FOR CONTRACT NO: 04-2A6204
PROJECT ID: 0400000832

INFORMATION HANDOUT

WATER QUALITY

CENTRAL VALLEY RIGIONAL WATER QUALITY CONTROL BOARD
401 CERTIFICATION WDID NO. 5A48CR00114

PERMITS

U.S. ARMY CORPS OF ENGINEERS
PERMIT NO. SPK-2009-00309
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
INCIDENTAL TAKE PERMIT NO. 2081-2012-018-03
UNITED STATES FISH AND WILDLIFE SERVICE
PERMIT NO. 81420-2009-F-0152-4

AGREEMENTS

CALIFORNIA DEPARTMENT OF FISH AND GAME
FINAL LAKE AND STREAMBED ALTERATION AGREEMENT

MATERIALS INFORMATION

FOUNDATION REPORT FOR SHEET PILE
MATERIALS RECOMMENDATION FOR PS&E
PAVEMENT RECOMMENDATIONS
STORM WATER INFORMATION HANDOUT

ROUTE: 04-Sol-12-20.6/23.5

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

21 December 2012

Jason Mac
California Department of Transportation, District 4
111 Grand Avenue
Oakland, CA 94612

CERTIFIED MAIL
7011 2970 0003 8939 7318

CLEAN WATER ACT §401 TECHNICALLY CONDITIONED WATER QUALITY CERTIFICATION; CALIFORNIA DEPARTMENT OF TRANSPORTATION, SOLANO STATE ROUTE 12 SHOULDER WIDENING PROJECT (WDID#5A48CR00114), SOLANO COUNTY

This Order responds to your 7 November 2012 application submittal for the Water Quality Certification of a road widening project permanently impacting 0.059 acre and temporarily impacting 0.069 acre of waters of the United States and permanently impacting 0.04 acre and temporarily impacting 0.01 acre of waters of the State.

This Order serves as certification of the United States Army Corps of Engineers' Nationwide Permit #14 (SPK #2009-00309) under § 401 of the Clean Water Act, and a Waste Discharge Requirement under the Porter-Cologne Water Quality Control Act.

WATER QUALITY CERTIFICATION STANDARD CONDITIONS:

1. This Order serves as a Water Quality Certification (Certification) action that is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to § 13330 of the California Water Code and § 3867 of the California Code of Regulations.

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

3. The validity of any non-denial Certification action shall be conditioned upon total payment of the full fee required under § 3833 of the California Code of Regulations, unless otherwise stated in writing by the certifying agency.

4. This Certification is valid for the duration of the described project. This Certification is no longer valid if the project (as currently described) is modified, or coverage under § 404 of the Clean Water Act has expired.

5. All reports, notices, or other documents required by this Certification or requested by the Central Valley Regional Water Quality Control Board (Central Valley Water Board) shall be signed by a person described below or by a duly authorized representative of that person.

   (a) For a corporation: by a responsible corporate officer such as (1) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function; (2) any other person who performs similar policy or decision-making functions for the corporation; or (3) the manager of one or more manufacturing, production, or operating facilities if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
   (b) For a partnership or sole proprietorship: by a general partner or the proprietor.
   (c) For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.

6. Any person signing a document under Standard Condition number 5 shall make the following certification:

   "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 gathered and evaluated 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 there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

TECHNICAL CERTIFICATION CONDITIONS:

In addition to the above standard conditions, the California Department of Transportation shall satisfy the following:

1. The California Department of Transportation shall notify the Central Valley Water Board in writing 7 days in advance of the start of any work within waters of the United States and State. The notification shall include the name of the project and the WDID number, and shall be sent to the Central Valley Water Board Contact indicated in this Certification.

2. Except for activities permitted by the United States Army Corps of Engineers under § 404 of the Clean Water Act soil, silt, or other organic materials shall not be placed where such materials could pass into surface water or surface water drainage courses.

3. The California Department of Transportation shall maintain a copy of this Certification and supporting documentation (Project Information Sheet) at the Project site during construction for review by site personnel and agencies. All personnel (employees, contractors, and subcontractors) performing work on the proposed project shall be adequately informed and trained regarding the conditions of this Certification.

4. The California Department of Transportation shall perform surface water sampling: 1) when performing any in-water work; 2) in the event that project activities result in any materials reaching surface waters; or 3) when any activities result in the creation of a visible plume in surface waters. The monitoring requirements in Table 1 shall be conducted upstream out of the influence of the project, and 300 feet downstream of the work area. The sampling frequency may be modified for certain projects with written approval from Central Valley Water Board staff.

Table 1:

Parameter	Unit	Type of Sample	Minimum Sampling Frequency	Required Analytical Test Method
Turbidity	NTU	Grab(1)	Every 4 hours during in-water work	(2)
Settleable Material	mL/L	Grab(1)	Every 4 hours during in-water work	(2)
Visible construction related pollutants (3)	Observations	Visual Inspections	Continuous throughout the construction period	—
pH(4)	Standard Units	Grab(1)	Every 4 hours during in-water work	(2)

(1) Grab sample shall not be collected at the same time each day to get a complete representation of variations in the receiving water.
(2) Pollutants shall be analyzed using the analytical methods described in 40 Code of Federal Regulations Part 136; where no methods are specified for a given pollutant, method shall be approved by Central Valley Water Board staff.
(3) Visible construction-related pollutants include oil, grease, foam, fuel, petroleum products, and construction-related, excavated, organic or earthen materials.
(4) pH water quality monitoring is required due to the use of concrete and/or cement slurry within the project area.

A surface water monitoring report shall be submitted to the Central Valley Water Board Contact indicated in this Certification within two weeks of initiation of sampling and every two weeks thereafter. In reporting the monitoring data, the California Department of Transportation shall arrange the data in tabular form so that the sampling locations, date, constituents, and concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the project complies with Certification requirements. The report shall include surface water sampling results, visual observations,

and identification of the turbidity increase in the receiving water applicable to the natural turbidity conditions specified in the turbidity criteria below.

5. The Central Valley Water Board adopted a *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised October 2011 (Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Turbidity, settleable matter, and pH limits are based on water quality objectives contained in the Basin Plan and are part of this Certification as follows:

   A. Activities shall not cause turbidity increases in surface water to exceed:

      i. where natural turbidity is less than 1 Nephelometric Turbidity Units (NTUs), controllable factors shall not cause downstream turbidity to exceed 2 NTUs;
      ii. where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU;
      iii. where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent;
      iv. where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs; and
      v. where natural turbidty is greater than 100 NTUs, increases shall not exceed 10 percent.

