent possible, should be established in locations disturbed by previous activities to prevent further adverse effects. Project-related vehicles will observe a 20-mile per hour speed limit within construction areas, except on County roads, and State and Federal highways; this is particularly important at night when the California red-legged frog is most active. To the maximum extent possible, night-time construction will be minimized. Off-road traffic outside of designated project areas will be prohibited.

7. Dust control measures will be implemented during construction, consisting of regular thick watering of constriction access areas and disturbed soil areas with the use of organic soil stabilizers to minimize airborne dust and soil particles generated from graded areas. Regular truck watering will be a requirement of the construction contract. In addition, for disturbed soil areas, an organic tackifier to control dust emissions blowing off of the right-of-way or out of the construction area during construction will be included in the contract special provisions. Watering guidelines for trick watering will be established to avoid any excessive nun-off that may flow into contiguous areas. Any material stockpiles will be watered, sprayed with tackifier, or covered, to minimize dust production and wind erosion.

8. Project employees will be provided with written guidance governing vehicle use, speed limits on unpaved roads, fire prevention, and other hazards.

9. To eliminate an attraction to predators of the California red-legged frog, all food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in closed containers and removed at least once a day from the entire project site.

10. To avoid injury or death of the California red-legged frog, no firearms will be allowed on the project site except for those carried by authorized security personnel, or local, State, or Federal law enforcement officials.

11. To prevent harassment, injury or mortality of the California red-legged frog or destruction of their burrows by dogs or cats, no canine or feline pets will be permitted in the action area.

12. All fueling and maintenance of vehicles and other equipment will occur at least 65 feet from any riparian habitat or aquatic habitat.

13. All grindings and asphaltic-concrete waste will be stored within previously disturbed areas absent of habitat and at a minimum of 250 feet from any culvert, or drainage feature.

14. For seasonal avoidance of the California red-legged frog, construction will not occur from November 1 through March 31 to the extent practicable. If any work remains to be completed after November 1, exclusion fencing will be placed in those areas where construction needs to be completed. Exclusionary fencing will consist of taut silt fabric; 24 inches in height, stacked at 10-foot intervals, with the bottom buried 6 inches below grade. Exclusion fencing will be maintained so that it is intact during rain events and 24 hours after any rain event.

15. The construction area will be delineated with high visibility temporary fencing at least four feet in height, flagging, or other barrier to prevent encroachment of construction personnel and equipment onto any sensitive areas during project work activities. Such fencing will be inspected and maintained daily by the on-site biologist until completion of the project. The fencing will be removed only when all construction equipment is removed from the site. Actions within the project area will be limited to vehicle and equipment operation on existing roads. No project activities will occur outside the delineated project construction area.

16. If requested, before, during, or upon completion of ground breaking and construction activities, Caltrans will allow access by Service and/or California Department of Fish and Game personnel to the project site to inspect project effects to listed species and their habitats. Due to safety concerns, Service staff will check in with the Resident Engineer and Biological Monitor prior to accessing the construction site.

17. No more than twenty (20) working days prior to any ground disturbance, pre-construction surveys shall be conducted by a Service-approved biologist for the California red-legged frog. These surveys shall consist of walking surveys of the project limits and adjacent areas accessible to the public to determine presence of the species. The Service-approved biologists must investigate all potential California red-legged frog cover sites. This includes full investigation of mammal burrows. The entrances shall be collapsed following investigation.

18. Only Service-approved biologist(s) who are familiar with the biology and ecology of the California red-legged frog will capture or handle the species.

19. California red-legged frogs will be relocated outside of the environmentally sensitive area/silt fence within the same riparian area or watershed by the approved biological monitor. If relocation of the frog outside the fence is not feasible (i.e., there are too many frogs observed per day), the approved biological monitor will relocate frogs to a pre-approved location determined by Caltrans, the Service, and local agencies. Prior to construction, Caltrans will obtain approval of the relocation protocol from the Service in the event that California red-legged frogs are encountered and need to be relocated away from the immediate project area (Caltrans 2007b).

20. All California red-legged frogs encountered in the action area shall be relocated to a Service-approved location. Caltrans shall submit a written plan for translocating California red-legged frogs to the Service for review and approval prior to the date of initial groundbreaking at the proposed project.

21. Biologists will take precautions to prevent introduction of amphibian diseases to the action area by disinfecting equipment and clothing as directed in the October 2003 California tiger salamander survey protocol titled, Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander and the recommended equipment decontamination procedures within the Service's California Red-Legged Frog Survey Guidance. Both items are available at the Service's Sacramento office website (http://www.fws.gov/sacramento/es/protocol.htm). Disinfecting equipment and clothing is especially important when biologists are coming to the action area to handle salamanders or frogs after working in other aquatic habitats.

22. To prevent inadvertent entrapment of California red-legged frogs during construction, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they must be thoroughly inspected for trapped animals. If at anytime a trapped listed animal is discovered, the on-site biologist will immediately place escape ramps or other appropriate structures to allow the animal to escape, or the Service and/or California Department of Fish and Game will be contacted by telephone for guidance. The Service will be notified of the incident by telephone and electronic mail within one working day.

23. Plastic mono-filament netting (erosion control matting) or similar material will not be used at the project site because California red-legged frog may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

24. Construction fabric and a layer of gravel will protect the original contour of all wetland pools that cannot be avoided within identified temporary effect areas adjacent or within the right-of-way, minimizing potential effects from compaction or other disturbance. After construction, gravel and fabric will be removed.

25. Injured California red-legged frogs will be cared for by a licensed veterinarian or other qualified person such as the on-site biologist; dead individuals of any listed species will be preserved according to standard museum techniques and held in a secure location. The Service and the California Department of Fish and Game will be notified within one (1) working day of the discovery of death or injury to a listed species that occurs due to project related activities or is observed at the project site. Notification will include the date, time, and location of the incident or of the finding of a dead or injured animal clearly indicated on a USGS 7.5 minute quadrangle and other maps at a finer scale, as requested by the Service, and any other pertinent information. Dead individual animals shall be placed in a Zip-Lock® plastic bag with a piece of paper containing information on where and when the animal was found along with the name of the person who found it, the bag shall be frozen in a freezer located in a secure location until instructions are received from the Service regarding the disposition of the specimen or the Service takes custody of the specimen. The Service contacts are Chris Nagano, Deputy Assistance Field Supervisor, Endangered Species Program at the Sacramento Fish and Wildlife Office (916/414-6600), and Scott Heard, Resident Agent-in-Charge of the Service's Law Enforcement Division at 916/414-6660. The California Department of Fish and Game contact is Mr. Ron Schlorff at 1416 9th Street, Sacramento, California 95814, (916) 654-4262.

26. Caltrans will submit a post-construction compliance report prepared by the on-site biologist to the Sacramento Fish and Wildlife Office within forty (40) working days following project completion or within sixty calendar days of any break in construction activity lasting more than forty (40) working days. This report will detail (i) dates that construction occurred; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of failure to meet such measures, if any; (iv) known project effects on listed species, if any; (v) occurrences of incidental take of any listed species; (vi) documentation of employee environmental education; and (vii) other pertinent information. The reports will be addressed to the Deputy Assistant Field Supervisor of the Endangered Species Program, Sacramento Fish and Wildlife Office.

27. Caltrans shall report to the Service any information about take or suspected take of listed wildlife species not authorized by this biological opinion. Caltrans must notify the Service via electronic mail and telephone within twenty-four (24) hours of receiving such information. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and photographs of the specific animal. The Service contacts are Chris Nagano, Deputy Assistant Field Supervisor, Endangered Species

Program, Sacramento Fish and Wildlife Office at (916) 414-6600, and Special Agent Scott Heard of the Service's Law Enforcement Division at (916) 414-6660

A Service-approved biologist shall be onsite to monitor the initial ground disturbance activities for the road construction and restoration projects. The biologist shall perform a clearance survey immediately prior to the initial ground disturbance. Safety permitting, the Service-approved biologist(s) must investigate areas of disturbed soil for signs of listed species within thirty (30) minutes following the initial disturbance of that given area.

Action Area

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For the proposed action, the action area includes all lands associated with the approximately 72.2 acre (29.2 hectare) project footprint and roads (except for County roads, and State and Federal highways) and other areas accessed by project vehicles.

Status of the Species and Environmental Baseline

The California red-legged frog was listed as a threatened species on May 23, 1996 (Service 1996). Please refer to the final rule and the *Recovery Plan for the California Red-Legged Frog (Rana aurora draytonii)* (Service 2002) for additional information on this species.

This threatened species is the largest native frog in the western United States (Wright and Wright 1949), ranging from 1.5 to 5.1 inches in length (Stebbins 2003). The abdomen and hind legs of adults are largely red, while the back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Dorsal spots usually have lighter centers (Stebbins 2003) and dorsolateral folds are prominent on the back. Larvae (tadpoles) range from 0.6 to 3.1 inches in length, and the background color of the body is dark brown and yellow with darker spots (Storer 1925).

Red-legged frogs have paired vocal sacs and vocalize in air (Hayes and Krempels 1986). Female frogs deposit egg masses on emergent vegetation, allowing the egg mass floats on the surface of the water (Hayes and Miyamoto 1984). Red-legged frogs breed from November through March with earlier breeding records occurring in southern localities (Storer 1925). Individuals occurring in coastal drainages are active year-round (Jennings *et al.* 1992), whereas those found in interior sites are normally less active during the cold season.

The historic range of the red-legged frog extended coastally from the vicinity of Elk Creek in Mendocino County, California, and inland from the vicinity of Redding, Shasta County, California, southward to northwestern Baja California, Mexico (Fellers 2005; Jennings and Hayes 1985; Hayes and Krempels 1986). The species historically was documented in 46 counties but the taxa now remains in 238 streams or drainages within 23 counties. This

represents a loss of 70 percent of its former range (Service 2002). Red-legged frogs are still locally abundant within portions of the San Francisco Bay area and the central coast. Within the remaining distribution of the species, only isolated populations have been documented in the Sierra Nevada, northern Coast, and northern Transverse Ranges. This listed amphibian is believed to be extirpated from the southern Transverse and Peninsular ranges, but is still present in Baja California, Mexico (California Department of Fish and Game 2004).

Adult California red-legged frogs prefer dense, shrubby or emergent riparian vegetation closely associated with deep (>2.3 feet [0.7 meters]), still, or slow-moving water (Hayes and Jennings 1988). However, frogs also have been found in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation. The largest densities of red-legged frogs currently are associated with deep pools with dense stands of overhanging willows (*Salix* species) and an intermixed fringe of cattails (*Typha latifolia*) (Jennings 1988). Red-legged frogs disperse upstream and downstream of their breeding habitat to forage and seek sheltering habitat.

According to Feller and Kleeman (2007), non-breeding dry season habitat includes several characteristics: 1) sufficient moisture to allow the frogs to survive throughout the non-breeding season that may be up to 11 months long ; 2) sufficient cover to moderate temperatures during the warmest and coldest times of the year; and 3) protection (e.g., deep pools in a stream, or complex cover such as root masses or thick vegetation) from predators such as hawks and owls, herons, and small carnivores.

During other parts of the year, habitat includes nearly any area within 1-2 miles (1.6-3.2 kilometers) of a breeding site that stays moist and cool through the summer (Fellers 2005). According to Fellers (2005), this can include vegetated areas with coyote bush (*Baccharis pilularis*), California blackberry thickets (*Rubus ursinus*), and root masses associated with willow (*Salix* species) and California bay trees (*Umbellularia californica*). Sometimes the non-breeding habitat used by red-legged frogs is extremely limited in size. For example, non-breeding red-legged frogs have been found in a 6-foot (1.8-meter) wide coyote bush thicket growing along a tiny intermittent creek surrounded by heavily grazed grassland (Fellers 2005). Sheltering habitat for red-legged frogs is potentially all aquatic, riparian, and upland areas within the range of the species and includes any landscape features that provide cover, such as existing animal burrows, boulders or rocks, organic debris such as downed trees or logs, and industrial debris. Agricultural features such as drains, watering troughs, spring boxes, abandoned sheds, or hay stacks may also be used. Incised stream channels with portions narrower and depths greater than 18 inches (45.7 centimeters) also may provide important summer sheltering habitat. Accessibility to sheltering habitat is essential for the survival of red-legged frogs within a watershed, and can be a factor limiting frog population numbers and survival.

Red-legged frogs do not have a distinct breeding migration (Fellers 2005). Adult frogs are often associated with permanent bodies of water. Some frogs remain at breeding sites all year while others disperse. Dispersal distances are typically less than 0.5 mile (0.8 kilometers), with records of a few individuals moving up to 1-2 miles (1.6-3.2 kilometers) (Fellers 2005). Movements are

typically along riparian corridors, but some individuals, especially on rainy nights, move directly from one site to another through normally inhospitable habitats, such as heavily grazed pastures or oak-grassland savannas (Fellers 2005). Dispersing frogs in northern Santa Cruz County traveled distances from 0.25 miles (0.4 kilometers) to more than 2 miles (3.2 kilometers) without apparent regard to topography, vegetation type, or riparian corridors (Bulger *et al.* 2003). Fellers and Kleeman (2007) and Bulger et al. (2003) found that California red-legged frog migration corridors can be less "pristine" (e.g., closely grazed fields, plowed agricultural lands) than breeding or non-breeding habitats. Bulger et al. (2003) observed that this listed ranid did not avoid or prefer any landscape feature or vegetation type. They tracked individuals that crossed agricultural land, including recently tilled fields and areas with mature crops. The threats facing migrating California red-legged frogs during their movements include being run over by vehicles on roads (Gibbs 1998; Vos and Chardon 1998), degradation of habitat (Vos and Stumpel 1995; Findlay and Houlahan 1997; Gibbs 1998), predation (Gibbs 1998), and dessication (Rothermel and Semlistch 2002; Mazerolle and Desrochers 2003).

Egg masses contain about 2,000 to 5,000 moderate sized (0.08 to 0.11 inches [0.2 to 0.3 centimeters] in diameter), dark reddish brown eggs and are typically attached to vertical emergent vegetation, such as bulrushes (*Scirpus* species) or cattails (Jennings *et al.* 1992). Red-legged frogs are often prolific breeders, laying their eggs during or shortly after large rainfall events in late winter and early spring (Hayes and Miyamoto 1984). Eggs hatch in 6 to 14 days (Jennings 1988). In coastal lagoons, the most significant mortality factor in the pre-hatching stage is water salinity (Jennings *et al.* 1992). Eggs exposed to salinity levels greater than 4.5 parts per thousand results in 100 percent mortality (Jennings and Hayes 1990). Increased siltation during the breeding season can cause asphyxiation of eggs and small larvae. Larvae undergo metamorphosis 3.5 to 7 months after hatching (Storer 1925; Wright and Wright 1949; Jennings and Hayes 1990). Of the various life stages, larvae probably experience the highest mortality rates, with less than 1 percent of eggs laid reaching metamorphosis (Jennings *et al.* 1992). Sexual maturity normally is reached at 3 to 4 years of age (Storer 1925; Jennings and Hayes 1985). Red-legged frogs may live 8 to 10 years (Jennings *et al.* 1992). Populations of red-legged frogs fluctuate from year to year. When conditions are favorable red-legged frogs can experience extremely high rates of reproduction and thus produce large numbers of dispersing young and a concomitant increase in the number of occupied sites. In contrast, red-legged frogs may temporarily disappear from an area when conditions are stressful (e.g., drought).

The diet of red-legged frogs is highly variable. Hayes and Tennant (1985) found invertebrates to be the most common food items. According to their data, vertebrates, such as Pacific tree frogs and California mice (*Peromyscus californicus*) represent over half the prey mass eaten by larger frogs (Hayes and Tennant 1985). Hayes and Tennant (1985) found juvenile frogs to be active diurnally and nocturnally, whereas adult frogs were largely nocturnal. The diet of red-legged frogs is not well studied, but their diet is likely similar to other ranid frogs that feed on algae, diatoms, and detritus by grazing on the surface of rocks and vegetation (Fellers 2005; Kupferberg 1996a, 1996b).

Several researchers in central California have noted the decline and eventual local disappearance of California and northern red-legged frogs in systems supporting bullfrogs (Jennings and Hayes 1990; Twedt 1993), red swamp crayfish (*Procambarus clarkii*), signal crayfish (*Pacifastacus leniusculus*), and several species of warm water fish including sunfish (*Lepomis* species), goldfish (*Carassius auratus*), common carp (*Cyprinus carpio*), and mosquitofish (L. Hunt, in litt. 1993; S. Barry, in litt. 1992; S. Sweet, in litt. 1993). Habitat loss, non-native species introduction, and urban encroachment are the primary factors that have adversely affected the red-legged frog throughout its range.

Several researchers in central California have noted the decline and eventual disappearance of red-legged frog populations once bullfrogs became established at the same site (L. Hunt, in litt. 1993; S. Barry, in litt. 1992; S. Sweet, in litt. 1993). This has been attributed to predation, competition, and reproduction interference. Twedt (1993) documented bullfrog predation of juvenile northern red-legged frogs (*Rana aurora aurora*), and suggested that bullfrogs could prey on subadult northern red-legged frogs as well. Bullfrogs may also have a competitive advantage over red-legged frogs. For instance, bullfrogs are larger and possess more generalized food habits (Bury and Whelan 1984). In addition, bullfrogs have an extended breeding season (Storer 1933) during which an individual female can produce as many as 20,000 eggs (Emlen 1977). Further more, bullfrog larvae are unpalatable to predatory fish (Kruse and Francis 1977). Bullfrogs also interfere with red-legged frog reproduction. Both California and northern red-legged frogs have been observed in amplexus (mounted on) with both male and female bullfrogs (Jennings and Hayes 1990; Twedt 1993; M. Jennings, in litt.1993; R. Stebbins in litt. 1993). Thus bullfrogs are able to prey upon and out-compete red-legged frogs, especially in sub-optimal habitat.

The urbanization of land within and adjacent to red-legged frog habitat has also adversely affected red-legged frogs. These declines are attributed to channelization of riparian areas, enclosure of the channels by urban development that blocks red-legged frog dispersal, and the introduction of predatory fishes and bullfrogs. The conversion and isolation of perennial pool habitats resulting from urbanization is an ongoing impact to red-legged frogs.

The California red-legged frog may be susceptible to many of the same pathogens, fungi, water mold, bacteria, and viruses have been known to adversely affect tiger salamander species or other amphibians. As with the California tiger salamander, Chytridiomycosis and ranaviruses may be a particular developing concern for California red-legged frog populations. Mao *et al.* (1999 cited in Fellers 2005) reported northern red-legged frogs infected with an iridovirus, which was also presented in sympatric three-spined sticklebacks (*Gasterosteus aculeatus*) in northwestern California. Ingles (1932a, 1932b, and 1933 cited in Fellers 2005) reported four species of trematodes from red-legged frogs, but he later synonymized two of them (found them to be the same as the other two). Nonnative species, such as bullfrogs and nonnative tiger salamanders, are both located within the range of the California red-legged frog and have been identified as potential carriers of these diseases. Human activities can facilitate the spread of disease by encouraging the further introduction of non-native carriers and by acting as carriers themselves

(i.e. contaminated boots or fishing equipment). Human activities can also introduce stress by other means, such as habitat fragmentation, that results in red-legged frogs being more susceptible to the effects of disease. Disease will likely become a growing threat because of the relatively small, fragmented remaining California red-legged frog breeding sites, the many stresses on these sites due to habitat losses and alterations, and the many other potential disease-enhancing anthropogenic changes which have occurred both inside and outside the species' range.

The recovery plan for red-legged frogs identifies eight Recovery Units (Service 2002). The establishment of these Recovery Units is based on the Recovery Team's determination that various regional areas of the species' range are essential to its survival and recovery. The status of the red-legged frog will be considered within the smaller scale of Recovery Units as opposed to the overall range. These Recovery Units are delineated by major watershed boundaries as defined by U.S. Geological Survey hydrologic units and the limits of the range of the California red-legged frog. The goal of the draft recovery plan is to protect the long-term viability of all extant populations within each Recovery Unit. Within each Recovery Unit, core areas have been delineated and represent contiguous areas of moderate to high red-legged frog densities that are relatively free of exotic species such as bullfrogs. The goal of designating core areas is to protect metapopulations that, combined with suitable dispersal habitat, will allow for the long term viability within existing populations. This management strategy will allow for the recolonization of habitat within and adjacent to core areas that are naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of red-legged frogs.

The State Route 12/State Route 29 Interchange Improvement and State Route 12 Jameson Canyon Road Widening Projects are within Recovery Unit 3 (North Coast and North San Francisco Bay) (Service 2002). The action area falls within Core Area #15 (Jameson Canyon Lower Napa River) of that Recovery Unit (Service 2002). The conservation needs for the Fagan-Jameson Canyon-Lower Napa River core area are: (1) protecting existing populations from current and future urbanization; (2) create and manage alternative breeding habitats; and (3) protecting dispersal corridors.

The State Route 12/State Route 29 Interchange Improvement and State Route 12 Jameson Canyon Road Widening Projects bisect the Fagan-Jameson Canyon-Lower Napa River core recovery area. Other than agricultural development adjacent to State Route 12/State Route 29 intersection, the land adjacent to the existing State Route 12 roadway through Jameson Canyon is characterized by a continuous mosaic of upland grassland dispersal, cover, and foraging habitat as well as seasonal wetlands, riparian habitat, and numerous ephemeral and perennial creek crossings. According to the Biological Assessment, the project intersects seven perennial creeks and numerous ephemeral creeks. Caltrans discounts developed lands, vineyards, and disked fields as suitable upland habitat, however these areas can be subject to temporal use by dispersing frogs (Caltrans 2007a).

Although the action area does not contain designated critical habitat for the California red-legged frog, the action area was located within the proposed Unit 11 (American Canyon Unit) in the proposed rule issued on April 13, 2004 (Service 2004). The definition of the formerly proposed critical habitat unit specifically included the watersheds of Fagan Creek and Jameson Canyon.

The lack of species occurrence records in the California Natural Diversity Database likely is the result of a lack of survey efforts in Jameson Canyon (CDFG 2007) because the majority of the land adjacent to the action area is in private ownership that has been used for grazing for a long period of time. As directed by the draft Solano HCP, surveys will be conducted for California red-legged frogs within the Jameson Canyon-Lower Napa River Core Recovery Area within two years of adopting the HCP and will continue every five years for the live of the HCP (SCWA 2007). There are two individual red-legged frog records less than 0.25 miles north of the action area near the intersection of State Route 12 and Redtop Road (CDFG 2007). The records are from 2004 and 2003 and are the result of surveys conducted for another road project.

All undeveloped areas of the action area are within 1.0 mile of. suitable California red-legged frog breeding habitat and therefore the undeveloped upland areas are considered potential foraging, aestivation, and movement habitat (Caltrans 2007a); the action area includes 255.37 acres of California red-legged frog habitat (Caltrans 2007a). This includes breeding, non-breeding aquatic, and upland California red-legged frog habitat. Therefore, the Service has determined it is reasonable to conclude the California red-legged frog inhabits and has the potential to be encountered within 255.37 acres of the action area, based on the biology and ecology of the species, the presence of suitable habitat, and the recent records of this species.

Effects of the Proposed Action

The proposed project could have adverse effects on the threatened California red-legged frog through mortality, injury, harassment, and harm of individual juveniles and adults. Using data provided by Caltrans, the proposed actions will adversely affect 255.37 acres of California red-legged frog habitat (Caltrans 2007b). This includes 176.37 acres of habitat for the State Route 12 Jameson Canyon Road Widening Project and 79.00 acres of habitat for the State Route 12/State Route 29 Interchange Improvement.

The proposed project likely will result in adverse effects to the feeding, resting, aestivation, movement, and other essential behaviors of the California red-legged frog, and also eliminate or reduce its ability to move across Jameson Canyon. It will result in the loss, degradation, and fragmentation of habitat, and also the significant reduction or elimination of a movement corridor for this species that likely will result in long-term adverse effects to the species in the Cordelia Hills. Any further reduction in the north-south movement corridor in Jameson Canyon by the proposed project will increase the potential for the loss of this population of the California red-legged frog due to a constellation of factors including disease, predation, fire, competition, and genetic problems. Construction and maintenance of properly sized and located culverts likely

will minimize this adverse effect of the threatened California red-legged frog (see Rodriguez *et al.* 1996; Yanes *et al.* 1905).

Construction activities associated with the proposed project would remove vegetation and other materials necessary for cover and aestivation, fill or crush burrows or crevices, and potentially reduce the prey base for the California red-legged frog. Because this listed amphibian uses small mammal burrows and soil crevices for shelter, individuals may be crushed, buried, or otherwise injured during construction activities. California red-legged frogs also may be run over by construction equipment or other vehicles accessing the construction areas. Disturbance caused by construction activities may cause frogs to disperse into areas of unsuitable habitat, increase the risk of predation or other sources of mortality. Siltation, fill, or spill of petroleum products or other chemicals could cause loss of prey items in or adjacent to the project area. Construction activities are likely to result in the direct disturbance, displacement, injury, and/or morality of California red-legged frogs. Individuals likely are to be killed or injured by construction equipment or other vehicles accessing the construction site. There is a likelihood of direct injury or mortality to the animal from injury or death due to pet cats or dogs owned by construction related personnel, poisoning by pesticides, injury or death due to predators attracted to food or trash at the site, and harassment from night-lighting, noise, and vibration. Implementation of certain types of erosion control materials, such as plastic netting, could result in the entanglement and death of California red-legged frogs within these materials due to exposure or predators (Bartin and Kinkead 2005; Stuart *et al.* 2001). Disturbance from construction activities may also cause individuals to move into or across areas of unsuitable habitat where they may be prone to higher rates of mortality from vehicles and predation.

Range-wide habitat loss, fragmentation, and degradation from multiple factors are the primary threats to the California red-legged frog (Service 1996, 2004). Loss of natural lands continues to occur further reducing the habitat available for this listed animal. However, the amount of historical and current habitat loss directly attributable to road loss has not been calculated, but the effect of habitat fragmentation on the California red-legged frog is significant. Fragmentation can reduce access to habitat as well as habitat suitability, increase mortality of animals that are moving between habitat patches due to increased risk of predation, and disrupt movements, dispersal, and gene flow. As barriers to movement for the California red-legged frog, roads create smaller patches of habitat and increase patch isolation. Smaller populations of animals are at greater risk of extinction by chance from demographic, genetic, and environmental stochastic events (Wilcox and Murphy 1985; Schoener and Spiller 1992). Isolated populations also have a higher chance of extinction without the demographic and genetic input of immigrants and a lower chance of colonization after extinction (Lande 1988; Sjogren-Gulve 1994).

The proposed project will reduce or eliminate the ability of the California red-legged frog to move along and across Jameson Canyon over the short and long term. The loss of individuals due to traffic mortality can have an effect on two levels: reduced population sizes and reduced movement between complementary resources and conspecifics populations (Carr *et al.* 2000). The short term temporal effect will occur when suitable habitat is lost when riparian and other

vegetation vegetation is removed for construction of the highway, and also due to the improved ability of predators to hunt the listed amphibian. Hilty and Merender (2004) found that, in contrast to native species, non-native mammalian predators were more active in narrow and denuded riparian corridors and in large expanses of agricultural land (vineyards) far from core habitat. The increased width of the highway along with higher numbers of vehicles and speed of the cars and trucks likely will discourage or prevent movement by the California red-legged frog. The inhibition of animal movements caused by roads and other similar structures produces a significant effect by fragmenting habitats and populations (Mader 1984; Joly and Morand 1997; Yates *et al.* 1995).

The necessity of moving between multiple habitats and breeding ponds means that many amphibian species, such as the California red-legged frog are especially vulnerable to roads in the landscape. Van Gelder (1973) and Cooke (1995) have examined the effect of roads on amphibians; and found that because of their activity patterns, population structure, and preferred habitats, aquatic breeding amphibians are more vulnerable to traffic mortality than some other species.

The construction of the proposed project likely will restrict or block access for the California red-legged frog and wildlife between the Coast Range and the Cordelia Hills. This phenomenon is likely to increase with the larger road size and higher traffic volumes. The presence of vehicular traffic and the continuous linear nature of roads can be a significant physical barrier for many species, including the threatened California red-legged frog (small mammals: Oxley *et al.* 1974; Garland and Bradley 1984; Mader 1984; Merriam *et al.* 1989; snails: Baur and Baur 1990; arthropods: Mader *et al.* 1990). For example, over two years, 32,000 amphibians, reptiles, birds and mammals were found as roadkill on the 2.4 mile Long Point causeway adjacent to the Big Creek Wetland at Lake Erie in Ontario, Canada (Ashley and Robinson 1996). Ehman and Cogger (1985) estimated that road traffic killed 5.48 million reptiles and frogs in Australia each year.

Fahrig *et al.* (1995) found that high traffic two-lane paved roads had a much larger effect on frog abundance than low traffic two-lane roads. Mortality rates for anurans on high traffic roads are higher than on low traffic roads (Hels and Buchwald 2001). Vos and Chardon (1998) found a significant negative effect of road density on the occupation probability of ponds by the moor frog (*Rana arvalis*) in the Netherlands. In addition, incidences of very large numbers of road-killed frogs are well documented (e.g., Asley and Robinson 1996), and studies have shown strong population level effects of traffic density (Carr and Fahrig 2001) and high traffic roads on these amphibians (Van Gelder 1973; Vos and Chardon 1998). Most studies regularly count road kills from slow moving vehicles (Hansen 1982; Rosen and Lowe 1994; Drews 1995; Mallick *et al.* 1998) or by foot (Munguira and Thomas 1992). These studies assume that every victim is observed, which may be true for large conspicuous mammals, but it certainly is not true for small animals, such as the California red-legged frog. Amphibians appear especially vulnerable to traffic mortality because they readily attempt to cross roads, are slow-moving and small, and thus can not easily be avoided by drivers (Carr and Fahrig 2001).

The direction and type of habitat used by dispersing animals is especially important in fragmented environments (Forys and Humphrey 1996). Models of habitat patch geometry predict that individual animals will exit patches at more "permeable" areas (Buechner 1987; Stamps *et al.* 1987). A landscape corridor may increase the patch-edge permeability by extending patch habitat (La Polla and Barrett 1993), and allow individuals to move from one patch to another. The geometric and habitat features that constitute a "corridor" must be determined from the perspective of the animal (Forys and Humphrey 1996).

Caltrans plans to upsize six culverts to a 36 inch diameter and install two new 36 inch diameter culverts under State Route 12 available for frogs to use to move across road, however, it is doubtful if frogs will use long corregated culverts across a 80-foot or wider roadway that are not day-lighted, do not have a natural bottom, and do not have regular maintenance to prevent filling with sediment and debris. The dimension of the tunnels is considered one of the most important variables in the design of passage ways for vertebrates (Yanes *et al.* 1995; Rodriguez *et al.* 1996); although no studies have determined a minimum width for the California red-legged frog, passages made for other small vertebrates, such as salamanders, must be wide and tall enough to enable animals to clearly see to the opposite end of the culvert, or there is lighting along the culvert provided by overhead grates. Ng *et al.* (2004) note that culverts typically are installed to accommodate water flow, the installation of such passage ways solely for listed species and wildlife, especially across major roadways, is justified if no other passages or crossings exist and there is suitable habitat. It is also important that the crossing attract target listed species and wildlife; fencing or other measures be incorporated into a wildlife crossing to guide animals to the preferred crossing; the crossing be placed strategically to enhance habitat connectivity; and that the adjacent land use be conducive to long-term habitat protection (Portland State University 2003). The 36-inch culverts proposed by the California Department of Transportation may not adequately minimize the reduction or elimination of the movement of the California red-legged frog. The long term viability of any designated wildlife crossing is questionable unless crossing locations and the habitat on both sides of the crossing are permanently set aside as open space or have a conservation easement or some other designation that limits development. In addition, hog wire apparently will not be placed on the bottom one foot of the highway perimeter fence to deter frogs from entering the roadway and guide them towards safe crossings. The culverts may not be high enough to allow the animals to see through them to the other side of the roadway, improper placement in areas where the animals will not use them, and the uncertainty of maintenance and silt removal at drainage-associated culverts could eliminate their potential use by the frogs. The lack of hog wire will result in individuals crossing the roadway where they are more likely to be killed by vehicles.

Larger culverts, e.g. at least 72 inches tall, grates placed midway on the culvert to allow lighting to encourage the animals to use them, placement in areas where the animals are moving through, and regular, e.g. at least once a year, maintenance and silt removal, and the use of properly sized hog wire along the bottom of the highway perimeter fence to guide the California red-legged frog to the culverts should increase the potential for these animals to move between the Coast Range and Cordelia Hills.

Road studies suggest that properly designed culverts can significantly reduce wildlife, including frog. mortality (Dodd *et al.* 2004). The town of Amherst in the State of Massachusetts installed two culverts with guiding fences to facilitate spotted salamander (*Ambystoma maculatum*) migration from their wintering burrows during the spring. Before the placement of these culverts under Henry Street, a two-lane street, salamander mortality was high. After installation, approximately 75.9% of animals that reached the tunnel entrances successfully passed through them (Jackson 1996).

The installation of a concrete median will present a definitive barrier to California red-legged frog movement over the road. Caltrans plans to include a 6 inch radius hole in the concrete median every 300 feet and a one foot wide opening in the barrier every 1200 feet. Given the amount of traffic on State Route 12 it is unlikely that frogs will be able to successfully cross the road even if they do manage to find these openings. Construction of this barrier is likely to adversely affect the population within Fagan-Jameson Canyon-Lower Napa River core recovery area and will reduce or possibly eliminate the north-south population continuity, opportunities to recolonize formerly occupied habitat, and overall population viability. The barrier may also compromise the recovery goals for this California red-legged frog core recovery unit.

Though the intent of wildlife culverts and crossings are to ensure safe passage of listed species and wildlife, they are also a benefit to human safety (Aleshire 2007; Ruediger and DiGiorgio undated; Sherwood 2007). Deer-automobile collisions, estimated by the Insurance Information Institute to occur at a rate of 500,000 per year, result in over $1 billion worth of vehicular damages, 29,000 human injuries, and 200 human fatalities each year (Cornell University). Culverts large enough to accommodate species such as deer (*Odocoileus* species) and mountain lion (*Felis concolor*), while maintaining substrates for the California red-legged frog and smaller wildlife, could reduce roadway collisions for a variety of species. For example, wildlife crossings of the Trans-Canada Highway in Canada's Banff National Park have reduced wildlife road mortality by 80%, and as much as 96% for ungulates (Robbins 2003).

California red-legged frog crossing of State Route 12 via culverts should be designed and sited to enhance movement of this listed species. Recent conservation and minimization measures for this amphibian and other listed species (East Contra Costa County Habitat Conservation Plan Association 2006) has included:

1. Crossing Frequency. Large wildlife crossings will be placed approximately once every mile along new or substantially expanded roads that cross wildlife movement routes and small wildlife crossings should be placed approximately every 1,000 feet along new or substantially expanded roads. Within these parameters, undercrossings should be placed where wildlife are most likely to use them, rather than evenly spaced.

2. Culvert Designs. Tunnels or culverts must be the minimum length, height, and width necessary to provide safe passage under the road. Culvert designs will be based on the best available data at the time. Culverts should be as wide as possible. Culverts should,

when feasible, provide a natural substrate on which wildlife can travel (e.g., open bottom). It is also recommended that wildlife undercrossings using tunnels or culverts use grating on the inactive part of the roadbed (e.g., road shoulders) to allow filtration of ambient light and moisture but minimize noise intrusion. Artificial lighting inside tunnels or culverts is not recommended; these devices have not been shown to be effective and may deter nocturnal wildlife.

3. Fencing Design. Fencing will be used along the roadway to direct wildlife to undercrossings and minimize their access to the road. Fencing designs will be customized for the wildlife expected to use the undercrossing and will be based on the best available data at the time. Fencing must be continuous along the road and must be attached to the undercrossing to facilitate its use. Fencing must also extend well beyond the target undercrossing to reduce the chance of wildlife moving around the fence.

   Fencing must be monitored regularly by the applicant and repairs made promptly to ensure effectiveness. Wildlife undercrossings must be at the same or similar elevation as the fencing (e.g., along elevated roadways) to increase chances of their use. Vegetation must be managed along small mammal and amphibian fencing to reduce the opportunity for these species to climb the fence. Fencing designed for small mammal or amphibian exclusion must be installed at least 8 inches deep into the soil to prevent small mammal burrows providing access under the fence.

Because their habitats have been fragmented, many endangered and threatened species exist as metapopulations (Verboom and Apeldom 1990; Verboom *et al.* 1991). A metapopulation is a collection of spatially discrete subpopulations that are connected by the dispersal movements of the individuals (Levins 1970; Hanski 1991). For metapopulations of listed species, a prerequisite to recovery is determining if unoccupied habitat patches are vacant due to the attributes of the habitat patch (food, cover, and patch area) or due to patch context (distance of the patch to other patches and distance of the patch to other features). Subpopulations on patches with higher quality food and cover are more likely to persist because they can support more individuals. Large populations have less of a chance of extinction due to stochastic events (Gilpin and Soule 1986). Similarly, small patches will support fewer individuals, increasing the rate of extinction. Patches that are near occupied patches are more likely to be recolonized when local extinction occurs and may benefit from emigration of individuals via the "rescue" effect (Hanski 1982; Gotelli 1991; Holt 1993; Fahrig and Merriam 1985). For the metapopulation to persist, the rate of patches being colonized must exceed the rate of patches going extinct (Levins 1970). If some subpopulations go extinct regardless of patch context, recovery actions should be placed on patch attributes. Patches could be managed to increase the availability of food and/or cover. Movements and dispersal corridors likely are critical to California red-legged frog population dynamics, particularly because the animals likely currently persist as metapopulations with disjunct population centers. Movement and dispersal corridors are important for alleviating over-crowding and intraspecific competition, and also they are important for facilitating the recolonization of areas where the animal has been extirpated. Movement between population

centers maintains gene flow and reduced genetic isolation. Genetically isolated populations are at greater risk of deleterious genetic effects such as inbreeding, genetic drift, and founder effects. The survival of wildlife species in fragmented habitats may ultimately depend on their ability to move among patches to access necessary resources, retain genetic diversity, and maintain reproductive capacity within populations (Hilty and Merenlender 2004; Petit *et al.* 1995; Buza *et al.* 2000).

Most metapopulation or meta-population-like models of patchy populations do not directly include the effects of dispersal mortality on populations dynamics (Hanski 1994; With and Crist 1995; Lindenmayer and Possingham 1996). Based on these models, it has become a widely held notion that more vagile species have a higher tolerance to habitat loss and fragmentation than less vagile species. But models that include dispersal mortality predict exactly the opposite: more vagile species should be more vulnerable to habitat loss and fragmentation becase they are more susceptible to dispersal mortality (Fahrig 1998; Casagrandi and Gatto 1999). This prediction is supported by Gibbs (1998), who examined the presence-absence of five amphibian species across a gradient of habitat loss. He found that species with low dispersal rates are better able than more vagile species top persist in landscapes with low habitat cover. Gibbs (1998) postulated that the land between habitat serves as a demographic "drain" for many amphibians. Furthermore, Bonnet *et al.* (1999) found that snake species that use frequent long-distance movements have higher mortality rates than do sedentary species.

The construction activities at the proposed project could result in the introduction of chemical contaminants to the site. Substances used in road building materials or could leach out or wash out of the soil into adjacent habitat. Vehicles may leak hazardous substances such as motor oil and antifreeze. A variety of substances could be introduced during accidental spills of materials. Such spills can result from leaks in vehicles, small containers falling off vehicles, or from accidents resulting in whole loads being spilled. Large spills may be partially or completely mitigated by clean-up efforts, depending on the substance. California red-legged frogs using these areas could be exposed to any contaminants that are present at the site. Exposure pathways could include inhalation, dermal contact, direct ingestion, or ingestion of contaminated soil or plants. Exposure to contaminants could cause short- or long-term morbidity, possibly resulting in reduced productivity or mortality. Carcinogenic substances could cause genetic damage resulting in sterility, reduced productivity, or reduced fitness among progeny. Little information is available on the effects of contaminants on the California red-legged frog. The effects may be difficult to detect. Morbidity or mortality likely would occur after the animals had left the contaminated site, and more subtle effects such as genetic damage could only be detected through intensive study and monitoring.

Preconstruction surveys and the relocation of individual red-legged frogs may reduce injury or mortality. However, the capturing and handling of red-legged frogs to remove them from a work area may result in the harassment, mortality or injury of individuals. Stress, injury, and mortality may occur as a result of improper handling, containment, and transport of individuals. Death and injury of individual red-legged frogs could occur at the time of relocation or later in time

subsequent to their release. Although survivorship for translocated red-legged frogs has not been estimated, survivorship of translocated wildlife, in general, is lower because of intraspecific competition, lack of familiarity with the location of potential breeding, feeding, and sheltering habitats, and increased risk of predation. Improper handling, containment, or transport of individuals would be reduced or prevented by use of a Service-approved biologist, by limiting the duration of handling, and requiring the proper transport.

Biologists, construction workers, and construction equipment working in different areas and with different species may transmit diseases by introducing contaminated equipment. The chance of a disease being introduced into a new area is greater today than in the past due to the increasing occurrences of disease throughout amphibian populations in California and the United States. It is possible that chytrid fungus may exacerbate the effects of other diseases on amphibians or increase the sensitivity of the amphibian to environmental changes (e.g., water pH) that reduce normal immune response capabilities (Bosch *et al.* 2001). Implementation of the "Declining Amphibian Populations Task Force Fieldwork Code of Practice" during any aquatic survey activity will likely prevent transfer of diseases through contaminated equipment or clothing.

Construction of roads can facilitate the invasion and establishment by species not native to the area (Gelbard and Belnap 2003) or are native and are better competitors than the California red-legged frog, such as the bullfrog, that could feed on or compete with, the listed amphibian or its food sources. Disturbance and alteration of habitat adjacent to roads may create favorable conditions for non-native plants and animals. These exotic species can spread along roadsides and then into adjacent habitat. Non-native animals may use modified habitats adjacent to road to disperse into California red-legged frog habitat. These animals could compete with the listed ranid for resources such as food or cover, or directly injure or kill the amphibians. Non-native plants and animals may reduce habitat quality for the threatened frog, and reduce the productivity or the local carrying capacity for the animals. Introductions of non-native species could cause California red-legged frogs to alter behavioral patterns by avoiding or abandoning areas near road.

Disturbed areas adjacent to roads provide favorable habitat conditions for a number of non-native plant species. Some of these taxa are aggressively invasive and they can alter natural communities and potentially affect habitat quality. A problematic species within the range of the California red-legged frog is yellow star thistle (*Centaurea melitensis*). Dense stands of this plant can form along roadsides and then spread into adjacent habitat. This plant displaces native vegetation, competes with native plants for resources, and it may be difficult for the animals to move through due the plant's numerous sharp spines. Other species that may disperse along roads and invade adjacent riparian habitats include mustards (*Brassica* species) and Russian thistle (*Salsola tragus*) (Tellman 1997). Disturbed soils and reduced competition from native plants are some of the conditions that facilitate invasion along roads by non-native plant species. Negative effects to wildlife populations from roads may extend some distance from the actual road, as the proposed project. The phenomenon can result from any of the effects already described in this biological opinion, such as vehicle-related mortality, habitat degradation, and

invasive exotic species. Forman and Deblinger (1998) described the area affected as the "road effect" zone. Along a 4-lane road in Massachusetts, they determined that this zone extend for an average of approximately 980 feet to either side of the road for an average total zone width of approximately 1970 feet. However, in places they detected an effect > 0.6 mile from the road. Rudolph *et al* (1999) detected reduced snake abundance up to 2790 feet from roads in Texas. They estimated snake abundance out to 2790 feet, so the effect may have been greater. Extrapolating to a landscape scale, they concluded the effect of roads on snake populations in Texas likely was significant, given that approximately 79% of the land area of the Lone Star State is within 1640 feet of a road. The "road-zone" effects can be subtle. Van der Zandt *et al.* (1980) reported that lapwings (*Vanellus vanellus*) and black-tailed godwits (*Limosa limosa*) feeding at 1575 feet-6560 feet from roads were disturbed by passing vehicles. The heart rate, metabolic rate and energy expenditure of female bighorn sheep (*Ovis canadensis*) increases near roads (MacArthur *et al.* 1979). Trombulak and Frossell (2000) described another type of "road-zone' effect. Heavy metal concentrations from vehicle exhaust were greatest within 66 feet of roads, by elevated levels of metals in both soil and plants were detected at 660 feet of roads. The "road-zone" apparently varies with habitat type and traffic volume. Based on responses by birds, Forman (2000) estimated the effect zone along primary roads of 1000 feet in woodlands, 1197 feet in grasslands, and 2657 feet) in natural lands near urban areas. Along secondary roads with lower traffic volumes, the effect zone was 656 feet. The "road zone" and the California red-legged frog have not been adequately investigated.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

A number of on-going and proposed projects could contribute to adverse affects to vernal pool crustaceans within Solano and Napa counties. In most cases, however, these actions would be subject to Federal review and would, therefore, not be considered cumulative to the proposed project. These projects will contribute to the loss and degradation of habitats of listed species across their range. These activities may alter vernal pool crustacean habitats and can potentially harass, harm, injure, or kill these species. Because these activities have a Federal nexus, the Service will analyze these projects to determine if they will result in the jeopardy of federally-listed species and/or adverse modification and destruction of critical habitat for these species. An undetermined number of future projects that alter the habitat of vernal pool crustaceans, however, could go forward without the need for a Corps 404 permit. Activities that would potentially affect listed vernal pool crustaceans include development associated with urban, water, flood control, highway/roadway and utility projects, application of herbicides/pesticides, conversion to agricultural use, and indirect effects of adjacent development such as urban run-off altering the hydrologic regime.