      Except that these limits will be eased during in-water working periods to allow a turbidity increase of 15 NTUs over background turbidity. In determining compliance with the above limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. Averaging periods may only be used with prior approval of the Central Valley Water Board staff.

   B. Activities shall not cause settleable matter to exceed 0.1 mL/L in surface waters as measured in surface waters within 300 feet downstream of the project.

   C. Activities shall not cause pH to be depressed below 6.5 nor raised above 8.5 in surface water.

6. The California Department of Transportation shall notify the Central Valley Water Board immediately if the above criteria for turbidity, pH, and settleable matter or other water quality objectives are exceeded.

7. The discharge of petroleum products or other excavated materials to surface water is prohibited. Activities shall not cause visible oil, grease, or foam in the receiving water. The California Department of Transportation shall notify the Central Valley Water Board immediately of any spill of petroleum products or other organic or earthen materials.

8. The California Department of Transportation shall comply with all California Department of Fish and Game requirements, including but not limited to those requirements described in Lake or Streambed Alteration Agreement No.1600-2012-0213-R3.

9. The California Department of Transportation shall comply with all United States Fish and Wildlife Service requirements, including but not limited to those requirements described in Biological Opinion 81420-2009-F-0152-4, provided to the United States Army Corps of Engineers, dated 30 April 2010.

10. The use of netting material (e.g., monofilament-based erosion blankets) that could trap aquatic dependent wildlife is prohibited within the project area. (Figure 1 and Figure 2)

11. All temporarily affected areas will be restored to pre-construction contours and conditions upon completion of construction activities.

12. All areas disturbed by project activities shall be protected from washout or erosion.

13. In-stream work will occur during periods of low flow and no precipitation.

14. This Certification does not allow permanent water diversion of flow from the receiving water. This Certification is invalid if any water is permanently diverted as a part of the project.

15. Refueling of equipment within the floodplain or within 300 feet of the waterway is prohibited. If critical equipment must be refueled within 300 feet of the waterway, spill prevention and countermeasures must be implemented to avoid spills. Refueling areas shall be provided with secondary containment including drip pans and/or placement or absorbent material. No hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, or other construction-related potentially hazardous substances should be stored within a floodplain or within 300 feet of a waterway. The California Department of Transportation must perform frequent inspections of construction equipment prior to utilizing it near surface waters to ensure leaks from the equipment are not occurring and are not a threat to water quality.

16. The California Department of Transportation shall develop and maintain onsite a project-specific Spill Prevention, Containment and Cleanup Plan outlining the practices to prevent, minimize, and/or clean up potential spills during construction of the project. The Plan must detail the project elements, construction equipment types and location, access and staging and construction sequence. The Plan must also address the potential of responding to a spill or prevention of spills occurring within the project site.

17. If temporary surface water diversions and/or dewatering are anticipated, the California Department of Transportation shall develop and maintain on-site a Surface Water Diversion and/or Dewatering Plan(s). The Plan(s) shall include the proposed method and duration of diversion activities. The Surface Water Diversion and/or Dewatering Plan(s) must be consistent with this Certification.

18. When work in a flowing stream is unavoidable and any dam or other artificial obstruction is being constructed, maintained, or placed in operation, sufficient water shall at all times be allowed to pass downstream, to maintain beneficial uses of waters of the State below the dam. Construction, dewatering, and removal of temporary cofferdams shall not violate Technical Certification Condition 5 of this Certification.

19. Any temporary dam or other artificial obstruction constructed shall only be built from clean materials such as sandbags, gravel bags, water dams, or clean/washed gravel which will cause little or no siltation. Stream flow shall be temporarily diverted using gravity flow through temporary culverts/pipes or pumped around the work site with the use of hoses.

20. During construction, silt fencing, straw wattles, or other effective management practices must be used along the construction zone to minimize soil or sediment along the embankments from migrating into the waters of the United States and State.

21. Raw cement, concrete (or washing thereof), asphalt, drilling fluids, lubricants, paints, coating material, oil, petroleum products, or any other substances which could be hazardous to fish and wildlife resulting from or disturbed by project-related activities, shall be prevented from contaminating the soil and/or entering waters of the United States and State.

22. Concrete must completely be cured before coming into contact with waters of the United States and State. Surface water that contacts wet concrete must be pumped out and disposed of at an appropriate off-site commercial facility which is authorized to accept concrete wastes.

23. All materials resulting from the project shall be removed from the site and disposed of properly.

24. If unanticipated discharges to the waters of the United States and State, and/or soil occur, the California Department of Transportation shall notify the Central Valley Water Board Contact indicated in this Certification in writing within 5 calendar days of occurrence. Unanticipated discharges may include, but are not limited to, any construction materials, hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, raw cement, concrete, asphalt, paint, coating material, drilling fluids, or other construction-related potentially hazardous substances.

25. The California Department of Transportation shall obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities Order No. 2009-0009-DWQ for discharges to surface waters comprised of storm water associated with construction activity, including, but not limited to, demolition, clearing, grading, excavation, and other land disturbance activities of one or more acres, or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres.

26. The Conditions in this Certification are based on the information in the attached "Project Information Sheet." If the actual project, as described in the attached Project Information Sheet, is modified or changed, this Certification is no longer valid until amended by the Central Valley Water Board.

27. The California Department of Transportation shall implement each of the mitigation measures specified in the approved Negative Declaration for the project, as they pertain to biology, hydrology and water quality impacts as required by § 21081.6 of the Public Resource Code and CEQA Guidelines, § 15097 of the California Code of Regulations.

28. In the event of any violation or threatened violation of the conditions of this Certification, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under state and federal law. The applicability of any state law authorizing remedies, penalties, process, or sanctions for the violation or threatened violation constitutes a limitation necessary to ensure compliance with this Certification.

    (a) If the California Department of Transportation or a duly authorized representative of the project fails or refuses to furnish technical or monitoring reports, as required under this Certification, or falsifies any information provided in the monitoring reports, the applicant is subject to civil liability, for each day of violation, and/or criminal liability.

    (b) In response to a suspected violation of any condition of this Certification, the Central Valley Water Board may require the California Department of Transportation to furnish, under penalty of perjury, any technical or monitoring reports the Central Valley Water Board deems appropriate, provided that the burden, including cost of the reports, shall be in reasonable relationship to the need for the reports and the benefits to be obtained from the reports.

    (c) The California Department of Transportation shall allow the staff(s) of the Central Valley Water Board, or an authorized representative(s), upon the presentation of credentials and other documents, as may be required by law, to enter the project premises for inspection, including taking photographs and securing copies of project-related records, for the purpose of assuring compliance with this Certification and determining the ecological success of the project.

29. The California Department of Transportation shall provide a Notice of Completion (NOC) no later than 30 days after the project completion. The NOC shall demonstrate that the project has been carried out in accordance with the project's description in the Certification and in any amendments approved. The NOC shall include a map of the project location(s), including final boundaries of any on-site restoration area(s), if appropriate, and representative pre and post construction photographs. Each photograph shall include a descriptive title, date taken, photographic site, and photographic orientation.

CENTRAL VALLEY WATER BOARD CONTACT:

Trevor Cleak, Environmental Scientist
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114
tcleak@waterboards.ca.gov
(916) 464-4684

CALIFORNIA ENVIRONMENTAL QUALITY ACT:

The California Department of Transportation is the Lead Agency responsible for compliance with the California Environmental Quality Act for the Solano State Route 12 Shoulder Widening Project pursuant to § 21000 et seq. of the Public Resources Code. The California Department of Transportation certified a Negative Declaration on 31 August 2010 (State Clearinghouse Number 2009022028). The California Department of Transportation filed a Notice of Determination with the State Clearinghouse on 27 April 2011.

The Central Valley Water Board is a responsible agency for the project. The Central Valley Water Board has determined that the Negative Declaration is in accordance with the requirements of the California Environmental Quality Act and is valid pursuant § 21167.3(b) of the Public Resources Code.

WATER QUALITY CERTIFICATION:

I hereby issue an Order certifying that any discharge from the California Department of Transportation, Solano State Route 12 Shoulder Widening Project (WDID#5A48CR00114) will comply with the applicable provisions of § 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. This discharge is also regulated under State Water Resources Control Board Water Quality Order No. 2003-0017 DWQ "Statewide General Waste Discharge Requirements For Dredged Or Fill Discharges That Have Received State Water Quality Certification (General WDRs)".

Except insofar as may be modified by any preceding conditions, all Certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in compliance with the conditions of this Certification, the California Department of Transportation's application package, and the attached Project Information Sheet, and (b) compliance with all applicable requirements of the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised October 2011.

for Pamela C. Creedon
Executive Officer

Enclosure: Project Information

Attachment: Figure 1-Project Location Map (Segment A)
Figure 2-Project Location Map (Segment B)

cc: Distribution List, page 16

PROJECT INFORMATION SHEET

Application Date: 7 November 2012

Applicant: Jason Mac
California Department of Transportation, District 4
111 Grand Avenue
Oakland, CA 94612

Applicant Representatives: Cyrus Vafai
California Department of Transportation, District 4
111 Grand Avenue
Oakland, CA 94612

Project Name: Solano State Route 12 Shoulder Widening Project (Project)

Application Number: WDID#5A48CR00114

Type of Project: Road Widening

Timeframe of Project Implementation: January 2013 through January 2016

Project Location: Section 14-17, Township 2 North, Range 4 East, MDB&M.
Latitude: 38°11'00"N and Longitude: 121°16'08" W

County: Solano County

Receiving Water(s) (hydrologic unit): Wells Creek, Sacramento Joaquin Hydrologic Basin, Valley Putah-Cache Hydrologic Unit #511.10, Elmira HA

Water Body Type: Wetland, Agricultural Ditch

Designated Beneficial Uses: The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised October 2011 (Basin Plan) has designated beneficial uses for surface and ground waters within the region. Beneficial uses that could be impacted by the project include, but are not limited to: Municipal and Domestic Water Supply (MUN); Agricultural Supply (AGR); Industrial Supply (IND); Hydropower Generation (POW); Groundwater Recharge (GWR); Water Contact Recreation (REC-1); Non-Contact Water Recreation (REC-2); Warm Freshwater Habitat (WARM); Cold Freshwater Habitat (COLD); Preservation of Biological Habitats of Special Significance (BIOL); Rare, Threatened, or Endangered Species (RARE); Migration of Aquatic Organisms (MIGR); Spawning, Reproduction, and/or Early Development (SPWN); and Wildlife Habitat (WILD). A comprehensive and specific list of the Beneficial Uses applicable for the project area can be found at http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/index.shtml.

303(d) List of Water Quality Limited Segments: Well Creek is the receiving water for the Project. Well Creek is not listed on the 303(d) list. The project will not impact an already impaired water body. The most recent list of approved water quality limited segments can be found at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml.

Project Description: The Project involves modifications to State Route 12 from west of Liberty Island Road to west of Currie Road to allow for standard shoulder widths, clear recovery zone, left-turn pockets and improvements to vertical sight distances. The Project is located 3 miles northwest of Rio Vista, in Solano County.

Liberty Island Road to Azevedo Road (Segment A): Within a 1.1 mile stretch of State Route 12, between Liberty Island Road and Azevedo Road in Solano County, activities will include widening the existing shoulder on each side of the roadway to an eight foot standard width. Widening will require tree removal and extension of the box culvert at Well Creek. Widening will also require modifications of existing drainage features, including culverts and roadside ditches. Drainage improvements in Segment A include the replacement of six existing culverts and the extension of one existing culvert (Table 1).

Azevedo Road to Currie Road (Segment B): Drainage improvements in Segment B will include installation of three new culverts, replacement of four existing culverts, and extensions of one existing culvert located on a unnamed ephemeral drainage near McClosky Road (Table 1).