Numerous non-Federal activities continue to negatively affect the California red-legged frog in Solano and Napa Counties. Habitats are lost or degraded as a result of road and utility construction and maintenance, overgrazing, agricultural expansion, and water irrigation and storage projects that may not be funded, permitted, or constructed by a Federal agency. Other threats include contamination, poisoning, increased predation, and competition from non-native species associated with human development. Small private actions that may impact listed species, such as conversion of land, small mammal population control, mosquito control, and residential development, may occur without consultation with or authorization by the Service or the California Department of Fish and Game pursuant to their respectively Endangered Species Act.

According to the Environmental Assessment prepared for the State Route 12 Jameson Canyon Road Widening & State Routes 29/12 Interchange Project, areas adjacent to the State Route 12 widening are projected to remain zoned as rural and agricultural (Caltrans 2007c). However, the interchange is within an unincorporated area known as the South Napa County Business Park or the Napa Airport Industrial Planning Area. This area is projected to become a major regional employment center with industrial and low density commercial uses (Caltrans 2007c). Much of the former open grassland habitat adjacent to the intersection had already been cleared for development at the time of the November 21, 2007 site visit (John Cleckler, Service, personal observation). The Service is unaware of formal or informal section 10 or section 7 consultations initiated for the development of these properties.

According to the Environmental Assessment, Napa County is expected to gain 12,030 households between 2005 and 2030, and the State Route 29 corridor will dominate the county's growth (Caltrans 2007c). State Route 12 will continue to be the primary link between Napa and Sonoma Counties. Although housing growth is expected to increase in Napa and Sonoma Counties, Jameson Canyon will continue to experience major traffic due to residents of the more affordable Sonoma County commuting to work in Napa County (Caltrans 2007c).

As urban development continues, it will likely adversely affect upland areas that serve as dispersal and aestivation habitat for red-legged frogs. Continued development and maintenance of roadways to serve expanding urban areas may further fragment and isolate populations of red-legged frogs from other nearby populations. Increased predation associated with domesticated pets or feral animals generally accompanies urban expansion. As urban development encroaches on rural areas, the need increases for mosquito abatement programs that may introduce exotic fish into ponds used for breeding by red-legged frogs, thus impacting the reproductive success of this species.

Increased levels of vehicles and increased vehicle speeds could lead to an increased mortality level for the California red-legged frog. The cumulative local development will result in temporary and permanent habitat fragmentation. The results of fragmentation are inhibition of genetic exchange between populations and impediments to recolonization of habitats from which populations have been extirpated. Small, isolated populations are substantially more vulnerable

to stochastic events (e.g., aberrant weather patterns, fluctuations in availability of food) and may exhibit reduced adaptability to environmental (natural or anthropogenic) changes.

There is a continued demand for new housing and commercial development in Solano and Napa counties and other road and development projects have been recently completed or are planned along the State Route 12, Interstate 80, State Route 101, and State Route 29. These developments and further infill will eliminate the habitat connectivity between listed species habitat remaining habitat in the action area vicinity and the local region. Development of adjacent wildlife habitat will continue to result in the loss of not only breeding, resting, and foraging habitat, but the loss of dispersal corridors between breeding populations, thereby further isolating and fragmenting wildlife populations. Additionally, development of small reservoirs or water bodies, such as golf course hazards, and water diversions may occur which may pose further threats such as disruption of dispersal corridors for terrestrial species, and competition or predation from with non-native species such as bullfrogs for aquatic species.

Cumulative effects to the California red-legged frog include continuing and future conversion of suitable breeding, foraging, sheltering, and dispersal habitat resulting from urban development. Additional urbanization can result in road widening and increased traffic on roads that bisect habitat, thereby increasing road-kill while reducing in size and further fragmenting remaining habitats.

Cattle-grazing is a common land use practice in rural Solano and Napa Counties. Overgrazing results in degradation and loss of riparian vegetation, increased water temperatures, streambank and upland erosion, and decreased water quality in streams. Livestock operations may also degrade water quality with pesticides and nutrient contamination. However, light to moderate livestock grazing is generally thought to be compatible with continued successful use of rangelands by the red-legged frog and other listed species, provided the grazed areas do not also have intensive burrowing rodent control efforts (T. Jones, in litt. 1993; Shaffer et al. 1993). The shorter vegetation associated with grazed areas may make the habitat more suitable for ground squirrels whose burrows are utilized by red-legged frogs. Rodent control in rural areas in Solano and Napa Counties could contribute to the decline of red-legged frogs in the region, as well as other sensitive species that utilize burrows created by burrowing rodents.

Agricultural development, impoundments, and irrigation can reduce stream flows, resulting in the loss of aquatic habitat during the summer for red-legged frogs. Discing is a common practice on agricultural lands which can result in substantial losses of upland habitat for red-legged frogs. Significant conversion of rural, undeveloped land to agricultural land, particularly vineyards, is currently occurring in Solano and Napa Counties, resulting in loss of upland habitat for listed species.

California red-legged frogs likely are exposed to a variety of pesticides and other chemicals throughout their ranges. This amphibian species could also die from starvation due to the loss of their prey base. Hydrocarbon and other contamination from oil production and road runoff; the

application of numerous chemicals for roadside maintenance; urban/suburban landscape maintenance; and rodent and vector control programs may all have negative effects on red-legged frog populations. In addition, red-legged frogs may be harmed through increased road kill due to the construction and use of new roads and increased traffic in the overall region and collection by amphibian enthusiast and others.

Further habitat fragmentation; additional non-native species introduction; and increased access to aquatic habitat could facilitate or increase the spread of amphibian diseases within the range of the California red-legged frog. The global mass extinction of amphibians primarily due to chytrid fungus continues to be of significant concern (Norris 2007; Skerratt *et al* 2007).

The global average temperature has risen by approximately 0.6 degrees Celsius during the 20th Century (IFPC 2001, 2007; Adger *et al* 2007). There is an international scientific consensus that most of the warming observed has been caused by human activities (IFPC 2001, 2007; Adger *et al.* 2007), and that it is "very likely" that it is largely due to manmade emissions of carbon dioxide and other greenhouse gases (Adger *et al.* 2007). Ongoing climate change (Anonymous 2007; Inkley *et al.* 2004; Adger *et al.* 2007; Kanter 2007) likely imperils the California red-legged frog, and the resources necessary for their survival. Since climate change threatens to disrupt annual weather patterns, it may result in a loss of their habitats and/or prey, and/or increased numbers of their predators, parasites, and diseases. Where populations are isolated, a changing climate may result in local extinction, with range shifts precluded by lack of habitat.

Conclusion

After reviewing the current status of the California red-legged frog, the environmental baseline for the action area; the effects of the proposed State Route 12/State Route 29 Interchange Improvement and State Route 12 Jameson Canyon Road Widening Projects and the cumulative effects; it is the Service's biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of this listed species. We based these determinations on the following: (1) pre-construction surveys will be conducted for California red-legged frogs and individuals found in the project work area will be relocated to suitable habitat; (2) a Service-approved biologist will monitor all activities that may result in the take of listed species; (3) a compensation package has been developed that provides in-perpetuity management for 766.11 acres of habitat and design features that will benefit the California red-legged frog, (4) other conservation measures, as described in the Project Description of this biological opinion, that will be fully implemented by Caltrans. Critical habitat for the California red-legged frog have been designated, however none is located in the action area, and therefore none will be affected by the proposed project.

INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species without special exemption. Take is

defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by Caltrans so that they become binding conditions of any grant or permit issued to Caltrans as appropriate, in order for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity covered by this Incidental Take Statement. If Caltrans (1) fails to require Caltrans to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect because when California red-legged frogs are not in their breeding ponds, they inhabit the burrows of ground squirrels or other rodents; they may be difficult to locate due to their cryptic appearance and behavior; the juvenile and adult animals may be located a distance from the breeding ponds; the migrations occur on a limited period during rainy nights in the fall, winter, or spring; and the finding of an injured or dead individual is unlikely because of their relatively small body size. Recent project monitoring suggests that California red-legged frogs are difficult to find during preconstruction clearance surveys that include excavation of potential upland salamander refugia in close proximity to breeding ponds and other aquatic habitat. Losses of California red-legged frogs may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime at their breeding ponds, or additional environmental disturbances. Due to the difficulty in quantifying the number of California red-legged frogs that will be taken as a result of the proposed action, the Service is quantifying take incidental to the project as all of the California red-legged frogs inhabiting or utilizing the 255.37 acres of habitat identified within the action area. The incidental take is expected to be in the form of harm, harassment, injury, and mortality to adult California red-legged frogs from habitat loss/degradation, construction-related disturbance, and capture and relocation.

Upon implementation of the following reasonable and prudent measures incidental take associated with the proposed action described above for the California red-legged frog will become exempt from the prohibitions described under section 9 of the Act.

Effect of the Take

The Service has determined that this level of anticipated take for the California red-legged frog is not likely to jeopardize the continued existence of this species. Critical habitat for the California red-legged frog have been designated, however none is located in the action area, and therefore none will be affected by the proposed project.

Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the effect of the proposed action on the California red-legged frog:

1. Caltrans will implement the conservation measures in the project description as described in the August 2007, Biological Assessment, the November 21, 2007 revised project description, and this biological opinion.

2. Caltrans shall minimze adverse effects to the California red-legged frog.

3. Caltrans shall ensure their compliance with this biological opinion.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Caltrans shall ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

1. The following Terms and Conditions implement Reasonable and Prudent Measure one (1):

    a. Caltrans shall minimize the potential for harm, harassment, or killing of federally listed wildlife species resulting from project related activities by implementation of the conservation measures as described in the August 2007, Biological Assessment, the November 21, 2007 revised project description, January 31, 2008, letter from Caltrans to the Service, January 31, 2008, electronic mail message from Caltrans to the Service, and appearing in the *Project Description* of this biological opinion.

    b. Caltrans shall include Special Provisions that include the Conservation Measures and the Terms and Conditions of this biological opinion in the solicitation for bid

information. In addition, Caltrans shall educate and inform contractors involved in the project as to the requirements of the biological opinion.

c. The applicant shall prepare a relocation plan for moving California red-legged frogs that will be submitted to the Service for review ad approval at least thirty (30) calendar days prior to the date of groundbreaking.

2. The following Terms and Conditions implement Reasonable and Prudent Measure two (2):

a. The Resident Engineer or their designee shall be responsible for implementing the conservation measures and Terms and Conditions of this biological opinion and shall be the point of contact for the project. The Resident Engineer or their designee shall maintain a copy of this biological opinion onsite whenever construction is taking place. Their name and telephone number shall be provided to the Service at least thirty (30) calendar days prior to groundbreaking at the project. Prior to ground breaking, the Resident Engineer must submit a letter to the Service verifying that they posses a copy of this biological opinion and have read the Terms and Conditions.

b. A qualified biologist(s) shall be onsite during all activities that may result in the take of the California red-legged frog. The qualifications of the biologist(s) must be presented to the Service for review and written approval prior to ground-breaking at the project site. Prior to approval, the biologist(s) must submit a letter to the Service verifying that they posses a copy of this biological opinion and understand its Terms and Conditions. The biologist(s) will keep a copy of this biological opinion in their possession when onsite. The biologist(s) shall be given the authority to stop any work that may result in take of these listed animal species. If the biologist(s) exercises this authority, the Service and the California Department of Fish and Game shall be notified by telephone and electronic mail within one (1) working day. The Service contact is Chris Nagano, Deputy Assistant Field Supervisor, Endangered Species Program at the Sacramento Fish and Wildlife Office at telephone (916) 414-6600 or e-mail at Chris_Nagano@fws.gov.

c. The Caltrans biologist shall have oversight over implementation of all the Terms and Conditions in this biological opinion, and shall have the authority to stop project activities, through communication with the Resident Engineer or their designee, if any of the requirements associated with these Terms and Conditions are not being fulfilled. If biologist/construction liaison has requested a stop work due to take of any of the listed species the Service and the California Department of Fish and Game will be notified within one (1) working day via email or telephone.

d. No more than thirty (30) calendar days prior to any ground disturbance, pre-construction surveys shall be conducted by a Service-approved biologist for the

California red-legged frog for the road construction. These surveys shall consist of walking surveys of the project limits and adjacent areas accessible to the public to determine presence of the species. Biologist should investigate all potential California red-legged frog cover sites. This includes thorough investigation of mammal burrows. The entrances should be collapsed following investigation.

e. Only Service-approved biologist(s) who are familiar with the biology and ecology of the California red-legged frog shall capture or handle this listed species.

f. To control erosion during and after implementation of the project, the applicant will implement best management practices (BMPs). Erosion control measures and BMPs, which retain soil or sediment, runoff from dust control, and hazardous materials on the construction site and prevent these from entering the vernal pool complexes, will be placed, monitored, and maintained throughout the construction operations. These measures and BMPs may include, but are not limited to, silt fencing, sterile hay bales, vegetative strips, hydroseeding, and temporary sediment disposal.

g. Nets or bare hands may be used to capture California red-legged frogs. Service-approved biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they are capturing and relocating red-legged frogs. To avoid transferring disease or pathogens between aquatic habitats during the course of surveys or handling of red-legged frogs, Service-approved biologists will follow the Declining Amphibian Populations Task Force's "Code of Practice." Service-approved biologists will limit the duration of handling and captivity of red-legged frogs. While in captivity, individual frogs shall be kept in a cool, moist, aerated environment, such as a bucket containing a damp sponge. Containers used for holding or transporting adults shall not contain any standing water.

h. Biologists shall take precautions to prevent introduction of amphibian diseases to the action area by disinfecting equipment and clothing as directed in the October 2003, California tiger salamander survey protocol titled, Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander and the recommended equipment decontamination procedures within the Service's California Red-Legged Frog Survey Guidance. Both items are available at the Service's Sacramento office website (http://www.fws.gov/sacramento/es/protocol.htm). Disinfecting equipment and clothing is especially important when biologists are coming to the action area to handle salamanders or frogs after working in other aquatic habitats.

i. A biologist should be onsite to monitor the initial ground disturbance activities. The biologist should perform a clearance survey immediately prior to the initial ground disturbance. The biological monitor should also investigate areas of disturbed soil for

signs of listed species within 30 minutes following the initial disturbance of that given area.

j. All California red-legged frogs encountered in the action area should be relocated to a Service-approved location. The relocation site must be approved for the State Route 12/State Route 29 Interchange Improvement and State Route 12 Jameson Canyon Road Widening Projects prior to California red-legged frogs.

k. An employee education program covering the California red-legged frog must be conducted before groundbreaking for the State Route 12/State Route 29 Interchange Improvement and State Route 12 Jameson Canyon Road Widening Projects. The program should consist of a brief presentation by the on-site biologist to explain endangered species concerns to all contractors, their employees, and agency personnel involved in the project. The program should include a description of the California red-legged frog and their habitat needs; an explanation of the status of these species and their protection under the Endangered Species Act; associated consequences of noncompliance with this opinion; and a description of the measures being taken to reduce effects to these species during project construction and implementation. An outline of the training program shall be submitted to the Deputy Assistant Field Supervisor of the Endangered Species Program at the Sacramento Fish and Wildlife Office within twenty (20) working days prior to the start of construction. Documentation of the training, including individual signed affidavits, will be kept of file and available on request.

l. Project employees shall be provided with written guidance governing vehicle use, speed limits on unpaved roads, fire prevention, and other hazards.

m. Permanent and temporary disturbances and other types of project-related disturbance to the habitats of the California red-legged frog shall be minimized to the maximum extent practicable by Caltrans. To minimize temporary disturbances, all project-related vehicle traffic shall be restricted to established roads, construction areas, and other designated areas. These areas also should be included in pre-construction surveys and, to the maximum extent possible, should be established in locations disturbed by previous activities to prevent further adverse effects.

n. The construction area shall be delineated with high visibility temporary fencing at least 4 feet in height, flagging, or other barrier to prevent encroachment of construction personnel and equipment onto any sensitive areas during project work activities. Such fencing shall be inspected and maintained daily by the on-site biologist until completion of the project. The fencing will be removed only when all construction equipment is removed from the site. Actions within the project area shall be limited to vehicle and equipment operation on existing roads. No project activities will occur outside the delineated project construction area.

o. To prevent inadvertent entrapment of California red-legged frogs during construction, all excavated, steep-walled holes or trenches more than 2 feet (0.61 meters) deep shall be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they must be thoroughly inspected for trapped animals. If at any time a trapped listed animal is discovered, the on-site biologist should immediately place escape ramps or other appropriate structures to allow the animal to escape, or the Service and/or California Department of Fish and Game shall be contacted by telephone for guidance. The Service shall be notified of the incident by telephone and electronic mail within one working day.

p. Project-related vehicles shall observe a 20-mile per hour speed limit within construction areas, except on County roads, and State and Federal highways; this is particularly important at night when California red-legged frogs are most active. To the maximum extent possible, night-time construction should be minimized. Off-road traffic outside of designated project areas shall be prohibited.

q. All grindings and asphaltic-concrete waste shall be stored within previously disturbed areas absent of habitat and at a minimum of 150 feet from any culvert, or drainage feature.

r. To eliminate an attraction to predators of the California red-legged frog all food-related trash items such as wrappers, cans, bottles, and food scraps must be disposed of in closed containers and removed at least once every day from the entire project site.

s. To avoid injury or death of the California red-legged frog, no firearms shall be allowed on the project site except for those carried by authorized security personnel, or local, State, or Federal law enforcement officials.

t. To prevent harassment, injury or mortality of California red-legged frog or destruction of their burrows by dogs or cats, no canine or feline pets shall be permitted in the action area.

u. Plastic mono-filament netting (erosion control matting) or similar material shall not be used at the project site because California red-legged frogs may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

3. The following Terms and Conditions implement Reasonable and Prudent Measure three (3):

   a. If requested, before, during, or upon completion of ground breaking and construction activities, Caltrans shall allow access by Service and/or California Department of Fish and Game personnel to the project site to inspect project effects to the California red-legged frog, and its habitat.

   b. Caltrans shall submit a post-construction compliance report prepared by the on-site biologist to the Sacramento Fish and Wildlife Office within 60 calendar days following project completion or within 60 calendar days of any break in construction activity lasting more than 60 calendar days. This report shall detail (i) dates that construction occurred; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of failure to meet such measures, if any; (iv) known project effects on the California red-legged frog, if any; (v) occurrences of incidental take of any of this species; (vi) documentation of employee environmental education; and (vii) other pertinent information. The reports shall be addressed to the Deputy Assistant Field Supervisor of the Endangered Species Program, Sacramento Fish and Wildlife Office.

   c. Caltrans shall report to the Service any information about take or suspected take of listed wildlife species not authorized by this biological opinion. Caltrans must notify the Service via electronic mail and telephone within 24 hours of receiving such information. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and photographs of the specific animal. The individual animal shall be preserved, as appropriate, and held in a secure location until instructions are received from the Service regarding the disposition of the specimen or the Service takes custody of the specimen. The Service contacts are Chris Nagano, Deputy Assistant Field Supervisor, Endangered Species Program, Sacramento Fish and Wildlife Office at (916) 414-6600, and Resident Agent-in-Charge Scott Heard of the Service's Law Enforcement Division at (916) 414-6660.

Reporting Requirements

Injured California red-legged frogs must be cared for by a licensed veterinarian or other qualified person such as the on-site biologist; dead individuals must be placed in a sealed plastic bag with the date, time, location of discovery, and the name of the person who found the animal; the carcass should be kept in a freezer; and held in a secure location. The Service and the California Department of Fish and Game must be notified within one (1) working day of the discovery of death or injury to a California red-legged frog that occurs due to project related activities or is observed at the project site. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal clearly indicated on a USGS 7.5 minute quadrangle and other maps at a finer scale, as requested by the Service, and any other pertinent information.

The Service contacts are Chris Nagano, Deputy Assistant Field Supervisor, Endangered Species Program at the Sacramento Fish and Wildlife Office (916/414-6600), and Scott Heard, Resident Agent-in-Charge of the Service's Law Enforcement Division at 916/414-6660. The California Department of Fish and Game contact is Mr. Scott Wilson at telephone (707) 944-5563. Sightings of any listed or sensitive animal species should be reported to the California Natural Diversity Database of the California Department of Fish and Game.

Caltrans shall submit a post-construction compliance report prepared by the on-site biologist to the Sacramento Fish and Wildlife Office within sixty (60) calendar days of the date of the completion of construction activity. This report shall detail (i) dates that construction occurred; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of failure to meet such measures, if any; (iv) known project effects on the California red-legged frog, if any; (v) occurrences of incidental take to any listed species, if any; (vi) documentation of employee environmental education; and (vii) other pertinent information.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

The Service requests notification of the implementation of any conservation recommendations in order to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats. We propose the following conservation recommendations:

1. Caltans, Solano Transportation Authority, and the Napa County Transportation and Planning Agency should include properly sized culverts to enable black-tailed deer (*Odocoileus hemionus*), mountain lion, bobcat (*Felis rufus*), gray fox (*Urocyon cinereoargenteus*), badger (*Taxidea taxus*), long-tailed weasel (*Mustela frenata*), and other wildlife to safely cross Highway 12. A culvert that allows safe crossing by black-tailed deer also can be used by hikers and horseback riders.

2. Caltans, Solano Transportation Authority, and the Napa County Transportation and Planning Agency should place hog wire along the bottom portion of the perimeter fence along State Route 12/State Route 29 Interchange Improvement and State Route 12 Jameson Canyon Road Widening Projects. The perimeter fence should guide California red-legged frogs and wildlife to the culverts in an attempt to ensure their safe passage across the roadway.

3. Caltans, Solano Transportation Authority, and the Napa County Transportation and Planning Agency should assist the Service in implementing recovery actions identified in the *Recovery Plan for the California Red-legged Frog* (Service 2002).

4. Caltans should consider participating in the planning for a regional habitat conservation plan for the California red-legged frog, other listed species, and sensitive species.

5. Caltans, Solano Transportation Authority, and the Napa County Transportation and Planning Agency should consider establishing functioning preservation and creation conservation banking systems to further the conservation of the California red-legged frog, and other appropriate species. Such banking systems also could possibly be utilized for other required mitigation (i.e., seasonal wetlands, riparian habitats, etc.) where appropriate. Efforts should be made to preserve habitat along roadways in association with wildlife crossings.

6. Roadways can constitute a major barrier to critical wildlife movement. Therefore, Caltans, Solano Transportation Authority, and the Napa County Transportation and Planning Agency should incorporate culverts, tunnels, or bridges on highways and other roadways that allow safe passage by California red-legged frog, other listed animals, and wildlife. Photographs, plans, and other information in to the biological assessments if "wildlife friendly" crossings are incorporated into projects. Efforts should be made to establish upland culverts designed specifically for wildlife movement rather than accommodations for hydrology. Transportation agencies should also acknowledge the value of enhancing human safety by providing safe passage for wildlife in their early project design.

7. Caltans should continue to pursue multifaceted compensation packages such as the one developed for the proposed U.S. Interstate 580/Isabel Avenue Interchange Construction Project on future formal consultations with the Service.

8. Caltrans should continue to develop and implement their Early Statewide Biological Mitigation Planning Project that has been developed by the University of California at Davis, Road Ecology Center through Caltrans funding.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed and/or proposed species or their habitats, the Service requests notification of the implementation of these recommendations.

REINITIATION--CLOSING STATEMENT

This concludes formal consultation on the proposed State Route 12/State Route 29 Interchange Improvement and State Route 12 Jameson Canyon Road Widening Projects, Solano and Napa Counties, California. As provided in 50 CFR §402.16 and in the terms and conditions of this biological opinion, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and

if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have questions concerning this opinion on the proposed State Route 12/State Route 29 Interchange Improvement and State Route 12 Jameson Canyon Road Widening Projects, Solano and Napa Counties, California, please contact John Cleckler or Chris Nagano at the letterhead address or at (916) 414-6600.

Sincerely,

Chris Nagano

for Cay C. Goude
Acting Field Supervisor

cc:
Scott Wilson, California Department of Fish and Game, Yountville, California
Greg Martinelli, California Department of Fish and Game, Yountville, California
Anna Holmes, California Department of Fish and Game, Yountville, California
Janet Adams, Solano Transportation Authority, Suisun City, California
Jim Leddy, Napa County Transportation and Planning Agency, Napa, California
John Ponte, Napa County Transportation and Planning Agency, Napa, California
Terry Bowen, Gray-Bowen, Walnut Creek, California
Bill Gray, Gray-Bowen, Walnut Creek, California
Jonathan Mates-Muchin, California Department of Transportation, Oakland, California
Dale Jones, California Department of Transportation, Sacramento, California

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Amendment to the
United States Fish and Wildlife Service
Biological Opinion

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In Reply Refer To:
81420-2008-F-0827-R001-2

JUN 14 2011

Mr. James Richards
California Department Transportation
Attn: Christopher States
Environmental Division, MS 8E
111 Grand Avenue
Oakland, California 94612

Subject: Reinitiation of the Biological Opinion on the Effects of the Proposed State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects, Solano and Napa Counties, California (Service File No.: 81420-2008-F-0827; Caltrans EA 04-287900 and 04-264100)

Dear Mr. Richards:

This is in response to your April 30, 2010, request for reinitiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects in Solano and Napa Counties, California. The reinitiation is prompted by the changes to the project description for the State Route 12 Jameson Canyon Road Widening Project. The California Department of Transportation (Caltrans) has reduced the proposed construction footprint primarily by redefining utility relocation and constricting the roadway corridor with the installation of retaining walls. Caltrans has also further upsized the dimensions of planned cross-culverts to increase the likelihood that they will be used by wildlife as safe passage under State Route 12 (Jameson Canyon Road). No changes have been made to the project description for the State Route 12/State Route 29 Interchange Improvement Project.

The Service is issuing a complete revision of the biological opinion due to the number of changes. At issue are the potential effects on the threatened California red-legged frog (*Rana draytonii*). This document represents the Service's revised biological opinion on the effects of the proposed action on this listed species. This document has been prepared in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*)(Act).

Since the issuance of the January 31, 2008, biological opinion, Caltrans has completed protocol-level surveys in the revised action area for the endangered showy Indian clover (*Trifolium*

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amoenum), endangered Contra Costa goldfields (*Lasthenia conjugans*), endangered Conservancy fairy shrimp (*Branchinecta conservatio*), endangered vernal pool tadpole shrimp (*Lepidurus packardii*), and the threatened vernal pool fairy shrimp (*Branchinecta lynchi*). Based on the provided survey results, the Service concurs that the proposed projects are not likely to have an adverse affect on these listed plants and branchiopods.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users legislation (23 U.S.C. 327) allows the Secretary of the U.S. Department of Transportation acting through the Federal Highway Administration (FHWA) to establish a Surface Transportation Project Delivery Pilot Program, whereby a State may assume the FHWA responsibilities under the National Environmental Policy Act for environmental review, agency consultation and other actions pertaining to the review or approval of a specific project. Caltrans assumed these responsibilities for the FHWA on July 1, 2007 through a Memorandum of Understanding within the State of California (http://www.dot.ca.gov/ser/downloads/MOUs/nepa_delegation /sec6005mou.pdf) and are exercising this authority as the federal nexus for section 7 consultation on this project.

This revised biological opinion is based on: (1) the 2010 California red-legged frog critical habitat designation (Service 2010); (2) the Draft Solano Multispecies Habitat Conservation Plan (HCP) Final Administrative Draft (SWCA 2009); (3) the January 31, 2008, biological opinion; (4) the April 30, 2010, request for reinitiation of formal consultation which included project description changes; (5) additional project information provided on May 12, 2010, May 20, 2010, November 22, 2010, and January 10, 2010; (6) miscellaneous correspondence and electronic mail (email) messages between the Service and Caltrans and Solano Transportation Authority; and (7) other information available to the Service.

Consultation History

August 31, 2007	The Service received a letter dated July 31, 2007, from Caltrans requesting formal consultation. The request was accompanied by a Biological Assessment dated August 2007. In the Biological Assessment, Caltrans determined that the proposed project would have no effect on the Contra Costa goldfields and the showy Indian clover, was not likely to adversely affect the Conservancy fairy shrimp and the vernal pool tadpole shrimp and, may adversely affect the vernal pool fairy shrimp and the California red-legged frog.
September 27, 2007	The Service sent Caltrans a request for additional information needed to adequately analyze the effects of the project on listed species (Service File No.: 1-1-07-I-1688).
November 5, 2007	The Service met with Caltrans, Solano Transportation Authority, Napa County Transportation and Planning Agency, and Gray-Bowen to discuss the proposed projects. It was agreed that Caltrans would complete protocol level surveys within the action area for Contra Costa goldfields,

	showy Indian clover, Conservancy fairy shrimp, vernal pool fairy shrimp and vernal pool tadpole shrimp prior to groundbreaking. Caltrans would reinitiate consultation pursuant to section 7 if any of these taxa were found. Caltrans also provided their written response to the September 27, 2007, request for additional information. In their response, Caltrans initiated formal consultation on the vernal pool tadpole shrimp but did not provide a revised assessment of the effects.
November 21, 2007	The Service visited the action area to review remaining project issues with Caltrans. Caltrans provided the Service with a supplemental response to Service data request. The supplemental response letter was dated November 19, 2007.
December 3, 2007	The Service received a revised project description from Caltrans via an email message.
December 7, 2007	The Service met with the Solano Transportation Authority, Napa County Transportation and Planning Agency, and Gray-Bowen.
December 14, 2007	The Service received a letter from Caltrans dated December 13, 2007, via an email message describing the phasing of compensation for the two proposed projects.
December 14, 2007	The Service sent a draft biological opinion to Caltrans, Solano Transportation Authority, Napa County Transportation and Planning Agency, and Gray-Bowen (Service File No.: 81420-2008-F-0530).
December 31, 2007	The Service received a December 24, 2007, letter from Caltrans regarding the draft biological opinion.
January 7, 2008	The Service attended a meeting with Caltrans and Gray-Bowen.
January 28, 2008	The Service and Caltrans discussed the proposed project on the telephone.
January 30, 2008	The Service and Caltrans discussed the proposed project on the telephone.
January 31, 2008	The Service received a letter and an email message from Caltrans requesting the Service issue the draft biological opinion as a final.
January 31, 2008	The Service issued the biological opinion (Service File No.: 81420-2008-F-0827).

April 30, 2010	The Service received a letter request from Caltrans to reinitiate consultation. Reintiation was based on changes to the project description.
May 12, 2010	The Service received additional revised project description information via an email message from Caltrans.
May 20, 2010	The Service provided Caltrans with the text version of the original project description for revision via an attachment to an email message.
May 21, 2010	Based on an initial review of the reinitiation package, the Service sent Caltrans a list of data requests via an email message.
November 22, 2010	Caltrans provided additional project information in response to the May 20 and May 21, 2010, Service information requests.
January 10, 2011	The Service met with Caltrans and representatives of Solano Transportation Authority to review the consultation reinitiation. Caltrans provided additional information regarding the revised project description.
January 26, 2011	The Service visited the project site with Caltrans to visit the proposed 12x12-foot recreational trail undercrossing and for further project description clarification.
March 1, 2011	The Service issued a draft biological opinion (Service File #81420-2008-F-0827-R001-1) for Caltrans review.
April 7, 2011	The Service received Caltrans' April 5, 2011, letter response to the March 1, 2011 Draft Biological Opinion.

BIOLOGICAL OPINION

Description of the Proposed Action

The following project description was provided by Caltrans with minor modifications for reasons of clarity and accuracy provided by the Service.

Caltrans proposes two interrelated projects to reduce congestion and improve safety along the State Route 12 corridor, west of Interstate 80. The State Route 12 (Jameson Canyon Road) Widening Project involves lane additions, turn pockets, minor roadway realignment, and installation of a median barrier. The State Route 12/State Route 29 Interchange Improvement Project will replace a standard four-way stop with an overpass design.

General Scope of Work
Both projects are covered in this biological opinion due to their interrelated utility. The combined components are located along State Route 12 in Napa and Solano Counties from the State Route 12/ State Route 29 Interchange to Red Top Road, approximately 1,000 feet west of Interstate 80.

The proposed projects are planned in three phases:

Phase 1(Jameson Canyon Road Widening) – construction of westbound lanes primarily north of the existing Jameson Canyon Road and horizontal and vertical curve corrections to eastbound Jameson Canyon Road;

Phase 2 (Jameson Canyon Road Widening) – correct remaining non-standard vertical curves; and

Phase 3 – State Route 12 and State Route 29 Interchange Improvement Project.

Construction Schedule and Funding
Federal, state and local funding is currently available for the first phase of the State Route 12 Jameson Canyon Road Widening Project. Construction for the first phase is anticipated to begin in May 2011 and be completed in February 2013. Scheduling for Phase 3, the State Route 12/State Route 29 Interchange Improvement Project is indefinite at this time. Funding sources for all three phases are contingent upon local governments approving tax measures to fund roadway projects.

Construction Activities
The key elements of the proposed projects are summarized as follows:

1. Jameson Canyon Road Widening Project.

    a. Construction of two additional lanes for westbound traffic along the Jameson Canyon Road.

    b. Vertical and horizontal corrections of the existing eastbound lanes of traffic on Jameson Canyon Road.

    c. Improvements to the existing intersections at State Route 12 and Kelly Road, State Route 12 and Kirkland Ranch, and State Route 12 and Lynch Roads, including a through-lane and right turn pocket at the Kirkland Ranch intersection and a realignment of Lynch Road and the addition of a right turn pocket.

    d. Construction of a median barrier with one traffic break and design features for wildlife passage through the median.

e. Culvert modification to accommodate some passage for the California red-legged frog and other wildlife.
f. Construction of 11 retaining walls, including soil nail, tie back, Type 5 and Type 1 walls.

g. Construction of Class II bike lanes.

2. Improvements to the State Route 12/ State Route 29 interchange.

The road widening and interchange projects would create approximately 35.7 acres of new pavement. Earth fill is estimated to be approximately 57,420 cubic yards. Excavation is estimated to be 506,800 cubic yards. According to Caltrans standard specifications, the surplus excavated material will become the property of the Contractor, who will have full responsibility for acquiring any environmental clearance and permits for disposing of the surplus material. Caltrans anticipates that approximately 34 acres of right-of-way acquisition will be required.

State Route 12 Jameson Canyon Road Widening Project
The road widening project site includes 5.9 linear miles along State Route 12 from Napa PM 0.0 to Solano Realignment PM 2.6, just east of Red Top Road.

East of Kirkland Road, the proposed State Route 12 road widening would expand the existing two-lane highway to a four-lane conventional highway. The eastbound lanes will be primarily constructed on the existing alignment, and two additional lanes will be added for the westbound direction. The westbound and eastbound lanes will be designed to highway standards, with a design speed of 55 miles per hour. All travel lanes will be 12 feet wide. The median width will also be 13 feet. The concrete median barrier will have a minimum height of 3.0 feet. The median break will be approximately 2,150 feet east of the Solano/Napa County line. The median break will facilitate "U" turn movements for the traffic along State Route 12. All inside shoulders throughout the projects will have a minimum width of 4.9 feet. The outside shoulders for the westbound and eastbound lanes will be a minimum of 8 feet wide and will also serve as a class II bike route. The average road width will be 77 feet.

Caltrans is incorporating two standard wildlife passage design features into the median barrier. This includes a "concrete barrier wildlife passageway Type S or Type S-modified" approximately every 300 feet. The Type S passage is specifically designed as an opening for small-sized animal passage and consists of a 9 inch radius scupper located at the base of the concrete barrier. A "concrete barrier wildlife passageway Type M-modified" will be placed approximately every 1,200 feet. Type M passage is designed for medium-sized animals and consists of two-foot wide gaps in the concrete median, bridged by a thrie beam rail.

At several locations within the new westbound roadway retaining walls will be constructed to reduce the overall footprint. A total of 11 retaining walls are proposed for the State Route 12 widening project for a combined 1.95 miles of retaining walls. Both cut and fill walls will be required for this project.

There will be minor modifications to the existing intersections of State Route 12 and Kelly, Kirkland Ranch, and Lynch Roads. Improvements to the intersection at Red Top Road are not

included in project. These modifications are included in the scope of the Red Top Road Truck Climbing Lane Project (Service File No.: 1-1-07-F-0073).

At the intersection of State Route 12 and Kelly Road, the projects design includes a designated left turn pocket and two through lanes for the west bound direction. The existing designated right turn pocket in the west bound direction from State Route 12 to Kelly Road will be eliminated by a through lane. In the eastbound direction, the lane configurations will not change. No profile change is proposed for this intersection.

At the intersection of Kirkland Ranch Road, in the eastbound direction a through lane will be added and in the westbound direction a right turn pocket will be added. The project will adjust the profile for the Kirkland Ranch Road to State Route 12 intersection.

Improvements to the Lynch Road intersection will include the realignment of Lynch Road to be perpendicular to State Route 12. One right turn movement pocket is proposed onto Lynch Road from State Route 12. A profile adjustment is also proposed for this intersection.

State Route 12/ State Route 29 Interchange Improvement Project
The interchange project is indefinitely on hold due to funding availability. The interchange project site includes 1.3 linear miles of State Route 29 from Napa Post Mile (PM) 4.2 to Napa PM 5.5. The interchange project also includes areas west of the interchange along Airport Boulevard, including an area north of Airport Boulevard along Devlin Road, and areas east of the interchange along State Route 12, including an area north of State Route 12 along North Kelly Road.

The upgrade will involve the reengineering of the existing intersection into a single point configuration with the existing four-way stop being replaced with an overpass over State Route 29. The approach ramps would be positioned on either fill or bridge structures with State Route 12 elevated over State Route 29, with a two-span bridge above State Route 29, and would establish an auxiliary lane on southbound State Route 29 between the State Route 29/ State Route 221 and State Route 12/ State Route 29 interchanges. State Route 12 and Airport Boulevard will be realigned through the intersection with State Route 29, and the roadway profiles for Devlin and Kelly Roads may be raised. State Route 12 and State Route 29 would have a minimum of 4.9-foot-wide inside shoulders and 9.8-foot-wide outside shoulders. State Route 29 would retain its four existing through lanes, two in each direction. An approximately 29.5-foot retaining wall will be used in fill areas. During construction, a detour for east-west traffic on State Route 12 and Airport Boulevard will be used south of the existing intersection.

The ramps in the south quadrants would have one exit lane splitting off into two lanes and two entrance lanes merging into one lane. At the northwest location, two lanes (including one auxiliary lane) exit from southbound State Route 29, splitting off into four lanes. At the end of the off-ramp, one lane turns west onto Airport Blvd while the other three lanes turn east onto State Route 12, merging to two lanes east of Kelly Road. At the northeast location, two lanes exit from westbound State Route 12 to northbound State Route 29.

Widening of State Route 12 and State Route 29 will require relocation of utilities, specifically electricity, gas, telephone, water lines, an aqueduct, and a control cable. Caltrans will be developing a utility design and will reinitiate consultation with the Service if the design results in changes to the action area or the potential effects of the proposed action on listed species.

Staging Locations
Staging locations for both projects will be used for temporary storage of heavy construction equipment and various construction materials, equipment maintenance shops, stockpile areas, and field offices. If necessary, an access road linking staging areas and the work area will be cleared and graded using equipment such as excavators, bobcats, and/or bulldozers. All temporary construction staging areas and access roads will be restored to preconstruction conditions.

Caltrans identified areas of temporary effects along the highway that the contractor may use for equipment storage or staging. However, the contractor may have specific locations for off-site facilities such as storage areas or disposal that they used for other projects and may utilize for this project as well. As stated in the Caltrans May 2006 Standard Specification, before disposing of materials outside the State right of way, the Contractor shall furnish satisfactory evidence that the Contractor has entered into agreements with the property owner of the site involved and has obtained the permits, licenses and clearances.

Drainages and Culverts
Sheehy Creek, Fagan Creek and associated tributaries in Napa County as well as tributaries to an unnamed creek in Solano County (referred to unofficially in some literature, and hereafter in this document, as Jameson Canyon Creek) cross under State Route 12 and the projects will involve modifications to the associated cross culverts. The projects will involve extensions of adequately sized existing culverts while the remaining culverts will either be upsized, replaced, or abandoned. Modifications to existing culverts with less than a 36 inch diameter will include removing, replacing, upsizing and extending the culverts to accommodate the widened roadway.

Caltrans proposes to replace and upsize nine existing culverts to a 36 inch diameter. Table 1 lists the culverts that Caltrans will modify to improve California red-legged frog passage. This table shows the metric stationing, the English stationing (current), approximate PM, existing diameter, planned diameter, proposed diameter, and culvert type. The "planned diameter" reflects the original dimensions designed solely to adequately accommodate hydrology, whereas the "proposed design" indicates the final modifications intended to enhance wildlife passage through the new culvert crossing. Where the columns "planned diameter" and "proposed diameter" disagree, the change to the design for the proposed upsize will occur as an addendum to the project design.

Table 1. Proposed modifications to existing culvert crossings for enhanced drainage capacity and wildlife passage from west to east.

Project	Former Stationing (metric)	Planned Stationing (feet)	Approximate Post Mile	Existing culvert diameter (inches)	Planned diameter (inches)	Proposed diameter (inches)	Type
Intersection	31+60	n/a	Nap 29 5.57	18	24	36	APC
Intersection	17+60	n/a	Nap 29 4.56	24	24	36	RCP / APC
Road Widening	114+00	140+00	Nap 12 0.94	-	36	36	APC new to replace 140+73
Road Widening	126+40	183+00	Nap 12 1.71	18	35x24	35x24	CSPA
Road Widening	142+60	233+50	Nap 12 2.69	24	-	-	remove
Road Widening	142+60	234+00	Nap 12 2.69	-	24	36	APC New to replace 233+50
Road Widening	154+40	280+20	Sol 12 0.35	18	36	36	APC
Road Widening	156+00	285+00	Sol 12 0.42	24	36	36	APC
Road Widening	158+40	290+80	Sol 12 0.54	24	30	36	APC
Road Widening	184+40	369+90	Sol 12 2.14	24	36	36	APC
Road Widening	191+00	390+20	Sol 12 2.42	24	36	36	APC

CSPA = corrugated steel pipe arch; RCP = reinforced concrete pipe; APC = alternative pipe culvert

The following Table 2 lists the nine existing cross culverts in the action area that exceed a 36-inch diameter and will therefore be extended to accommodate roadway widening at the current dimensions.

Table 2. Existing large culverts to be extended.