Table 1-Culverts to be Extended, Installed, Replaced or Relocated:

Segment	Station	Post Mile	Culvert ID**	Existing Type*	Existing Size	Repair Method
A	106+50	20.59	C-0	None	None	Install 12-inch APC
A	107+00	20.60	C-2	CMP	18"	Install 18-inch APC, remove 18-inch CMP
A	111+03	20.68	C-3	RCP	18"	Install 24-inch APC, remove 18-inch RCP
A	123+95	20.92	C-5	CMP	12"	Install 18-inch APC, remove 12-inch CMP
A	133+00	21.09	C-6	None	None	Install two 24-inch APC
A	134+88	21.13	C-7	RCB	10"x6"	Extend south and north
A	138+00	21.27	C-8	RCP	12"	Install 12-inch APC, remove 12-inch RCP

Segment	Station	Post Mile	Culvert ID**	Existing Type*	Existing Size	Repair Method
B	104+54 N	22.67	C-10	PPC	18"	Install 18-inch APC, remove 18-inch CMP
B	104+50 S	22.67	C-11	CMP	18"	Install 18-inch APC, remove 18-inch CMP
B	114+50	22.86	C-12	RCP	10"	Install 12-inch APC, remove 10-inch RCP
B	117+05	22.91	C-13	RCB	Double 10"x6"	Extend south and north
B	124+52	23.04	C-14	CMP	16"	Install 18-inch APC, remove 16-inch CMP
B	132+87	23.21	C-15	RCP	36"	Install 36-inch APC, remove 36-inch RCP
B	145+00	23.44	C-17	CMP	18"	Install 18-inch APC, remove 12-inch CMP

*APC =alternative pipe culvert; CMP=corrugated metal pipe; CSP=corrugated steel pipe; PPC=plastic pipe culvert; RCB=reinforced concrete box; RCP=reinforced concrete pipe
**Culverts are shown on Figures 1 and 2.

Box culvert extension will involve the placement of false work and concrete forms in the unnamed ephemeral drainage at McClosky Road and in Wells Creek. The box culverts extension will require the use of slurry and/or wet concrete and asphalt. This work will be completed between 15 May and 15 October of each construction year. Heavy equipment will not be staged within the unnamed ephemeral drainage at McClosky Road and within Wells Creek.

The Project will result in 0.069 acre of temporary impacts and 0.059 acre of permanent impacts to waters of the United States, and 0.01 acre of temporary impacts and 0.04 acre of permanent impacts to waters of the State.

Preliminary Water Quality Concerns: Construction activities may impact surface waters with increased turbidity and settleable matter.

Proposed Mitigation to Address Concerns: The California Department of Transportation will implement Best Management Practices to control sedimentation and erosion. All temporary affected areas will be restored to pre-construction contours and conditions upon completion of construction activities. The California Department of Transportation will conduct turbidity and

settleable matter testing during in-water work, stopping work if Basin Plan criteria are exceeded or are observed.

Excavation/Fill Area: Approximately 122.15 cubic yards of rock slope protection, native soil, alternative pipe culvert and concrete will be placed into 0.01 acre of waters of the United States and waters of the State.

Dredge Volume: None

United States Army Corps of Engineers File Number: SPK #2009-00309

United States Army Corps of Engineers Permit Type: Nationwide Permit #14

California Department of Fish and Game Lake or Streambed Alteration Agreement: 1600-2012-0213-R3.

Possible Listed Species: California tiger salamander

Status of CEQA Compliance: The California Department of Transportation approved a Negative Declaration on 31 August 2010. The California Department of Transportation filed a Notice of Determination with the State Clearinghouse on 27 April 2011 (State Clearinghouse Number 2009022028).

The Central Valley Water Board filed a Notice of Determination with the State Clearinghouse as a responsible agency within 5 days of the date of this Certification.

Compensatory Mitigation: The Central Valley Water Board is not requesting compensatory mitigation for the Project.

Application Fee Provided: Total fees of $ 1,431.00 have been submitted to the Central Valley Water Board as required by § 3833(b)(3)(A) and § 2200(a)(3) of the California Code of Regulations.

Figure 1 – Project Location (Segment A)