Project	Former Stationing (metric)	Current Stationing (feet)	Approximate Post Mile	Existing diameter/ dimensions (feet)	Type
Intersection	24+20	n/a	Nap 29 5.02	8	RCP
Road Widening	107+60	120+11	Nap 12 0.53	3	CMPA
Road Widening	110+40	128+72	Nap 12 0.69	3	APC (new culvert)
Road Widening	129+40	194+40	Nap 12 1.91	6x6	RCB
Road Widening	136+00	211+50	Nap 12 2.32	4x4 to 3.5 CSP	4x4 RCB
Road Widening	140+20	225+00	Nap 12 2.55	4.8x3	CMPA
Road Widening	146+60	246+38	Nap 12 2.94	10x6	RCB
Road Widening	166+00	310+00	Sol 12 1.02	4x4	RCB
Road Widening	171+40	327+80	Sol 12 1.31	6x3	RCB (2)

CMPA = corrugated metal pipe arch; RCB = reinforced concrete box; RCP = reinforced concrete pipe; APC = alternative pipe culvert

Caltrans proposed culverts based on their proximity to wetland or riparian areas. Caltrans excluded culverts based on particular design features that limit the suitability of culverts for passage, such as, retaining walls, or steep slopes. The maximum distance between any two of the large culverts in Table 2 is approximately 1,500 feet.

A temporary drainage bypass system may be used to divert flows around work areas in Sheehy Creek, Fagan Creek, Jameson Canyon Creek, and associated tributaries. The use, installation, and removal of the temporary drainage bypass system will be restricted to the period from June 15 to October 15. If dewatering is required during summer construction, Caltrans will establish a coffer dam using clean gravel or sand bags and pump water to the downstream side of the construction (Caltrans 2007b).

According to the Caltrans' Initial Study with Proposed Mitigated Negative Declaration (CEQA) and Environmental Assessment (NEPA) prepared for the proposed projects, the planned Bay Area Ridge Trail will cross the action area but will not be part of the current action (Caltrans 2007c). Caltrans proposes installing a 12x12-foot box culvert undercrossing beneath State Route 12 that will be located near Jameson Creek at Station 310. The structure will be filled with approximately 10 inches of natural soil resulting in an approximately 11-foot overhead clearance. This large undercrossing is designed to accommodate hikers, mountain bicyclists, equestrians, and outdoor enthusiasts, and is also likely to be used by the California red-legged frog and other wildlife.

Retaining Walls

A variety of retaining walls is incorporated into the design to limit road cutting in the hilly terrain and contain the cut walls. There will be 11 individual retaining walls constructed along Jameson Canyon Road ranging in length from 351 to 2,662 feet long and from 8 to 128 feet high. Table 3 includes the types, locations, and dimensions of the planned walls.

Table 3. Retaining walls along the State Route 12 Jameson Canyon Road Widening Project.

Wall Number	Wall Type	Station	Length (feet)	Maximum Height (feet)
1	Soil Nail	204+98.00 to 208+52.31	351	25
2	Soil Nail	252+49.94 to 261+05.98	841	25
9A	Type 5	240+00.00 to 245+04.61	498	8
9B	Type 5	246+20.00 to 249+86.88	369	8
3A*	Soil Nail	264+85.00 to 271+42.36	748	43
3B*	Tieback	271+42.36 to 273+16.70	216	13
3C	Soil Nail	273+73.05 to 280+66.18	691	25
4A*	Tieback	285+45.00 to 289+85.65	495	19
4B*	Tieback	289+85.65 to 296+78.00	688	22
5A	Soil Nail	310+20.00 to 320+11.91	803	27
5B	Tieback	320+11.91 to 323+58.89	345	21
6*	Soil Nail	331+95.57 to 353+57.86	2162	20
7A*	Soil Nail	331+53.20 to 357+62.00	2662	54
7B*	Soil Nail	334+99.54 to 357+00.98	2248	54
8	Type 1 Mod	359+25.61 to 364+43.50	568	20
10	Type 5 Mod	290+05.00 to 300+20.00	1022	12

*Walls 3A-3B, 4A-4B, and 6-7A-7B are continuous structures. Walls 6, 7A, and 7B make up a three tiered wall.

Backhoes and/or loaders are typically used to cut wall faces. Drill rigs are then used to install steel bars or "soil nails" into the cut wall for support. The excavated wall face is prepared and stabilized with drainage fabric and reinforcement before being covered with shotcrete. The wall surface will then be textured for a decorative appearance intended to correspond with the surrounding terrain.

Drainage Releases
The project incorporates drainage releases over the three tiered soil nail retaining wall (Wall #7). The drainage releases are both located in Solano County on the north side of roadway with one drainage release at Station 336+00 (SR 12 Sol PM 1.45) and the other at Station 343+75 (SR 12 Sol PM 1.61). The drainage releases are designed to convey storm water runoff over the wall at topographic depressions where intermittent flows occur during the rainy season. These drainage releases are essentially constructed waterfalls.

The water elevation drop is 25 feet at the PM 1.45 drainage release and 22 feet at the PM 1.61 drainage release, measured from the top of the wall to the collection point at the bottom. At each location, water flows from the hillside above the wall and is concentrated to pass over a key formed into the top of the retaining wall that acts as a weir. After passing over the weir, the water's velocity and energy are dissipated with splash blocks that are incorporated into the wall face. At the bottom of the wall, the water flows over a series of concrete aprons which are stepped down to further slow the water until it reaches a detention basin adjacent to the roadway. The concrete steps are faced with 25 pound to 200 pound "Sonoma Field Stone" to match the surrounding terrain and the soil nail wall stain. A pipe connected to the roadway drainage system is placed inside the basin to collect storm water and transport it beneath and across State Route 12 and ultimately discharged towards Jameson Canyon Creek. The basin is designed to hold water to a maximum depth of 2 feet during storm events, while being discharged into the roadway drainage system. The basin is designed as a velocity control structure and is not expected to remain inundated between rain events. Other than where the release falls over the retaining wall, the margins of the drainage will be planted with native riparian vegetation.

Right-of-Way Fencing
The boundary of the State Route 12 corridor will be defined by a right-of-way fence. Caltrans will construct this fence on behalf of the adjacent land owners to replace the existing fencing. The fencing will be owned and maintained by the private property owners following construction. The type of fence installed will be dependent upon the private property owner's requirements. Based on those individual preferences, there will be six different types of fencing designs installed along the right-of-way. Jameson Canyon is a rural setting and all six fencing designs have a shared function of keeping livestock off the highway. The fence heights are between 4.5 to 5 feet tall and designs range from vinyl board fences to barbed wire or mesh and a combination of barbed wire and mesh. The gauge of the mesh fencing varies between 6 and 4 inches and is more exclusive of a wider range of different sized animals. The mesh will not be buried and will be installed between 2 and 4 inches above the ground.

Temporary 2-foot high silt fencing will be installed in combination with 48 inch tall orange high visibility fencing to exclude wildlife from work areas and construction personnel from environmentally sensitive areas during construction. The silt fencing will be reinforced with wire mesh on the lower 32 inches in areas where it may be compromised by livestock. The locations and fencing design will be identified on construction design drawings.

Roadbed
Roadway excavation will be conducted using equipment such as a front-end loader and motor grader to excavate the area to be paved to the required grade. Excavated material may be hauled off-site using dump trucks. The location and type of excavated material disposal will be determined by the Contractor. The Contractor will be required to obtain any necessary environmental clearances associated with the disposal or reuse of these materials. Once the roadbed has been excavated, the soil will be rolled and vibrated with a sheepsfoot or drum roller to 95 percent relative compaction.

Structural Section
The layers making up the structural section of the roadway will be placed in short lifts of less than 6 inches. The material will be hauled in, dumped, spread with a motor grader or asphalt-paving machine, and compacted.

Overlay
For failed sections of existing pavement only, overlay will be adjusted by digging out the existing asphalt concrete to a maximum of 6 inches. The asphalt concrete overlay then will be dumped and spread using an asphalt-paving machine, and then rolled with a steel-tired compactor.

Temporary drainage bypass system
A temporary drainage bypass system (e.g. coffer dam and flume or pump system) may be used to divert flows around work areas in drainages. Use, installation, and removal of the temporary drainage bypass system will be restricted to the period from June 15 to October 15.

Permanent vs. Temporary Effects
The Service defines temporary effects as those in which California red-legged frog habitat is directly or indirectly affected by construction activities for duration of no more than one year. As construction ends and disturbed areas are stabilized, the habitat will again be available to the species for utilization. Caltrans has modified construction sequencing so that much of the project work in areas of potential California red-legged frog habitat will be completed and the habitat available again for species use within a single construction season. Caltrans therefore categorizes these areas as being subject to temporary effects. This includes areas proposed for staging.

All of the effects associated with the 79.0-acre interchange project are considered permanent and have not been classified by habitat type. The final acreages of effects associated with the road widening are presented in Table 4 and include a breakdown by habitat type.

Table 4. State Route 12 Jameson Canyon Road Widening Effects to the California Red-legged Frog.

Habitat Type	Permanent Effects (acres)	Temporary Effects (acres)
Potential breeding habitat	0.15	0.13
Potential aquatic dispersal habitat	0.28	0.15
Potential upland dispersal and aestivation habitat	42.36	40.26
Total	**42.79**	**40.54**

The Service does not consider areas that will be subjected to ongoing maintenance as areas of temporary effects even if they are restored within one year following the initial disturbance. Red-legged frogs can utilize these areas but credit is not given for restoration if the area is not maintained for the species.

Construction Site Restoration
Caltrans plans to restore areas of temporary ground disturbances, including storage and staging areas, and temporary roads. These areas will be re-contoured, if appropriate, and revegetated with seeds and/or cuttings of appropriate plant species to promote restoration of the area to pre-project conditions. Caltrans has developed a restoration plan that will be submitted to the Service for approval prior to initial ground breaking. This plan includes immediate application of permanent erosion control measures for all areas disturbed by construction activities. The permanent erosion control measures will include native (here referring to species naturally occurring in Napa and Solano counties) grass and forb seed, fertilizer, compost and mulch for soil protection. The restoration plan also includes planting at each creek crossing using a combination of wetland, riparian and upland/transitional species appropriate for the conditions at the specific creek crossings and is informed by local reference sites. To the maximum extent practicable (i.e., presence of natural lands), topsoil will be removed, cached, and returned to the site according to successful restoration protocols. Loss of soil from run-off or erosion will be prevented with straw bales, straw wattles, or similar means provided they do not entangle or block California red-legged frog escape or dispersal routes.

Equipment
The equipment expected to be used on the project is typical of roadway and interchange construction and may include cranes, excavators, bobcats, bulldozers, roadheaders, hydraulic excavators or backhoes, rubber-tired dump trucks, front-end loaders, load-haul-dumps, drill jumbos, front-end loaders and motor graders, sheepsfoot or drum rollers, and asphalt-paving machines.

Temporary construction areas will be cleared, graded, and reestablished using equipment such as excavators, bulldozers, and/or bobcats.

Proposed Conservation Measures
According to the revised project description that Caltrans provided to the Service on November 22, 2010, Caltrans proposes to avoid, minimize, and compensate for effects to listed species by implementing the following measures:

1. Caltrans has proposed to provide 3:1 compensation (365.37 acres) for the effects to 121.79 acres of California red-legged frog habitat. Acceptable compensation shall be satisfied through in-perpetuity preservation of high quality red-legged frog habitat consisting of a breeding and/or significant dispersal habitat between breeding populations or a biological equivalent site similar to the Dittmer Property along Jameson Canyon Road through purchase of bank credits, acquisition of a conservation easement or fee title, and/or contribution to an in-lieu fee program that complies with FHWA policy for Federal aid participation. Purchase of the site shall be reviewed and approved by the Service.

   If a compensation bank is proposed in lieu of acquisition it shall be a Service-approved bank and reviewed and approved by the Service prior to the purchase of credits.

   An approved ecologically-based conservation easement shall include restricted public access, a management plan, and an in-perpetuity endowment or other permanent non-wasting management fund based on a property analysis. The management plan shall include a description of the site, management needs (e.g. grazing plan, non-native vegetation and animal control, etc), when the management activities should be implemented, how often and to what level monitoring of the site shall occur, and an action/contingency plan to address potential management issues.

   Proposed habitat acquisition shall be accompanied by a Service-approved conservation easement that shall include restricted public access, a management plan, and an in-perpetuity endowment based on a property analysis.

   The compensation will be phased to coincide with the initiation of the individual projects. The State Route 12 Jameson Canyon Road Widening Project will have permanent effects to 42.79 acres of California red-legged frog habitat (at 3:1=128.37 acres) and the State Route 12/State Route 29 Interchange Improvement project will affect 79.0 acres of California red-legged frog habitat (at 3:1=237 acres).

2. Service-approved biologist(s) will be on-site during all activities that may result in the take of a California red-legged frog. The qualifications of the biologist(s) will be presented to the Service for review and written approval prior to ground-breaking at the project site. The Resident Engineer will stop work at the request of the Service-approved biologist(s) if activities are identified that may result in the take of a California red-legged frog. Should the biologist(s) or the Resident Engineer exercise this authority, the Service will be notified by telephone and electronic mail within one working day. The Service contact will be the Coast-Bay Branch Chief in the Sacramento Fish and Wildlife Office at (916) 414-6600.

3. Resident Engineer will halt work immediately and contact the Service-approved project biologist and the Service in the event that a California red-legged frog is within the construction zone. The Resident Engineer will suspend all construction activities in the immediate construction zone until the animal leaves the site voluntarily or is removed by the biologist to a Service-approved release site using Service-approved transportation techniques.

4. California red-legged frogs will be relocated outside of the environmentally sensitive area/silt fence within the same riparian area or watershed by the approved biological monitor. If relocation of the frog outside the fence is not feasible (i.e., there are too many frogs observed per day), the approved biological monitor will relocate frogs to a pre-approved location determined by Caltrans, the Service, and local agencies. Prior to construction, Caltrans will obtain approval of the relocation protocol from the Service in the event that California red-legged frogs are encountered and need to be relocated away from the immediate project area (Caltrans 2007b).

5. A Service-approved biologist will conduct environmental education training for all construction employees working on ground disturbing activities. The program will include the following: a description of the California red-legged frog and their habitat needs; photographs of the species; an explanation of its legal status and protection under the Act; and a list of the measures that will be implemented to minimize and avoid effects to the California red-legged frog.

6. Project employees will be provided with written guidance governing vehicle use, speed limits on unpaved roads, fire prevention, and other hazards.

7. To minimize temporary disturbances, all project-related vehicle traffic will be restricted to established roads, construction areas, and other designated areas. These areas also will be included in pre-construction surveys and, to the maximum extent possible, will be established in locations disturbed by previous activities to prevent further adverse effects. Off-road traffic outside of designated project areas will be prohibited.

8. Project-related vehicles will observe a 20-mile per hour speed limit within construction areas, except on County roads, and State and Federal highways; this is particularly important at night when the California red-legged frog is most active.

9. To the maximum extent possible, night-time construction will be minimized.

10. Dust control measures will be implemented during construction, consisting of regular truck watering of constriction access areas and disturbed soil areas with the use of organic soil stabilizers to minimize airborne dust and soil particles generated from graded areas. Regular truck watering will be a requirement of the construction contract. In addition, for disturbed soil areas, an organic tackifier to control dust emissions blowing off of the right-of-way or out of the construction area during construction will be included in the contract special provisions. Watering guidelines for truck watering will be established to avoid any excessive run-off that may flow into contiguous areas. Any material stockpiles will be watered, sprayed with tackifier, or covered, to minimize dust production and wind erosion.

11. To eliminate an attraction to predators of the California red-legged frog, all food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in closed containers and removed at least once a day from the entire project site.

12. To avoid injury or death of the California red-legged frog, no firearms will be allowed on the project site except for those carried by authorized security personnel, or local, State, or Federal law enforcement officials.

13. To prevent harassment, injury or mortality of the California red-legged frog or destruction of their cover sites by dogs or cats, no canine or feline pets will be permitted in the action area.

14. All fueling and maintenance of vehicles and other equipment will occur at least 65 feet from any riparian habitat or aquatic habitat.

15. All grindings and asphaltic-concrete waste will be stored within previously disturbed areas absent of habitat and at a minimum of 150 feet from any culvert, or drainage feature.

16. To the extent practicable, initial ground disturbing activities will be avoided between November 1 and March 31 to avoid the period when California red-legged frogs are most likely to be moving through upland areas. When unavoidable, ground disturbing activities between November 1 and March 31 will be accompanied by daily biological monitoring.

17. Exclusionary fencing will be placed at the edge of active construction areas (cleared by biological surveys) to restrict wildlife access from the adjacent upland and riparian habitat. The fencing will consist of taut silt fabric; 24 inches in height, stacked at 10-foot intervals, with the bottom buried 6 inches below grade. Exclusion fencing will be maintained so that it is intact during rain events and 24 hours after any rain event.

18. The active construction area will be delineated with high visibility temporary fencing at least 4 feet in height, flagging, or other barrier to prevent encroachment of construction personnel and equipment outside the described project footprint. Such fencing will be inspected and maintained daily by the on-site biologist until completion of the project. The fencing will be removed from areas only after all construction equipment is removed. No project activities will occur outside the delineated project construction area.

19. If requested through the Resident Engineer or Construction Inspector, before, during, or upon completion of ground breaking and construction activities, Caltrans will ensure the Service, California Department of Fish and Game, and/or their designated agents can immediately and without delay, access and inspect the project site for compliance with the proposed project description, conservation measures, and terms and conditions of this biological opinion, and to evaluate project effects to the California red-legged frog and their habitat.

20. No more than twenty (20) working days prior to any ground disturbance, pre-construction surveys will be conducted by a Service-approved biologist for the California red-legged frog. These surveys will consist of walking surveys of the project limits and adjacent areas accessible to the public to determine presence of the species. The Service-approved biologists will investigate all potential California red-legged frog cover sites. This includes full investigation of mammal burrows. The entrances will be collapsed following investigation.

21. To prevent inadvertent entrapment of California red-legged frogs during construction, all excavated, steep-walled holes or trenches more than 1-foot deep will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If at any time a trapped listed animal is discovered, the on-site biologist will immediately place escape ramps or other appropriate structures to allow the animal to escape, or the Service will be contacted by telephone for guidance. The Service will be notified of the incident by telephone and electronic mail within one working day.

22. Plastic mono-filament netting (erosion control matting) or similar material will not be used at the project site because California red-legged frog may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

23. Construction fabric and a layer of gravel will protect the original contour of all wetland areas that cannot be avoided within identified temporary effect areas adjacent or within the right-of-way, minimizing potential effects from compaction or other disturbance. After construction, gravel and fabric will be removed.

24. Injured California red-legged frogs will be cared for by a licensed veterinarian or other qualified person such as the on-site biologist; dead individuals of any listed species will be preserved according to standard museum techniques and held in a secure location. The Service will be notified within one (1) working day of the discovery of death or injury to a listed species that occurs due to project related activities or is observed at the project site. Notification will include the date, time, and location of the incident or of the finding of a dead or injured animal clearly indicated on a U.S. Geological Survey (USGS) 7.5 minute quadrangle and other maps at a finer scale, as requested by the Service, and any other pertinent information. Dead individual animals will be placed in a sealed plastic bag with a piece of paper containing information on where and when the animal was found along with the name of the person who found it, the bag will be frozen in a freezer located in a secure location until instructions are received from the Service regarding the disposition of the specimen or the Service takes custody of the specimen. The Service contacts are the Coast-Bay Branch Chief in the Sacramento Fish and Wildlife Office at (916) 414-6600, and the Resident Agent-in-Charge of the Service's Law Enforcement Division at (916) 414-6660.

    Caltrans will submit a post-construction compliance report prepared by the on-site biologist to the Sacramento Fish and Wildlife Office within forty (40) working days following project completion or within sixty (60) calendar days of any break in construction activity lasting more than forty (40) working days. This report will detail: (1) dates that construction occurred; (2) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (3) an explanation of failure to meet such measures if any; (4) known project effects on listed species if any; (5) occurrences of incidental take of any listed species; (6) documentation of employee environmental education; and (vii) other pertinent information. The reports will be addressed to the Coast-Bay Branch Chief of the Endangered Species Program, Sacramento Fish and Wildlife Office.

25. Caltrans will report to the Service any information about take or suspected take of listed wildlife species not authorized by this biological opinion. Caltrans will notify the Service via email and telephone within twenty-four (24) hours of receiving such information. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and photographs of the specific animal. The Service contacts are the Coast-Bay Branch Chief of the Endangered Species Program in the Sacramento Fish and Wildlife Office at (916) 414-6600, and the Resident Agent-in-Charge of the Service's Law Enforcement Division at (916) 414-6660.

Analytical Framework for the Jeopardy Determination

The following analysis relies on four components to support the jeopardy determination for the California red-legged frog: (1) the *Status of the Species*, which evaluates the species' range wide condition, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of the species in the action area, the factors responsible for that condition, and the role of the action area in the species' survival and recovery; (3) the *Effects of the Action*, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on the species; and (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the species.

In accordance with the implementing regulations for section 7 and Service policy, the jeopardy determination is made in the following manner: the effects of the proposed Federal action are evaluated in the context of the aggregate effects of all factors that have contributed to the species' current status and, for non-Federal activities in the action area, those actions likely to affect the species in the future, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild.

The following analysis places an emphasis on using the range-wide survival and recovery needs of the species and the role of the action area in providing for those needs as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Action Area

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For the proposed action, the action area includes all lands associated with the approximately 217.58-acre combined project footprint and roads (except for County roads, and State and Federal highways) and other areas accessed by project vehicles. The action area includes 55.25 acres of hardscape. Excluding hardscape, the State Route 12 Jameson Canyon Road Widening Project encompasses 83.33 acres and State Routes 29/12 Interchange Project encompasses 79.00 acres, with a combined area of 162.33 acres.

Status of the California Red-Legged Frog

Listing Status
The California red-legged frog was listed as a threatened species on May 23, 1996 (61 FR 25813). Critical habitat was designated for this species on April 13, 2006 (71 FR 19244) and revisions to the critical habitat designation were published on March 17, 2010 (75 FR 12816). At this time, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii* (Shaffer *et al.* 2010). A recovery plan was published for the California red-legged frog on September 12, 2002 (Service 2002).

Description
The California red-legged frog is the largest native frog in the western United States (Wright and Wright 1949), ranging from 1.5 to 5.1 inches in length (Stebbins 2003). The abdomen and hind legs of adults are largely red, while the back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Dorsal spots usually have light centers (Stebbins 2003), and dorsolateral folds are prominent on the back. Larvae (tadpoles) range from 0.6 to 3.1 inches in length, and the background color of the body is dark brown and yellow with darker spots (Storer 1925).

Distribution
The historic range of the California red-legged frog extended from the vicinity of Elk Creek in Mendocino County, California, along the coast inland to the vicinity of Redding in Shasta County, California, and southward to northwestern Baja California, Mexico (Fellers 2005; Jennings and Hayes 1985; Hayes and Krempels 1986). The species was historically documented in 46 counties but the taxa now remains in 238 streams or drainages within 23 counties, representing a loss of 70 percent of its former range (Service 2002). California red-legged frogs are still locally abundant within portions of the San Francisco Bay area and the Central California Coast. Isolated populations have been documented in the Sierra Nevada, northern Coast, and northern Transverse Ranges. The species is believed to be extirpated from the southern Transverse and Peninsular ranges, but is still present in Baja California, Mexico (CDFG 2010a).

Status and Natural History
California red-legged frogs predominately inhabit permanent water sources such as streams, lakes, marshes, natural and manmade ponds, and ephemeral drainages in valley bottoms and foothills up to 4,921 feet in elevation (Jennings and Hayes 1994, Bulger *et al.* 2003, Stebbins 2003). However, California red-legged frogs also have been found in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation. California red-legged frogs also can be found in disturbed areas such as channelized creeks and drainage ditches in urban and agricultural areas. For example, an adult California red-legged frog was observed in a shallow isolated pool on North Slough Creek in the American Canyon area of Napa County (Christine Gaber/PG&E personal communication with Chris Nagano/Service on October 22, 2008). This frog location was surrounded by vineyard development. Another adult California red-legged frog was observed under debris in an unpaved parking lot in a heavily industrial area of Burlingame (Patrick Kobernus/Coast Ridge Ecology communication with Michelle

Havens/Service on October 16, 2008). This Burlingame frog was likely utilizing a nearby drainage ditch. Caltrans also has discovered California red-legged frog adults, tadpoles, and egg masses within a storm drainage system within a major cloverleaf intersection of Millbrae Avenue and State Route 101 in a heavily developed area of San Mateo County (Caltrans 2007d). California red-legged frog has the potential to persist in disturbed areas as long as those locations provide at least one or more of their life history requirements.

California red-legged frogs breed from November to April, although earlier breeding records have been reported in southern localities. Breeding generally occurs in still or slow-moving water often associated with emergent vegetation, such as cattails, tules or overhanging willows (Storer 1925, Hayes and Jennings 1988). Female frogs deposit egg masses on emergent vegetation so that the egg mass floats on or near the surface of the water (Hayes and Miyamoto 1984).

Habitat includes nearly any area within 1 to 2 miles of a breeding site that stays moist and cool through the summer including vegetated areas with coyote brush, California blackberry thickets, and root masses associated with willow and California bay trees (Fellers 2005). Sheltering habitat for California red-legged frogs potentially includes all aquatic, riparian, and upland areas within the range of the species and includes any landscape feature that provide cover, such as animal burrows, boulders or rocks, organic debris such as downed trees or logs, and industrial debris. Agricultural features such as drains, watering troughs, spring boxes, abandoned sheds, or hay stacks may also be used. Incised stream channels with portions narrower and depths greater than 18 inches also may provide important summer sheltering habitat. Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed, and can be a factor limiting frog population numbers and survival.

California red-legged frogs do not have a distinct breeding migration (Fellers 2005). Adults are often associated with permanent bodies of water. Some individuals remain at breeding sites year-round, while others disperse to neighboring water features. Dispersal distances are typically less than 0.5-mile, with a few individuals moving up to 1 to 2 miles (Fellers 2005). Movements are typically along riparian corridors, but some individuals, especially on rainy nights, move directly from one site to another through normally inhospitable habitats, such as heavily grazed pastures or oak-grassland savannas (Fellers 2005).

In a study of California red-legged frog terrestrial activity in a mesic area of the Santa Cruz Mountains, Bulger *et al.* (2003) categorized terrestrial use as migratory and non-migratory. The latter occurred from one to several days and was associated with precipitation events. Migratory movements were characterized as the movement between aquatic sites and were most often associated with breeding activities. Bulger *et al.* (2003) reported that non-migrating frogs typically stayed within 200 feet of aquatic habitat 90 percent of the time and were most often associated with dense vegetative cover, i.e., California blackberry, poison oak and coyote brush. Dispersing frogs in northern Santa Cruz County traveled distances from 0.25-mile to more than 2 miles without apparent regard to topography, vegetation type, or riparian corridors (Bulger *et al.* 2003).

In a study of California red-legged frog terrestrial activity in a xeric environment in eastern Contra Costa County, Tatarian (2008) noted that a 57 percent majority of frogs fitted with radio transmitters in the Round Valley study area stayed at their breeding pools, whereas 43 percent moved into adjacent upland habitat or to other aquatic sites. Her study reported a peak seasonal terrestrial movement occurring in the fall months associated with the first 0.2-inch of precipitation and tapering off into spring. Upland movement activities ranged from 3 to 233 feet, averaging 80 feet, and were associated with a variety of refugia including grass thatch, crevices, cow hoof prints, ground squirrel burrows at the base of trees or rocks, logs, and under man-made structures; others were associated with upland sites lacking refugia (Tatarian 2008). The majority of terrestrial movements lasted from 1 to 4 days; however, one adult female was reported to remain in upland habitat for 50 days (Tatarian 2008). Upland refugia closer to aquatic sites were used more often and were more commonly associated with areas exhibiting higher object cover, e.g., woody debris, rocks, and vegetative cover. Subterranean cover was not significantly different between occupied upland habitat and non-occupied upland habitat.

California red-legged frogs are often prolific breeders, laying their eggs during or shortly after large rainfall events in late winter and early spring (Hayes and Miyamoto 1984). Egg masses containing 2,000 to 5,000 eggs are attached to vegetation below the surface and hatch after 6 to 14 days (Storer 1925, Jennings and Hayes 1994). In coastal lagoons, the most significant mortality factor in the pre-hatching stage is water salinity (Jennings *et al.* 1992). Eggs exposed to salinity levels greater than 4.5 parts per thousand resulted in 100 percent mortality (Jennings and Hayes 1990). Increased siltation during the breeding season can cause asphyxiation of eggs and small larvae. Larvae undergo metamorphosis 3½ to seven months following hatching and reach sexual maturity two to three years of age (Storer 1925; Wright and Wright 1949; Jennings and Hayes 1985, 1990, 1994). Of the various life stages, larvae probably experience the highest mortality rates, with less than 1 percent of eggs laid reaching metamorphosis (Jennings *et al.* 1992). California red-legged frogs may live 8 to 10 years (Jennings *et al.* 1992). Populations can fluctuate from year to year; favorable conditions allow the species to have extremely high rates of reproduction and thus produce large numbers of dispersing young and a concomitant increase in the number of occupied sites. In contrast, the animal may temporarily disappear from an area when conditions are stressful (e.g., during periods of drought, disease, etc.).

The diet of California red-legged frogs is highly variable and changes with the life history stage. The diet of the larvae is not well studied, but is likely similar to that of other ranid frogs, feeding on algae, diatoms, and detritus by grazing on the surface of rocks and vegetation (Fellers 2005; Kupferberg 1996a, 1996b, 1997). Hayes and Tennant (1985) analyzed the diets of California red-legged frogs from Cañada de la Gaviota in Santa Barbara County during the winter of 1981 and found invertebrates (comprising 42 taxa) to be the most common prey item consumed; however, they speculated that this was opportunistic and varied based on prey availability. They ascertained that larger frogs consumed larger prey and were recorded to have preyed on Pacific chorus frog, three-spined stickleback and, to a limited extent, California mice, which were abundant at the study site (Hayes and Tennant 1985, Fellers 2005). Although larger vertebrate prey was consumed less frequently, it represented over half of the prey mass eaten by larger frogs suggesting that such prey may play an energetically important role in their diets (Hayes and Tennant 1985). Juvenile and subadult/adult frogs varied in their feeding activity periods;

juveniles fed for longer periods throughout the day and night, while subadult/adults fed nocturnally (Hayes and Tennant 1985). Juveniles were significantly less successful at capturing prey and all life history stages exhibited poor prey discrimination, feeding on several inanimate objects that moved through their field of view (Hayes and Tennant 1985).

Metapopulation and Patch Dynamics

The direction and type of habitat used by dispersing animals is especially important in fragmented environments (Forys and Humphrey 1996). Models of habitat patch geometry predict that individual animals will exit patches at more "permeable" areas (Buechner 1987; Stamps *et al.* 1987). A landscape corridor may increase the patch-edge permeability by extending patch habitat (La Polla and Barrett 1993), and allow individuals to move from one patch to another. The geometric and habitat features that constitute a "corridor" must be determined from the perspective of the animal (Forys and Humphrey 1996).

Because their habitats have been fragmented, many endangered and threatened species exist as metapopulations (Verboom and Apeldom 1990; Verboom *et al.* 1991). A metapopulation is a collection of spatially discrete subpopulations that are connected by the dispersal movements of the individuals (Levins 1970; Hanski 1991). For metapopulations of listed species, a prerequisite to recovery is determining if unoccupied habitat patches are vacant due to the attributes of the habitat patch (food, cover, and patch area) or due to patch context (distance of the patch to other patches and distance of the patch to other features). Subpopulations on patches with higher quality food and cover are more likely to persist because they can support more individuals. Large populations have less of a chance of extinction due to stochastic events (Gilpin and Soule 1986). Similarly, small patches will support fewer individuals, increasing the rate of extinction. Patches that are near occupied patches are more likely to be recolonized when local extinction occurs and may benefit from emigration of individuals via the "rescue" effect (Hanski 1982; Gotelli 1991; Holt 1993; Fahrig and Merriam 1985). For the metapopulation to persist, the rate of patches being colonized must exceed the rate of patches going extinct (Levins 1970). If some subpopulations go extinct regardless of patch context, recovery actions should be placed on patch attributes. Patches could be managed to increase the availability of food and/or cover.

Movements and dispersal corridors likely are critical to California red-legged frog population dynamics, particularly because the animals likely currently persist as metapopulations with disjunct population centers. Movement and dispersal corridors are important for alleviating over-crowding and intraspecific competition, and also they are important for facilitating the recolonization of areas where the animal has been extirpated. Movement between population centers maintains gene flow and reduced genetic isolation. Genetically isolated populations are at greater risk of deleterious genetic effects such as inbreeding, genetic drift, and founder effects. The survival of wildlife species in fragmented habitats may ultimately depend on their ability to move among patches to access necessary resources, retain genetic diversity, and maintain reproductive capacity within populations (Hilty and Merenlender 2004; Petit *et al.* 1995; Buza *et al.* 2000).

Most metapopulation or meta-population-like models of patchy populations do not directly include the effects of dispersal mortality on population dynamics (Hanski 1994; With and Crist 1995; Lindenmayer and Possingham 1996). Based on these models, it has become a widely held notion that more vagile species have a higher tolerance to habitat loss and fragmentation than less vagile species. But models that include dispersal mortality predict exactly the opposite: more vagile species should be more vulnerable to habitat loss and fragmentation because they are more susceptible to dispersal mortality (Fahrig 1998; Casagrandi and Gatto 1999). This prediction is supported by Gibbs (1998), who examined the presence-absence of five amphibian species across a gradient of habitat loss. He found that species with low dispersal rates are better able than more vagile species to persist in landscapes with low habitat cover. Gibbs (1998) postulated that the land between habitats serves as a demographic "drain" for many amphibians. Furthermore, Bonnet *et al.* (1999) found that snake species that frequently make long-distance movements have higher mortality rates than do sedentary species.

Threats

Habitat loss, non-native species introduction, and urban encroachment are the primary factors that have adversely affected the California red-legged frog throughout its range. Several researchers in central California have noted the decline and eventual local disappearance of California and northern red-legged frogs in systems supporting bullfrogs (Jennings and Hayes 1990; Twedt 1993), red swamp crayfish, signal crayfish, and several species of warm water fish including sunfish, goldfish, common carp, and mosquitofish (Moyle 1976; Barry 1992; Hunt 1993; Fisher and Schaffer 1996). This has been attributed to predation, competition, and reproduction interference. Twedt (1993) documented bullfrog predation of juvenile northern red-legged frogs (*Rana aurora*), and suggested that bullfrogs could prey on subadult California red-legged frogs as well. Bullfrogs may also have a competitive advantage over California red-legged frogs. For instance, bullfrogs are larger and possess more generalized food habits (Bury and Whelan 1984). In addition, bullfrogs have an extended breeding season (Storer 1933) during which an individual female can produce as many as 20,000 eggs (Emlen 1977). Furthermore, bullfrog larvae are unpalatable to predatory fish (Kruse and Francis 1977). Bullfrogs also interfere with California red-legged frog reproduction by eating adult male California red-legged frogs. Both California and northern red-legged frogs have been observed in amplexus (mounted on) with both male and female bullfrogs (Jennings and Hayes 1990; Twedt 1993; Jennings 1993). Thus bullfrogs are able to prey upon and out-compete California red-legged frogs, especially in sub-optimal habitat.

The urbanization of land within and adjacent to California red-legged frog habitat has also affected the threatened amphibian. These declines are attributed to channelization of riparian areas, enclosure of the channels by urban development that blocks dispersal, and the introduction of predatory fishes and bullfrogs. Diseases may also pose a significant threat, although the specific effects of disease on the California red-legged frog are not known. Pathogens are suspected of causing global amphibian declines (Davidson *et al.* 2003). Chytridiomycosis and ranaviruses are a potential threat because these diseases have been found to adversely affect other amphibians, including the listed species (Davidson *et al.* 2003; Lips *et al.* 2006). Mao *et al.* (1999 cited in Fellers 2005) reported northern red-legged frogs infected with an iridovirus, which was also presented in sympatric threespine sticklebacks in northwestern California. Non-

native species, such as bullfrogs and non-native tiger salamanders that live within the range of the California red-legged frog have been identified as potential carriers of these diseases (Garner *et al.* 2006). Human activities can facilitate the spread of disease by encouraging the further introduction of non-native carriers and by acting as carriers themselves (i.e., contaminated boots, waders or fishing equipment). Human activities can also introduce stress by other means, such as habitat fragmentation, that results in the listed species being more susceptible to the effects of disease.

Negative effects to wildlife populations from roads and pavement may extend some distance from the actual road. The phenomenon can result from vehicle-related mortality, habitat degradation, noise and light pollution, and invasive exotic species. Forman and Deblinger (1998) described the area affected as the "road effect" zone. One study along a 4-lane road in Massachusetts determined that this zone extended for an average of 980 feet to either side of the road for an average total zone width of approximately 1,970 feet. However, in places they detected an effect greater than 0.6-mile from the road. The road effect zone can also be subtle. Van der Zandt *et al.* (1980) reported that lapwings and black-tailed godwits feeding at 1,575 to 6,560 feet from roads were disturbed by passing vehicles. The heart rate, metabolic rate and energy expenditure of female bighorn sheep increases near roads (MacArthur *et al.* 1979). Trombulak and Frissell (2000) described another type of "road-zone" effect due to contaminants. Heavy metal concentrations from vehicle exhaust were greatest within 66 feet of roads and elevated levels of metals in soil and plants were detected at 660 feet of roads. The "road-zone" varies with habitat type and traffic volume. Based on responses by birds, Forman (2000) estimated the road-zone along primary roads of 1,000 feet in woodlands, 1,197 feet in grasslands, and 2,657 feet in natural lands near urban areas. Along secondary roads with lower traffic volumes, the effect zone was 656 feet. The road-zone with regard to California red-legged frogs has not been adequately investigated.

The necessity of moving between multiple habitats and breeding ponds means that many amphibian species, such as the California red-legged frog are especially vulnerable to roads and well-used large paved areas in the landscape. Van Gelder (1973) and Cooke (1995) have examined the effect of roads on amphibians and found that because of their activity patterns, population structure, and preferred habitats, aquatic breeding amphibians are more vulnerable to traffic mortality than some other species. High-volume highways pose a nearly impenetrable barrier to amphibians and result in mortality to individual animals as well as significantly fragmenting habitat. Hels and Buchwald (2001) found that mortality rates for anurans on high traffic roads are higher than on low traffic roads. Vos and Chardon (1998) found a significant negative effect of road density on the occupation probability of ponds by the moor frog (*Rana arvalis*) in the Netherlands. In addition, incidences of very large numbers of road-killed frogs are well documented (Asley and Robinson 1996), and studies have shown strong population level effects of traffic density (Carr and Fahrig 2001) and high traffic roads on these amphibians (Van Gelder 1973; Vos and Chardon 1998). Most studies regularly count road mortalities from slow moving vehicles (Hansen 1982; Rosen and Lowe 1994; Drews 1995; Mallick *et al.* 1998) or by foot (Munguira and Thomas 1992). These studies assume that every victim is observed, which may be true for large conspicuous mammals, but may be an incorrect assumption for small animals, such as the California red-legged frog. Amphibians appear especially vulnerable to

traffic mortality because they readily attempt to cross roads, are small and slow-moving, and thus are not easily avoided by drivers (Carr and Fahrig 2001).

Status of the Species
The recovery plan for the California red-legged frog identifies eight recovery units (Service 2002). The establishment of these recovery units is based on the determination that various regional areas of the species' range are essential to its survival and recovery. The status of the California red-legged frog was considered within the small scale recovery units as opposed to their overall range. These recovery units are delineated by major watershed boundaries as defined by U.S. Geological Survey hydrologic units and the limits of its range. The goal of the recovery plan is to protect the long-term viability of all extant populations within each recovery unit. Within each recovery unit, core areas have been delineated and represent contiguous areas of moderate to high California red-legged frog densities that are relatively free of exotic species such as bullfrogs. The goal of designating core areas is to protect metapopulations. Thus when combined with suitable dispersal habitat, will allow for the long term viability within existing populations. This management strategy will allow for the recolonization of habitats within and adjacent to core areas that are naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of California red-legged frogs.

Environmental Baseline for the California Red-Legged Frog in the Action Area

Like most California highways, Jameson Canyon Road and State Route 29 were county roads prior to becoming part of the State highway system circa 1935 (http://www.cahighways.org/). Like most of the State's highways, the roadways now identified as State Route 12 and State Route 29 were constructed long before the establishment of NEPA (NEPA; 1969), the Act (1973), or the CEQA (CEQA; 1970); as well as the Federal listing of the California red-legged frog (1996) or our current understanding regarding the effects roads have on wildlife and how roads can be designed to minimize those effects.

The State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects are within Recovery Unit 3 (North Coast and North San Francisco Bay) (Service 2002). The action area falls within Core Area #15 (Jameson Canyon-Lower Napa River) of that Recovery Unit (Service 2002). The conservation needs for the Jameson Canyon-Lower Napa River core area are: (1) protecting existing populations from current and future urbanization; (2) create and manage alternative breeding habitats; and (3) protecting dispersal corridors. The Jameson Canyon-Lower Napa River Core Area is described in the recovery plan as an important source population for the species.

The State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects bisect the Jameson Canyon-Lower Napa River core recovery area. Other than agricultural development adjacent to State Route 12/State Route 29 intersection, the land along Jameson Canyon Road is characterized by a continuous mosaic of upland grassland dispersal, cover, and foraging habitat as well as seasonal wetlands, riparian habitat, and numerous ephemeral and perennial creek crossings. According to the 2007 Biological Assessment, the project intersects seven perennial creeks and numerous ephemeral

creeks. At minimum, developed lands, vineyards, and disked fields along the highway corridor can be subject to temporal use by dispersing frogs (Caltrans 2007a).

The action area is located within the formerly proposed Unit 11 (American Canyon Unit) in the proposed rule issued on April 13, 2004 (Service 2004). The definition of that proposed critical habitat unit specifically included the watersheds of Fagan Creek and Jameson Canyon. There are three currently designated California red-legged frog critical habitat units in Solano County (Service 2010). The revised critical habitat designation occurred after the initial consultation on these projects. The three Solano units are arranged as stepping stones separated by Jameson Canyon Road and Interstate 80 and a key factor in the species recovery is to provide connectivity from southeastern Napa County south to the interior Coast Range north of Suisun Bay. The SOL-2 unit is located immediately north of Jameson Canyon Road and is also known as the Jameson Canyon Unit. This unit is considered essential for the California red-legged frog because it provides connectivity from Napa County south to unit SOL-3 (American Canyon Unit) which occupies a wedge of habitat located between Jameson Canyon Road and Interstate 80. Critical habitat unit SOL-1 (the Sky Valley Unit) is the southernmost unit in the group and extends south to Suisun Bay. The connectivity function of the three Solano County units is dependent upon maintaining red-legged frog passage across Interstate 80 and Jameson Canyon Road.

The Draft Solano HCP represents the most complete regional scientific data and analysis for the California red-legged frog in Solano County (SWCA 2009). A final administrative draft of the HCP was issued in June 2009. The road widening and interchange projects are within the California red-legged frog Conservation Area defined in the draft HCP. The draft HCP also identified Jameson Canyon Creek and various aquatic features within 1-mile of the action area as potential California red-legged frog breeding and hydration habitat. According to the draft HCP analysis, the existing Jameson Canyon Road and Interstate 80 create barriers between the SOL-1, -2, and -3 critical habitat units and "severely restrict or eliminate the natural dispersal and migratory movements of individuals between these three blocks of habitat, reducing the resiliency of populations and limiting genetic diversity." One of the objectives of the draft HCP is to conserve 20 percent of the historic range of the California red-legged frog within Solano County which amounts to approximately 99 percent of the Jameson Canyon-Lower Napa River core recovery area.

The lack of species occurrence records in the California Natural Diversity Database (CNDDB) likely is the result of a lack of survey efforts in Jameson Canyon (CDFG 2010a; 2010b) because the majority of the land adjacent to the action area is in private ownership. The first California red-legged frog CNDDB record for Solano County was not recorded until 1993 (SWCA 2009). Caltrans did not conduct standardized or protocol frog or other wildlife surveys in the action area or a wildlife movement analysis to support their baseline analysis for the projects. Due to limited access, Caltrans and the Service used aerial photography and field observations from available access locations to independently identify available upland habitat for refugia and dispersal as well as potential riparian and aquatic habitat throughout the action area vicinity. As directed by the draft Solano HCP, regional surveys will be conducted for California red-legged frogs within the Jameson Canyon-Lower Napa River Core Recovery Area within two years of

adopting the final HCP and will continue every five years for the life of the HCP (SCWA 2009). There are two individual red-legged frog records less than 0.25-mile north of the action area near the intersection of State Route 12 and Redtop Road (CDFG 2010a; 2010b). The records are from 2003 and 2004 and are the result of surveys conducted for another road project. The CNDDB records identified red-legged frog breeding on the Mangel's Property. The identified breeding pond is likely an important source for the Solano County red-legged frog population.

It is likely that the California red-legged frog population along Jameson Canyon Road has been subject to a prolonged history of road mortality. There are no discernable barriers to prevent frogs from entering the existing roadway within the proposed project area. According to the traffic data on Caltrans' website, the annual average daily traffic on Jameson Canyon Road (monitored at the Napa/Solano County line) increased from 52,000 vehicles in 1992 to 62,000 in 2009 (http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm). This represents a 16 percent increase in daily traffic over a 17 year period. This indicates a history of significant traffic volume for this two-lane road. The draft Solano HCP concludes that any road with a volume exceeding 20 vehicles per hour constitutes a risk for significant roadkill that should be addressed with "safe" passage design features. Although traffic volumes drop after dark when frogs are more likely to be active, the 2009 data estimates 2,583 vehicles per hour. Of note, average daily traffic volumes on Jameson Canyon Road were 2,000 greater in 2006 and 3,000 greater in 2007 suggesting possible stabilization or declined over the past few years.
The existing Jameson Canyon Road is likely a significant fragmenting feature, not due to physical barriers but due to road mortality. Road mortality creates a semi-permeable barrier because some individual California red-legged frogs are likely to safely cross the roadway however, over time the increase in mortality risk can have a significant effect on population viability as the integrity of the larger population is disrupted and the recovery goals for the species in Solano County are compromised.

Without a road mortality study or movement analysis it is difficult to determine the "hot spots" for California red-legged frog movement across Jameson Canyon Road, and hence where increased road mortality risk would occur. The only roadkill data available to the Service for the action area has been uploaded to the University of California at Davis (UCD) Road Ecology Center's online California Roadkill Observation System (CROS) (http://www.wildlifecrossing.net/california/). The majority of CROS data is the result of episodic "citizen science" efforts rather than systematic and routine surveys of the roadway. Observations are typically made "from behind the wheel" and therefore primarily target easily identifiable mid to large-sized wildlife. Smaller species such as amphibians and reptiles are therefore underrepresented. Based on CROS from 2009 to January 2011, twenty-eight roadkill carcasses have been recorded for Jameson Canyon Road, between the Red Top Road and State Route 29 intersections (John Cleckler/Service personal communication with Fraser Shilling/UCD, January 27, 2011). Those carcasses include cattle egret, barn owls, Cooper's hawk, stripped skunk, raccoon, gray fox, coyote, and deer. The locations are distributed along the full length of Jameson Canyon Road with the highest concentration at the eastern third of the road widening project. This includes clusters of roadkill near the riparian habitat associated with the proposed 12x12-foot undercrossing and the Dittmer Property.

Given that both projects are either adjacent to Jameson Canyon Creek or within 0.5-mile of potential aquatic habitat and the lack of impermeable barriers it is difficult to discount the potential crossing in any give portion of the project alignment. California red-legged frogs do not appear to be limited to particular routes of travel but it is more likely that higher concentrations of traveling adults or dispersing juveniles would be found closer to aquatic features and riparian corridors. Based on the limited information regarding the nearby habitat functions it may be more likely to encounter a higher concentration of California red-legged frogs attempting to cross Jameson Canyon Road within 300 feet of aquatic and riparian habitat and established drainage crossings.

Culverts are often used as a solution to provide "safe" passage of amphibians across roadways. All of the existing culverts crossing under Jameson Canyon Road in the action area are designed to convey hydrology. Based on the modifications proposed in the project description, it is likely that at least half of these culverts are undersized for current hydrology. California red-legged frogs are most likely to move through upland habitat during seasonal rain events and would unlikely use culverts for passage when they are fully inundated. There are at least three existing cross culverts under State Route 29 and 16 under Jameson Canyon Road. Of them, there are nine pipe culverts with either an 18 or 24-inch diameter and nine culverts that range between a 3-foot diameter pipe to 10x6-foot box (Tables 1 and 2). The Service lacks data on the existing condition of these crossings and what wildlife species would be able to use them as "safe" passage. Unless buried in silt and/or debris or fully inundated with water, there is potential that the nine larger culverts listed in Table 2 provide baseline passage potential for the California red-legged frog.

Jameson Canyon Road includes an existing parallel Caltrans right-of-way (ROW) fence on both sides of the roadway but the fence is not designed to exclude California red-legged frogs from the roadway or direct them towards the nine "safe" crossings, therefore limiting the potential that frogs would use the culverts rather than move over the roadway. There are no existing median barriers on Jameson Canyon Road and there is one existing retaining wall immediately west of the Red Top Road intersection. This wall was constructed in 2009 as part of the Red Top Road Truck Climbing Lane Project. There are no street lights in the action area and limited ambient night lighting from low density housing and industrial operations.

The Service believes that the California red-legged frog is reasonably certain to occur within the action area because: (1) it is located within the species' range and current distribution; (2) suitable aquatic and riparian habitat intersect the action area in multiple locations; (3) the proximity of a confirmed breeding pond; (4) all the elements needed to support the species' life history are located within 0.5-mile of the action area; and (5) the biology and ecology of the animal, especially the ability of adults to move considerable distances.

Effects of the Proposed Action

The proposed State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects will likely adversely affect the threatened California red-legged frog during the construction and operational phases of each project.

Caltrans proposes to minimize construction related effects by implementing the *Conservation Measures* included in the project description section of this biological opinion. Effective implementation of *Conservation Measures* will likely minimize effects to the California red-legged frog but incidental take is still likely to occur. Therefore, the projects have the potential to result in a variety of adverse effects that would result in take of the California red-legged frog.

Construction could result in the killing, harming and/or harassment of juveniles and adults inhabiting areas of suitable aquatic and upland habitat. The projects as proposed in Caltrans revised project information and in the project description of this biological opinion would result in the removal of approximately 121.79 acres of California red-legged frog habitat. The Service has determined that the permanent and temporary loss and/or degradation of California red-legged frog habitat will result in the take of all frogs within these areas as a direct result of habitat loss.

During the construction phase of the projects, permanent and temporal loss of aquatic and upland habitat will result from the removal and/or disturbance of soil and vegetation within the project footprints. Construction noise, vibration, lighting used for possible night work, and increased human activity during the construction phase of the project may interfere with normal behaviors such as feeding, sheltering, movement between refugia and foraging grounds, and other frog essential behaviors. This can result in avoidance of areas that have suitable habitat but intolerable levels of disturbance.

Unless identified by the biological monitor or site personnel, and rescued by the biological monitor, individual California red-legged frogs exposed during excavations likely will be crushed and killed or injured by construction-related activities. Even with biological monitoring, overall awareness, and proper escape ramps, California red-legged frogs could fall into the trenches, pits, or other excavations, and then risk being directly killed or be unable to escape and be killed due to desiccation, entombment, or starvation. Proper trash disposal is often difficult to enforce on a large construction site and is a common non-compliance issue. Improperly disposed edible trash could attract predators, such as raccoons, crows, and ravens, to the sites, which could subsequently prey on the listed amphibian. Caltrans commitment to not use erosion control devices with mono-filament should be effective in avoiding the associated risk of entrapment that can result in death by predation, starvation, or desiccation (Stuart *et al.* 2001). Limiting initial ground disturbing activities between April 1 and November 1, 2012, primarily avoids the wettest time of year and the onset of the breeding season when frogs are more likely to be involved in upland dispersal. Caltrans will further minimize the effects by locating construction staging, storage and parking areas outside of sensitive habitat; clearly marking construction work boundaries with high-visibility fencing, conducting preconstruction surveys and environmental monitoring, and revegetating temporarily disturbed areas. The amount of take resulting from construction activities and the removal of habitat will be partially minimized by installing wildlife exclusion fencing to deter frogs from wandering onto construction sites; educating workers; and requiring a Service-approved biologist to be present to monitor construction activities.

If unrestricted, the proposed construction activities could result in the introduction of chemical contaminants to frog habitat. Exposure pathways could include inhalation, dermal contact, direct ingestion, or secondary ingestion of contaminated soil, plants or prey species. Exposure to contaminants could cause short- or long-term morbidity, possibly resulting in reduced productivity or mortality. However, Caltrans proposes to minimize these risks by implementing a stormwater pollution prevention plan (SWPPP), erosion control BMPs and a Spill Response Plan, which will consist of refueling, oiling or cleaning of vehicles and equipment a minimum of 65 feet from riparian and aquatic areas; installing coir rolls, straw wattles and/or silt fencing to capture sediment and prevent runoff or other harmful chemicals from entering the aquatic habitat; and locating staging, storage and parking areas away from aquatic habitat.

Preconstruction surveys and the relocation of individual California red-legged frogs may avoid injury or mortality; however, capturing and handling frogs may result in stress and/or inadvertent injury during handling, containment, and transport. Caltrans proposes to minimize these effects by using Service-approved biologists, limiting the duration of handling, and relocating amphibians to suitable nearby habitat in accordance with Service guidance.

If unrestricted, biologists and construction workers traveling to the action area from other project sites may transmit diseases by introducing contaminated equipment. The chance of a disease being introduced into a new area is greater today than in the past due to the increasing occurrences of disease throughout amphibian populations in California and the United States. It is possible that chytridiomycosis, caused by chytrid fungus, may exacerbate the effects of other diseases on amphibians or increase the sensitivity of the amphibian to environmental changes (e.g., water pH) that reduce normal immune response capabilities (Bosch *et al.* 2001, Weldon *et al.* 2004). Caltrans proposes to eliminate these risks by implementing proper decontamination procedures prior to and following aquatic surveys and handling amphibians. These will minimize the risk of transferring diseases through contaminated equipment or clothing. Proper handling and relocation of frogs out of construction areas increases the likelihood of their survival.

As described in *Conservation Measure 1*, Caltrans has proposed in-perpetuity preservation of 365.37 acres of high quality California red-legged frog habitat that will be located within the draft Solano HCP California Red-Legged Frog Conservation Area. Preserving frog habitat adjacent to Jameson Canyon Road would directly benefit the frog population otherwise subjected to adverse effects associated with the projects. Suitable preservation and management of locations such as the Dittmer Property would likely have considerable species conservation and recovery value. Securing habitat along Jameson Canyon Road is critical given the likelihood of future urbanization and agricultural land use changes. In combination with existing mosaic of local habitat-based conservation easements and future habitat acquisitions through the draft Solano HCP, the implementation of *Conservation Measure 1* is likely to promote the function of the Solano County critical habitat units and the first conservation need for the Jameson Canyon-Lower Napa River Core Recovery Area (protecting existing populations from current and future urbanization).

Other than preserving remaining habitat, the primary concern for California red-legged frog habitat in Solano County is maintaining connectivity across Jameson Canyon Road and Interstate 80. Amphibians are especially vulnerable to traffic mortality because they readily attempt to cross roads, are slow-moving and small, and cannot easily be detected or avoided by drivers (Carr and Fahrig 2001). Doubling the road width, installing a concrete median and increasing vehicle speed will intensify the baseline road effects by increasing the surface area for a frog to encounter a vehicle and introducing new, possibly insurmountable physical barriers. Connectivity within the Jameson Canyon-Lower Napa River Core Recovery Area and between critical habitat units SOL-3 and SOL-2 will be further compromised following the completion the proposed Interstate 80/Interstate 680/State Route 12 Interchange Project.

The installation of a concrete median will present a definitive barrier to California red-legged frog movement over the road. Caltrans plans to include a 9 inch radius scupper in the concrete median every 300 feet and a 2-foot wide opening in the barrier every 1,200 feet. Given the amount of traffic on Jameson Canyon Road it is unlikely that frogs will be able to successfully cross the road even if they do manage to find these openings.

The key to reducing road mortality and maintaining connectivity is to limit frogs' access to the roadway and redirect them to safe passage structures. This is more effectively achieved by placing barriers to frogs (such as jersey barriers, ERTECH's high UV E-Fence, or ACO's amphibian guide fence and stop grid) beyond the road shoulder. The proposed ROW fencing will be effective in excluding livestock from Jameson Canyon Road but is unlikely to deter frogs and other wildlife. The lack of such exclusion and directional features will result in California red-legged frogs crossing the roadway where they are more likely to be killed by vehicles. The construction of 1.95 miles of retaining walls along Jameson Canyon is likely to limit frog access on to the road. The ends of the walls will likely funnel animals to one end of seven of the cross culverts. However, in most locations the wall is limited to one side of the roadway thereby creating a barrier to frogs and other wildlife attempting to escape the roadway. Barriers are not effective as exclusion unless located on both sides of the roadway. The lack of wildlife fencing is likely to result in increased wildlife-vehicle collisions which may result in increased risk of property damage and human injury.

The greatest potential for providing safe passage across Jameson Canyon Road is by way of cross culverts. Caltrans plans to upsize nine existing culverts to a 36 inch diameter and install two new 36 inch diameter culverts under Jameson Canyon Road (Tables 1 and 2). In order to better accommodate frog passage, four of the proposed culvert replacements were upsized to exceed the hydrology design standards (Table 1). The dimension of the under-passage structures is considered one of the most important variables in the design of passage ways for vertebrates (Yanes *et al.* 1995; Rodriguez *et al.* 1996). Although no studies have determined a minimum width for the California red-legged frog, passages made for other small vertebrates, such as salamanders, must be wide and tall enough to enable animals to clearly see to the opposite end of the culvert, or there is lighting along the culvert provided by overhead grates or openings. It is unknown if red-legged frogs will use a 36 inch diameter corrugated culvert across a 77-foot wide or greater roadway that is not day-lighted, lacks a natural bottom, and does not have regular maintenance to prevent filling with sediment and debris. De Rivera and Bliss-Ketchum (2010)

detected bullfrogs using 18 and 24 inch diameter culverts across an approximately 60-foot wide roadway in Oregon and Woltz *et al.* (2008) determined that two *Rana* species (green and leopard frogs) preferred culverts that were at least approximately 20 inches in diameter or greater but were reluctant to use culverts that were 30 feet long. Condor Country Consulting, Inc. (2009) observed California red-legged frogs using only four-foot diameter or larger culverts to cross the two to three lane Vasco Road in Alameda County. It is difficult to determine if the proposed culvert upsizing will be an improvement over the existing "safe" crossing potential for Jameson Canyon Road. Sufficient culvert size is dependent upon culvert length therefore the 36 inch diameter may not be large enough to compensate for the approximate doubling of the crossing length.

Table 2 identified the additional nine existing box culverts with 3-foot diameter/ height or greater that will be extended at the existing dimension. These nine culverts have greater potential for continued frog passage. The proposed 12x12-foot box culvert to accommodate the Bay Ridge Trail has the greatest potential to provide frog and general wildlife passage. The trail culvert is located within the Jameson Canyon Creek riparian corridor and unlike the other culverts, is not associated with a drainage feature and will not convey hydrology. Crossings are not effective for terrestrial species and California red-legged frog passage when inundated with water. The existing culvert adjacent to the planned trail culvert was observed to be flooded by a perennial backwater pool on the south side of Jameson Canyon Road during the January 26, 2011, site visit. This made the culvert impassible for California red-legged frogs that likely utilize the dense riparian habitat and pool. The addition of the trail culvert will provide year-round upland passage for frogs and other wildlife such as deer, coyotes, and foxes. If the Bay Ridge Trail is completed to this crossing, recreational activities are unlikely to significantly affect wildlife use given that most species would utilize the crossing at night. There is no certainty that the Bay Ridge Trail will ever cross this location, therefore there is a possibility that the 12x12-foot box could function solely as a wildlife crossing.

Despite the suitability for passage, the potential use of the large culverts in Table 2 and the 12x12-foot trail culvert is likely dependent upon guidance barriers. It would be expected for California red-legged frogs to naturally move along drainage channels and riparian corridors that would lead them to culverts. However, studies indicate that it is typical for wildlife, including amphibians, to actively avoid undercrossings unless "forced" to use them (Condor Country Consulting, Inc. 2009; Patrick *et al.* 2010; de Rivera and Bliss-Ketchum 2010; Portland State University 2003; McAllister 2009, Gagnon 2009, Pagnucco 2009, Dodd 2009, WTI 2006, Boarman 1995, Sikich *et al.* 2009, Craighead Institute 2011). California red-legged frogs will often travel along riparian corridors but they are also known to disperse seemingly without regard for topography and habitat type. During their Vasco Road study, Condor Country Consulting, Inc. (2009) found roadkill California red-legged frogs to be randomly distributed along the road rather than clustered near drainage crossings and therefore recommended that continual directional fencing be installed between undercrossings. The Service has been unable to find any data to suggest that directional structures result in a significant increased risk of predation.

The long term viability of any designated wildlife crossing is questionable unless crossing locations and the habitat on both sides of the crossing are permanently set aside as open space or have a conservation easement or some other designation that limits development and land use. *Conservation Measure 1* should result in the preservation of habitat on the north side of a culvert crossing if the Dittmer Property is secured. Additional habitat acquisition associated with the intersection project, the Interstate 80/Interstate 680/State Route 12 Interchange Project, and the Draft Solano HCP will be directed towards the Solano HCP California Red-Legged Frog Conservation Area and should be targeted to include land adjacent to the Jameson Canyon Road culvert crossings.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The draft Solano HCP includes the eastern third of Jameson Canyon Road within its urban zone of covered activities. The Fairfield General Plan designates most of this area for planned development. Loss of additional California red-legged frog habitat and further fragmentation in this area due to non-Federal actions would result in cumulative effects to the California red-legged frog. Widening of Jameson Canyon Road may enhance this urban growth potential. The effects of the activities covered by the draft Solano HCP are addressed and mitigated through the HCP.

Conclusion

After reviewing the current status of the California red-legged frog, the environmental baseline for the action area; the effects of the proposed State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects and the cumulative effects; it is the Service's biological opinion that the projects, as proposed, are not likely to jeopardize the continued existence of this listed species. We based these determinations on the following: (1) pre-construction surveys will be conducted for California red-legged frogs and individuals found in the project work area will be relocated to nearby suitable habitat; (2) a Service-approved biologist will monitor all activities that may result in the take of listed species; (3) a compensation package has been developed that provides in-perpetuity management for 365.37 acres of California red-legged frog habitat within the draft Solano HCP California red-legged frog Conservation Area; (4) installation of a 12x12-foot box culvert that will be conducive to "safe" wildlife passage; and (5) other conservation measures, as described in the *Proposed Conservation Measures* of this biological opinion, that will be fully implemented by Caltrans.

INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, movement, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including movement, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by Caltrans so that they become binding conditions of any grant or permit issued to Caltrans as appropriate, in order for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity covered by this Incidental Take Statement. If Caltrans: (1) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document; and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect due to their small size, wariness, and cryptic nature. Finding an injured or dead California red-legged frog is unlikely because of their relatively small body size, rapid carcass deterioration, and likelihood that the remains will be removed by a scavenger. Losses of this species may also be difficult to quantify due to a lack of baseline survey data and seasonal/annual fluctuations in their numbers due to environmental or human-caused disturbances. There is a risk of harm, harassment, injury and mortality as a result of the proposed construction activities, the permanent and temporary loss/degradation of suitable habitat, and capture and relocation efforts; therefore, the Service is authorizing take incidental to the proposed action (combined projects) as: (1) the injury and mortality of no more than two adult or juvenile California red-legged frogs; and (2) the capture, harm and harassment of all California red-legged frogs within the 217.58-acre action area. Upon implementation of the following *Reasonable and Prudent Measures*, California red-legged frogs within the action area in proportion to the amount and type of take outlined above will become exempt from the prohibitions described under section 9 of the Act. No other forms of take are exempted under this opinion.

This biological opinion does not authorize take for Federal and non-Federal actions associated with use, operation, and maintenance of State Route 12, State Route 29, and the associated Caltrans ROW. Routine Caltrans' maintenance activities such as the removal/displacement of sand, silt, sediment, debris, rubbish, vegetation, and other obstruction flow; the control of weeds, grasses and emergent vegetation, minor repair of existing facilities, rip-rap replacement, and culvert replacement have the potential to result in take of the California red-legged frogs and are not authorized.

Effect of the Take

The Service has determined that this level of anticipated take for the California red-legged frog is not likely to jeopardize the continued existence of this species.

Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the effect of the proposed action on the California red-legged frog. Caltrans will be responsible for implementation of and compliance with these measures:

1. Caltrans will implement the Proposed Conservation Measures as described in this biological opinion; and

2. Caltrans will implement additional actions to minimize adverse effects to the California red-legged frog.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Caltrans shall ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

1. The following Terms and Conditions implement Reasonable and Prudent Measure one (1):

    a. Caltrans shall minimize the potential for harm, harassment, or killing of the California red-legged frog resulting from project related activities by implementing the conservation measures as described in the *Description of the Proposed Action* of this biological opinion.

    b. Caltrans shall require all contractors to comply with the Act in the performance of the action and shall perform the action as outlined in the *Description of the Proposed Action* of this biological opinion as provided by Caltrans in the November 2010 project description revision and all other supporting documentation submitted to the Service.

    c. Caltrans shall include language in their contracts that expressly requires contractors and subcontractors to work within the boundaries of the project footprints identified in this biological opinion, including vehicle parking, staging, laydown areas, and access roads.

2. The following Terms and Conditions implement Reasonable and Prudent Measure two (2):

   a. The Resident Engineer or their designee shall be responsible for implementing the conservation measures and Terms and Conditions of this biological opinion and shall be the point of contact for the project. The Resident Engineer or their designee shall maintain a copy of this biological opinion onsite whenever construction is taking place. Their name and telephone number shall be provided to the Service at least thirty (30) calendar days prior to groundbreaking at the two individual projects. Prior to ground breaking, the Resident Engineer must submit a letter to the Service verifying that they possess a copy of this biological opinion and have read the Terms and Conditions.
   b. A biologist shall be onsite to monitor the initial ground disturbance activities. The biologist shall perform a California red-legged frog clearance survey immediately prior to the initial ground disturbance. The biological monitor shall also investigate areas of disturbed soil for signs of California red-legged frogs within 30 minutes following the initial disturbance of that given area.

   c. Each California red-legged frog encounter shall be treated on a case-by-case basis in coordination with the Service but general guidance is as follows: (1) leave the non-injured frog if it is not in danger; or (2) move the frog to a nearby location if it is in danger.

      These two options are further described below.

      1. When a California red-legged frog is encountered in the action area the first priority is to stop all activities in the surrounding area that have the potential to result in the harm, harassment, injury, or death of the individual. Then the monitor needs to assess the situation in order to select a course of action that will minimize adverse effects to the individual. Contact the Service once the site is secure. The contacts for this situation are Ryan Olah (*ryan_olah@fws.gov*) or John Cleckler (*john_cleckler@fws.gov*). They can be reached at (916) 414-6600. If you get voicemail message for these contacts then contact John Cleckler on his cell phone at (916) 712-6784. The issue of contacting people on the weekend or after office hours is addressed later.

         The first priority is to avoid contact with the frog and allow it to move out of the action area and hazardous situation on its own to a safe location. The animal should not be picked up and moved because it is not moving fast enough or it is inconvenient for the construction activities. This guidance only applies to situations where a California red-legged frog is encountered on the move during conditions that make their upland travel feasible. This does not apply to California red-legged frogs that are uncovered or otherwise exposed or in areas where there is not sufficient adjacent habitat to support the life history of the California red-legged frog should they move outside the immediate area.

Avoidance is the preferred option if the California red-legged frog is not moving and is using aquatic habitat or is within some sort of burrow or other refugia. The area should be well marked for avoidance by construction and a Service-approved biological monitor should be assigned to the area when work is taking place nearby.

2. The animal should be captured and moved when it is the only option to prevent its death or injury.

   If appropriate habitat is located immediately adjacent to the capture location then the preferred option is short distance relocation to that habitat. This must be coordinated with the Service but the general guidance is the frog should not be moved outside of the radius it would have traveled on its own. Under no circumstances should a frog be relocated to another property without the owner's written permission. It is Caltrans' responsibility to arrange for that permission.

   The release must be coordinated with the Service and will depend on where the individual was found and the opportunities for nearby release. In most situations the release location is likely to be into the mouth of a small burrow or other suitable refugia and in certain circumstances pools without non-native predators may be suitable.

   Only Service-approved biologists for the project can capture California red-legged frogs. Nets or bare hands may be used to capture California red-legged frogs. Soaps, oils, creams, lotions, repellents, or solvents of any sort cannot be used on hands within two hours before and during periods when they are capturing and relocating California red-legged frogs. To avoid transferring disease or pathogens between sites during the course of surveys or handling of the frogs, Service-approved biologists must use the following guidance for disinfecting equipment and clothing. These recommendations are adapted from the Declining Amphibian Population Task Force's Code which can be found in their entirety at: http://www.open.ac.uk/daptf/

   1. All dirt and debris, including mud, snails, plant material (including fruits and seeds), and algae, must be removed from nets, traps, boots, vehicle tires and all other surfaces that have come into contact with water and/or an amphibian. Cleaned items should be rinsed with clean water before leaving each site.

   2. Boots, nets, traps, etc., must then be scrubbed with either a 70 percent ethanol solution, a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water), QUAT 128 (quaternary ammonium, use 1:60 dilution), or a 6 percent sodium hypochlorite 3 solution and rinsed clean with water between sites. Avoid cleaning equipment in the immediate vicinity of a pond or wetland. All traces of the disinfectant must be removed before entering the next aquatic habitat.

   3. Used cleaning materials (liquids, etc.) must be disposed of safely, and if necessary, taken back to the lab for proper disposal.

4. Service-approved biologists must limit the duration of handling and captivity. While in captivity, individual California red-legged frogs shall be kept in a cool, dark, moist, aerated environment, such as a clean and disinfected bucket or plastic container with a damp sponge. Containers used for holding or transporting should not contain any standing water.

d. Caltrans shall demonstrate measurable progress in providing the Service approved compensation prior to initiating construction on the State Route 12 Jameson Canyon Road Widening Project. Measurable progress shall be demonstrated by a site being selected with an option for its purchase in place. All compensation shall be secured, reviewed, and approved by the Service by completion of construction.

e. California red-legged frog habitat conservation shall be implemented within the boundaries of the draft/final Solano HCP California red-legged frog Conservation Area and shall be reviewed and approved by the Service, independent of the HCP process.

f. All native, woody riparian vegetation greater than a 1 inch diameter shall be replaced by new native riparian vegetation to achieve 3:1 replacement after five years.

g. Any revegetation plans shall be reviewed and approved by the Service. In addition, annual monitoring reports on the success of the plantings shall be provided to the Service.

h. If pumping is used for dewatering, intakes shall be completely screened with wire mesh no larger than 0.2 inches to prevent frogs from entering the pump.

i. The Service-approved biologist(s) shall permanently remove, from the project site, any exotic wildlife species, such as bullfrogs and crayfish, to the extent possible.

j. To minimize the fragmentation between the SOL-2 and SOL-3 critical habitat units and to maintain the recovery potential within the Jameson Canyon-Lower Napa River Core Recovery Area, Caltrans shall install barriers that will effectively deter entry onto Jameson Canyon Road and guide California red-legged frogs directly towards "safe" passage locations along the entire alignment for Jameson Canyon Road. This guidance system should tie-in to proposed retaining walls and other adequate existing or planned barriers. The barrier and guidance design shall be submitted for Service review and approval.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

The Service requests notification of the implementation of any conservation recommendations in order to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats. We propose the following conservation recommendations:

1. Enhancing habitat connectivity and wildlife passage across roads as well as reducing road effects should be included in the *Purpose and Need* section of environmental documents. FHWA agreed to coordinate with the Service on wildlife movement issues in a June 2, 2010, letter addressed to Mr. Greg Costello of the Western Environmental Law Center. As their NEPA delegate, Caltrans is expected to adopt the commitments made by FHWA to consider wildlife movement in transportation planning and project development.

2. Caltrans should include a wildlife passage section in their biological assessments that include an analysis of the existing passage and how the project will affect passage. The analysis should include identification of the species' resources on both sides of the project boundaries, an appropriately timed road mortality survey to identify "hot spots," and strategic locations where the species could benefit from the enhancement of an existing crossing or the installation of a new crossing. Caltrans should coordinate with their headquarters office and the University of California at Davis Road Ecology Center to develop a passage and road effects approach. Further guidance is provided by FHWA's *Wildlife Vehicle Collision Reduction Study* (available at: http://www.fhwa.dot.gov/environment/hconnect/wvc/index.htm) and Caltrans' Wildlife Crossings Guidance Manual (http://www.dot.ca.gov/hq/env/bio/wildlife_crossings/).

3. Efforts should be made to establish upland culverts designed specifically for wildlife movement rather than accommodations for hydrology. Transportation agencies should also acknowledge the value of enhancing human safety by providing safe passage for wildlife in their early project design.

4. Caltrans should use the internal system they have developed to keep track of road mortality records and the University of California at Davis, Road Ecology Center's California Roadkill Observation System (http://www.wildlifecrossing.net/california/). For reference, the Washington State Department of Transportation (DOT) developed a Wildlife Carcass Removal Database where they record information submitted by their maintenance crews (http://www.wsdot.wa.gov/Environment/Biology/bio_esa.htm). The importance of such a system is demonstrated by the public-access reporting system used in Idaho that resulted in more than double the previous DOT road mortality estimates (Kociolek 2009).

5. Caltrans should consider establishing functioning preservation and creation conservation banking systems to further the conservation of the California red-legged frog and other listed species. Such banking systems also may be utilized for other required mitigation (i.e., seasonal wetlands, riparian habitats, etc.) where appropriate. Efforts should be made to preserve habitat along roadways in association with wildlife crossings.

6. Caltrans should continue to pursue multifaceted compensation packages such as the one developed for the proposed U.S. Interstate 580/Isabel Avenue Interchange Construction Project (Service File No.: 1-1-07-F-0280) on future formal consultations with the Service.

7. Caltrans should continue to develop and implement their Early Statewide Biological Mitigation Planning Project that has been developed by the University of California at Davis, Road Ecology Center through Caltrans funding.

REINITIATION--CLOSING STATEMENT

This concludes formal consultation on the proposed State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, including work outside of the project footprint analyzed in this opinion and including vehicle parking, staging, lay down areas, and access roads; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion including use of rodenticides or herbicides; relocation of utilities; and use of vehicle parking, staging, lay down areas, and access roads; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

If you have any questions regarding this reinitiation of the biological opinion for the State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects, please contact John Cleckler or Ryan Olah at the letterhead address or at (916) 414-6600.

Sincerely,

Susan K. Moore
Field Supervisor

cc:

Scott Wilson, Greg Martinelli, and Melissa Escaron, California Department of Fish and Game, Yountville, California
Janet Adams, Solano Transportation Authority, Suisun City, California
Jim Leddy and John Ponte, Napa County Transportation and Planning Agency, Napa, California
Brendan Thompson, San Francisco Bay Regional Water Quality Control Board, Oakland, California
Frances Malamud-Roam, California Department of Transportation, Oakland, California
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Attachment AA

Attachment BB

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

NOTE:

1. THIS WATER POLLUTION CONTROL PLAN IS FOR TREE REMOVAL WORK ONLY AND DOES NOT APPLY TO OTHER CONSTRUCTION ACTIVITIES THAT CAUSE SOIL DISTURBANCE.
2. DO NOT DISTURB SOIL IN CREEK AREAS.
3. DO NOT ALLOW TRIMMINGS AND BRANCHES OR LIMBS TO FALL INTO CREEK AREAS.

LEGEND:

- REMOVE TREE (SEE CONTRACT PLANS FOR INFORMATION)
- EXISTING TREE TO REMAIN
- TCE
- PTE
- TEMPORARY CONSTRUCTION ENTRANCE
- TEMPORARY FENCE (TYPE ESA)
- TEMPORARY DRAINAGE INLET PROTECTION

ABBREVIATIONS:

PTE PERMIT TO ENTER AND CONSTRUCT

TCE TEMPORARY CONSTRUCTION EASEMENT

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap,Sol	12	2.8/3.3, 0.0/2.6	1	12

REGISTERED CIVIL ENGINEER 10/26/11 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER RICHARD K. TANAKA No. 23233 Exp. 12/31/11 CIVIL STATE OF CALIFORNIA

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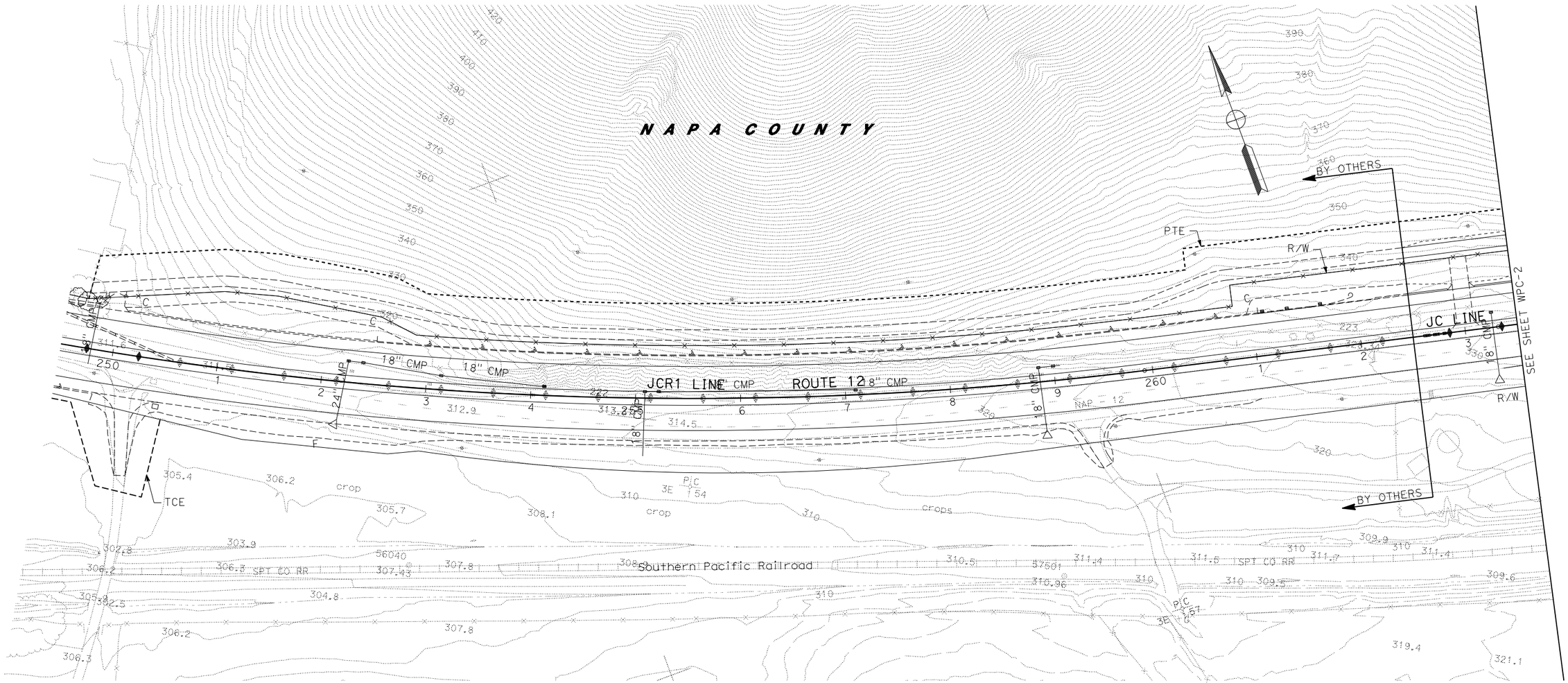

NO WORK THIS SHEET, FOR INFORMATION ONLY

TEMPORARY WATER POLLUTION CONTROL PLAN

FOR CSWPPP (VEGETATION REMOVAL WORK ONLY)

SCALE: 1"=50'

WPC-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

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FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap,Sol	12	2.8/3.3, 0.0/2.6	2	12

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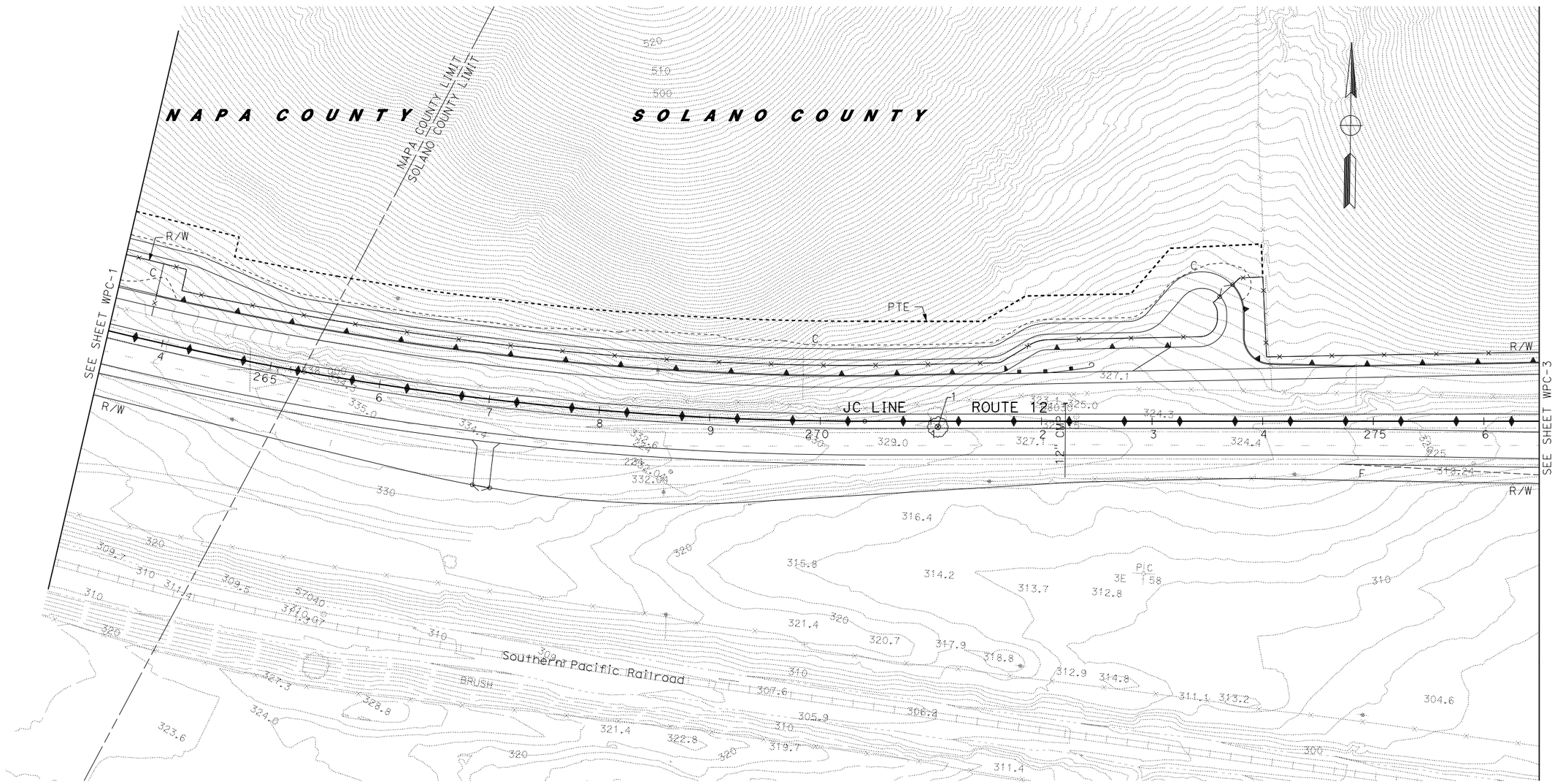

TEMPORARY WATER POLLUTION CONTROL PLAN

FOR CSWPPP (VEGETATION REMOVAL WORK ONLY)

SCALE: 1"=50'

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET WPC-1

WPC-2

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap,Sol	12	2.8/3.3, 0.0/2.6	3	12

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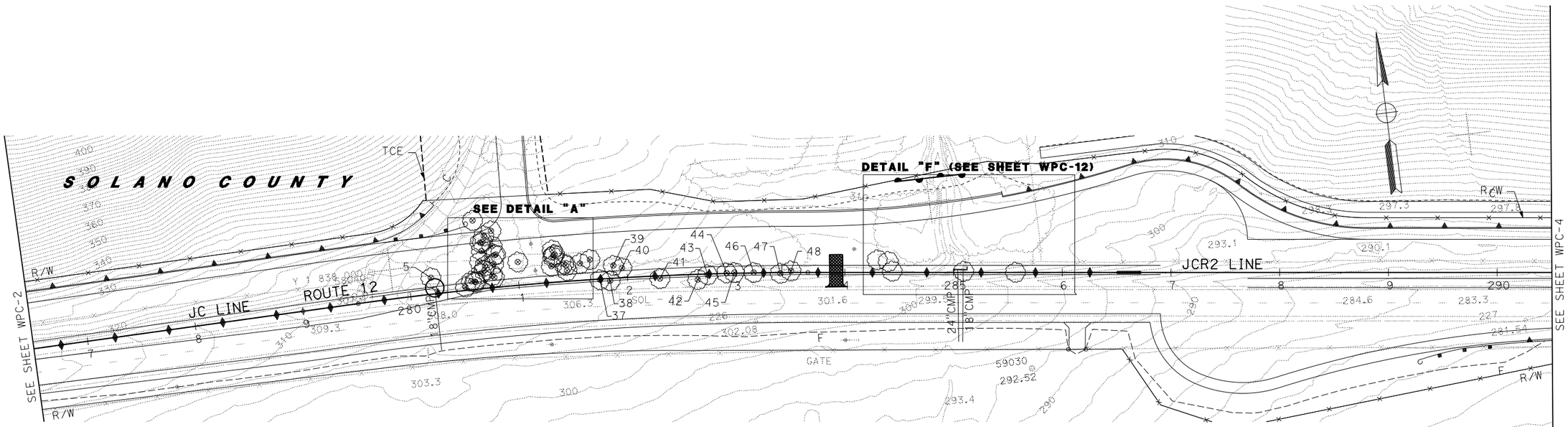

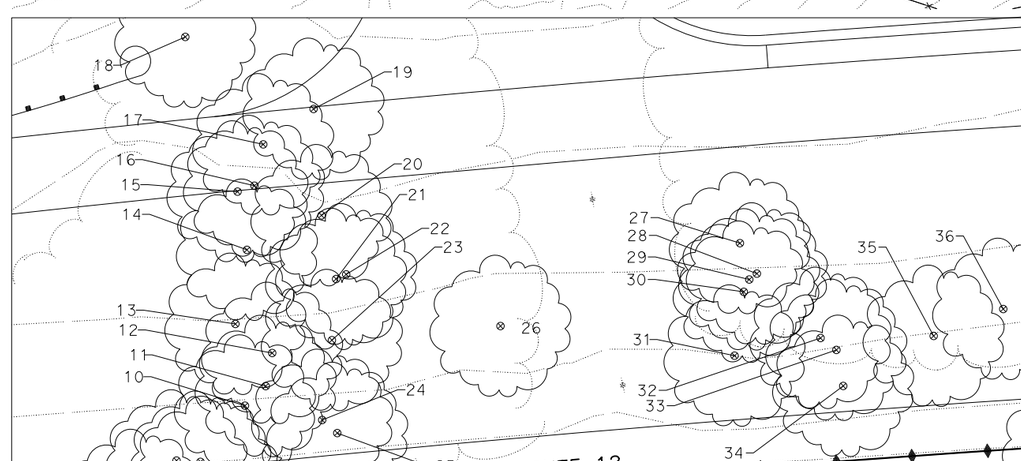

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET WPC-1

DETAIL "A"
SCALE: 1"=10'

TEMPORARY WATER POLLUTION CONTROL PLAN

FOR CSWPPP (VEGETATION REMOVAL WORK ONLY)

SCALE: 1"=50'

WPC-3

(N) - NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY.