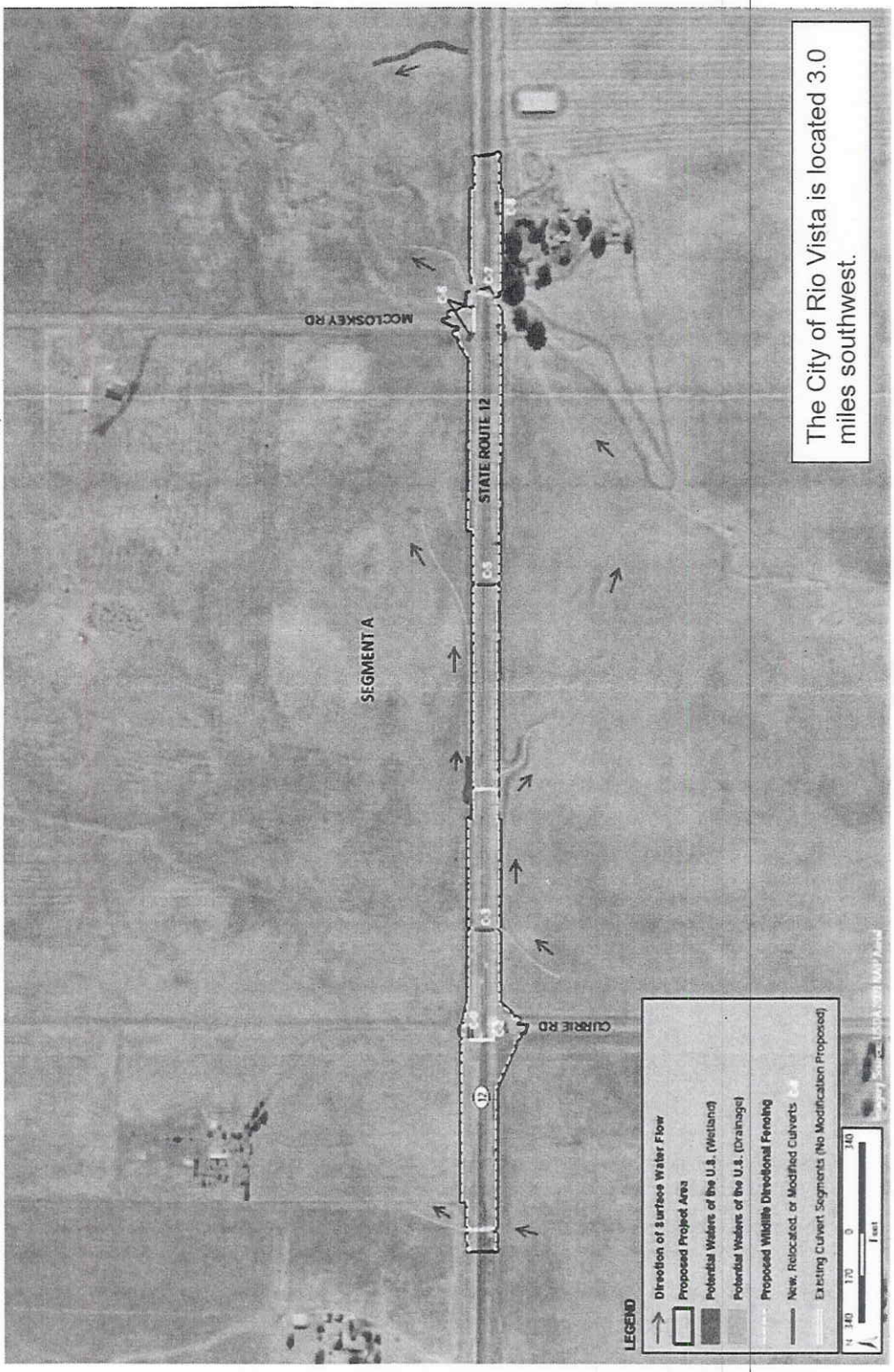
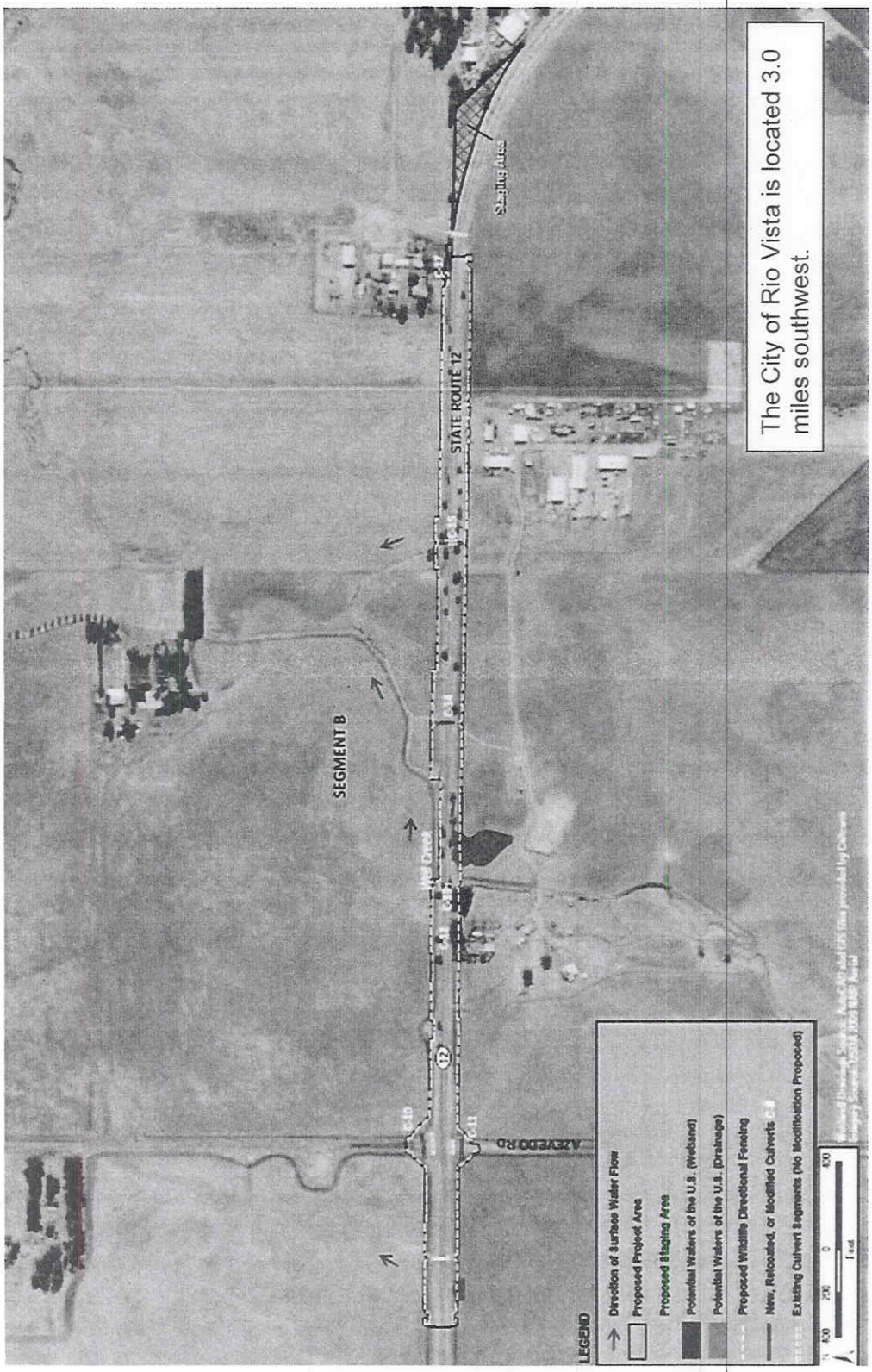


Figure 2- Project Location (Segment B)



DISTRIBUTION LIST

Marc Fugler
United States Army Corps of Engineers
Sacramento District Office
Regulatory Division
1325 J Street, Suite 1350
Sacramento, CA 95814-2922

Jim Starr
Department of Fish and Game
7329 Silverado Trail
Napa, CA 94558

Bill Jennings
CA Sportfishing Protection Alliance
3536 Rainier Avenue
Stockton, CA 95204

Bill Orme (Electronic copy only)
401 Certification and Wetlands Unit Chief
State Water Resources Control Board

Jason A. Brush (Electronic copy only)
Wetlands Office Supervisor (WTR-8)
United States Environmental Protection Agency

Cyrus Vafai
California Department of Transportation, District 4
111 Grand Avenue
Oakland, CA 94612

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

October 17, 2012

Regulatory Division (SPK-2009-00309)

California Department of Transportation
Attn: Mr. Jeffrey Jensen
111 Grand Avenue
Oakland, California 94623-0660

Dear Mr. Jensen:

We are responding to your August 17, 2012 request for a Department of the Army permit for the State Route (SR) 2 Liberty Island Road to Currie Road Shoulder Widening Project, Solano County. This approximately 38-acre project involves activities, including discharges of dredged or fill material, in waters of the United States to widen SR 12. The project is located along SR12, west of Rio Vista, along the Southern boundary of Sections 20, 21, 22, 23, Range 4 North, Township 2 East, Mount Diablo Meridian, Latitude 38.27042° North, Longitude 121.93189° West, in Solano County, California.