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap,Sol	12	2.8/3.3, 0.0/2.6	4	12

REGISTERED CIVIL ENGINEER — DATE 10/26/11

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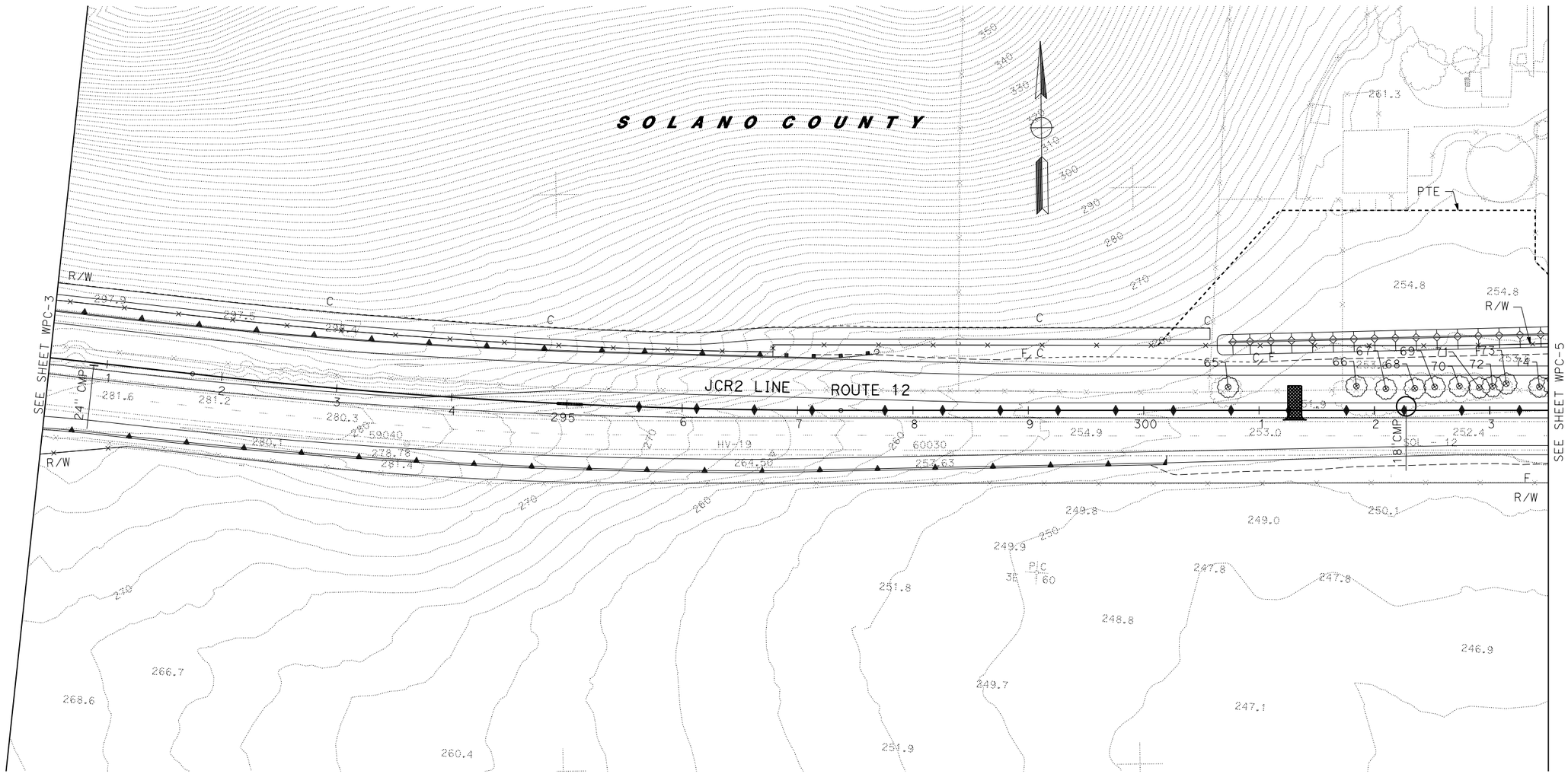

TEMPORARY WATER POLLUTION CONTROL PLAN

FOR CSWPPP (VEGETATION REMOVAL WORK ONLY)

SCALE: 1"=50'

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET WPC-1

WPC-4

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap,Sol	12	2.8/3.3, 0.0/2.6	5	12

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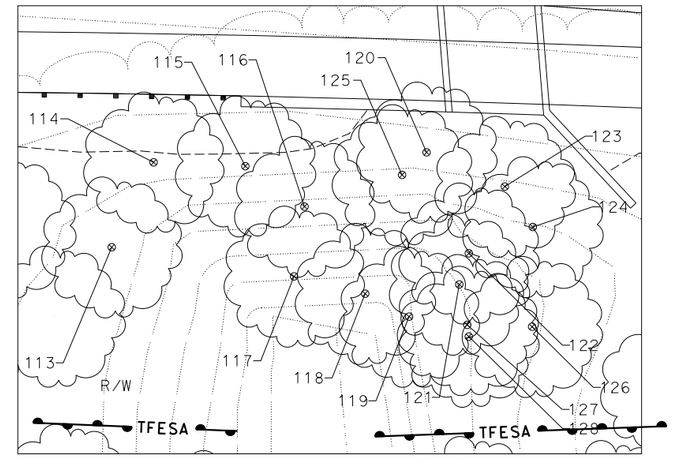

DETAIL "B"
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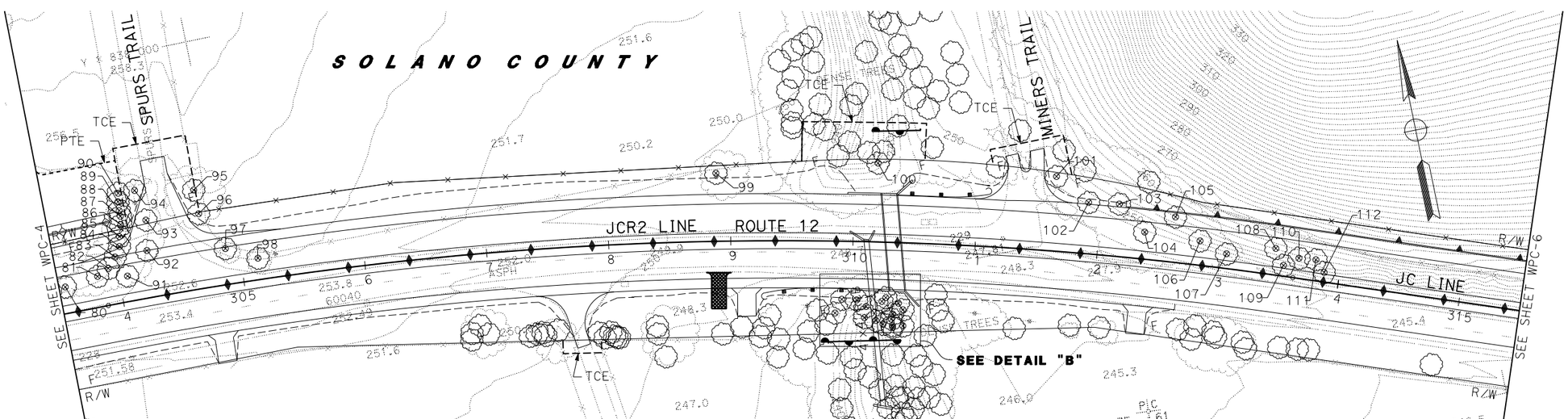

TEMPORARY WATER POLLUTION CONTROL PLAN

FOR CSWPPP (VEGETATION REMOVAL WORK ONLY)

SCALE: 1"=50'

WPC-5

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET WPC-1

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap,Sol	12	2.8/3.3, 0.0/2.6	6	12

REGISTERED CIVIL ENGINEER — DATE 10/26/11

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — RICHARD K. TANAKA — No. 23233 — Exp. 12/31/11 — CIVIL — STATE OF CALIFORNIA

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SAN JOSE, CA 95112

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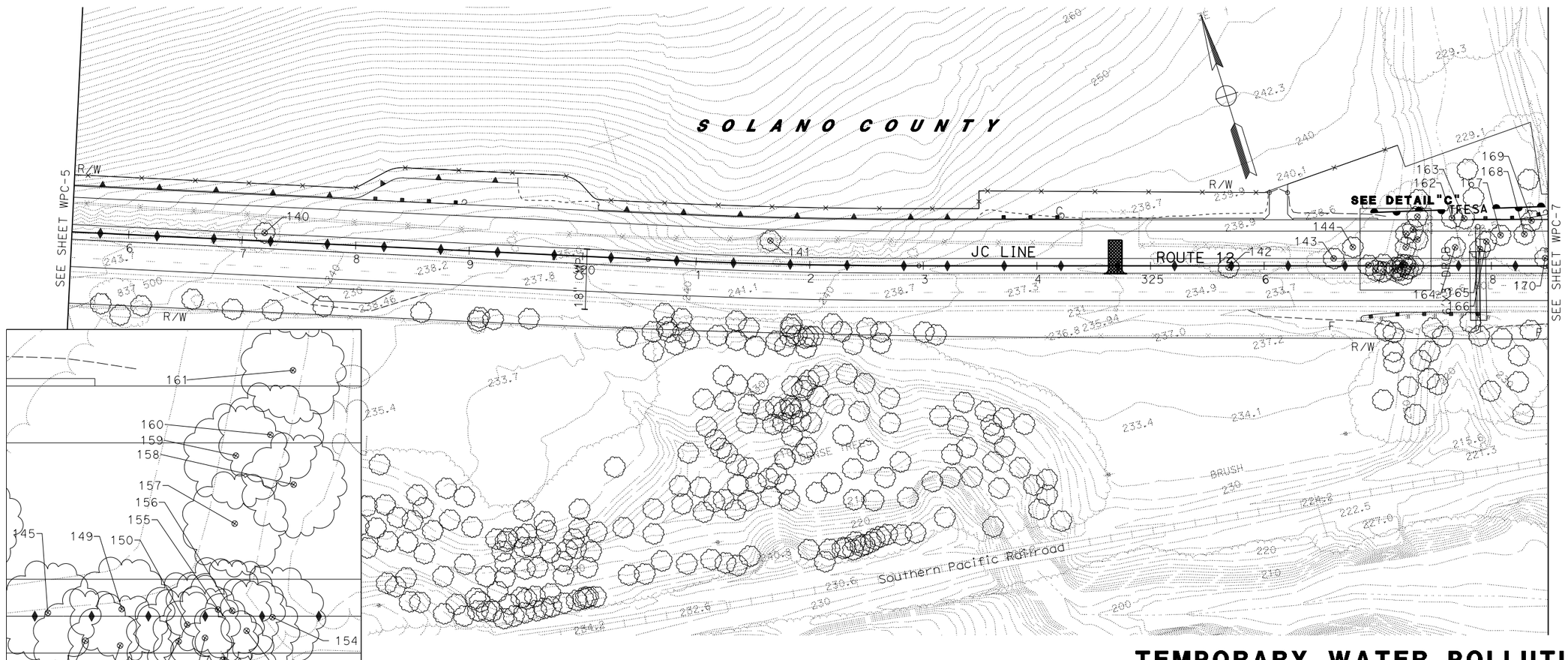
SUISUN CITY, CA 94585



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET WPC-1

TEMPORARY WATER POLLUTION CONTROL PLAN

FOR CSWPPP (VEGETATION REMOVAL WORK ONLY)

SCALE: 1"=50'

WPC-6

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 00-00-00 | DATE PLOTTED => 27-OCT-2011 | TIME PLOTTED => 15:32

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => vluchessi | DGN FILE => 426414ga032.dgn | CU 04264 | EA 264141

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap,Sol	12	2.8/3.3, 0.0/2.6	7	12

REGISTERED CIVIL ENGINEER 10/26/11 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER RICHARD K. TANAKA No. 23233 Exp. 12/31/11 CIVIL STATE OF CALIFORNIA

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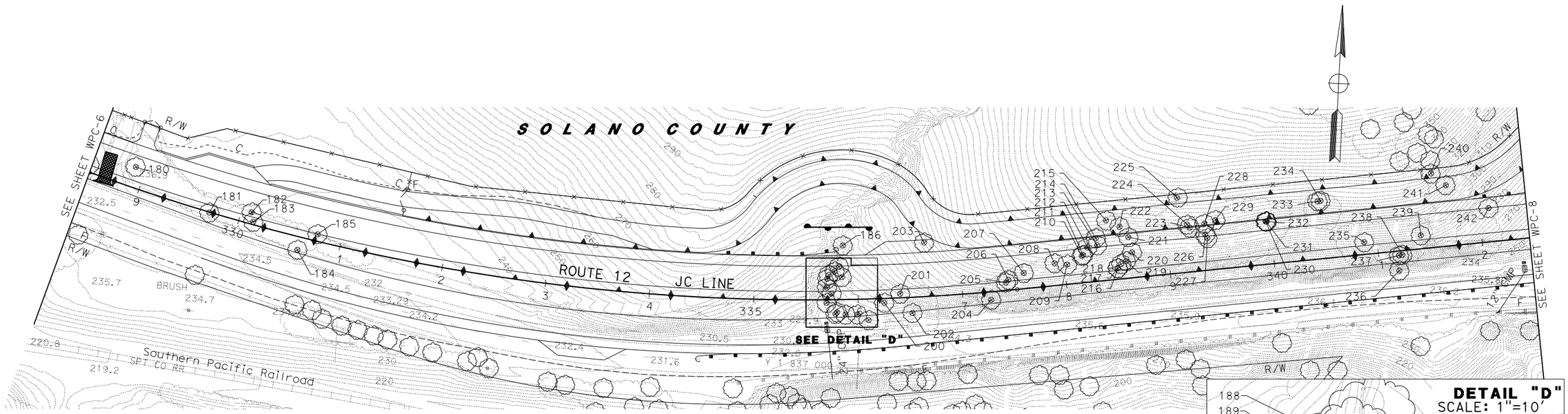

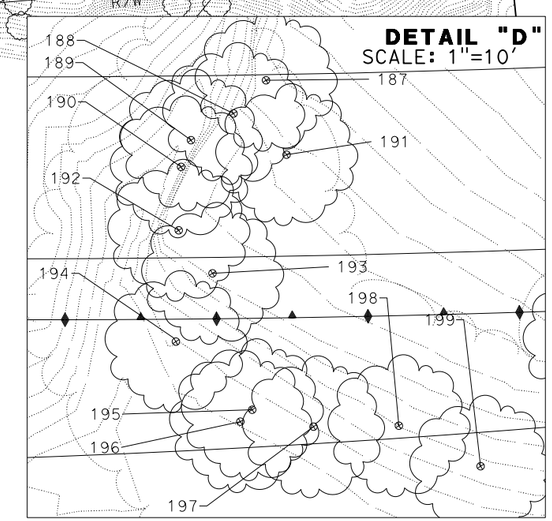

TEMPORARY WATER POLLUTION CONTROL PLAN

FOR CSWPPP (VEGETATION REMOVAL WORK ONLY)

SCALE: 1"=50'

WPC-7

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET WPC-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

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REVISED BY

DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => 27-OCT-2011
TIME PLOTTED => 15:32

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap,Sol	12	2.8/3.3, 0.0/2.6	8	12

REGISTERED CIVIL ENGINEER — DATE 10/26/11

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — RICHARD K. TANAKA — No. 23233 — Exp. 12/31/11 — CIVIL — STATE OF CALIFORNIA

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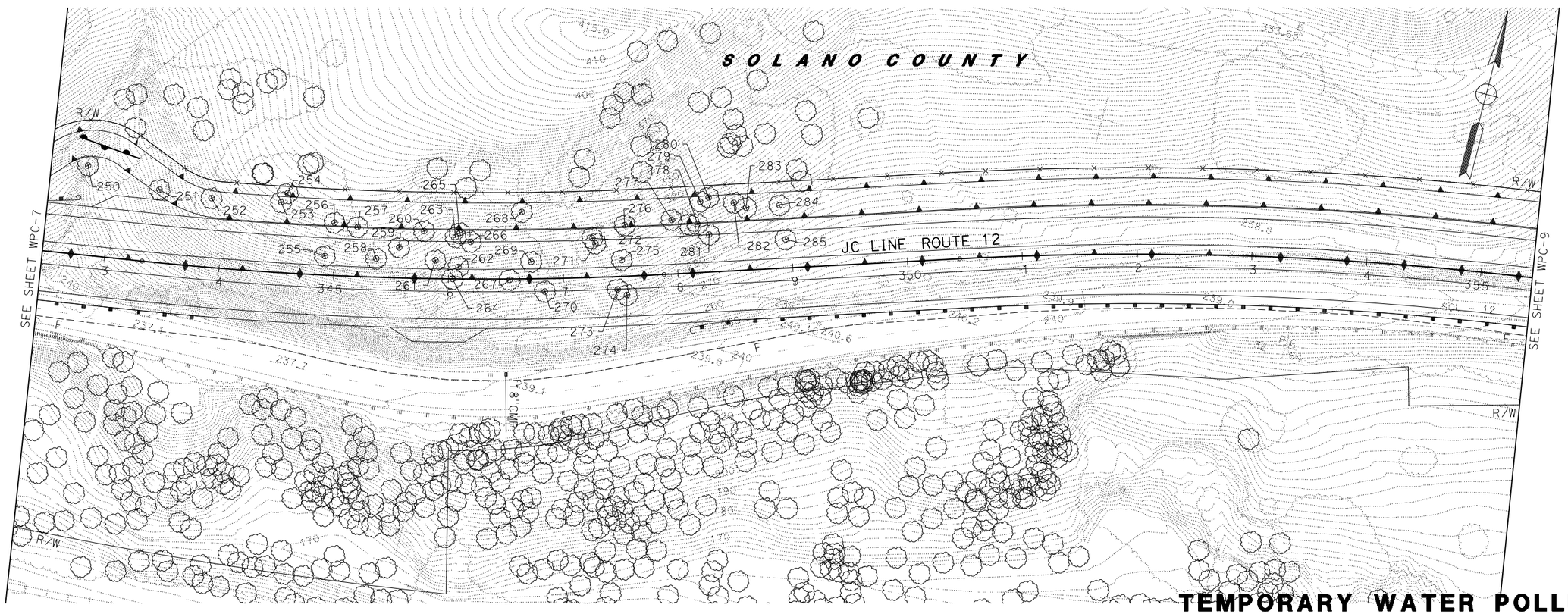

TEMPORARY WATER POLLUTION CONTROL PLAN

FOR CSWPPP (VEGETATION REMOVAL WORK ONLY)

SCALE: 1"=50'

WPC-8

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET WPC-1

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CALCULATED-DESIGNED BY | CHECKED BY

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FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap,Sol	12	2.8/3.3, 0.0/2.6	9	12

REGISTERED CIVIL ENGINEER — DATE 10/26/11

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — RICHARD K. TANAKA — No. 23233 — Exp. 12/31/11 — CIVIL — STATE OF CALIFORNIA

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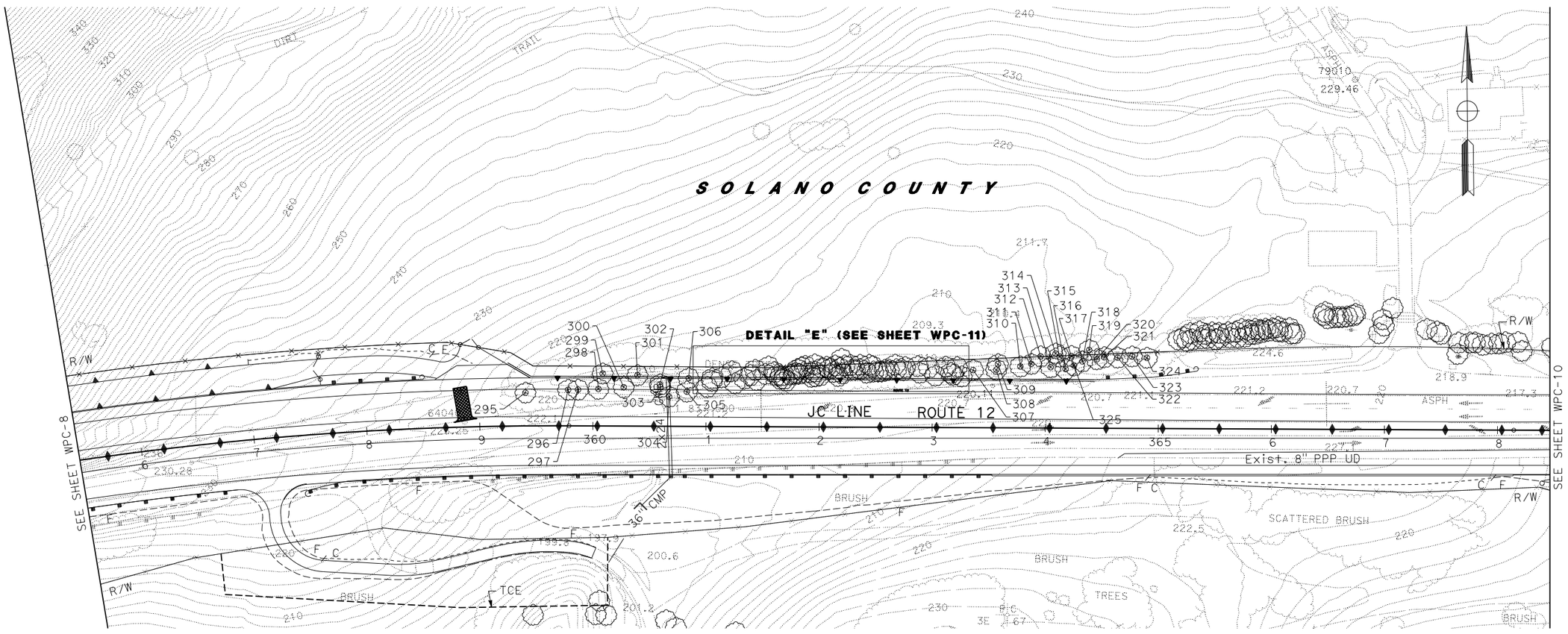

TEMPORARY WATER POLLUTION CONTROL PLAN

FOR CSWPPP (VEGETATION REMOVAL WORK ONLY)

SCALE: 1"=50'

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET WPC-1

WPC-9

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CONSULTANT FUNCTIONAL SUPERVISOR
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap,Sol	12	2.8/3.3, 0.0/2.6	10	12

REGISTERED CIVIL ENGINEER — DATE 10/26/11

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — RICHARD K. TANAKA — No. 23233 — Exp. 12/31/11 — CIVIL — STATE OF CALIFORNIA

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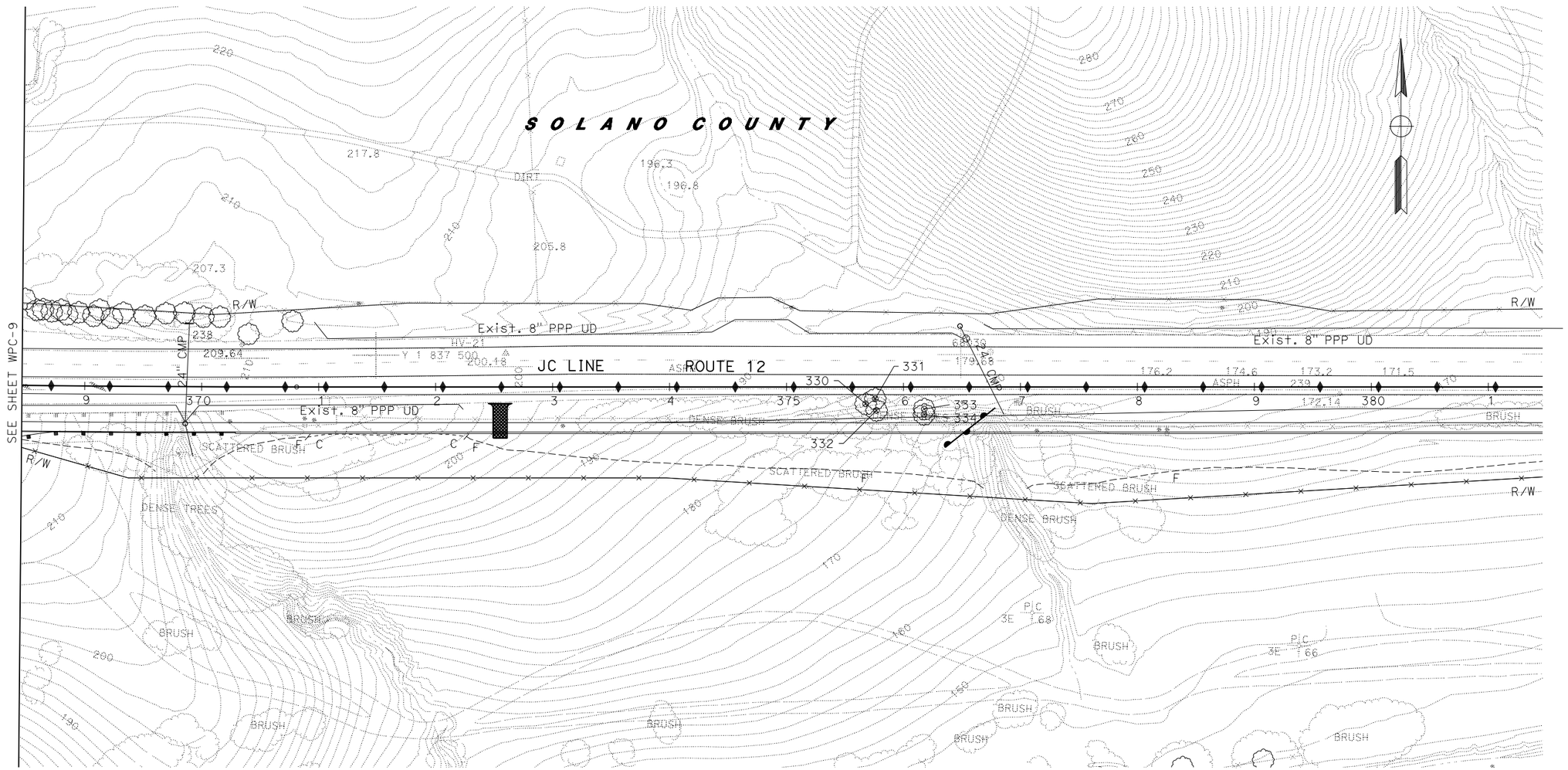

TEMPORARY WATER POLLUTION CONTROL PLAN

FOR CSWPPP (VEGETATION REMOVAL WORK ONLY)

SCALE: 1"=50'

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET WPC-1

WPC-10

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BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => vluchessi | DGN FILE => 426414ga036.dgn | CU 04264 | EA 264141

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap,Sol	12	2.8/3.3, 0.0/2.6	11	12

REGISTERED CIVIL ENGINEER — DATE 10/26/11

PLANS APPROVAL DATE

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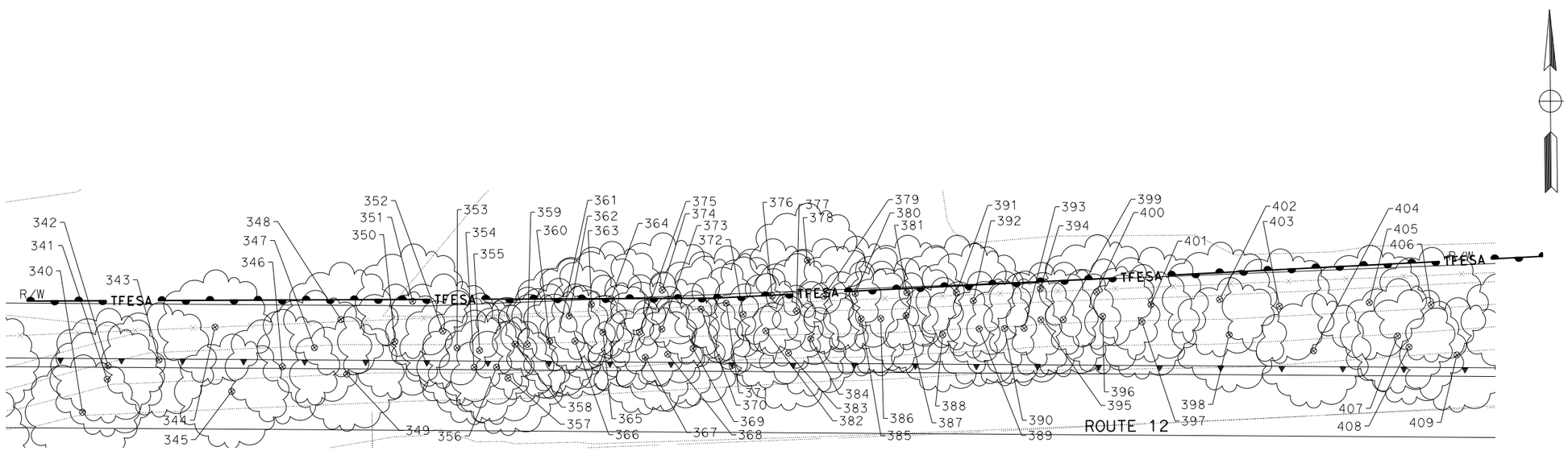

DETAIL "E"

TEMPORARY WATER POLLUTION CONTROL PLAN

FOR CSWPPP (VEGETATION REMOVAL WORK ONLY)

SCALE: 1"=50'

WPC-11

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET WPC-1

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap,Sol	12	2.8/3.3, 0.0/2.6	12	12

REGISTERED CIVIL ENGINEER 10/26/11 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER RICHARD K. TANAKA No. 23233 Exp. 12/31/11 CIVIL STATE OF CALIFORNIA

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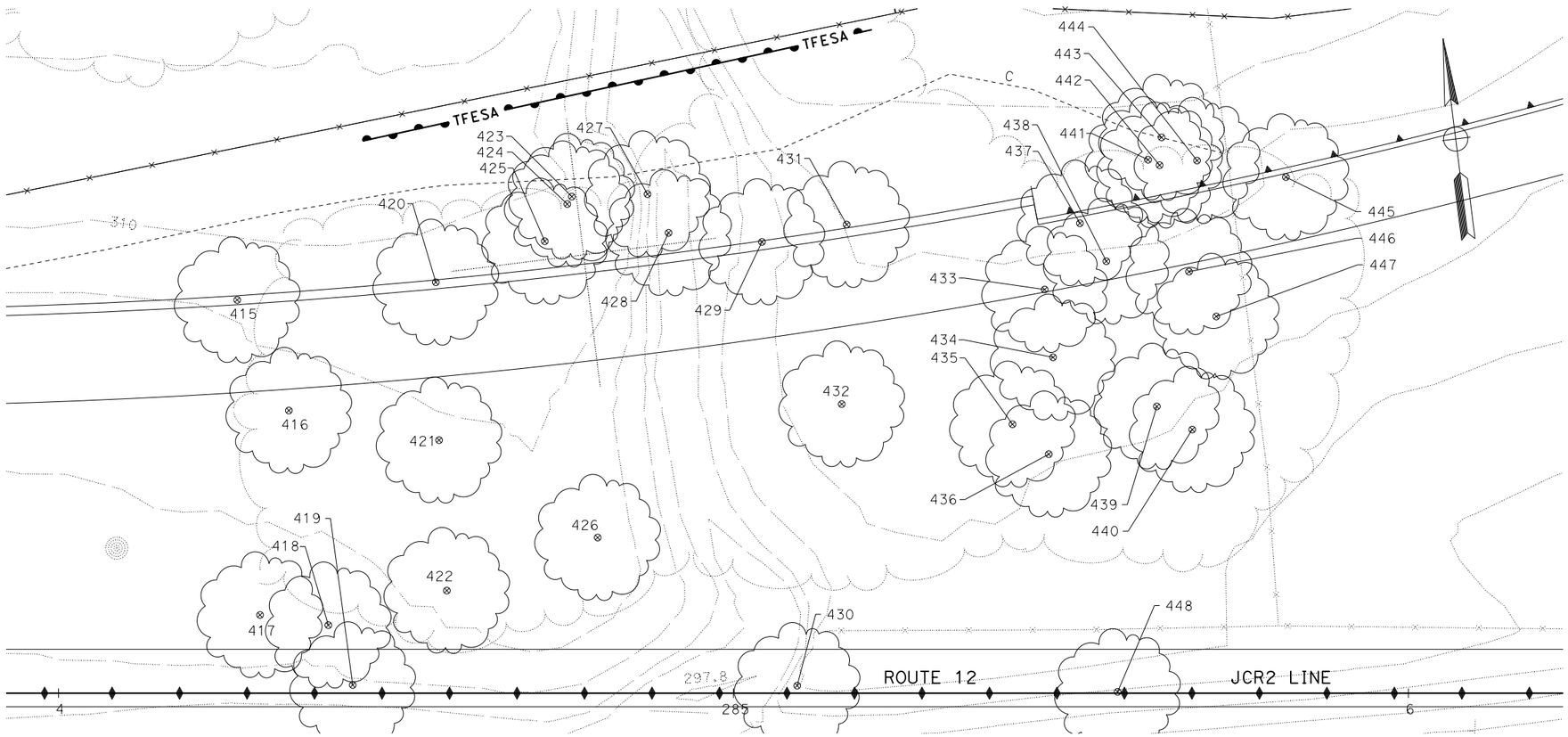

DETAIL "F"

TEMPORARY WATER POLLUTION CONTROL PLAN

FOR CSWPPP (VEGETATION REMOVAL WORK ONLY)

SCALE: 1"=50'

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET WPC-1

WPC-12

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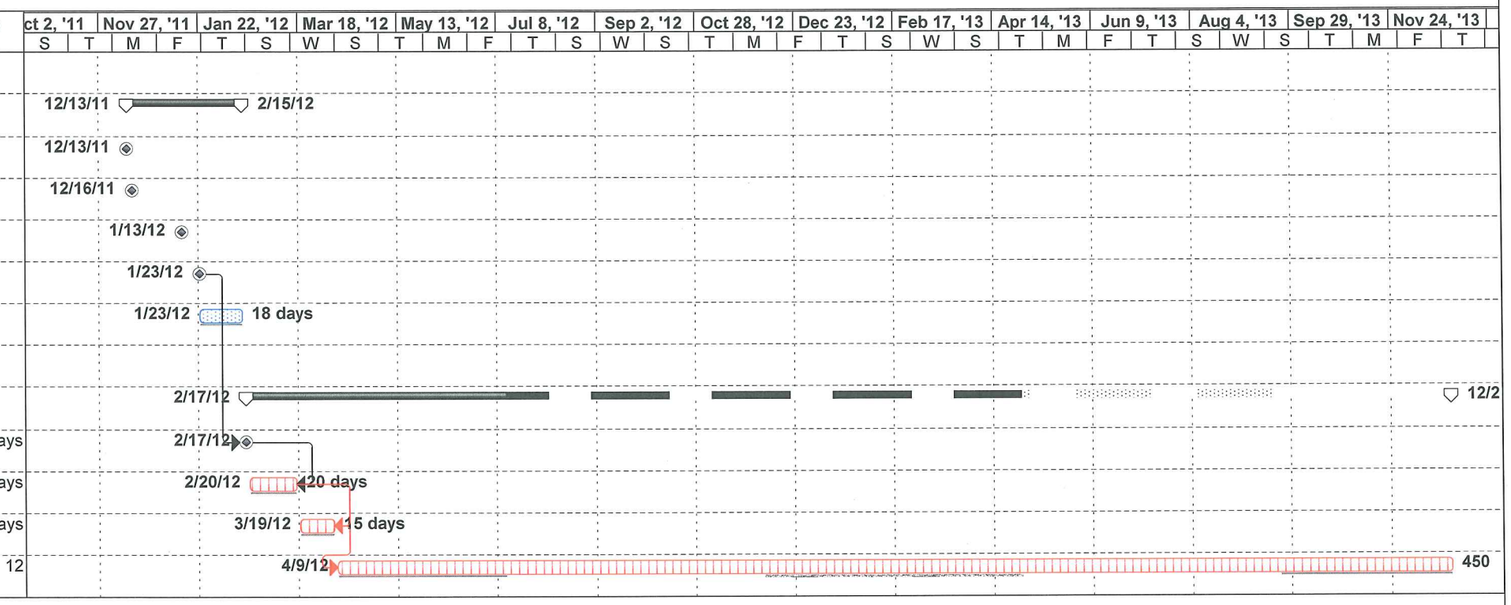
Attachment CC

Attachment DD

EA 04-264144
SR12 Jameson Canyon Road Widening
SCHEDULE FOR CSWPPP

ID	Task Name	Start	Finish	Duration	Predecessors
1					
2	**Vegetation Clearing Work**	**Tue 12/13/11**	**Wed 2/15/12**	**47 days**	
3	Bid Opening	Tue 12/13/11	Tue 12/13/11	0 days	
4	CSWPPP Submit to RWQCB by Caltrans	Fri 12/16/11	Fri 12/16/11	0 days	
5	Contract Award	Fri 1/13/12	Fri 1/13/12	0 days	
6	Contract Execution	Mon 1/23/12	Mon 1/23/12	0 days	
7	Vegetation Clearing	Mon 1/23/12	Wed 2/15/12	18 days	
8					
9	**Roadwork**	**Fri 2/17/12**	**Fri 12/27/13**	**485 days**	
10	Contractor Submit SWPPP	Fri 2/17/12	Fri 2/17/12	0 days	6FS+20 days
11	Engineer Review SWPPP	Mon 2/20/12	Fri 3/16/12	20 days	10FF+20 days
12	Resubmit SWPPP	Mon 3/19/12	Fri 4/6/12	15 days	11FF+15 days
13	Begin Construction	Mon 4/9/12	Fri 12/27/13	450 days	12



Date: Wed 11/2/11

Task | Critical Task | Milestone | Summary | External Milestone | Deadline

Prepared by: Mark Thomas & Company, Inc.

Attachment EE

FOR ACCURATE RIGHT OF WAY DATA,
CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

LEGEND:

S# SAMPLING LOCATION

C# CONTROL POINT

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap Sol	12	2.8/3.3 0.0/2.6		

REGISTERED CIVIL ENGINEER — DATE 04/15/10

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — ANALETTE OCHOA — No. 55279 — Exp. 12/31/10 — CIVIL — STATE OF CALIFORNIA

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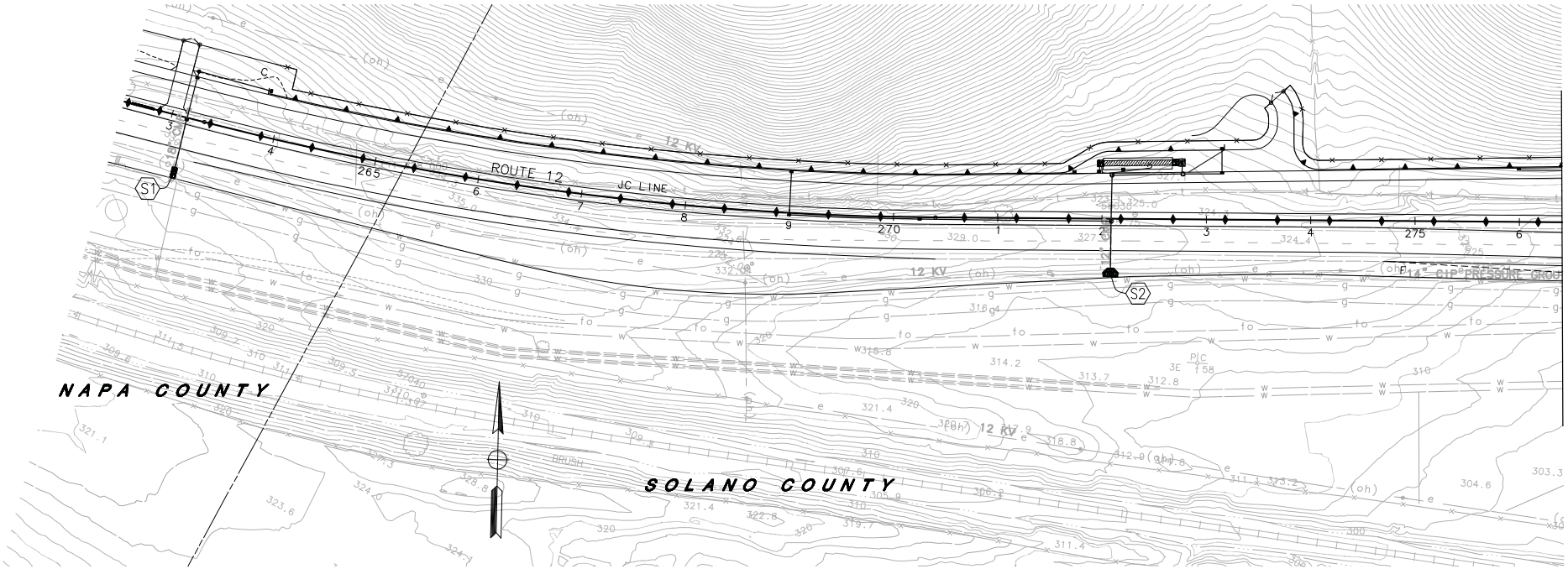

SAMPLING PLAN

SCALE: 1"=50'

S-1

THIS PLAN ACCURATE FOR SAMPLING AND MONITORING WORK ONLY.

CALCULATED-DESIGNED BY	JEFF TUDD
CHECKED BY	ANALETTE OCHOA
REVISED BY	JT
DATE REVISED	04/15/10
CONSULTANT FUNCTIONAL SUPERVISOR	HAN-BIN LIANG

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap Sol	12	2.8/3.3 0.0/2.6		

REGISTERED CIVIL ENGINEER — DATE 04/15/10

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — ANALETTE OCHOA — No. 55279 — Exp. 12/31/10 — CIVIL — STATE OF CALIFORNIA

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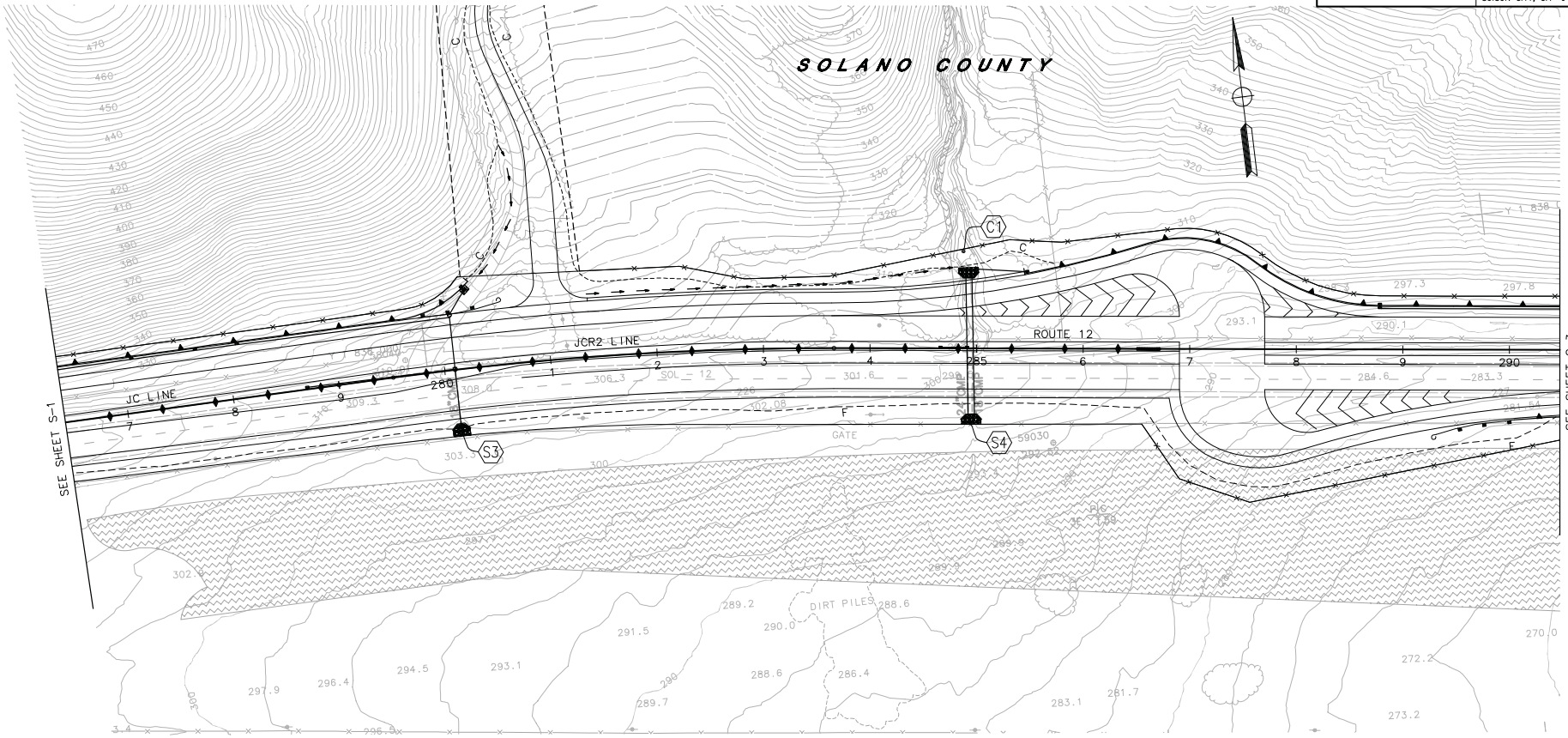

FOR NOTES, ABBREVIATIONS & LEGEND, SEE SHEET S-1

THIS PLAN ACCURATE FOR SAMPLING AND MONITORING WORK ONLY.