The proposed road widening would occur within two segments along SR 12. Segment A is an approximately 0.7 mile section of roadway from just east of McClosky Road, west to just beyond Currie Road. Work within Segment A would involve widening of the road, the replacement of four existing culverts and the extension of one existing culvert. The proposed widening of SR 12 within Segment A would result in the discharge of fill material into 0.0386 acre of waters of the U.S., including 0.024 acre of roadside ditches, 0.014 acre of ephemeral drainages and 0.0006 acre of wetland. Segment B is an approximately 1.1 mile section of roadway between Liberty Island Road and Azevedo Road. Work within Segment A would involve widening of the road, the replacement of six existing culverts and the extension of on existing culvert. The proposed widening of SR 12 within Segment B would result in the discharge of fill material into 0.050 acre of waters of the U.S., including 0.003 acre of roadside ditches, 0.012 acre of ephemeral drainages and 0.035 acre of wetlands. Construction of Segments A and B would also result in temporary impacts to 0.160 acre of waters of the U.S. due to the construction of cofferdams and indirect impacts associated with road widening.

Based on the information you provided, the proposed activity, resulting in the permanent loss of 0.09 acre of waters of the U.S. and temporary impacts to 0.160 acre of waters of the U.S., is authorized by Nationwide Permit Number 14 (*Linear Transportation Projects*). **However, until Section 401 Water Quality Certification for the activity has been issued or waived, our authorization is denied without prejudice. Once you have provided us evidence of water quality certification, the activity is authorized and the work may proceed subject to the conditions of certification and the Nationwide Permit.**

Furthermore, we understand the State of California, Department of Transportation (Caltrans), acting on behalf of the Federal Highway Administration (FHWA), is the National Environmental Policy Act (NEPA) lead Federal agency for this project, and as such, will ensure the authorized work complies with the NEPA, the Endangered Species Act, the National Historical Preservation Act, and any other applicable federal laws. Your work must comply with the general terms and conditions listed on the enclosed Nationwide Permit information sheets and the enclosed *Final Sacramento District Regional Conditions for California* (regional conditions). Please pay particular attention to general conditions **2, 4, 6, 9-14, 17, 19, 21, 25, 27, 29** and **30** and regional conditions **5, 6-14**. In addition, your work must comply with the following special conditions:

Special Conditions

1. To mitigate for the loss of 0.026 acre of ephemeral drainage and 0.0356 acre of seasonal wetlands, you shall purchase 0.0616 credits of seasonal wetland creation habitat at a Corps approved mitigation bank. The selected mitigation bank shall include the area of the permitted project within its service area. Evidence of this purchase shall be provided to the Corps prior to initiation of construction activities within waters of the U.S.

2. In order to mitigate for the loss of 0.028 (1,081 linear feet) of roadside ditch, you shall re-construct 0.028 acre of roadside ditches within the project area. The construction of the roadside ditches shall be conducted before or concurrent with impacts to waters of the U.S.

3. You shall implement the avoidance and minimization measures (including Pre- and Post-Construction Best Management Practices (BMPs)) as described on pages 22 through 30 of the enclosed *Attachment 1: Nationwide Permit Application Supplemental Information0*, which are incorporated by reference as a condition of this verification.

4. You shall restore all temporary impacts to waters of the U.S. and adjacent upland areas to their original contour and condition within 30 days following completion of construction activities. In order to ensure compliance with this condition, you shall:

a. Prior to initiation of any construction activities within waters of the U.S., submit to this office, for review and approval, a plan for the restoration of temporary impact areas prior to initiation of any construction activities. You shall include the following information within this plan:

i. Design drawings showing the existing contours (elevation) and existing vegetation of the temporary impact areas. This information shall include site photographs taken of the temporary impact areas. For linear projects, these photographs shall be taken from the alignment, in both directions;

ii. A statement which includes the description of the proposed restoration activities and the methods used to restore the site to the original contour and conditions; and

b. Within 30 days following completion of restoration activities, submit to this office a report describing the restoration activities including color photographs of the restored area. The compass angle and position of all photographs shall be similar to pre-construction photographs and shall be identified on an aerial photo or plan-view drawing.

c. Monitor the area for a minimum of one year following restoration activities. You shall submit a monitoring report of the restored areas by October 1 of the monitoring year. This report shall provide photo-documentation of all restored waters of the U.S.

5. You shall notify this office of any proposed modifications to the project, including revisions to any of the work plans or documents cited in this authorization, for review and approval prior to construction work associated with the proposed modification(s).

6. Prior to any work in waters of the U.S., you shall submit to this office, for review and acceptance, all design plans, maps, and/or drawings which outline or detail the activities authorized by this DA permit, including but not limited to; de-watering, grading, access, Disposal, Staging, and Borrow (DSB), and Environmentally Sensitive Areas (ESA). Plans, maps and/or drawings may be submitted electronically to regulatory-info@usace.army.mil.

7. If for any reason there is a violation of any of the terms and conditions of this permit, or if unauthorized activities occur within waters of the U.S. shall stop work immediately and notify this office. You shall provide us with a detailed description of the unauthorized activity(s), photo documentation, and any measures taken to remedy the unauthorized activities.

8. This verification does not authorize you to take an endangered species, in particular California tiger salamander (*Ambystoma californiense*), or their designated critical habitat. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (e.g., an Endangered Species Act Section 10 permit, or a Biological Opinion under Endangered Species Act Section 7, with "incidental take" provisions with which you must comply). The enclosed Fish and Wildlife Service Biological Opinion (Number 81420-2009-F-0152-4, dated April 30, 2010), contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the Biological Opinion. Your authorization under this Nationwide Permit is conditional upon your compliance with all of the mandatory terms and conditions associated with "incidental take" of the attached Biological Opinion, which terms and conditions are incorporated by reference. Failure to comply with the terms and conditions associated with incidental take of the Biological Opinion, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. The U. S. Fish and Wildlife Service is the appropriate authority to determine compliance with the terms and conditions of its Biological Opinion, and with the Endangered Species Act. You must comply with all conditions of the enclosed Biological Opinion, including those ascribed to Caltrans on behalf of the FHWA.