SAMPLING PLAN

SCALE: 1"=50'

S-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG

CALCULATED-DESIGNED BY: JEFF TUDD — CHECKED BY: ANALETTE OCHOA

REVISED BY: JT — DATE REVISED: 04/15/10

LAST REVISION 12-11-09 — DATE PLOTTED => 4/09/10 — TIME PLOTTED => 2:11pm

BORDER LAST REVISED 4/11/2008 — RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 — USERNAME => jeff_tudd — DGN FILE => 426414sp002.dwg — CU 04264 — EA 264141

FOR ACCURATE RIGHT OF WAY DATA,
CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap Sol	12	2.8/3.3 0.0/2.6		

REGISTERED CIVIL ENGINEER — DATE 04/15/10

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — ANALETTE OCHOA — No. 55279 — Exp. 12/31/10 — CIVIL — STATE OF CALIFORNIA

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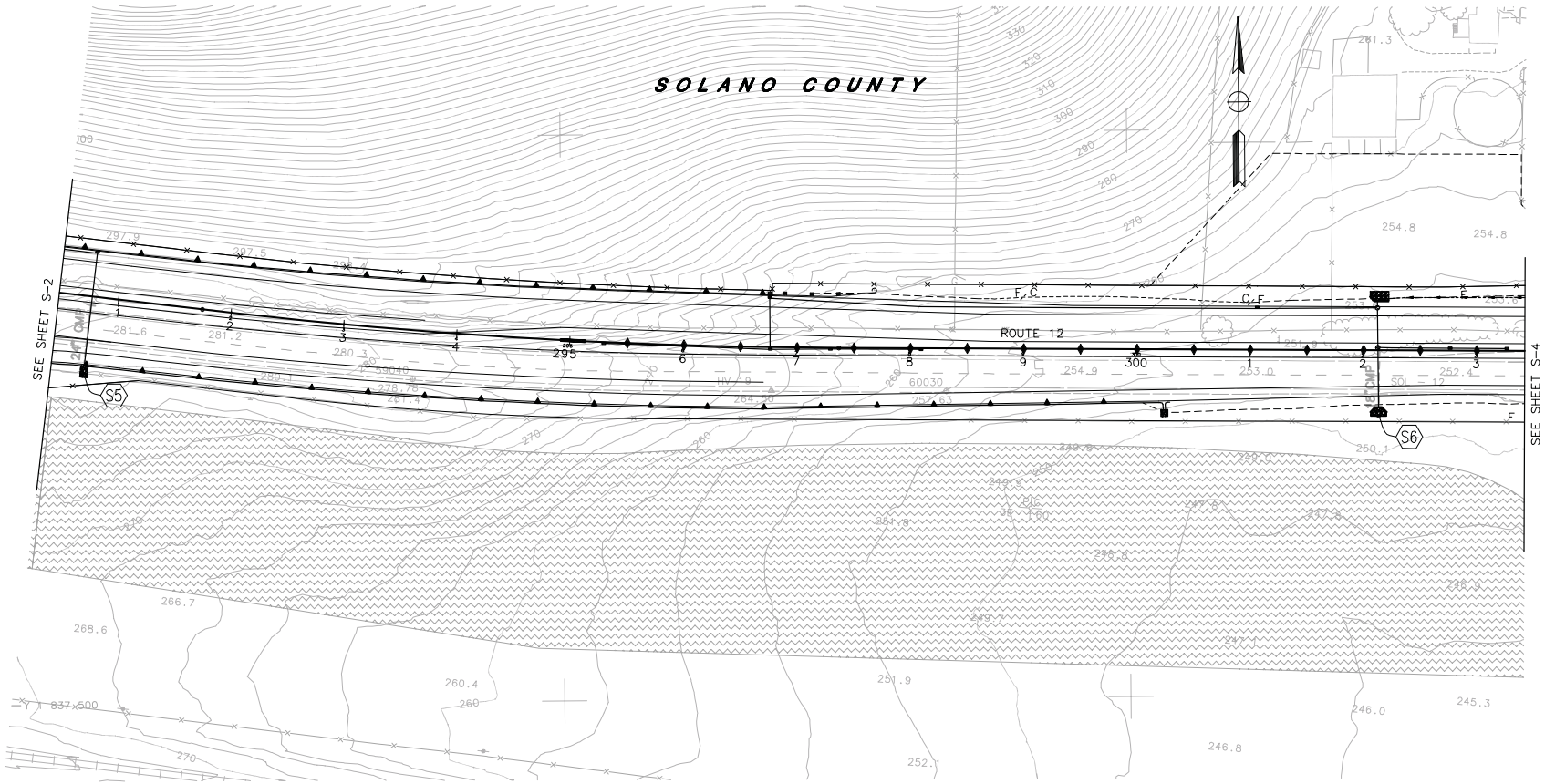

SAMPLING PLAN

SCALE: 1"=50'

S-3

FOR NOTES, ABBREVIATIONS & LEGEND, SEE SHEET S-1

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG

CALCULATED-DESIGNED BY: JEFF TUDD — CHECKED BY: ANALETTE OCHOA

REVISED BY: JT — DATE REVISED: 04/15/10

LAST REVISION 12-11-09 — DATE PLOTTED => 4/09/10 — TIME PLOTTED => 2:12pm

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CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap Sol	12	2.8/3.3 0.0/2.6		

REGISTERED CIVIL ENGINEER — DATE 04/15/10

PLANS APPROVAL DATE

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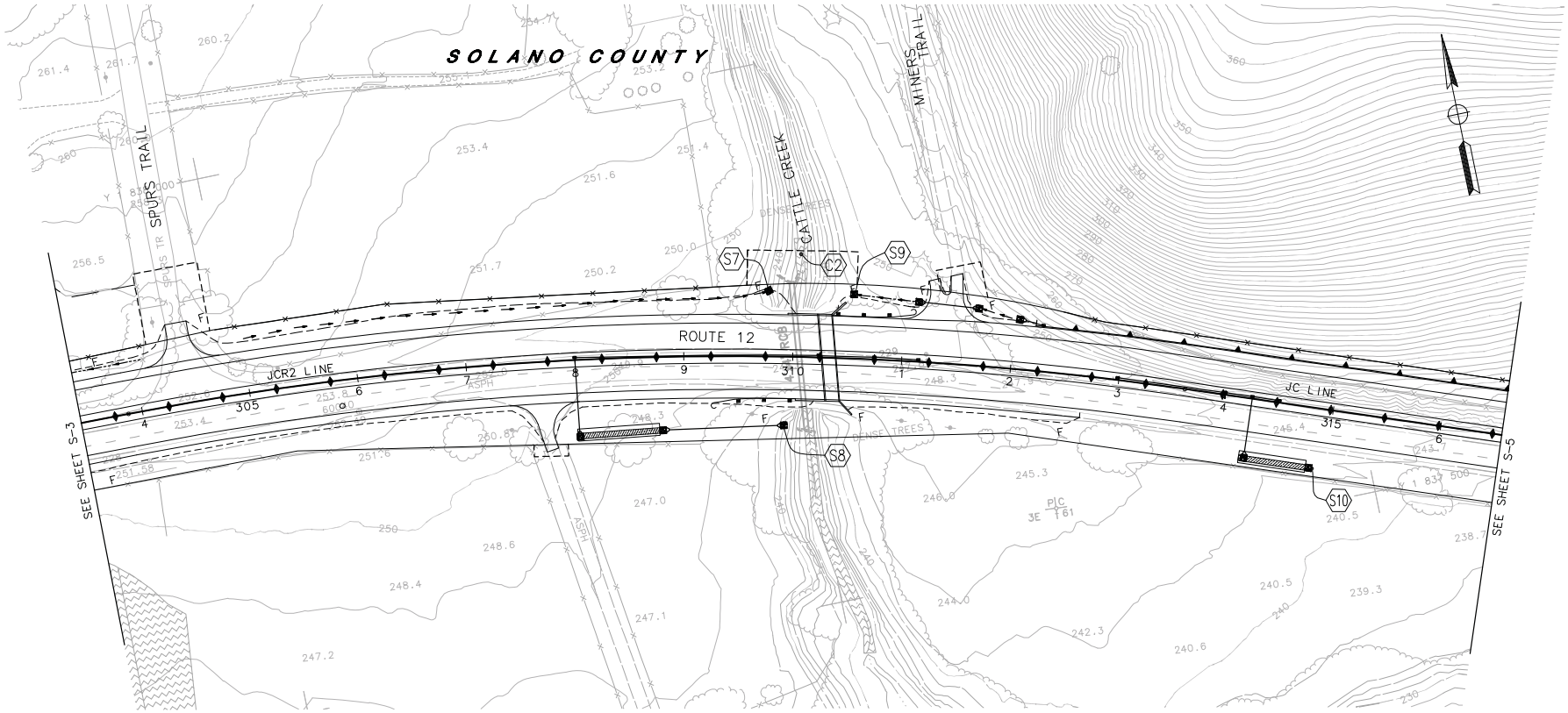

FOR NOTES, ABBREVIATIONS & LEGEND, SEE SHEET S-1

THIS PLAN ACCURATE FOR SAMPLING AND MONITORING WORK ONLY.

SAMPLING PLAN

SCALE: 1"=50'

S-4

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG

CALCULATED-DESIGNED BY: JEFF TUDD — CHECKED BY: ANALETTE OCHOA

REVISED BY: JT — DATE REVISED: 04/15/10

LAST REVISION 12-11-09 — DATE PLOTTED => 4/09/10 — TIME PLOTTED => 2:17pm

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FOR ACCURATE RIGHT OF WAY DATA,
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap Sol	12	2.8/3.3 0.0/2.6		

REGISTERED CIVIL ENGINEER — DATE 04/15/10

PLANS APPROVAL DATE

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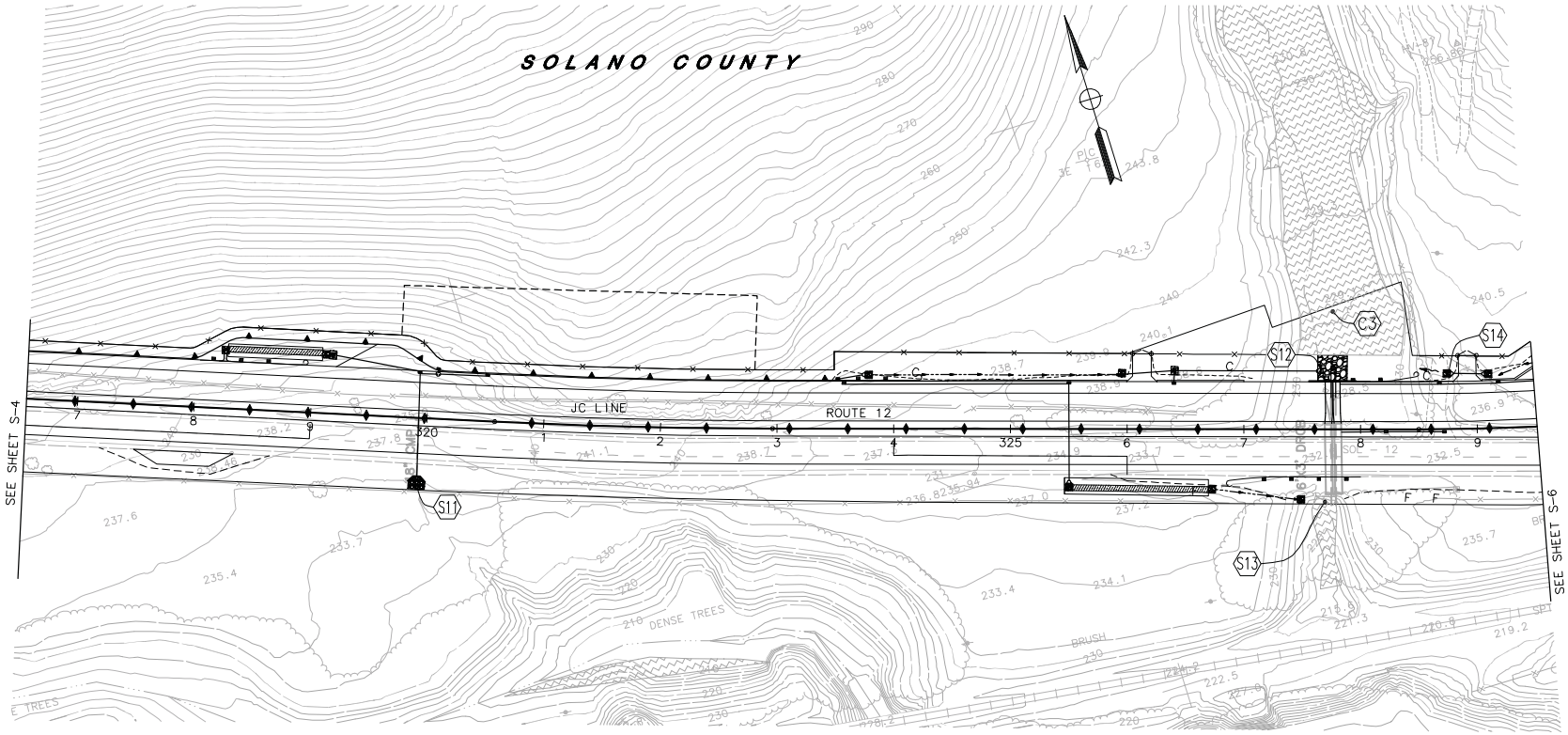

SAMPLING PLAN

SCALE: 1"=50'

S-5

FOR NOTES, ABBREVIATIONS & LEGEND, SEE SHEET S-1

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	JEFF TUDD
Caltrans	HAN-BIN LIANG	CHECKED BY	ANALETTE OCHOA
		REVISED BY	JT
		DATE REVISED	04/15/10

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CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap Sol	12	2.8/3.3 0.0/2.6		

REGISTERED CIVIL ENGINEER — DATE 04/15/10

PLANS APPROVAL DATE

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WALNUT CREEK, CA 94596

SOLANO TRANSPORTATION AUTHORITY
ONE HARBOR CENTER, SUITE 130
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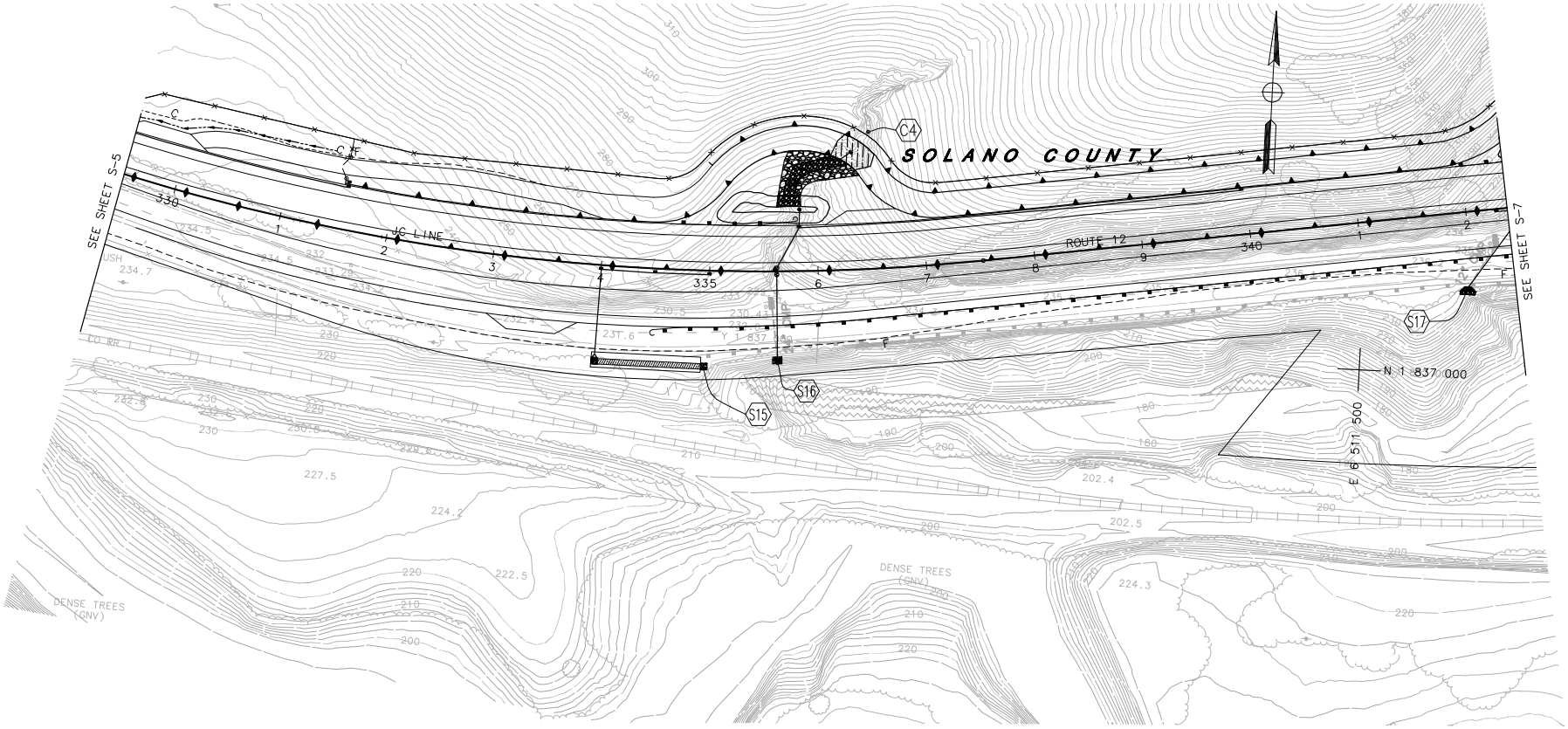

SAMPLING PLAN

SCALE: 1"=50'

S-6

FOR NOTES, ABBREVIATIONS & LEGEND, SEE SHEET S-1

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG

CALCULATED-DESIGNED BY: JEFF TUDD — CHECKED BY: ANALETTE OCHOA

REVISED BY: JT — DATE REVISED: 04/15/10

LAST REVISION 12-11-09 — DATE PLOTTED => 4/09/10 — TIME PLOTTED => 1:53pm

BORDER LAST REVISED 4/11/2008 — RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 — USERNAME => jeff_tudd — DGN FILE => 426414sp006.dwg — CU 04264 — EA 264141

FOR ACCURATE RIGHT OF WAY DATA,
CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap Sol	12	2.8/3.3 0.0/2.6		

REGISTERED CIVIL ENGINEER — DATE 04/15/10

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — ANALETTE OCHOA — No. 55279 — Exp. 12/31/10 — CIVIL — STATE OF CALIFORNIA

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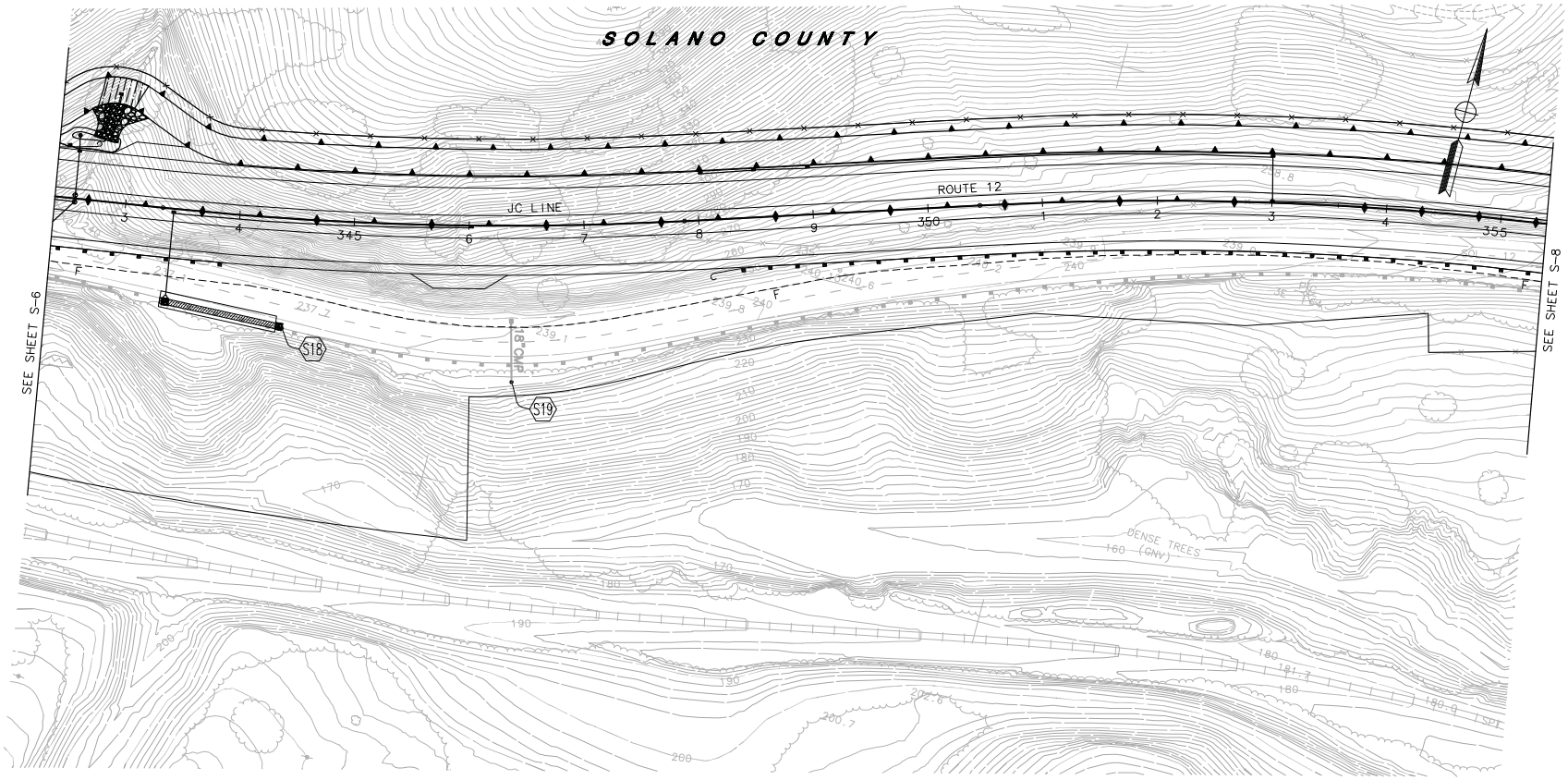

SAMPLING PLAN

SCALE: 1"=50'

S-7

FOR NOTES, ABBREVIATIONS & LEGEND, SEE SHEET S-1

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	JEFF TUDD	REVISED BY	JT
Caltrans	HAN-BIN LIANG	ANALETTE OCHOA	DATE REVISED	04/15/10
		CALCULATED-DESIGNED BY		
		CHECKED BY		

LAST REVISION 12-11-09 — DATE PLOTTED => 4/09/10 — TIME PLOTTED => 1:57pm

BORDER LAST REVISED 4/11/2008 — RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 — USERNAME => jeff_tudd — DGN FILE => 426414sp007.dwg — CU 04264 — EA 264141

FOR ACCURATE RIGHT OF WAY DATA,
CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap Sol	12	2.8/3.3 0.0/2.6		

REGISTERED CIVIL ENGINEER — DATE 04/15/10

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — ANALETTE OCHOA — No. 55279 — Exp. 12/31/10 — CIVIL — STATE OF CALIFORNIA

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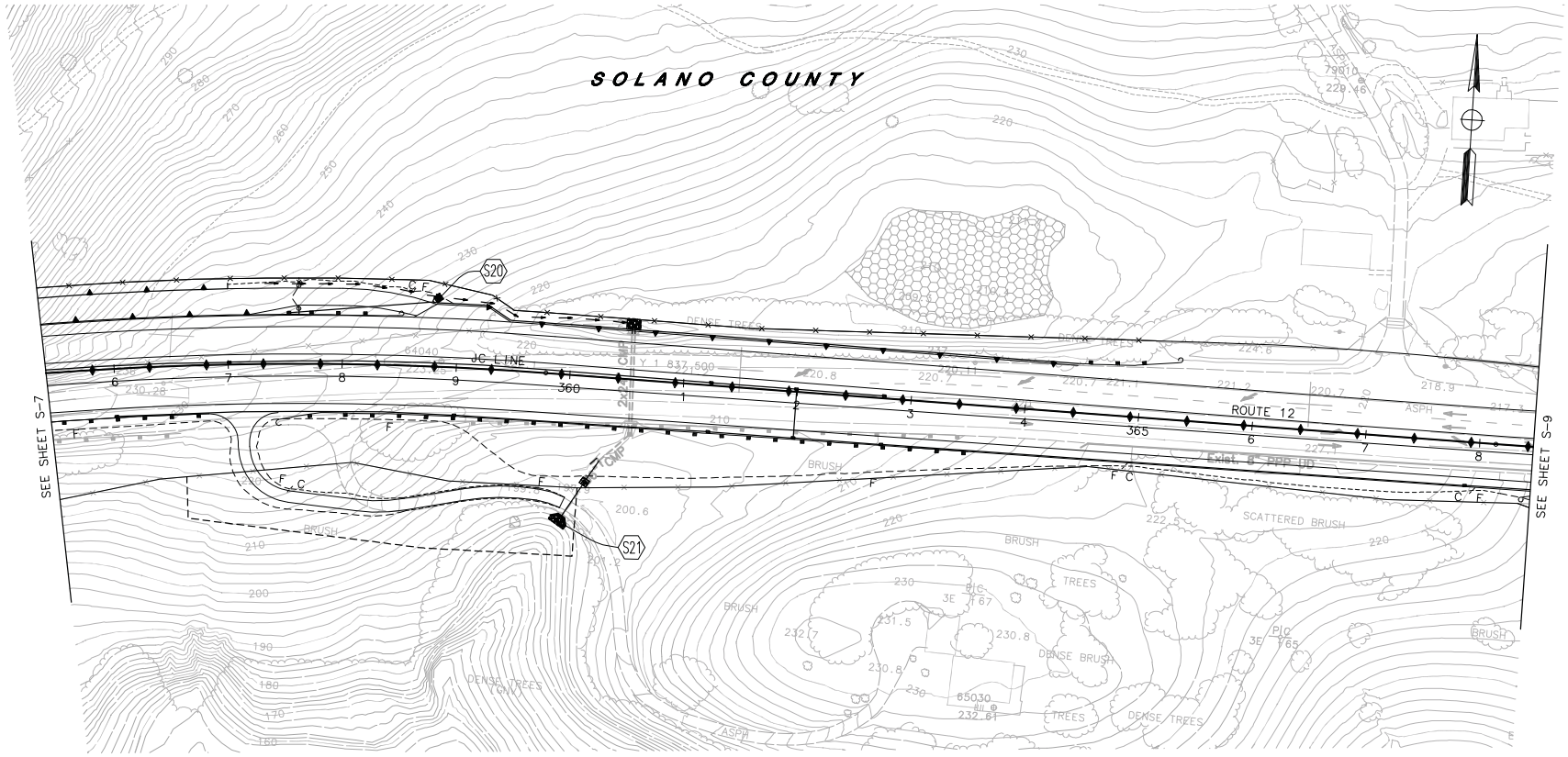

FOR NOTES, ABBREVIATIONS & LEGEND, SEE SHEET S-1

THIS PLAN ACCURATE FOR SAMPLING AND MONITORING WORK ONLY.

SAMPLING PLAN

SCALE: 1"=50'

S-8

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG

CALCULATED-DESIGNED BY: JEFF TUDD — CHECKED BY: ANALETTE OCHOA

REVISED BY: JT — DATE REVISED: 04/15/10

LAST REVISION 12-11-09 — DATE PLOTTED => 4/09/10 — TIME PLOTTED => 2:06pm

BORDER LAST REVISED 4/11/2008 — RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 — USERNAME => jeff_tudd — DGN FILE => 426414sp008.dwg — CU 04264 — EA 264141

FOR ACCURATE RIGHT OF WAY DATA,
CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap Sol	12	2.8/3.3 0.0/2.6		

REGISTERED CIVIL ENGINEER — DATE 04/15/10

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — ANALETTE OCHOA — No. 55279 — Exp. 12/31/10 — CIVIL — STATE OF CALIFORNIA

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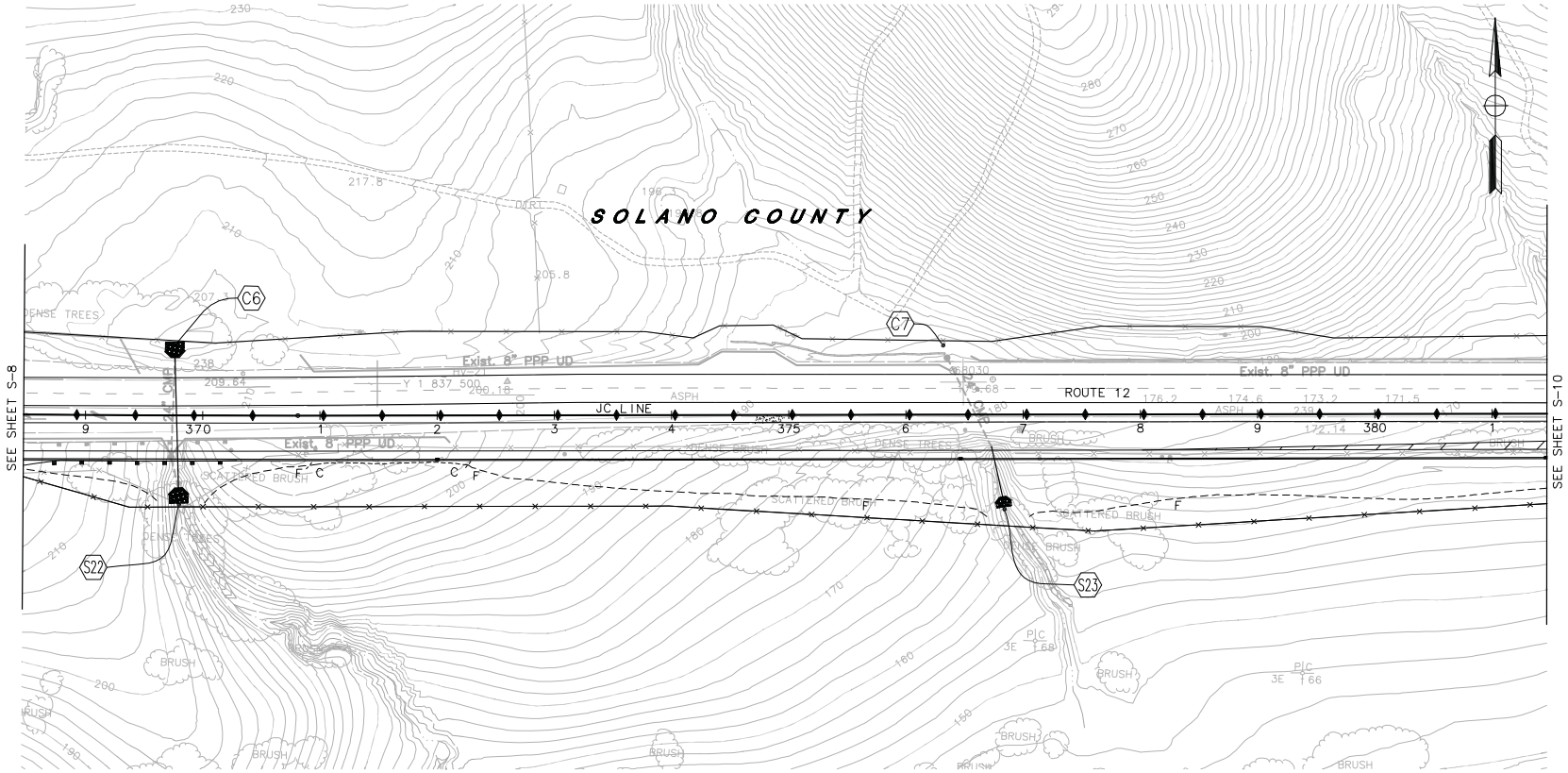

SAMPLING PLAN

SCALE: 1"=50'

S-9

FOR NOTES, ABBREVIATIONS & LEGEND, SEE SHEET S-1

THIS PLAN ACCURATE FOR SAMPLING AND MONITORING WORK ONLY.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG

CALCULATED-DESIGNED BY: JEFF TUDD — CHECKED BY: ANALETTE OCHOA

REVISED BY: JT — DATE REVISED: 04/15/10

LAST REVISION 12-11-09 — DATE PLOTTED => 4/09/10 — TIME PLOTTED => 2:03pm

BORDER LAST REVISED 4/11/2008 — RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 — USERNAME => jeff_tudd — DGN FILE => 426414sp009.dwg — CU 04264 — EA 264141

FOR ACCURATE RIGHT OF WAY DATA,
CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Nap Sol	12	2.8/3.3 0.0/2.6		

REGISTERED CIVIL ENGINEER — DATE 04/15/10

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — ANALETTE OCHOA — No. 55279 — Exp. 12/31/10 — CIVIL — STATE OF CALIFORNIA

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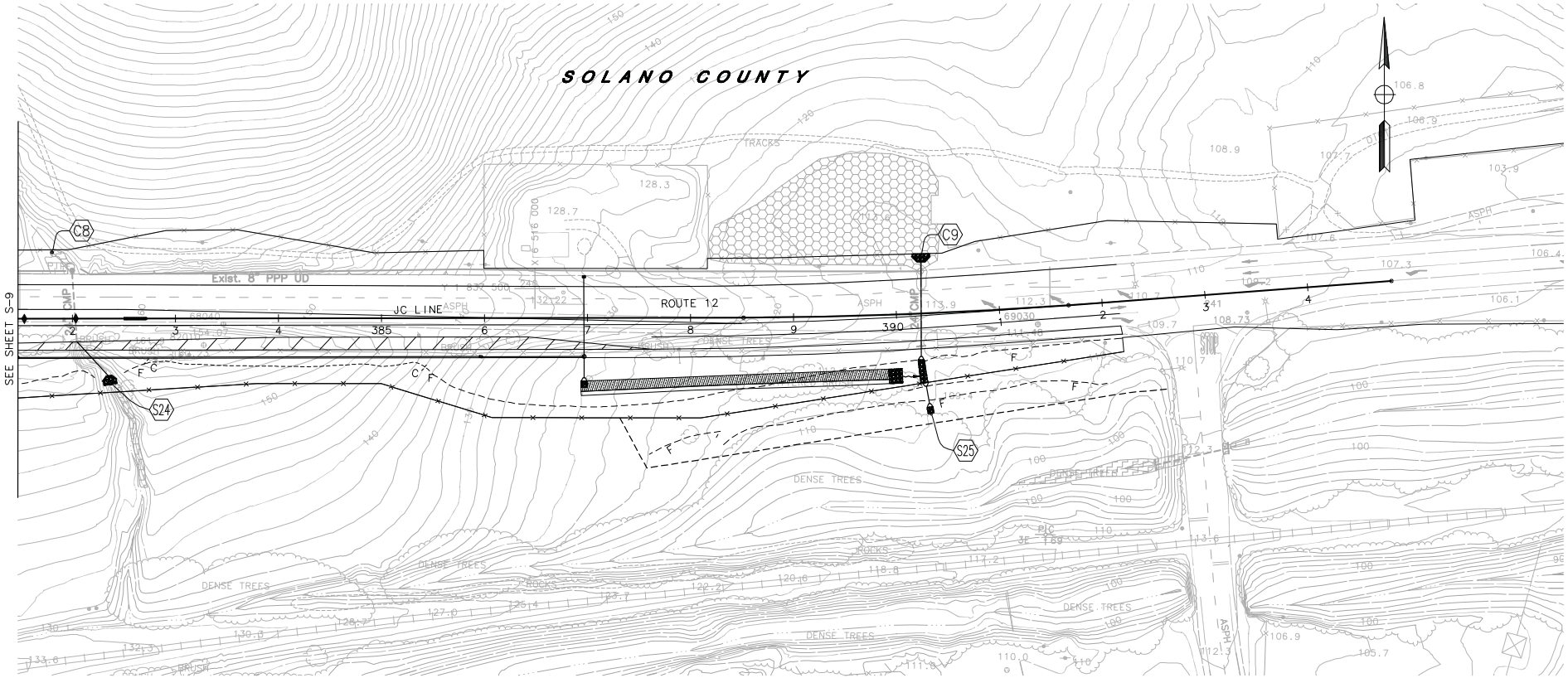

SAMPLING PLAN

SCALE: 1"=50'

S-10

FOR NOTES, ABBREVIATIONS & LEGEND, SEE SHEET S-1

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG	CALCULATED-DESIGNED BY: JEFF TUDD	REVISED BY: JT
Caltrans	CHECKED BY: ANALETTE OCHOA	DATE REVISED: 04/15/10	

LAST REVISION 12-11-09 — DATE PLOTTED => 4/09/10 — TIME PLOTTED => 2:05pm

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In Reply Refer To:
81420-2008-F-0827-R001-2

JUN 14 2011

Mr. James Richards
California Department Transportation
Attn: Christopher States
Environmental Division, MS 8E
111 Grand Avenue
Oakland, California 94612

Subject: Reinitiation of the Biological Opinion on the Effects of the Proposed State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects, Solano and Napa Counties, California (Service File No.: 81420-2008-F-0827; Caltrans EA 04-287900 and 04-264100)

Dear Mr. Richards:

This is in response to your April 30, 2010, request for reinitiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects in Solano and Napa Counties, California. The reinitiation is prompted by the changes to the project description for the State Route 12 Jameson Canyon Road Widening Project. The California Department of Transportation (Caltrans) has reduced the proposed construction footprint primarily by redefining utility relocation and constricting the roadway corridor with the installation of retaining walls. Caltrans has also further upsized the dimensions of planned cross-culverts to increase the likelihood that they will be used by wildlife as safe passage under State Route 12 (Jameson Canyon Road). No changes have been made to the project description for the State Route 12/State Route 29 Interchange Improvement Project.

The Service is issuing a complete revision of the biological opinion due to the number of changes. At issue are the potential effects on the threatened California red-legged frog (*Rana draytonii*). This document represents the Service's revised biological opinion on the effects of the proposed action on this listed species. This document has been prepared in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*)(Act).

Since the issuance of the January 31, 2008, biological opinion, Caltrans has completed protocol-level surveys in the revised action area for the endangered showy Indian clover (*Trifolium*

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amoenum), endangered Contra Costa goldfields (*Lasthenia conjugans*), endangered Conservancy fairy shrimp (*Branchinecta conservatio*), endangered vernal pool tadpole shrimp (*Lepidurus packardii*), and the threatened vernal pool fairy shrimp (*Branchinecta lynchi*). Based on the provided survey results, the Service concurs that the proposed projects are not likely to have an adverse affect on these listed plants and branchiopods.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users legislation (23 U.S.C. 327) allows the Secretary of the U.S. Department of Transportation acting through the Federal Highway Administration (FHWA) to establish a Surface Transportation Project Delivery Pilot Program, whereby a State may assume the FHWA responsibilities under the National Environmental Policy Act for environmental review, agency consultation and other actions pertaining to the review or approval of a specific project. Caltrans assumed these responsibilities for the FHWA on July 1, 2007 through a Memorandum of Understanding within the State of California (http://www.dot.ca.gov/ser/downloads/MOUs/nepa_delegation /sec6005mou.pdf) and are exercising this authority as the federal nexus for section 7 consultation on this project.

This revised biological opinion is based on: (1) the 2010 California red-legged frog critical habitat designation (Service 2010); (2) the Draft Solano Multispecies Habitat Conservation Plan (HCP) Final Administrative Draft (SWCA 2009); (3) the January 31, 2008, biological opinion; (4) the April 30, 2010, request for reinitiation of formal consultation which included project description changes; (5) additional project information provided on May 12, 2010, May 20, 2010, November 22, 2010, and January 10, 2010; (6) miscellaneous correspondence and electronic mail (email) messages between the Service and Caltrans and Solano Transportation Authority; and (7) other information available to the Service.

Consultation History

August 31, 2007	The Service received a letter dated July 31, 2007, from Caltrans requesting formal consultation. The request was accompanied by a Biological Assessment dated August 2007. In the Biological Assessment, Caltrans determined that the proposed project would have no effect on the Contra Costa goldfields and the showy Indian clover, was not likely to adversely affect the Conservancy fairy shrimp and the vernal pool tadpole shrimp and, may adversely affect the vernal pool fairy shrimp and the California red-legged frog.
September 27, 2007	The Service sent Caltrans a request for additional information needed to adequately analyze the effects of the project on listed species (Service File No.: 1-1-07-I-1688).
November 5, 2007	The Service met with Caltrans, Solano Transportation Authority, Napa County Transportation and Planning Agency, and Gray-Bowen to discuss the proposed projects. It was agreed that Caltrans would complete protocol level surveys within the action area for Contra Costa goldfields,

	showy Indian clover, Conservancy fairy shrimp, vernal pool fairy shrimp and vernal pool tadpole shrimp prior to groundbreaking. Caltrans would reinitiate consultation pursuant to section 7 if any of these taxa were found. Caltrans also provided their written response to the September 27, 2007, request for additional information. In their response, Caltrans initiated formal consultation on the vernal pool tadpole shrimp but did not provide a revised assessment of the effects.
November 21, 2007	The Service visited the action area to review remaining project issues with Caltrans. Caltrans provided the Service with a supplemental response to Service data request. The supplemental response letter was dated November 19, 2007.
December 3, 2007	The Service received a revised project description from Caltrans via an email message.
December 7, 2007	The Service met with the Solano Transportation Authority, Napa County Transportation and Planning Agency, and Gray-Bowen.
December 14, 2007	The Service received a letter from Caltrans dated December 13, 2007, via an email message describing the phasing of compensation for the two proposed projects.
December 14, 2007	The Service sent a draft biological opinion to Caltrans, Solano Transportation Authority, Napa County Transportation and Planning Agency, and Gray-Bowen (Service File No.: 81420-2008-F-0530).
December 31, 2007	The Service received a December 24, 2007, letter from Caltrans regarding the draft biological opinion.
January 7, 2008	The Service attended a meeting with Caltrans and Gray-Bowen.
January 28, 2008	The Service and Caltrans discussed the proposed project on the telephone.
January 30, 2008	The Service and Caltrans discussed the proposed project on the telephone.
January 31, 2008	The Service received a letter and an email message from Caltrans requesting the Service issue the draft biological opinion as a final.
January 31, 2008	The Service issued the biological opinion (Service File No.: 81420-2008-F-0827).