You must sign the enclosed Compliance Certification and return it to this office within 30 days after completion of the authorized work.

This verification is valid for two years from the date of this letter or until the Nationwide Permit is modified, reissued, or revoked, whichever comes first. Failure to comply with the General and Regional Conditions of this Nationwide Permit, or the project-specific Special Conditions of this authorization, may result in the suspension or revocation of your authorization.

We would appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer survey on our website under *Customer Service Survey*.

Please refer to identification number SPK-2009-00309 in any correspondence concerning this project. If you have any questions, please contact Lisa Gibson at 1325 J Street, Room 1350, Sacramento, California 95814-2922, email *Lisa.M.Gibson2@usace.army.mil*, or telephone 916-557-5288. For more information regarding our program, please visit our website at *www.spk.usace.army.mil/Missions/Regulatory.aspx*.

Sincerely,

for

Kathleen A. Dadey
Chief, California Delta Branch

Enclosures

Copies Furnished without enclosures:

Mr. Ryan Olah, Endangered Species Division, U.S. Fish and Wildlife Service, 2800 Cottage Way, Suite W2605, Sacramento, California 95825-3901

Mr. Paul Jones, U.S. Environmental Protection Agency, Region IX, Wetlands Regulatory Office (WTR-8), 75 Hawthorne Street, San Francisco, California 94105-3901

Mr. Kent Smith, California Department of Fish and Game, Region 2, 1701 Nimbus Road, Rancho Cordova, California 95670-4599

Ms. Elizabeth Lee, Storm Water and Water Quality Certification Unit, Central Valley Regional Water Quality Control Board, 11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114

COMPLIANCE CERTIFICATION

Permit File Number: SPK-2009-00309

Nationwide Permit Number: 14, Linear Transportation Projects

Permittee: California Department of Transportation
Attn: Mr. Jeffrey Jensen
111 Grand Avenue
Oakland, California 94623-0660

County: Solano

Date of Verification: October 17, 2012

Within 30 days after completion of the activity authorized by this permit, sign this certification and return it to the following address:

U.S. Army Corps of Engineers
Sacramento District

DLL-CESPK-RD-Compliance@usace.army.mil

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the terms and conditions of the permit your authorization may be suspended, modified, or revoked. If you have any questions about this certification, please contact the Corps of Engineers.

* * * * * * * * *

I hereby certify that the work authorized by the above-referenced permit, including all the required mitigation, was completed in accordance with the terms and conditions of the permit verification.

_____ _____
Signature of Permittee Date

California Department of Fish and Wildlife
Bay Delta Region
7329 SILVERADO TRAIL
NAPA, CA 94558

California Endangered Species Act
Incidental Take Permit No. 2081-2012-018-03

SOLANO STATE ROUTE 12 SHOULDER WIDENING AND CLEAR RECOVERY ZONE PROJECT

Authority: This California Endangered Species Act (CESA) Incidental Take Permit (ITP) is issued by the Department of Fish and Wildlife (CDFW) pursuant to Fish and Game Code section 2081, subdivisions (b) and (c), and California Code of Regulations, Title 14, section 783.0 et seq. CESA prohibits the take[1] of any species of wildlife designated by the California Fish and Game Commission as an endangered, threatened, or candidate species.[2] CDFW, however, may authorize the take of any such species by permit if the conditions set forth in Fish and Game Code section 2081, subdivisions (b) and (c) are met. (See also Cal. Code Regs., tit. 14, § 783.4).

Permittee:	**State of California, Department of Transportation**
Principal Officer:	**Jason Mac, Project Manager**
Contact Person:	**Christopher States, (510) 286-7185**
Mailing Address:	**111 Grand Avenue** **Oakland, CA 94612**

Effective Date and Expiration Date of this ITP:

This ITP shall be executed in duplicate original form and shall become effective once a duplicate original is acknowledged by signature of the Permittee on the last page of this ITP and returned to CDFW's Habitat Conservation Planning Branch at the address listed in the Notices section of this ITP. Unless renewed by CDFW, this ITP's authorization to take the Covered Species shall expire on **December 31, 2017**.

Notwithstanding the expiration date on the take authorization provided by this ITP, Permittee's obligations pursuant to this ITP do not end until CDFW accepts as complete the Permittee's Final Mitigation Report required by Condition 6.7 of this ITP.

[1] Pursuant to Fish and Game Code section 86, "'Take' means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill."

[2] "Candidate species" are species of wildlife that have not yet been placed on the list of endangered species or the list of threatened species, but which are under formal consideration for listing pursuant to Fish and Game Code section 2074.2.

Project Location:

The proposed project spans a 3.1-mile distance of State Route (SR) 12, beginning just west of Currie Road and ending west of Liberty Island Road in the southeastern portion of Solano County (Figure 1).

Project Description:

The California Department of Transportation (Caltrans) proposes to modify the SR 12 roadway from west of Liberty Island Road to west of Currie Road to allow for the addition of standard shoulder widths, a clear recovery zone, left turn pockets at three intersections, and the improvement of existing non-standard vertical sight distances by reconstructing the roadway profile at Post Miles (PM) 21.3, 23.1, and 23.2. The Project area is divided into two distinct segments, A and B (Figure 2).

McClosky Road to Currie Road (Segment A)

The approximately 0.7-mile section of roadway from just east of McClosky Road to just beyond Currie Road, referred to herein as Segment A, already has standard 8-foot shoulders and widening will not be necessary. Left turn lanes will be added in this segment at Currie Road (PM 20.6 to 20.75) and McClosky Road (PM 21.15 to 21.3). Non-standard vertical sight distances will be corrected at PM 21.3 by reconstructing the roadway vertical profile. Work within Segment A will not require tree removal. Work within this segment will include the installation of two new culverts, replacement of three existing culverts, and the extension of one existing culvert at McClosky Road. The existing 10-foot by 6-foot concrete box culvert located at McClosky Road will be extended to accommodate the new roadway width. The extension will require excavation of the existing creek bed on either side of the existing culvert to install the extension flush with the existing culvert grade. The culvert extension will involve the placement of false work and concrete forms in the drainage at McClosky Road. Rock slope protection will be installed at the outfalls. Staging for the Project is available within the Caltrans right-of-way, and may occur both within the construction limits and in a triangular area at the eastern end of the Project Area near Liberty Island Road.