April 30, 2010	The Service received a letter request from Caltrans to reinitiate consultation. Reintiation was based on changes to the project description.
May 12, 2010	The Service received additional revised project description information via an email message from Caltrans.
May 20, 2010	The Service provided Caltrans with the text version of the original project description for revision via an attachment to an email message.
May 21, 2010	Based on an initial review of the reinitiation package, the Service sent Caltrans a list of data requests via an email message.
November 22, 2010	Caltrans provided additional project information in response to the May 20 and May 21, 2010, Service information requests.
January 10, 2011	The Service met with Caltrans and representatives of Solano Transportation Authority to review the consultation reinitiation. Caltrans provided additional information regarding the revised project description.
January 26, 2011	The Service visited the project site with Caltrans to visit the proposed 12x12-foot recreational trail undercrossing and for further project description clarification.
March 1, 2011	The Service issued a draft biological opinion (Service File #81420-2008-F-0827-R001-1) for Caltrans review.
April 7, 2011	The Service received Caltrans' April 5, 2011, letter response to the March 1, 2011 Draft Biological Opinion.

BIOLOGICAL OPINION

Description of the Proposed Action

The following project description was provided by Caltrans with minor modifications for reasons of clarity and accuracy provided by the Service.

Caltrans proposes two interrelated projects to reduce congestion and improve safety along the State Route 12 corridor, west of Interstate 80. The State Route 12 (Jameson Canyon Road) Widening Project involves lane additions, turn pockets, minor roadway realignment, and installation of a median barrier. The State Route 12/State Route 29 Interchange Improvement Project will replace a standard four-way stop with an overpass design.

General Scope of Work
Both projects are covered in this biological opinion due to their interrelated utility. The combined components are located along State Route 12 in Napa and Solano Counties from the State Route 12/ State Route 29 Interchange to Red Top Road, approximately 1,000 feet west of Interstate 80.

The proposed projects are planned in three phases:

Phase 1(Jameson Canyon Road Widening) – construction of westbound lanes primarily north of the existing Jameson Canyon Road and horizontal and vertical curve corrections to eastbound Jameson Canyon Road;

Phase 2 (Jameson Canyon Road Widening) – correct remaining non-standard vertical curves; and

Phase 3 – State Route 12 and State Route 29 Interchange Improvement Project.

Construction Schedule and Funding
Federal, state and local funding is currently available for the first phase of the State Route 12 Jameson Canyon Road Widening Project. Construction for the first phase is anticipated to begin in May 2011 and be completed in February 2013. Scheduling for Phase 3, the State Route 12/State Route 29 Interchange Improvement Project is indefinite at this time. Funding sources for all three phases are contingent upon local governments approving tax measures to fund roadway projects.

Construction Activities
The key elements of the proposed projects are summarized as follows:

1. Jameson Canyon Road Widening Project.

    a. Construction of two additional lanes for westbound traffic along the Jameson Canyon Road.

    b. Vertical and horizontal corrections of the existing eastbound lanes of traffic on Jameson Canyon Road.

    c. Improvements to the existing intersections at State Route 12 and Kelly Road, State Route 12 and Kirkland Ranch, and State Route 12 and Lynch Roads, including a through-lane and right turn pocket at the Kirkland Ranch intersection and a realignment of Lynch Road and the addition of a right turn pocket.

    d. Construction of a median barrier with one traffic break and design features for wildlife passage through the median.

e. Culvert modification to accommodate some passage for the California red-legged frog and other wildlife.
f. Construction of 11 retaining walls, including soil nail, tie back, Type 5 and Type 1 walls.

g. Construction of Class II bike lanes.

2. Improvements to the State Route 12/ State Route 29 interchange.

The road widening and interchange projects would create approximately 35.7 acres of new pavement. Earth fill is estimated to be approximately 57,420 cubic yards. Excavation is estimated to be 506,800 cubic yards. According to Caltrans standard specifications, the surplus excavated material will become the property of the Contractor, who will have full responsibility for acquiring any environmental clearance and permits for disposing of the surplus material. Caltrans anticipates that approximately 34 acres of right-of-way acquisition will be required.

State Route 12 Jameson Canyon Road Widening Project
The road widening project site includes 5.9 linear miles along State Route 12 from Napa PM 0.0 to Solano Realignment PM 2.6, just east of Red Top Road.

East of Kirkland Road, the proposed State Route 12 road widening would expand the existing two-lane highway to a four-lane conventional highway. The eastbound lanes will be primarily constructed on the existing alignment, and two additional lanes will be added for the westbound direction. The westbound and eastbound lanes will be designed to highway standards, with a design speed of 55 miles per hour. All travel lanes will be 12 feet wide. The median width will also be 13 feet. The concrete median barrier will have a minimum height of 3.0 feet. The median break will be approximately 2,150 feet east of the Solano/Napa County line. The median break will facilitate "U" turn movements for the traffic along State Route 12. All inside shoulders throughout the projects will have a minimum width of 4.9 feet. The outside shoulders for the westbound and eastbound lanes will be a minimum of 8 feet wide and will also serve as a class II bike route. The average road width will be 77 feet.

Caltrans is incorporating two standard wildlife passage design features into the median barrier. This includes a "concrete barrier wildlife passageway Type S or Type S-modified" approximately every 300 feet. The Type S passage is specifically designed as an opening for small-sized animal passage and consists of a 9 inch radius scupper located at the base of the concrete barrier. A "concrete barrier wildlife passageway Type M-modified" will be placed approximately every 1,200 feet. Type M passage is designed for medium-sized animals and consists of two-foot wide gaps in the concrete median, bridged by a thrie beam rail.

At several locations within the new westbound roadway retaining walls will be constructed to reduce the overall footprint. A total of 11 retaining walls are proposed for the State Route 12 widening project for a combined 1.95 miles of retaining walls. Both cut and fill walls will be required for this project.

There will be minor modifications to the existing intersections of State Route 12 and Kelly, Kirkland Ranch, and Lynch Roads. Improvements to the intersection at Red Top Road are not

included in project. These modifications are included in the scope of the Red Top Road Truck Climbing Lane Project (Service File No.: 1-1-07-F-0073).

At the intersection of State Route 12 and Kelly Road, the projects design includes a designated left turn pocket and two through lanes for the west bound direction. The existing designated right turn pocket in the west bound direction from State Route 12 to Kelly Road will be eliminated by a through lane. In the eastbound direction, the lane configurations will not change. No profile change is proposed for this intersection.

At the intersection of Kirkland Ranch Road, in the eastbound direction a through lane will be added and in the westbound direction a right turn pocket will be added. The project will adjust the profile for the Kirkland Ranch Road to State Route 12 intersection.

Improvements to the Lynch Road intersection will include the realignment of Lynch Road to be perpendicular to State Route 12. One right turn movement pocket is proposed onto Lynch Road from State Route 12. A profile adjustment is also proposed for this intersection.

State Route 12/ State Route 29 Interchange Improvement Project
The interchange project is indefinitely on hold due to funding availability. The interchange project site includes 1.3 linear miles of State Route 29 from Napa Post Mile (PM) 4.2 to Napa PM 5.5. The interchange project also includes areas west of the interchange along Airport Boulevard, including an area north of Airport Boulevard along Devlin Road, and areas east of the interchange along State Route 12, including an area north of State Route 12 along North Kelly Road.

The upgrade will involve the reengineering of the existing intersection into a single point configuration with the existing four-way stop being replaced with an overpass over State Route 29. The approach ramps would be positioned on either fill or bridge structures with State Route 12 elevated over State Route 29, with a two-span bridge above State Route 29, and would establish an auxiliary lane on southbound State Route 29 between the State Route 29/ State Route 221 and State Route 12/ State Route 29 interchanges. State Route 12 and Airport Boulevard will be realigned through the intersection with State Route 29, and the roadway profiles for Devlin and Kelly Roads may be raised. State Route 12 and State Route 29 would have a minimum of 4.9-foot-wide inside shoulders and 9.8-foot-wide outside shoulders. State Route 29 would retain its four existing through lanes, two in each direction. An approximately 29.5-foot retaining wall will be used in fill areas. During construction, a detour for east-west traffic on State Route 12 and Airport Boulevard will be used south of the existing intersection.

The ramps in the south quadrants would have one exit lane splitting off into two lanes and two entrance lanes merging into one lane. At the northwest location, two lanes (including one auxiliary lane) exit from southbound State Route 29, splitting off into four lanes. At the end of the off-ramp, one lane turns west onto Airport Blvd while the other three lanes turn east onto State Route 12, merging to two lanes east of Kelly Road. At the northeast location, two lanes exit from westbound State Route 12 to northbound State Route 29.

Widening of State Route 12 and State Route 29 will require relocation of utilities, specifically electricity, gas, telephone, water lines, an aqueduct, and a control cable. Caltrans will be developing a utility design and will reinitiate consultation with the Service if the design results in changes to the action area or the potential effects of the proposed action on listed species.

Staging Locations
Staging locations for both projects will be used for temporary storage of heavy construction equipment and various construction materials, equipment maintenance shops, stockpile areas, and field offices. If necessary, an access road linking staging areas and the work area will be cleared and graded using equipment such as excavators, bobcats, and/or bulldozers. All temporary construction staging areas and access roads will be restored to preconstruction conditions.

Caltrans identified areas of temporary effects along the highway that the contractor may use for equipment storage or staging. However, the contractor may have specific locations for off-site facilities such as storage areas or disposal that they used for other projects and may utilize for this project as well. As stated in the Caltrans May 2006 Standard Specification, before disposing of materials outside the State right of way, the Contractor shall furnish satisfactory evidence that the Contractor has entered into agreements with the property owner of the site involved and has obtained the permits, licenses and clearances.

Drainages and Culverts
Sheehy Creek, Fagan Creek and associated tributaries in Napa County as well as tributaries to an unnamed creek in Solano County (referred to unofficially in some literature, and hereafter in this document, as Jameson Canyon Creek) cross under State Route 12 and the projects will involve modifications to the associated cross culverts. The projects will involve extensions of adequately sized existing culverts while the remaining culverts will either be upsized, replaced, or abandoned. Modifications to existing culverts with less than a 36 inch diameter will include removing, replacing, upsizing and extending the culverts to accommodate the widened roadway.

Caltrans proposes to replace and upsize nine existing culverts to a 36 inch diameter. Table 1 lists the culverts that Caltrans will modify to improve California red-legged frog passage. This table shows the metric stationing, the English stationing (current), approximate PM, existing diameter, planned diameter, proposed diameter, and culvert type. The "planned diameter" reflects the original dimensions designed solely to adequately accommodate hydrology, whereas the "proposed design" indicates the final modifications intended to enhance wildlife passage through the new culvert crossing. Where the columns "planned diameter" and "proposed diameter" disagree, the change to the design for the proposed upsize will occur as an addendum to the project design.

Table 1. Proposed modifications to existing culvert crossings for enhanced drainage capacity and wildlife passage from west to east.

Project	Former Stationing (metric)	Planned Stationing (feet)	Approximate Post Mile	Existing culvert diameter (inches)	Planned diameter (inches)	Proposed diameter (inches)	Type
Intersection	31+60	n/a	Nap 29 5.57	18	24	36	APC
Intersection	17+60	n/a	Nap 29 4.56	24	24	36	RCP / APC
Road Widening	114+00	140+00	Nap 12 0.94	-	36	36	APC new to replace 140+73
Road Widening	126+40	183+00	Nap 12 1.71	18	35x24	35x24	CSPA
Road Widening	142+60	233+50	Nap 12 2.69	24	-	-	remove
Road Widening	142+60	234+00	Nap 12 2.69	-	24	36	APC New to replace 233+50
Road Widening	154+40	280+20	Sol 12 0.35	18	36	36	APC
Road Widening	156+00	285+00	Sol 12 0.42	24	36	36	APC
Road Widening	158+40	290+80	Sol 12 0.54	24	30	36	APC
Road Widening	184+40	369+90	Sol 12 2.14	24	36	36	APC
Road Widening	191+00	390+20	Sol 12 2.42	24	36	36	APC

CSPA = corrugated steel pipe arch; RCP = reinforced concrete pipe; APC = alternative pipe culvert

The following Table 2 lists the nine existing cross culverts in the action area that exceed a 36-inch diameter and will therefore be extended to accommodate roadway widening at the current dimensions.

Table 2. Existing large culverts to be extended.

Project	Former Stationing (metric)	Current Stationing (feet)	Approximate Post Mile	Existing diameter/ dimensions (feet)	Type
Intersection	24+20	n/a	Nap 29 5.02	8	RCP
Road Widening	107+60	120+11	Nap 12 0.53	3	CMPA
Road Widening	110+40	128+72	Nap 12 0.69	3	APC (new culvert)
Road Widening	129+40	194+40	Nap 12 1.91	6x6	RCB
Road Widening	136+00	211+50	Nap 12 2.32	4x4 to 3.5 CSP	4x4 RCB
Road Widening	140+20	225+00	Nap 12 2.55	4.8x3	CMPA
Road Widening	146+60	246+38	Nap 12 2.94	10x6	RCB
Road Widening	166+00	310+00	Sol 12 1.02	4x4	RCB
Road Widening	171+40	327+80	Sol 12 1.31	6x3	RCB (2)

CMPA = corrugated metal pipe arch; RCB = reinforced concrete box; RCP = reinforced concrete pipe; APC = alternative pipe culvert

Caltrans proposed culverts based on their proximity to wetland or riparian areas. Caltrans excluded culverts based on particular design features that limit the suitability of culverts for passage, such as, retaining walls, or steep slopes. The maximum distance between any two of the large culverts in Table 2 is approximately 1,500 feet.

A temporary drainage bypass system may be used to divert flows around work areas in Sheehy Creek, Fagan Creek, Jameson Canyon Creek, and associated tributaries. The use, installation, and removal of the temporary drainage bypass system will be restricted to the period from June 15 to October 15. If dewatering is required during summer construction, Caltrans will establish a coffer dam using clean gravel or sand bags and pump water to the downstream side of the construction (Caltrans 2007b).

According to the Caltrans' Initial Study with Proposed Mitigated Negative Declaration (CEQA) and Environmental Assessment (NEPA) prepared for the proposed projects, the planned Bay Area Ridge Trail will cross the action area but will not be part of the current action (Caltrans 2007c). Caltrans proposes installing a 12x12-foot box culvert undercrossing beneath State Route 12 that will be located near Jameson Creek at Station 310. The structure will be filled with approximately 10 inches of natural soil resulting in an approximately 11-foot overhead clearance. This large undercrossing is designed to accommodate hikers, mountain bicyclists, equestrians, and outdoor enthusiasts, and is also likely to be used by the California red-legged frog and other wildlife.

Retaining Walls

A variety of retaining walls is incorporated into the design to limit road cutting in the hilly terrain and contain the cut walls. There will be 11 individual retaining walls constructed along Jameson Canyon Road ranging in length from 351 to 2,662 feet long and from 8 to 128 feet high. Table 3 includes the types, locations, and dimensions of the planned walls.

Table 3. Retaining walls along the State Route 12 Jameson Canyon Road Widening Project.

Wall Number	Wall Type	Station	Length (feet)	Maximum Height (feet)
1	Soil Nail	204+98.00 to 208+52.31	351	25
2	Soil Nail	252+49.94 to 261+05.98	841	25
9A	Type 5	240+00.00 to 245+04.61	498	8
9B	Type 5	246+20.00 to 249+86.88	369	8
3A*	Soil Nail	264+85.00 to 271+42.36	748	43
3B*	Tieback	271+42.36 to 273+16.70	216	13
3C	Soil Nail	273+73.05 to 280+66.18	691	25
4A*	Tieback	285+45.00 to 289+85.65	495	19
4B*	Tieback	289+85.65 to 296+78.00	688	22
5A	Soil Nail	310+20.00 to 320+11.91	803	27
5B	Tieback	320+11.91 to 323+58.89	345	21
6*	Soil Nail	331+95.57 to 353+57.86	2162	20
7A*	Soil Nail	331+53.20 to 357+62.00	2662	54
7B*	Soil Nail	334+99.54 to 357+00.98	2248	54
8	Type 1 Mod	359+25.61 to 364+43.50	568	20
10	Type 5 Mod	290+05.00 to 300+20.00	1022	12

*Walls 3A-3B, 4A-4B, and 6-7A-7B are continuous structures. Walls 6, 7A, and 7B make up a three tiered wall.

Backhoes and/or loaders are typically used to cut wall faces. Drill rigs are then used to install steel bars or "soil nails" into the cut wall for support. The excavated wall face is prepared and stabilized with drainage fabric and reinforcement before being covered with shotcrete. The wall surface will then be textured for a decorative appearance intended to correspond with the surrounding terrain.

Drainage Releases
The project incorporates drainage releases over the three tiered soil nail retaining wall (Wall #7). The drainage releases are both located in Solano County on the north side of roadway with one drainage release at Station 336+00 (SR 12 Sol PM 1.45) and the other at Station 343+75 (SR 12 Sol PM 1.61). The drainage releases are designed to convey storm water runoff over the wall at topographic depressions where intermittent flows occur during the rainy season. These drainage releases are essentially constructed waterfalls.

The water elevation drop is 25 feet at the PM 1.45 drainage release and 22 feet at the PM 1.61 drainage release, measured from the top of the wall to the collection point at the bottom. At each location, water flows from the hillside above the wall and is concentrated to pass over a key formed into the top of the retaining wall that acts as a weir. After passing over the weir, the water's velocity and energy are dissipated with splash blocks that are incorporated into the wall face. At the bottom of the wall, the water flows over a series of concrete aprons which are stepped down to further slow the water until it reaches a detention basin adjacent to the roadway. The concrete steps are faced with 25 pound to 200 pound "Sonoma Field Stone" to match the surrounding terrain and the soil nail wall stain. A pipe connected to the roadway drainage system is placed inside the basin to collect storm water and transport it beneath and across State Route 12 and ultimately discharged towards Jameson Canyon Creek. The basin is designed to hold water to a maximum depth of 2 feet during storm events, while being discharged into the roadway drainage system. The basin is designed as a velocity control structure and is not expected to remain inundated between rain events. Other than where the release falls over the retaining wall, the margins of the drainage will be planted with native riparian vegetation.

Right-of-Way Fencing
The boundary of the State Route 12 corridor will be defined by a right-of-way fence. Caltrans will construct this fence on behalf of the adjacent land owners to replace the existing fencing. The fencing will be owned and maintained by the private property owners following construction. The type of fence installed will be dependent upon the private property owner's requirements. Based on those individual preferences, there will be six different types of fencing designs installed along the right-of-way. Jameson Canyon is a rural setting and all six fencing designs have a shared function of keeping livestock off the highway. The fence heights are between 4.5 to 5 feet tall and designs range from vinyl board fences to barbed wire or mesh and a combination of barbed wire and mesh. The gauge of the mesh fencing varies between 6 and 4 inches and is more exclusive of a wider range of different sized animals. The mesh will not be buried and will be installed between 2 and 4 inches above the ground.

Temporary 2-foot high silt fencing will be installed in combination with 48 inch tall orange high visibility fencing to exclude wildlife from work areas and construction personnel from environmentally sensitive areas during construction. The silt fencing will be reinforced with wire mesh on the lower 32 inches in areas where it may be compromised by livestock. The locations and fencing design will be identified on construction design drawings.

Roadbed
Roadway excavation will be conducted using equipment such as a front-end loader and motor grader to excavate the area to be paved to the required grade. Excavated material may be hauled off-site using dump trucks. The location and type of excavated material disposal will be determined by the Contractor. The Contractor will be required to obtain any necessary environmental clearances associated with the disposal or reuse of these materials. Once the roadbed has been excavated, the soil will be rolled and vibrated with a sheepsfoot or drum roller to 95 percent relative compaction.

Structural Section
The layers making up the structural section of the roadway will be placed in short lifts of less than 6 inches. The material will be hauled in, dumped, spread with a motor grader or asphalt-paving machine, and compacted.

Overlay
For failed sections of existing pavement only, overlay will be adjusted by digging out the existing asphalt concrete to a maximum of 6 inches. The asphalt concrete overlay then will be dumped and spread using an asphalt-paving machine, and then rolled with a steel-tired compactor.

Temporary drainage bypass system
A temporary drainage bypass system (e.g. coffer dam and flume or pump system) may be used to divert flows around work areas in drainages. Use, installation, and removal of the temporary drainage bypass system will be restricted to the period from June 15 to October 15.

Permanent vs. Temporary Effects
The Service defines temporary effects as those in which California red-legged frog habitat is directly or indirectly affected by construction activities for duration of no more than one year. As construction ends and disturbed areas are stabilized, the habitat will again be available to the species for utilization. Caltrans has modified construction sequencing so that much of the project work in areas of potential California red-legged frog habitat will be completed and the habitat available again for species use within a single construction season. Caltrans therefore categorizes these areas as being subject to temporary effects. This includes areas proposed for staging.

All of the effects associated with the 79.0-acre interchange project are considered permanent and have not been classified by habitat type. The final acreages of effects associated with the road widening are presented in Table 4 and include a breakdown by habitat type.

Table 4. State Route 12 Jameson Canyon Road Widening Effects to the California Red-legged Frog.

Habitat Type	Permanent Effects (acres)	Temporary Effects (acres)
Potential breeding habitat	0.15	0.13
Potential aquatic dispersal habitat	0.28	0.15
Potential upland dispersal and aestivation habitat	42.36	40.26
Total	**42.79**	**40.54**

The Service does not consider areas that will be subjected to ongoing maintenance as areas of temporary effects even if they are restored within one year following the initial disturbance. Red-legged frogs can utilize these areas but credit is not given for restoration if the area is not maintained for the species.

Construction Site Restoration
Caltrans plans to restore areas of temporary ground disturbances, including storage and staging areas, and temporary roads. These areas will be re-contoured, if appropriate, and revegetated with seeds and/or cuttings of appropriate plant species to promote restoration of the area to pre-project conditions. Caltrans has developed a restoration plan that will be submitted to the Service for approval prior to initial ground breaking. This plan includes immediate application of permanent erosion control measures for all areas disturbed by construction activities. The permanent erosion control measures will include native (here referring to species naturally occurring in Napa and Solano counties) grass and forb seed, fertilizer, compost and mulch for soil protection. The restoration plan also includes planting at each creek crossing using a combination of wetland, riparian and upland/transitional species appropriate for the conditions at the specific creek crossings and is informed by local reference sites. To the maximum extent practicable (i.e., presence of natural lands), topsoil will be removed, cached, and returned to the site according to successful restoration protocols. Loss of soil from run-off or erosion will be prevented with straw bales, straw wattles, or similar means provided they do not entangle or block California red-legged frog escape or dispersal routes.

Equipment
The equipment expected to be used on the project is typical of roadway and interchange construction and may include cranes, excavators, bobcats, bulldozers, roadheaders, hydraulic excavators or backhoes, rubber-tired dump trucks, front-end loaders, load-haul-dumps, drill jumbos, front-end loaders and motor graders, sheepsfoot or drum rollers, and asphalt-paving machines.

Temporary construction areas will be cleared, graded, and reestablished using equipment such as excavators, bulldozers, and/or bobcats.

Proposed Conservation Measures
According to the revised project description that Caltrans provided to the Service on November 22, 2010, Caltrans proposes to avoid, minimize, and compensate for effects to listed species by implementing the following measures:

1. Caltrans has proposed to provide 3:1 compensation (365.37 acres) for the effects to 121.79 acres of California red-legged frog habitat. Acceptable compensation shall be satisfied through in-perpetuity preservation of high quality red-legged frog habitat consisting of a breeding and/or significant dispersal habitat between breeding populations or a biological equivalent site similar to the Dittmer Property along Jameson Canyon Road through purchase of bank credits, acquisition of a conservation easement or fee title, and/or contribution to an in-lieu fee program that complies with FHWA policy for Federal aid participation. Purchase of the site shall be reviewed and approved by the Service.

   If a compensation bank is proposed in lieu of acquisition it shall be a Service-approved bank and reviewed and approved by the Service prior to the purchase of credits.

   An approved ecologically-based conservation easement shall include restricted public access, a management plan, and an in-perpetuity endowment or other permanent non-wasting management fund based on a property analysis. The management plan shall include a description of the site, management needs (e.g. grazing plan, non-native vegetation and animal control, etc), when the management activities should be implemented, how often and to what level monitoring of the site shall occur, and an action/contingency plan to address potential management issues.

   Proposed habitat acquisition shall be accompanied by a Service-approved conservation easement that shall include restricted public access, a management plan, and an in-perpetuity endowment based on a property analysis.

   The compensation will be phased to coincide with the initiation of the individual projects. The State Route 12 Jameson Canyon Road Widening Project will have permanent effects to 42.79 acres of California red-legged frog habitat (at 3:1=128.37 acres) and the State Route 12/State Route 29 Interchange Improvement project will affect 79.0 acres of California red-legged frog habitat (at 3:1=237 acres).

2. Service-approved biologist(s) will be on-site during all activities that may result in the take of a California red-legged frog. The qualifications of the biologist(s) will be presented to the Service for review and written approval prior to ground-breaking at the project site. The Resident Engineer will stop work at the request of the Service-approved biologist(s) if activities are identified that may result in the take of a California red-legged frog. Should the biologist(s) or the Resident Engineer exercise this authority, the Service will be notified by telephone and electronic mail within one working day. The Service contact will be the Coast-Bay Branch Chief in the Sacramento Fish and Wildlife Office at (916) 414-6600.

3. Resident Engineer will halt work immediately and contact the Service-approved project biologist and the Service in the event that a California red-legged frog is within the construction zone. The Resident Engineer will suspend all construction activities in the immediate construction zone until the animal leaves the site voluntarily or is removed by the biologist to a Service-approved release site using Service-approved transportation techniques.

4. California red-legged frogs will be relocated outside of the environmentally sensitive area/silt fence within the same riparian area or watershed by the approved biological monitor. If relocation of the frog outside the fence is not feasible (i.e., there are too many frogs observed per day), the approved biological monitor will relocate frogs to a pre-approved location determined by Caltrans, the Service, and local agencies. Prior to construction, Caltrans will obtain approval of the relocation protocol from the Service in the event that California red-legged frogs are encountered and need to be relocated away from the immediate project area (Caltrans 2007b).

5. A Service-approved biologist will conduct environmental education training for all construction employees working on ground disturbing activities. The program will include the following: a description of the California red-legged frog and their habitat needs; photographs of the species; an explanation of its legal status and protection under the Act; and a list of the measures that will be implemented to minimize and avoid effects to the California red-legged frog.

6. Project employees will be provided with written guidance governing vehicle use, speed limits on unpaved roads, fire prevention, and other hazards.

7. To minimize temporary disturbances, all project-related vehicle traffic will be restricted to established roads, construction areas, and other designated areas. These areas also will be included in pre-construction surveys and, to the maximum extent possible, will be established in locations disturbed by previous activities to prevent further adverse effects. Off-road traffic outside of designated project areas will be prohibited.

8. Project-related vehicles will observe a 20-mile per hour speed limit within construction areas, except on County roads, and State and Federal highways; this is particularly important at night when the California red-legged frog is most active.

9. To the maximum extent possible, night-time construction will be minimized.

10. Dust control measures will be implemented during construction, consisting of regular truck watering of constriction access areas and disturbed soil areas with the use of organic soil stabilizers to minimize airborne dust and soil particles generated from graded areas. Regular truck watering will be a requirement of the construction contract. In addition, for disturbed soil areas, an organic tackifier to control dust emissions blowing off of the right-of-way or out of the construction area during construction will be included in the contract special provisions. Watering guidelines for truck watering will be established to avoid any excessive run-off that may flow into contiguous areas. Any material stockpiles will be watered, sprayed with tackifier, or covered, to minimize dust production and wind erosion.

11. To eliminate an attraction to predators of the California red-legged frog, all food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in closed containers and removed at least once a day from the entire project site.

12. To avoid injury or death of the California red-legged frog, no firearms will be allowed on the project site except for those carried by authorized security personnel, or local, State, or Federal law enforcement officials.

13. To prevent harassment, injury or mortality of the California red-legged frog or destruction of their cover sites by dogs or cats, no canine or feline pets will be permitted in the action area.

14. All fueling and maintenance of vehicles and other equipment will occur at least 65 feet from any riparian habitat or aquatic habitat.

15. All grindings and asphaltic-concrete waste will be stored within previously disturbed areas absent of habitat and at a minimum of 150 feet from any culvert, or drainage feature.

16. To the extent practicable, initial ground disturbing activities will be avoided between November 1 and March 31 to avoid the period when California red-legged frogs are most likely to be moving through upland areas. When unavoidable, ground disturbing activities between November 1 and March 31 will be accompanied by daily biological monitoring.

17. Exclusionary fencing will be placed at the edge of active construction areas (cleared by biological surveys) to restrict wildlife access from the adjacent upland and riparian habitat. The fencing will consist of taut silt fabric; 24 inches in height, stacked at 10-foot intervals, with the bottom buried 6 inches below grade. Exclusion fencing will be maintained so that it is intact during rain events and 24 hours after any rain event.

18. The active construction area will be delineated with high visibility temporary fencing at least 4 feet in height, flagging, or other barrier to prevent encroachment of construction personnel and equipment outside the described project footprint. Such fencing will be inspected and maintained daily by the on-site biologist until completion of the project. The fencing will be removed from areas only after all construction equipment is removed. No project activities will occur outside the delineated project construction area.

19. If requested through the Resident Engineer or Construction Inspector, before, during, or upon completion of ground breaking and construction activities, Caltrans will ensure the Service, California Department of Fish and Game, and/or their designated agents can immediately and without delay, access and inspect the project site for compliance with the proposed project description, conservation measures, and terms and conditions of this biological opinion, and to evaluate project effects to the California red-legged frog and their habitat.

20. No more than twenty (20) working days prior to any ground disturbance, pre-construction surveys will be conducted by a Service-approved biologist for the California red-legged frog. These surveys will consist of walking surveys of the project limits and adjacent areas accessible to the public to determine presence of the species. The Service-approved biologists will investigate all potential California red-legged frog cover sites. This includes full investigation of mammal burrows. The entrances will be collapsed following investigation.

21. To prevent inadvertent entrapment of California red-legged frogs during construction, all excavated, steep-walled holes or trenches more than 1-foot deep will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If at any time a trapped listed animal is discovered, the on-site biologist will immediately place escape ramps or other appropriate structures to allow the animal to escape, or the Service will be contacted by telephone for guidance. The Service will be notified of the incident by telephone and electronic mail within one working day.

22. Plastic mono-filament netting (erosion control matting) or similar material will not be used at the project site because California red-legged frog may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

23. Construction fabric and a layer of gravel will protect the original contour of all wetland areas that cannot be avoided within identified temporary effect areas adjacent or within the right-of-way, minimizing potential effects from compaction or other disturbance. After construction, gravel and fabric will be removed.

24. Injured California red-legged frogs will be cared for by a licensed veterinarian or other qualified person such as the on-site biologist; dead individuals of any listed species will be preserved according to standard museum techniques and held in a secure location. The Service will be notified within one (1) working day of the discovery of death or injury to a listed species that occurs due to project related activities or is observed at the project site. Notification will include the date, time, and location of the incident or of the finding of a dead or injured animal clearly indicated on a U.S. Geological Survey (USGS) 7.5 minute quadrangle and other maps at a finer scale, as requested by the Service, and any other pertinent information. Dead individual animals will be placed in a sealed plastic bag with a piece of paper containing information on where and when the animal was found along with the name of the person who found it, the bag will be frozen in a freezer located in a secure location until instructions are received from the Service regarding the disposition of the specimen or the Service takes custody of the specimen. The Service contacts are the Coast-Bay Branch Chief in the Sacramento Fish and Wildlife Office at (916) 414-6600, and the Resident Agent-in-Charge of the Service's Law Enforcement Division at (916) 414-6660.

    Caltrans will submit a post-construction compliance report prepared by the on-site biologist to the Sacramento Fish and Wildlife Office within forty (40) working days following project completion or within sixty (60) calendar days of any break in construction activity lasting more than forty (40) working days. This report will detail: (1) dates that construction occurred; (2) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (3) an explanation of failure to meet such measures if any; (4) known project effects on listed species if any; (5) occurrences of incidental take of any listed species; (6) documentation of employee environmental education; and (vii) other pertinent information. The reports will be addressed to the Coast-Bay Branch Chief of the Endangered Species Program, Sacramento Fish and Wildlife Office.

25. Caltrans will report to the Service any information about take or suspected take of listed wildlife species not authorized by this biological opinion. Caltrans will notify the Service via email and telephone within twenty-four (24) hours of receiving such information. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and photographs of the specific animal. The Service contacts are the Coast-Bay Branch Chief of the Endangered Species Program in the Sacramento Fish and Wildlife Office at (916) 414-6600, and the Resident Agent-in-Charge of the Service's Law Enforcement Division at (916) 414-6660.

Analytical Framework for the Jeopardy Determination

The following analysis relies on four components to support the jeopardy determination for the California red-legged frog: (1) the *Status of the Species*, which evaluates the species' range wide condition, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of the species in the action area, the factors responsible for that condition, and the role of the action area in the species' survival and recovery; (3) the *Effects of the Action*, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on the species; and (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the species.

In accordance with the implementing regulations for section 7 and Service policy, the jeopardy determination is made in the following manner: the effects of the proposed Federal action are evaluated in the context of the aggregate effects of all factors that have contributed to the species' current status and, for non-Federal activities in the action area, those actions likely to affect the species in the future, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild.

The following analysis places an emphasis on using the range-wide survival and recovery needs of the species and the role of the action area in providing for those needs as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Action Area

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For the proposed action, the action area includes all lands associated with the approximately 217.58-acre combined project footprint and roads (except for County roads, and State and Federal highways) and other areas accessed by project vehicles. The action area includes 55.25 acres of hardscape. Excluding hardscape, the State Route 12 Jameson Canyon Road Widening Project encompasses 83.33 acres and State Routes 29/12 Interchange Project encompasses 79.00 acres, with a combined area of 162.33 acres.

Status of the California Red-Legged Frog

Listing Status
The California red-legged frog was listed as a threatened species on May 23, 1996 (61 FR 25813). Critical habitat was designated for this species on April 13, 2006 (71 FR 19244) and revisions to the critical habitat designation were published on March 17, 2010 (75 FR 12816). At this time, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii* (Shaffer *et al.* 2010). A recovery plan was published for the California red-legged frog on September 12, 2002 (Service 2002).

Description
The California red-legged frog is the largest native frog in the western United States (Wright and Wright 1949), ranging from 1.5 to 5.1 inches in length (Stebbins 2003). The abdomen and hind legs of adults are largely red, while the back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Dorsal spots usually have light centers (Stebbins 2003), and dorsolateral folds are prominent on the back. Larvae (tadpoles) range from 0.6 to 3.1 inches in length, and the background color of the body is dark brown and yellow with darker spots (Storer 1925).

Distribution
The historic range of the California red-legged frog extended from the vicinity of Elk Creek in Mendocino County, California, along the coast inland to the vicinity of Redding in Shasta County, California, and southward to northwestern Baja California, Mexico (Fellers 2005; Jennings and Hayes 1985; Hayes and Krempels 1986). The species was historically documented in 46 counties but the taxa now remains in 238 streams or drainages within 23 counties, representing a loss of 70 percent of its former range (Service 2002). California red-legged frogs are still locally abundant within portions of the San Francisco Bay area and the Central California Coast. Isolated populations have been documented in the Sierra Nevada, northern Coast, and northern Transverse Ranges. The species is believed to be extirpated from the southern Transverse and Peninsular ranges, but is still present in Baja California, Mexico (CDFG 2010a).

Status and Natural History
California red-legged frogs predominately inhabit permanent water sources such as streams, lakes, marshes, natural and manmade ponds, and ephemeral drainages in valley bottoms and foothills up to 4,921 feet in elevation (Jennings and Hayes 1994, Bulger *et al.* 2003, Stebbins 2003). However, California red-legged frogs also have been found in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation. California red-legged frogs also can be found in disturbed areas such as channelized creeks and drainage ditches in urban and agricultural areas. For example, an adult California red-legged frog was observed in a shallow isolated pool on North Slough Creek in the American Canyon area of Napa County (Christine Gaber/PG&E personal communication with Chris Nagano/Service on October 22, 2008). This frog location was surrounded by vineyard development. Another adult California red-legged frog was observed under debris in an unpaved parking lot in a heavily industrial area of Burlingame (Patrick Kobernus/Coast Ridge Ecology communication with Michelle

Havens/Service on October 16, 2008). This Burlingame frog was likely utilizing a nearby drainage ditch. Caltrans also has discovered California red-legged frog adults, tadpoles, and egg masses within a storm drainage system within a major cloverleaf intersection of Millbrae Avenue and State Route 101 in a heavily developed area of San Mateo County (Caltrans 2007d). California red-legged frog has the potential to persist in disturbed areas as long as those locations provide at least one or more of their life history requirements.

California red-legged frogs breed from November to April, although earlier breeding records have been reported in southern localities. Breeding generally occurs in still or slow-moving water often associated with emergent vegetation, such as cattails, tules or overhanging willows (Storer 1925, Hayes and Jennings 1988). Female frogs deposit egg masses on emergent vegetation so that the egg mass floats on or near the surface of the water (Hayes and Miyamoto 1984).

Habitat includes nearly any area within 1 to 2 miles of a breeding site that stays moist and cool through the summer including vegetated areas with coyote brush, California blackberry thickets, and root masses associated with willow and California bay trees (Fellers 2005). Sheltering habitat for California red-legged frogs potentially includes all aquatic, riparian, and upland areas within the range of the species and includes any landscape feature that provide cover, such as animal burrows, boulders or rocks, organic debris such as downed trees or logs, and industrial debris. Agricultural features such as drains, watering troughs, spring boxes, abandoned sheds, or hay stacks may also be used. Incised stream channels with portions narrower and depths greater than 18 inches also may provide important summer sheltering habitat. Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed, and can be a factor limiting frog population numbers and survival.

California red-legged frogs do not have a distinct breeding migration (Fellers 2005). Adults are often associated with permanent bodies of water. Some individuals remain at breeding sites year-round, while others disperse to neighboring water features. Dispersal distances are typically less than 0.5-mile, with a few individuals moving up to 1 to 2 miles (Fellers 2005). Movements are typically along riparian corridors, but some individuals, especially on rainy nights, move directly from one site to another through normally inhospitable habitats, such as heavily grazed pastures or oak-grassland savannas (Fellers 2005).

In a study of California red-legged frog terrestrial activity in a mesic area of the Santa Cruz Mountains, Bulger *et al.* (2003) categorized terrestrial use as migratory and non-migratory. The latter occurred from one to several days and was associated with precipitation events. Migratory movements were characterized as the movement between aquatic sites and were most often associated with breeding activities. Bulger *et al.* (2003) reported that non-migrating frogs typically stayed within 200 feet of aquatic habitat 90 percent of the time and were most often associated with dense vegetative cover, i.e., California blackberry, poison oak and coyote brush. Dispersing frogs in northern Santa Cruz County traveled distances from 0.25-mile to more than 2 miles without apparent regard to topography, vegetation type, or riparian corridors (Bulger *et al.* 2003).

In a study of California red-legged frog terrestrial activity in a xeric environment in eastern Contra Costa County, Tatarian (2008) noted that a 57 percent majority of frogs fitted with radio transmitters in the Round Valley study area stayed at their breeding pools, whereas 43 percent moved into adjacent upland habitat or to other aquatic sites. Her study reported a peak seasonal terrestrial movement occurring in the fall months associated with the first 0.2-inch of precipitation and tapering off into spring. Upland movement activities ranged from 3 to 233 feet, averaging 80 feet, and were associated with a variety of refugia including grass thatch, crevices, cow hoof prints, ground squirrel burrows at the base of trees or rocks, logs, and under man-made structures; others were associated with upland sites lacking refugia (Tatarian 2008). The majority of terrestrial movements lasted from 1 to 4 days; however, one adult female was reported to remain in upland habitat for 50 days (Tatarian 2008). Upland refugia closer to aquatic sites were used more often and were more commonly associated with areas exhibiting higher object cover, e.g., woody debris, rocks, and vegetative cover. Subterranean cover was not significantly different between occupied upland habitat and non-occupied upland habitat.

California red-legged frogs are often prolific breeders, laying their eggs during or shortly after large rainfall events in late winter and early spring (Hayes and Miyamoto 1984). Egg masses containing 2,000 to 5,000 eggs are attached to vegetation below the surface and hatch after 6 to 14 days (Storer 1925, Jennings and Hayes 1994). In coastal lagoons, the most significant mortality factor in the pre-hatching stage is water salinity (Jennings *et al.* 1992). Eggs exposed to salinity levels greater than 4.5 parts per thousand resulted in 100 percent mortality (Jennings and Hayes 1990). Increased siltation during the breeding season can cause asphyxiation of eggs and small larvae. Larvae undergo metamorphosis 3½ to seven months following hatching and reach sexual maturity two to three years of age (Storer 1925; Wright and Wright 1949; Jennings and Hayes 1985, 1990, 1994). Of the various life stages, larvae probably experience the highest mortality rates, with less than 1 percent of eggs laid reaching metamorphosis (Jennings *et al.* 1992). California red-legged frogs may live 8 to 10 years (Jennings *et al.* 1992). Populations can fluctuate from year to year; favorable conditions allow the species to have extremely high rates of reproduction and thus produce large numbers of dispersing young and a concomitant increase in the number of occupied sites. In contrast, the animal may temporarily disappear from an area when conditions are stressful (e.g., during periods of drought, disease, etc.).

The diet of California red-legged frogs is highly variable and changes with the life history stage. The diet of the larvae is not well studied, but is likely similar to that of other ranid frogs, feeding on algae, diatoms, and detritus by grazing on the surface of rocks and vegetation (Fellers 2005; Kupferberg 1996a, 1996b, 1997). Hayes and Tennant (1985) analyzed the diets of California red-legged frogs from Cañada de la Gaviota in Santa Barbara County during the winter of 1981 and found invertebrates (comprising 42 taxa) to be the most common prey item consumed; however, they speculated that this was opportunistic and varied based on prey availability. They ascertained that larger frogs consumed larger prey and were recorded to have preyed on Pacific chorus frog, three-spined stickleback and, to a limited extent, California mice, which were abundant at the study site (Hayes and Tennant 1985, Fellers 2005). Although larger vertebrate prey was consumed less frequently, it represented over half of the prey mass eaten by larger frogs suggesting that such prey may play an energetically important role in their diets (Hayes and Tennant 1985). Juvenile and subadult/adult frogs varied in their feeding activity periods;

juveniles fed for longer periods throughout the day and night, while subadult/adults fed nocturnally (Hayes and Tennant 1985). Juveniles were significantly less successful at capturing prey and all life history stages exhibited poor prey discrimination, feeding on several inanimate objects that moved through their field of view (Hayes and Tennant 1985).

Metapopulation and Patch Dynamics

The direction and type of habitat used by dispersing animals is especially important in fragmented environments (Forys and Humphrey 1996). Models of habitat patch geometry predict that individual animals will exit patches at more "permeable" areas (Buechner 1987; Stamps *et al.* 1987). A landscape corridor may increase the patch-edge permeability by extending patch habitat (La Polla and Barrett 1993), and allow individuals to move from one patch to another. The geometric and habitat features that constitute a "corridor" must be determined from the perspective of the animal (Forys and Humphrey 1996).

Because their habitats have been fragmented, many endangered and threatened species exist as metapopulations (Verboom and Apeldom 1990; Verboom *et al.* 1991). A metapopulation is a collection of spatially discrete subpopulations that are connected by the dispersal movements of the individuals (Levins 1970; Hanski 1991). For metapopulations of listed species, a prerequisite to recovery is determining if unoccupied habitat patches are vacant due to the attributes of the habitat patch (food, cover, and patch area) or due to patch context (distance of the patch to other patches and distance of the patch to other features). Subpopulations on patches with higher quality food and cover are more likely to persist because they can support more individuals. Large populations have less of a chance of extinction due to stochastic events (Gilpin and Soule 1986). Similarly, small patches will support fewer individuals, increasing the rate of extinction. Patches that are near occupied patches are more likely to be recolonized when local extinction occurs and may benefit from emigration of individuals via the "rescue" effect (Hanski 1982; Gotelli 1991; Holt 1993; Fahrig and Merriam 1985). For the metapopulation to persist, the rate of patches being colonized must exceed the rate of patches going extinct (Levins 1970). If some subpopulations go extinct regardless of patch context, recovery actions should be placed on patch attributes. Patches could be managed to increase the availability of food and/or cover.

Movements and dispersal corridors likely are critical to California red-legged frog population dynamics, particularly because the animals likely currently persist as metapopulations with disjunct population centers. Movement and dispersal corridors are important for alleviating over-crowding and intraspecific competition, and also they are important for facilitating the recolonization of areas where the animal has been extirpated. Movement between population centers maintains gene flow and reduced genetic isolation. Genetically isolated populations are at greater risk of deleterious genetic effects such as inbreeding, genetic drift, and founder effects. The survival of wildlife species in fragmented habitats may ultimately depend on their ability to move among patches to access necessary resources, retain genetic diversity, and maintain reproductive capacity within populations (Hilty and Merenlender 2004; Petit *et al.* 1995; Buza *et al.* 2000).

Most metapopulation or meta-population-like models of patchy populations do not directly include the effects of dispersal mortality on population dynamics (Hanski 1994; With and Crist 1995; Lindenmayer and Possingham 1996). Based on these models, it has become a widely held notion that more vagile species have a higher tolerance to habitat loss and fragmentation than less vagile species. But models that include dispersal mortality predict exactly the opposite: more vagile species should be more vulnerable to habitat loss and fragmentation because they are more susceptible to dispersal mortality (Fahrig 1998; Casagrandi and Gatto 1999). This prediction is supported by Gibbs (1998), who examined the presence-absence of five amphibian species across a gradient of habitat loss. He found that species with low dispersal rates are better able than more vagile species to persist in landscapes with low habitat cover. Gibbs (1998) postulated that the land between habitats serves as a demographic "drain" for many amphibians. Furthermore, Bonnet *et al.* (1999) found that snake species that frequently make long-distance movements have higher mortality rates than do sedentary species.

Threats

Habitat loss, non-native species introduction, and urban encroachment are the primary factors that have adversely affected the California red-legged frog throughout its range. Several researchers in central California have noted the decline and eventual local disappearance of California and northern red-legged frogs in systems supporting bullfrogs (Jennings and Hayes 1990; Twedt 1993), red swamp crayfish, signal crayfish, and several species of warm water fish including sunfish, goldfish, common carp, and mosquitofish (Moyle 1976; Barry 1992; Hunt 1993; Fisher and Schaffer 1996). This has been attributed to predation, competition, and reproduction interference. Twedt (1993) documented bullfrog predation of juvenile northern red-legged frogs (*Rana aurora*), and suggested that bullfrogs could prey on subadult California red-legged frogs as well. Bullfrogs may also have a competitive advantage over California red-legged frogs. For instance, bullfrogs are larger and possess more generalized food habits (Bury and Whelan 1984). In addition, bullfrogs have an extended breeding season (Storer 1933) during which an individual female can produce as many as 20,000 eggs (Emlen 1977). Furthermore, bullfrog larvae are unpalatable to predatory fish (Kruse and Francis 1977). Bullfrogs also interfere with California red-legged frog reproduction by eating adult male California red-legged frogs. Both California and northern red-legged frogs have been observed in amplexus (mounted on) with both male and female bullfrogs (Jennings and Hayes 1990; Twedt 1993; Jennings 1993). Thus bullfrogs are able to prey upon and out-compete California red-legged frogs, especially in sub-optimal habitat.

The urbanization of land within and adjacent to California red-legged frog habitat has also affected the threatened amphibian. These declines are attributed to channelization of riparian areas, enclosure of the channels by urban development that blocks dispersal, and the introduction of predatory fishes and bullfrogs. Diseases may also pose a significant threat, although the specific effects of disease on the California red-legged frog are not known. Pathogens are suspected of causing global amphibian declines (Davidson *et al.* 2003). Chytridiomycosis and ranaviruses are a potential threat because these diseases have been found to adversely affect other amphibians, including the listed species (Davidson *et al.* 2003; Lips *et al.* 2006). Mao *et al.* (1999 cited in Fellers 2005) reported northern red-legged frogs infected with an iridovirus, which was also presented in sympatric threespine sticklebacks in northwestern California. Non-

native species, such as bullfrogs and non-native tiger salamanders that live within the range of the California red-legged frog have been identified as potential carriers of these diseases (Garner *et al.* 2006). Human activities can facilitate the spread of disease by encouraging the further introduction of non-native carriers and by acting as carriers themselves (i.e., contaminated boots, waders or fishing equipment). Human activities can also introduce stress by other means, such as habitat fragmentation, that results in the listed species being more susceptible to the effects of disease.

Negative effects to wildlife populations from roads and pavement may extend some distance from the actual road. The phenomenon can result from vehicle-related mortality, habitat degradation, noise and light pollution, and invasive exotic species. Forman and Deblinger (1998) described the area affected as the "road effect" zone. One study along a 4-lane road in Massachusetts determined that this zone extended for an average of 980 feet to either side of the road for an average total zone width of approximately 1,970 feet. However, in places they detected an effect greater than 0.6-mile from the road. The road effect zone can also be subtle. Van der Zandt *et al.* (1980) reported that lapwings and black-tailed godwits feeding at 1,575 to 6,560 feet from roads were disturbed by passing vehicles. The heart rate, metabolic rate and energy expenditure of female bighorn sheep increases near roads (MacArthur *et al.* 1979). Trombulak and Frissell (2000) described another type of "road-zone" effect due to contaminants. Heavy metal concentrations from vehicle exhaust were greatest within 66 feet of roads and elevated levels of metals in soil and plants were detected at 660 feet of roads. The "road-zone" varies with habitat type and traffic volume. Based on responses by birds, Forman (2000) estimated the road-zone along primary roads of 1,000 feet in woodlands, 1,197 feet in grasslands, and 2,657 feet in natural lands near urban areas. Along secondary roads with lower traffic volumes, the effect zone was 656 feet. The road-zone with regard to California red-legged frogs has not been adequately investigated.

The necessity of moving between multiple habitats and breeding ponds means that many amphibian species, such as the California red-legged frog are especially vulnerable to roads and well-used large paved areas in the landscape. Van Gelder (1973) and Cooke (1995) have examined the effect of roads on amphibians and found that because of their activity patterns, population structure, and preferred habitats, aquatic breeding amphibians are more vulnerable to traffic mortality than some other species. High-volume highways pose a nearly impenetrable barrier to amphibians and result in mortality to individual animals as well as significantly fragmenting habitat. Hels and Buchwald (2001) found that mortality rates for anurans on high traffic roads are higher than on low traffic roads. Vos and Chardon (1998) found a significant negative effect of road density on the occupation probability of ponds by the moor frog (*Rana arvalis*) in the Netherlands. In addition, incidences of very large numbers of road-killed frogs are well documented (Asley and Robinson 1996), and studies have shown strong population level effects of traffic density (Carr and Fahrig 2001) and high traffic roads on these amphibians (Van Gelder 1973; Vos and Chardon 1998). Most studies regularly count road mortalities from slow moving vehicles (Hansen 1982; Rosen and Lowe 1994; Drews 1995; Mallick *et al.* 1998) or by foot (Munguira and Thomas 1992). These studies assume that every victim is observed, which may be true for large conspicuous mammals, but may be an incorrect assumption for small animals, such as the California red-legged frog. Amphibians appear especially vulnerable to

traffic mortality because they readily attempt to cross roads, are small and slow-moving, and thus are not easily avoided by drivers (Carr and Fahrig 2001).

Status of the Species
The recovery plan for the California red-legged frog identifies eight recovery units (Service 2002). The establishment of these recovery units is based on the determination that various regional areas of the species' range are essential to its survival and recovery. The status of the California red-legged frog was considered within the small scale recovery units as opposed to their overall range. These recovery units are delineated by major watershed boundaries as defined by U.S. Geological Survey hydrologic units and the limits of its range. The goal of the recovery plan is to protect the long-term viability of all extant populations within each recovery unit. Within each recovery unit, core areas have been delineated and represent contiguous areas of moderate to high California red-legged frog densities that are relatively free of exotic species such as bullfrogs. The goal of designating core areas is to protect metapopulations. Thus when combined with suitable dispersal habitat, will allow for the long term viability within existing populations. This management strategy will allow for the recolonization of habitats within and adjacent to core areas that are naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of California red-legged frogs.

Environmental Baseline for the California Red-Legged Frog in the Action Area

Like most California highways, Jameson Canyon Road and State Route 29 were county roads prior to becoming part of the State highway system circa 1935 (http://www.cahighways.org/). Like most of the State's highways, the roadways now identified as State Route 12 and State Route 29 were constructed long before the establishment of NEPA (NEPA; 1969), the Act (1973), or the CEQA (CEQA; 1970); as well as the Federal listing of the California red-legged frog (1996) or our current understanding regarding the effects roads have on wildlife and how roads can be designed to minimize those effects.

The State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects are within Recovery Unit 3 (North Coast and North San Francisco Bay) (Service 2002). The action area falls within Core Area #15 (Jameson Canyon-Lower Napa River) of that Recovery Unit (Service 2002). The conservation needs for the Jameson Canyon-Lower Napa River core area are: (1) protecting existing populations from current and future urbanization; (2) create and manage alternative breeding habitats; and (3) protecting dispersal corridors. The Jameson Canyon-Lower Napa River Core Area is described in the recovery plan as an important source population for the species.

The State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects bisect the Jameson Canyon-Lower Napa River core recovery area. Other than agricultural development adjacent to State Route 12/State Route 29 intersection, the land along Jameson Canyon Road is characterized by a continuous mosaic of upland grassland dispersal, cover, and foraging habitat as well as seasonal wetlands, riparian habitat, and numerous ephemeral and perennial creek crossings. According to the 2007 Biological Assessment, the project intersects seven perennial creeks and numerous ephemeral

creeks. At minimum, developed lands, vineyards, and disked fields along the highway corridor can be subject to temporal use by dispersing frogs (Caltrans 2007a).

The action area is located within the formerly proposed Unit 11 (American Canyon Unit) in the proposed rule issued on April 13, 2004 (Service 2004). The definition of that proposed critical habitat unit specifically included the watersheds of Fagan Creek and Jameson Canyon. There are three currently designated California red-legged frog critical habitat units in Solano County (Service 2010). The revised critical habitat designation occurred after the initial consultation on these projects. The three Solano units are arranged as stepping stones separated by Jameson Canyon Road and Interstate 80 and a key factor in the species recovery is to provide connectivity from southeastern Napa County south to the interior Coast Range north of Suisun Bay. The SOL-2 unit is located immediately north of Jameson Canyon Road and is also known as the Jameson Canyon Unit. This unit is considered essential for the California red-legged frog because it provides connectivity from Napa County south to unit SOL-3 (American Canyon Unit) which occupies a wedge of habitat located between Jameson Canyon Road and Interstate 80. Critical habitat unit SOL-1 (the Sky Valley Unit) is the southernmost unit in the group and extends south to Suisun Bay. The connectivity function of the three Solano County units is dependent upon maintaining red-legged frog passage across Interstate 80 and Jameson Canyon Road.

The Draft Solano HCP represents the most complete regional scientific data and analysis for the California red-legged frog in Solano County (SWCA 2009). A final administrative draft of the HCP was issued in June 2009. The road widening and interchange projects are within the California red-legged frog Conservation Area defined in the draft HCP. The draft HCP also identified Jameson Canyon Creek and various aquatic features within 1-mile of the action area as potential California red-legged frog breeding and hydration habitat. According to the draft HCP analysis, the existing Jameson Canyon Road and Interstate 80 create barriers between the SOL-1, -2, and -3 critical habitat units and "severely restrict or eliminate the natural dispersal and migratory movements of individuals between these three blocks of habitat, reducing the resiliency of populations and limiting genetic diversity." One of the objectives of the draft HCP is to conserve 20 percent of the historic range of the California red-legged frog within Solano County which amounts to approximately 99 percent of the Jameson Canyon-Lower Napa River core recovery area.

The lack of species occurrence records in the California Natural Diversity Database (CNDDB) likely is the result of a lack of survey efforts in Jameson Canyon (CDFG 2010a; 2010b) because the majority of the land adjacent to the action area is in private ownership. The first California red-legged frog CNDDB record for Solano County was not recorded until 1993 (SWCA 2009). Caltrans did not conduct standardized or protocol frog or other wildlife surveys in the action area or a wildlife movement analysis to support their baseline analysis for the projects. Due to limited access, Caltrans and the Service used aerial photography and field observations from available access locations to independently identify available upland habitat for refugia and dispersal as well as potential riparian and aquatic habitat throughout the action area vicinity. As directed by the draft Solano HCP, regional surveys will be conducted for California red-legged frogs within the Jameson Canyon-Lower Napa River Core Recovery Area within two years of

adopting the final HCP and will continue every five years for the life of the HCP (SCWA 2009). There are two individual red-legged frog records less than 0.25-mile north of the action area near the intersection of State Route 12 and Redtop Road (CDFG 2010a; 2010b). The records are from 2003 and 2004 and are the result of surveys conducted for another road project. The CNDDB records identified red-legged frog breeding on the Mangel's Property. The identified breeding pond is likely an important source for the Solano County red-legged frog population.

It is likely that the California red-legged frog population along Jameson Canyon Road has been subject to a prolonged history of road mortality. There are no discernable barriers to prevent frogs from entering the existing roadway within the proposed project area. According to the traffic data on Caltrans' website, the annual average daily traffic on Jameson Canyon Road (monitored at the Napa/Solano County line) increased from 52,000 vehicles in 1992 to 62,000 in 2009 (http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm). This represents a 16 percent increase in daily traffic over a 17 year period. This indicates a history of significant traffic volume for this two-lane road. The draft Solano HCP concludes that any road with a volume exceeding 20 vehicles per hour constitutes a risk for significant roadkill that should be addressed with "safe" passage design features. Although traffic volumes drop after dark when frogs are more likely to be active, the 2009 data estimates 2,583 vehicles per hour. Of note, average daily traffic volumes on Jameson Canyon Road were 2,000 greater in 2006 and 3,000 greater in 2007 suggesting possible stabilization or declined over the past few years.
The existing Jameson Canyon Road is likely a significant fragmenting feature, not due to physical barriers but due to road mortality. Road mortality creates a semi-permeable barrier because some individual California red-legged frogs are likely to safely cross the roadway however, over time the increase in mortality risk can have a significant effect on population viability as the integrity of the larger population is disrupted and the recovery goals for the species in Solano County are compromised.

Without a road mortality study or movement analysis it is difficult to determine the "hot spots" for California red-legged frog movement across Jameson Canyon Road, and hence where increased road mortality risk would occur. The only roadkill data available to the Service for the action area has been uploaded to the University of California at Davis (UCD) Road Ecology Center's online California Roadkill Observation System (CROS) (http://www.wildlifecrossing.net/california/). The majority of CROS data is the result of episodic "citizen science" efforts rather than systematic and routine surveys of the roadway. Observations are typically made "from behind the wheel" and therefore primarily target easily identifiable mid to large-sized wildlife. Smaller species such as amphibians and reptiles are therefore underrepresented. Based on CROS from 2009 to January 2011, twenty-eight roadkill carcasses have been recorded for Jameson Canyon Road, between the Red Top Road and State Route 29 intersections (John Cleckler/Service personal communication with Fraser Shilling/UCD, January 27, 2011). Those carcasses include cattle egret, barn owls, Cooper's hawk, stripped skunk, raccoon, gray fox, coyote, and deer. The locations are distributed along the full length of Jameson Canyon Road with the highest concentration at the eastern third of the road widening project. This includes clusters of roadkill near the riparian habitat associated with the proposed 12x12-foot undercrossing and the Dittmer Property.

Given that both projects are either adjacent to Jameson Canyon Creek or within 0.5-mile of potential aquatic habitat and the lack of impermeable barriers it is difficult to discount the potential crossing in any give portion of the project alignment. California red-legged frogs do not appear to be limited to particular routes of travel but it is more likely that higher concentrations of traveling adults or dispersing juveniles would be found closer to aquatic features and riparian corridors. Based on the limited information regarding the nearby habitat functions it may be more likely to encounter a higher concentration of California red-legged frogs attempting to cross Jameson Canyon Road within 300 feet of aquatic and riparian habitat and established drainage crossings.

Culverts are often used as a solution to provide "safe" passage of amphibians across roadways. All of the existing culverts crossing under Jameson Canyon Road in the action area are designed to convey hydrology. Based on the modifications proposed in the project description, it is likely that at least half of these culverts are undersized for current hydrology. California red-legged frogs are most likely to move through upland habitat during seasonal rain events and would unlikely use culverts for passage when they are fully inundated. There are at least three existing cross culverts under State Route 29 and 16 under Jameson Canyon Road. Of them, there are nine pipe culverts with either an 18 or 24-inch diameter and nine culverts that range between a 3-foot diameter pipe to 10x6-foot box (Tables 1 and 2). The Service lacks data on the existing condition of these crossings and what wildlife species would be able to use them as "safe" passage. Unless buried in silt and/or debris or fully inundated with water, there is potential that the nine larger culverts listed in Table 2 provide baseline passage potential for the California red-legged frog.

Jameson Canyon Road includes an existing parallel Caltrans right-of-way (ROW) fence on both sides of the roadway but the fence is not designed to exclude California red-legged frogs from the roadway or direct them towards the nine "safe" crossings, therefore limiting the potential that frogs would use the culverts rather than move over the roadway. There are no existing median barriers on Jameson Canyon Road and there is one existing retaining wall immediately west of the Red Top Road intersection. This wall was constructed in 2009 as part of the Red Top Road Truck Climbing Lane Project. There are no street lights in the action area and limited ambient night lighting from low density housing and industrial operations.

The Service believes that the California red-legged frog is reasonably certain to occur within the action area because: (1) it is located within the species' range and current distribution; (2) suitable aquatic and riparian habitat intersect the action area in multiple locations; (3) the proximity of a confirmed breeding pond; (4) all the elements needed to support the species' life history are located within 0.5-mile of the action area; and (5) the biology and ecology of the animal, especially the ability of adults to move considerable distances.

Effects of the Proposed Action

The proposed State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects will likely adversely affect the threatened California red-legged frog during the construction and operational phases of each project.

Caltrans proposes to minimize construction related effects by implementing the *Conservation Measures* included in the project description section of this biological opinion. Effective implementation of *Conservation Measures* will likely minimize effects to the California red-legged frog but incidental take is still likely to occur. Therefore, the projects have the potential to result in a variety of adverse effects that would result in take of the California red-legged frog.

Construction could result in the killing, harming and/or harassment of juveniles and adults inhabiting areas of suitable aquatic and upland habitat. The projects as proposed in Caltrans revised project information and in the project description of this biological opinion would result in the removal of approximately 121.79 acres of California red-legged frog habitat. The Service has determined that the permanent and temporary loss and/or degradation of California red-legged frog habitat will result in the take of all frogs within these areas as a direct result of habitat loss.

During the construction phase of the projects, permanent and temporal loss of aquatic and upland habitat will result from the removal and/or disturbance of soil and vegetation within the project footprints. Construction noise, vibration, lighting used for possible night work, and increased human activity during the construction phase of the project may interfere with normal behaviors such as feeding, sheltering, movement between refugia and foraging grounds, and other frog essential behaviors. This can result in avoidance of areas that have suitable habitat but intolerable levels of disturbance.

Unless identified by the biological monitor or site personnel, and rescued by the biological monitor, individual California red-legged frogs exposed during excavations likely will be crushed and killed or injured by construction-related activities. Even with biological monitoring, overall awareness, and proper escape ramps, California red-legged frogs could fall into the trenches, pits, or other excavations, and then risk being directly killed or be unable to escape and be killed due to desiccation, entombment, or starvation. Proper trash disposal is often difficult to enforce on a large construction site and is a common non-compliance issue. Improperly disposed edible trash could attract predators, such as raccoons, crows, and ravens, to the sites, which could subsequently prey on the listed amphibian. Caltrans commitment to not use erosion control devices with mono-filament should be effective in avoiding the associated risk of entrapment that can result in death by predation, starvation, or desiccation (Stuart *et al.* 2001). Limiting initial ground disturbing activities between April 1 and November 1, 2012, primarily avoids the wettest time of year and the onset of the breeding season when frogs are more likely to be involved in upland dispersal. Caltrans will further minimize the effects by locating construction staging, storage and parking areas outside of sensitive habitat; clearly marking construction work boundaries with high-visibility fencing, conducting preconstruction surveys and environmental monitoring, and revegetating temporarily disturbed areas. The amount of take resulting from construction activities and the removal of habitat will be partially minimized by installing wildlife exclusion fencing to deter frogs from wandering onto construction sites; educating workers; and requiring a Service-approved biologist to be present to monitor construction activities.

If unrestricted, the proposed construction activities could result in the introduction of chemical contaminants to frog habitat. Exposure pathways could include inhalation, dermal contact, direct ingestion, or secondary ingestion of contaminated soil, plants or prey species. Exposure to contaminants could cause short- or long-term morbidity, possibly resulting in reduced productivity or mortality. However, Caltrans proposes to minimize these risks by implementing a stormwater pollution prevention plan (SWPPP), erosion control BMPs and a Spill Response Plan, which will consist of refueling, oiling or cleaning of vehicles and equipment a minimum of 65 feet from riparian and aquatic areas; installing coir rolls, straw wattles and/or silt fencing to capture sediment and prevent runoff or other harmful chemicals from entering the aquatic habitat; and locating staging, storage and parking areas away from aquatic habitat.

Preconstruction surveys and the relocation of individual California red-legged frogs may avoid injury or mortality; however, capturing and handling frogs may result in stress and/or inadvertent injury during handling, containment, and transport. Caltrans proposes to minimize these effects by using Service-approved biologists, limiting the duration of handling, and relocating amphibians to suitable nearby habitat in accordance with Service guidance.

If unrestricted, biologists and construction workers traveling to the action area from other project sites may transmit diseases by introducing contaminated equipment. The chance of a disease being introduced into a new area is greater today than in the past due to the increasing occurrences of disease throughout amphibian populations in California and the United States. It is possible that chytridiomycosis, caused by chytrid fungus, may exacerbate the effects of other diseases on amphibians or increase the sensitivity of the amphibian to environmental changes (e.g., water pH) that reduce normal immune response capabilities (Bosch *et al.* 2001, Weldon *et al.* 2004). Caltrans proposes to eliminate these risks by implementing proper decontamination procedures prior to and following aquatic surveys and handling amphibians. These will minimize the risk of transferring diseases through contaminated equipment or clothing. Proper handling and relocation of frogs out of construction areas increases the likelihood of their survival.

As described in *Conservation Measure 1*, Caltrans has proposed in-perpetuity preservation of 365.37 acres of high quality California red-legged frog habitat that will be located within the draft Solano HCP California Red-Legged Frog Conservation Area. Preserving frog habitat adjacent to Jameson Canyon Road would directly benefit the frog population otherwise subjected to adverse effects associated with the projects. Suitable preservation and management of locations such as the Dittmer Property would likely have considerable species conservation and recovery value. Securing habitat along Jameson Canyon Road is critical given the likelihood of future urbanization and agricultural land use changes. In combination with existing mosaic of local habitat-based conservation easements and future habitat acquisitions through the draft Solano HCP, the implementation of *Conservation Measure 1* is likely to promote the function of the Solano County critical habitat units and the first conservation need for the Jameson Canyon-Lower Napa River Core Recovery Area (protecting existing populations from current and future urbanization).

Other than preserving remaining habitat, the primary concern for California red-legged frog habitat in Solano County is maintaining connectivity across Jameson Canyon Road and Interstate 80. Amphibians are especially vulnerable to traffic mortality because they readily attempt to cross roads, are slow-moving and small, and cannot easily be detected or avoided by drivers (Carr and Fahrig 2001). Doubling the road width, installing a concrete median and increasing vehicle speed will intensify the baseline road effects by increasing the surface area for a frog to encounter a vehicle and introducing new, possibly insurmountable physical barriers. Connectivity within the Jameson Canyon-Lower Napa River Core Recovery Area and between critical habitat units SOL-3 and SOL-2 will be further compromised following the completion the proposed Interstate 80/Interstate 680/State Route 12 Interchange Project.

The installation of a concrete median will present a definitive barrier to California red-legged frog movement over the road. Caltrans plans to include a 9 inch radius scupper in the concrete median every 300 feet and a 2-foot wide opening in the barrier every 1,200 feet. Given the amount of traffic on Jameson Canyon Road it is unlikely that frogs will be able to successfully cross the road even if they do manage to find these openings.

The key to reducing road mortality and maintaining connectivity is to limit frogs' access to the roadway and redirect them to safe passage structures. This is more effectively achieved by placing barriers to frogs (such as jersey barriers, ERTECH's high UV E-Fence, or ACO's amphibian guide fence and stop grid) beyond the road shoulder. The proposed ROW fencing will be effective in excluding livestock from Jameson Canyon Road but is unlikely to deter frogs and other wildlife. The lack of such exclusion and directional features will result in California red-legged frogs crossing the roadway where they are more likely to be killed by vehicles. The construction of 1.95 miles of retaining walls along Jameson Canyon is likely to limit frog access on to the road. The ends of the walls will likely funnel animals to one end of seven of the cross culverts. However, in most locations the wall is limited to one side of the roadway thereby creating a barrier to frogs and other wildlife attempting to escape the roadway. Barriers are not effective as exclusion unless located on both sides of the roadway. The lack of wildlife fencing is likely to result in increased wildlife-vehicle collisions which may result in increased risk of property damage and human injury.

The greatest potential for providing safe passage across Jameson Canyon Road is by way of cross culverts. Caltrans plans to upsize nine existing culverts to a 36 inch diameter and install two new 36 inch diameter culverts under Jameson Canyon Road (Tables 1 and 2). In order to better accommodate frog passage, four of the proposed culvert replacements were upsized to exceed the hydrology design standards (Table 1). The dimension of the under-passage structures is considered one of the most important variables in the design of passage ways for vertebrates (Yanes *et al.* 1995; Rodriguez *et al.* 1996). Although no studies have determined a minimum width for the California red-legged frog, passages made for other small vertebrates, such as salamanders, must be wide and tall enough to enable animals to clearly see to the opposite end of the culvert, or there is lighting along the culvert provided by overhead grates or openings. It is unknown if red-legged frogs will use a 36 inch diameter corrugated culvert across a 77-foot wide or greater roadway that is not day-lighted, lacks a natural bottom, and does not have regular maintenance to prevent filling with sediment and debris. De Rivera and Bliss-Ketchum (2010)

detected bullfrogs using 18 and 24 inch diameter culverts across an approximately 60-foot wide roadway in Oregon and Woltz *et al.* (2008) determined that two *Rana* species (green and leopard frogs) preferred culverts that were at least approximately 20 inches in diameter or greater but were reluctant to use culverts that were 30 feet long. Condor Country Consulting, Inc. (2009) observed California red-legged frogs using only four-foot diameter or larger culverts to cross the two to three lane Vasco Road in Alameda County. It is difficult to determine if the proposed culvert upsizing will be an improvement over the existing "safe" crossing potential for Jameson Canyon Road. Sufficient culvert size is dependent upon culvert length therefore the 36 inch diameter may not be large enough to compensate for the approximate doubling of the crossing length.

Table 2 identified the additional nine existing box culverts with 3-foot diameter/ height or greater that will be extended at the existing dimension. These nine culverts have greater potential for continued frog passage. The proposed 12x12-foot box culvert to accommodate the Bay Ridge Trail has the greatest potential to provide frog and general wildlife passage. The trail culvert is located within the Jameson Canyon Creek riparian corridor and unlike the other culverts, is not associated with a drainage feature and will not convey hydrology. Crossings are not effective for terrestrial species and California red-legged frog passage when inundated with water. The existing culvert adjacent to the planned trail culvert was observed to be flooded by a perennial backwater pool on the south side of Jameson Canyon Road during the January 26, 2011, site visit. This made the culvert impassible for California red-legged frogs that likely utilize the dense riparian habitat and pool. The addition of the trail culvert will provide year-round upland passage for frogs and other wildlife such as deer, coyotes, and foxes. If the Bay Ridge Trail is completed to this crossing, recreational activities are unlikely to significantly affect wildlife use given that most species would utilize the crossing at night. There is no certainty that the Bay Ridge Trail will ever cross this location, therefore there is a possibility that the 12x12-foot box could function solely as a wildlife crossing.

Despite the suitability for passage, the potential use of the large culverts in Table 2 and the 12x12-foot trail culvert is likely dependent upon guidance barriers. It would be expected for California red-legged frogs to naturally move along drainage channels and riparian corridors that would lead them to culverts. However, studies indicate that it is typical for wildlife, including amphibians, to actively avoid undercrossings unless "forced" to use them (Condor Country Consulting, Inc. 2009; Patrick *et al.* 2010; de Rivera and Bliss-Ketchum 2010; Portland State University 2003; McAllister 2009, Gagnon 2009, Pagnucco 2009, Dodd 2009, WTI 2006, Boarman 1995, Sikich *et al.* 2009, Craighead Institute 2011). California red-legged frogs will often travel along riparian corridors but they are also known to disperse seemingly without regard for topography and habitat type. During their Vasco Road study, Condor Country Consulting, Inc. (2009) found roadkill California red-legged frogs to be randomly distributed along the road rather than clustered near drainage crossings and therefore recommended that continual directional fencing be installed between undercrossings. The Service has been unable to find any data to suggest that directional structures result in a significant increased risk of predation.

The long term viability of any designated wildlife crossing is questionable unless crossing locations and the habitat on both sides of the crossing are permanently set aside as open space or have a conservation easement or some other designation that limits development and land use. *Conservation Measure 1* should result in the preservation of habitat on the north side of a culvert crossing if the Dittmer Property is secured. Additional habitat acquisition associated with the intersection project, the Interstate 80/Interstate 680/State Route 12 Interchange Project, and the Draft Solano HCP will be directed towards the Solano HCP California Red-Legged Frog Conservation Area and should be targeted to include land adjacent to the Jameson Canyon Road culvert crossings.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The draft Solano HCP includes the eastern third of Jameson Canyon Road within its urban zone of covered activities. The Fairfield General Plan designates most of this area for planned development. Loss of additional California red-legged frog habitat and further fragmentation in this area due to non-Federal actions would result in cumulative effects to the California red-legged frog. Widening of Jameson Canyon Road may enhance this urban growth potential. The effects of the activities covered by the draft Solano HCP are addressed and mitigated through the HCP.

Conclusion

After reviewing the current status of the California red-legged frog, the environmental baseline for the action area; the effects of the proposed State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects and the cumulative effects; it is the Service's biological opinion that the projects, as proposed, are not likely to jeopardize the continued existence of this listed species. We based these determinations on the following: (1) pre-construction surveys will be conducted for California red-legged frogs and individuals found in the project work area will be relocated to nearby suitable habitat; (2) a Service-approved biologist will monitor all activities that may result in the take of listed species; (3) a compensation package has been developed that provides in-perpetuity management for 365.37 acres of California red-legged frog habitat within the draft Solano HCP California red-legged frog Conservation Area; (4) installation of a 12x12-foot box culvert that will be conducive to "safe" wildlife passage; and (5) other conservation measures, as described in the *Proposed Conservation Measures* of this biological opinion, that will be fully implemented by Caltrans.

INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, movement, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including movement, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by Caltrans so that they become binding conditions of any grant or permit issued to Caltrans as appropriate, in order for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity covered by this Incidental Take Statement. If Caltrans: (1) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document; and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect due to their small size, wariness, and cryptic nature. Finding an injured or dead California red-legged frog is unlikely because of their relatively small body size, rapid carcass deterioration, and likelihood that the remains will be removed by a scavenger. Losses of this species may also be difficult to quantify due to a lack of baseline survey data and seasonal/annual fluctuations in their numbers due to environmental or human-caused disturbances. There is a risk of harm, harassment, injury and mortality as a result of the proposed construction activities, the permanent and temporary loss/degradation of suitable habitat, and capture and relocation efforts; therefore, the Service is authorizing take incidental to the proposed action (combined projects) as: (1) the injury and mortality of no more than two adult or juvenile California red-legged frogs; and (2) the capture, harm and harassment of all California red-legged frogs within the 217.58-acre action area. Upon implementation of the following *Reasonable and Prudent Measures*, California red-legged frogs within the action area in proportion to the amount and type of take outlined above will become exempt from the prohibitions described under section 9 of the Act. No other forms of take are exempted under this opinion.

This biological opinion does not authorize take for Federal and non-Federal actions associated with use, operation, and maintenance of State Route 12, State Route 29, and the associated Caltrans ROW. Routine Caltrans' maintenance activities such as the removal/displacement of sand, silt, sediment, debris, rubbish, vegetation, and other obstruction flow; the control of weeds, grasses and emergent vegetation, minor repair of existing facilities, rip-rap replacement, and culvert replacement have the potential to result in take of the California red-legged frogs and are not authorized.

Effect of the Take

The Service has determined that this level of anticipated take for the California red-legged frog is not likely to jeopardize the continued existence of this species.

Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the effect of the proposed action on the California red-legged frog. Caltrans will be responsible for implementation of and compliance with these measures:

1. Caltrans will implement the Proposed Conservation Measures as described in this biological opinion; and

2. Caltrans will implement additional actions to minimize adverse effects to the California red-legged frog.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Caltrans shall ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

1. The following Terms and Conditions implement Reasonable and Prudent Measure one (1):

    a. Caltrans shall minimize the potential for harm, harassment, or killing of the California red-legged frog resulting from project related activities by implementing the conservation measures as described in the *Description of the Proposed Action* of this biological opinion.

    b. Caltrans shall require all contractors to comply with the Act in the performance of the action and shall perform the action as outlined in the *Description of the Proposed Action* of this biological opinion as provided by Caltrans in the November 2010 project description revision and all other supporting documentation submitted to the Service.

    c. Caltrans shall include language in their contracts that expressly requires contractors and subcontractors to work within the boundaries of the project footprints identified in this biological opinion, including vehicle parking, staging, laydown areas, and access roads.

2. The following Terms and Conditions implement Reasonable and Prudent Measure two (2):

   a. The Resident Engineer or their designee shall be responsible for implementing the conservation measures and Terms and Conditions of this biological opinion and shall be the point of contact for the project. The Resident Engineer or their designee shall maintain a copy of this biological opinion onsite whenever construction is taking place. Their name and telephone number shall be provided to the Service at least thirty (30) calendar days prior to groundbreaking at the two individual projects. Prior to ground breaking, the Resident Engineer must submit a letter to the Service verifying that they possess a copy of this biological opinion and have read the Terms and Conditions.
   b. A biologist shall be onsite to monitor the initial ground disturbance activities. The biologist shall perform a California red-legged frog clearance survey immediately prior to the initial ground disturbance. The biological monitor shall also investigate areas of disturbed soil for signs of California red-legged frogs within 30 minutes following the initial disturbance of that given area.

   c. Each California red-legged frog encounter shall be treated on a case-by-case basis in coordination with the Service but general guidance is as follows: (1) leave the non-injured frog if it is not in danger; or (2) move the frog to a nearby location if it is in danger.

      These two options are further described below.

      1. When a California red-legged frog is encountered in the action area the first priority is to stop all activities in the surrounding area that have the potential to result in the harm, harassment, injury, or death of the individual. Then the monitor needs to assess the situation in order to select a course of action that will minimize adverse effects to the individual. Contact the Service once the site is secure. The contacts for this situation are Ryan Olah (*ryan_olah@fws.gov*) or John Cleckler (*john_cleckler@fws.gov*). They can be reached at (916) 414-6600. If you get voicemail message for these contacts then contact John Cleckler on his cell phone at (916) 712-6784. The issue of contacting people on the weekend or after office hours is addressed later.

         The first priority is to avoid contact with the frog and allow it to move out of the action area and hazardous situation on its own to a safe location. The animal should not be picked up and moved because it is not moving fast enough or it is inconvenient for the construction activities. This guidance only applies to situations where a California red-legged frog is encountered on the move during conditions that make their upland travel feasible. This does not apply to California red-legged frogs that are uncovered or otherwise exposed or in areas where there is not sufficient adjacent habitat to support the life history of the California red-legged frog should they move outside the immediate area.

Avoidance is the preferred option if the California red-legged frog is not moving and is using aquatic habitat or is within some sort of burrow or other refugia. The area should be well marked for avoidance by construction and a Service-approved biological monitor should be assigned to the area when work is taking place nearby.

2. The animal should be captured and moved when it is the only option to prevent its death or injury.

   If appropriate habitat is located immediately adjacent to the capture location then the preferred option is short distance relocation to that habitat. This must be coordinated with the Service but the general guidance is the frog should not be moved outside of the radius it would have traveled on its own. Under no circumstances should a frog be relocated to another property without the owner's written permission. It is Caltrans' responsibility to arrange for that permission.

   The release must be coordinated with the Service and will depend on where the individual was found and the opportunities for nearby release. In most situations the release location is likely to be into the mouth of a small burrow or other suitable refugia and in certain circumstances pools without non-native predators may be suitable.

   Only Service-approved biologists for the project can capture California red-legged frogs. Nets or bare hands may be used to capture California red-legged frogs. Soaps, oils, creams, lotions, repellents, or solvents of any sort cannot be used on hands within two hours before and during periods when they are capturing and relocating California red-legged frogs. To avoid transferring disease or pathogens between sites during the course of surveys or handling of the frogs, Service-approved biologists must use the following guidance for disinfecting equipment and clothing. These recommendations are adapted from the Declining Amphibian Population Task Force's Code which can be found in their entirety at: http://www.open.ac.uk/daptf/

   1. All dirt and debris, including mud, snails, plant material (including fruits and seeds), and algae, must be removed from nets, traps, boots, vehicle tires and all other surfaces that have come into contact with water and/or an amphibian. Cleaned items should be rinsed with clean water before leaving each site.

   2. Boots, nets, traps, etc., must then be scrubbed with either a 70 percent ethanol solution, a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water), QUAT 128 (quaternary ammonium, use 1:60 dilution), or a 6 percent sodium hypochlorite 3 solution and rinsed clean with water between sites. Avoid cleaning equipment in the immediate vicinity of a pond or wetland. All traces of the disinfectant must be removed before entering the next aquatic habitat.

   3. Used cleaning materials (liquids, etc.) must be disposed of safely, and if necessary, taken back to the lab for proper disposal.

4. Service-approved biologists must limit the duration of handling and captivity. While in captivity, individual California red-legged frogs shall be kept in a cool, dark, moist, aerated environment, such as a clean and disinfected bucket or plastic container with a damp sponge. Containers used for holding or transporting should not contain any standing water.

d. Caltrans shall demonstrate measurable progress in providing the Service approved compensation prior to initiating construction on the State Route 12 Jameson Canyon Road Widening Project. Measurable progress shall be demonstrated by a site being selected with an option for its purchase in place. All compensation shall be secured, reviewed, and approved by the Service by completion of construction.

e. California red-legged frog habitat conservation shall be implemented within the boundaries of the draft/final Solano HCP California red-legged frog Conservation Area and shall be reviewed and approved by the Service, independent of the HCP process.

f. All native, woody riparian vegetation greater than a 1 inch diameter shall be replaced by new native riparian vegetation to achieve 3:1 replacement after five years.

g. Any revegetation plans shall be reviewed and approved by the Service. In addition, annual monitoring reports on the success of the plantings shall be provided to the Service.

h. If pumping is used for dewatering, intakes shall be completely screened with wire mesh no larger than 0.2 inches to prevent frogs from entering the pump.

i. The Service-approved biologist(s) shall permanently remove, from the project site, any exotic wildlife species, such as bullfrogs and crayfish, to the extent possible.

j. To minimize the fragmentation between the SOL-2 and SOL-3 critical habitat units and to maintain the recovery potential within the Jameson Canyon-Lower Napa River Core Recovery Area, Caltrans shall install barriers that will effectively deter entry onto Jameson Canyon Road and guide California red-legged frogs directly towards "safe" passage locations along the entire alignment for Jameson Canyon Road. This guidance system should tie-in to proposed retaining walls and other adequate existing or planned barriers. The barrier and guidance design shall be submitted for Service review and approval.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

The Service requests notification of the implementation of any conservation recommendations in order to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats. We propose the following conservation recommendations:

1. Enhancing habitat connectivity and wildlife passage across roads as well as reducing road effects should be included in the *Purpose and Need* section of environmental documents. FHWA agreed to coordinate with the Service on wildlife movement issues in a June 2, 2010, letter addressed to Mr. Greg Costello of the Western Environmental Law Center. As their NEPA delegate, Caltrans is expected to adopt the commitments made by FHWA to consider wildlife movement in transportation planning and project development.

2. Caltrans should include a wildlife passage section in their biological assessments that include an analysis of the existing passage and how the project will affect passage. The analysis should include identification of the species' resources on both sides of the project boundaries, an appropriately timed road mortality survey to identify "hot spots," and strategic locations where the species could benefit from the enhancement of an existing crossing or the installation of a new crossing. Caltrans should coordinate with their headquarters office and the University of California at Davis Road Ecology Center to develop a passage and road effects approach. Further guidance is provided by FHWA's *Wildlife Vehicle Collision Reduction Study* (available at: http://www.fhwa.dot.gov/environment/hconnect/wvc/index.htm) and Caltrans' Wildlife Crossings Guidance Manual (http://www.dot.ca.gov/hq/env/bio/wildlife_crossings/).

3. Efforts should be made to establish upland culverts designed specifically for wildlife movement rather than accommodations for hydrology. Transportation agencies should also acknowledge the value of enhancing human safety by providing safe passage for wildlife in their early project design.

4. Caltrans should use the internal system they have developed to keep track of road mortality records and the University of California at Davis, Road Ecology Center's California Roadkill Observation System (http://www.wildlifecrossing.net/california/). For reference, the Washington State Department of Transportation (DOT) developed a Wildlife Carcass Removal Database where they record information submitted by their maintenance crews (http://www.wsdot.wa.gov/Environment/Biology/bio_esa.htm). The importance of such a system is demonstrated by the public-access reporting system used in Idaho that resulted in more than double the previous DOT road mortality estimates (Kociolek 2009).

5. Caltrans should consider establishing functioning preservation and creation conservation banking systems to further the conservation of the California red-legged frog and other listed species. Such banking systems also may be utilized for other required mitigation (i.e., seasonal wetlands, riparian habitats, etc.) where appropriate. Efforts should be made to preserve habitat along roadways in association with wildlife crossings.

6. Caltrans should continue to pursue multifaceted compensation packages such as the one developed for the proposed U.S. Interstate 580/Isabel Avenue Interchange Construction Project (Service File No.: 1-1-07-F-0280) on future formal consultations with the Service.

7. Caltrans should continue to develop and implement their Early Statewide Biological Mitigation Planning Project that has been developed by the University of California at Davis, Road Ecology Center through Caltrans funding.

REINITIATION--CLOSING STATEMENT

This concludes formal consultation on the proposed State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, including work outside of the project footprint analyzed in this opinion and including vehicle parking, staging, lay down areas, and access roads; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion including use of rodenticides or herbicides; relocation of utilities; and use of vehicle parking, staging, lay down areas, and access roads; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

If you have any questions regarding this reinitiation of the biological opinion for the State Route 12 Jameson Canyon Road Widening and State Route 12/State Route 29 Interchange Improvement Projects, please contact John Cleckler or Ryan Olah at the letterhead address or at (916) 414-6600.

Sincerely,

Susan K. Moore
Field Supervisor

cc:

Scott Wilson, Greg Martinelli, and Melissa Escaron, California Department of Fish and Game, Yountville, California
Janet Adams, Solano Transportation Authority, Suisun City, California
Jim Leddy and John Ponte, Napa County Transportation and Planning Agency, Napa, California
Brendan Thompson, San Francisco Bay Regional Water Quality Control Board, Oakland, California
Frances Malamud-Roam, California Department of Transportation, Oakland, California
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