Liberty Island Road to Azevedo Road (Segment B)

Construction activities within the approximately 1.1-mile stretch of road between Liberty Island Road and Azevedo Road, referred to herein as Segment B, will include widening of the existing road shoulder on each side of the roadway to an 8-foot standard width. Segment B work will improve existing non-standard vertical sight distances by reconstructing the roadway profile at PM 23.1 and 23.2. Widening will involve the removal of approximately 44 trees. Roadway widening in this segment will include the replacement of five existing culverts, the extension of two existing culverts, and the re-establishment of longitudinal roadside ditches. The culvert extension at Well Creek will require excavation of the creek bed on either side of the existing culvert to match the grade. A sheet pile retaining wall will be installed on the east side of the Well Creek box culvert to minimize intrusion of the roadway widening into the creek. The culvert extension will involve the placement of false work and concrete forms in the drainage. Left turn lanes will be added at Azevedo Road. Staging for the Project is available within the Caltrans right-

of-way and at an existing large gravel turnout area on the east end of the Project near Liberty Island Road.

Utilities Relocations
The proposed Project is expected to include utility relocation. Underground gas lines, telecommunication fiber optic lines, and electrical lines currently located in the Caltrans right-of-way may need to be relocated to accommodate the proposed roadway widening. Caltrans has calculated the areas expected to be disturbed by utilities relocations based on standard relocation requirements. Caltrans will notify CDFW of changes to the utilities relocations plans that may impact Covered Species, these impacts will be addressed through an amendment to this ITP.

Wildlife Exclusion Fencing
Prior to ground or vegetation disturbance activities, Caltrans will install wildlife exclusion fencing to prevent Covered Species from gaining access to the Project Area. The exclusionary fencing shall extend a minimum of the length of the Project area and shall terminate in such a way that Covered Species are unlikely to gain access to the Project Area.

Wildlife Directional Fencing
After construction is completed, Caltrans will install wildlife directional fencing in an effort to prevent Covered Species roadway mortality by redirecting Covered Species to culverts for safe crossing under SR 12.

Project Components:

- Staging
- Water diversions
- Culvert work
- Utility relocations
- Roadway resurfacing
- Temporary traffic realignment
- Placement of asphaltic concrete
- Replacement of median barrier
- Restriping
- Installation of bio-filtration strips
- Construction site restoration
- Installation of wildlife directional fencing

Equipment
Construction equipment that will likely be needed to complete the proposed Project includes graders, excavators, a crane, a vibratory sheet pile driver, an asphalt drum grinder, transfer and bottom dump semi-trucks and trailers, lowboy-style trucks and trailers, cement trucks, Gradall-style articulating 4-wheel-drive forklifts, front-end loaders, vibramatic rollers, a hydro-seeding truck rig, and various pick-up trucks.

Schedule
Caltrans plans to begin construction in the fall of 2013, and the work is expected to take approximately 15 to 18 months.

Covered Species Subject to Take Authorization Provided by this ITP:

This ITP covers the following species:

Name	**CESA Status**[3]
1. California tiger salamander (*Ambystoma californiense*)	Threatened[4]

This species and only this species is hereinafter referred to as "Covered Species."

Impacts of the Taking on Covered Species:

Project activities and their resulting impacts are expected to result in the incidental take of individuals of the Covered Species. The activities described above that are expected to result in incidental take of individuals of the Covered Species include clearing and grubbing, grading, trench digging, pile driving, compaction, tree removal, night work, paving, excavation, dumping, stockpiling, material storage, staging, operation of heavy equipment, boring, concrete forming and pouring, and falsework installation (Covered Activities). Incidental take of individuals of the Covered Species may occur from the Covered Activities in the form of mortality ("kill") from crushing, entombing underground, predation, desiccation, or starvation. Incidental take of individuals of the Covered Species may also occur from the Covered Activities in the form of pursue, catch, capture, or attempt to do so, of the Covered Species from capture and relocation activities. Take could occur in the areas proposed for the new alignment construction, the construction access areas, and staging area, as illustrated by Figure 3, and referred to herein as the Project Area. The Project will impact 13.01 acres of habitat for the Covered Species. Impacts of the proposed taking also include adverse impacts to the Covered Species related to temporal losses, and the Project's incremental contribution to cumulative impacts (indirect impacts). These impacts include: stress resulting from construction noise, vibration, capture and relocation, obstruction of dispersal patterns, fatal injury, and long-term effects due to decreased habitat. The Project is expected to take 18 months to complete, and the Permittee has requested approval to construct this project year-round. Both temporary and permanent impacts have been treated equally for the purposes of determining compensation mitigation.

Incidental Take Authorization of Covered Species:

This ITP authorizes incidental take of the Covered Species and only the Covered Species. With respect to incidental take of the Covered Species, CDFW authorizes the Permittee, its

[3] Under CESA, a species may be on the list of endangered species, the list of threatened species, or the list of candidate species. All other species are "unlisted."
[4] See Cal. Code Regs. tit. 14 § 670.5, subd. (b)(3)(G).

employees, contractors, and agents to take Covered Species incidentally in carrying out the Covered Activities, subject to the limitations described in this section and the Conditions of Approval identified below. This ITP does not authorize take of Covered Species from activities outside the scope of the Covered Activities, take of Covered Species outside of the Project Area, take of Covered Species resulting from violation of this ITP, or intentional take of Covered Species except for capture and relocation of Covered Species as authorized by this ITP.

Conditions of Approval:

Unless specified otherwise, the following measures shall pertain to all Covered Activities within the Project Area, including areas used including areas used for vehicular ingress and egress, staging and parking, and noise and vibration generating activities that may cause take. CDFW's issuance of this ITP and Permittee's authorization to take the Covered Species are subject to Permittee's compliance with and implementation of the following Conditions of Approval:

1. **Legal Compliance:** Permittee shall comply with all applicable State, federal, and local laws in existence on the effective date of this ITP or adopted thereafter.

2. **CEQA Compliance:** Permittee shall implement and adhere to the mitigation measures related to the Covered Species in the Biological Resources section of the Mitigated Negative Declaration and Initial Study (SCH Number: 2009022028) adopted by the lead agency, California Department of Transportation, for the Project pursuant to the California Environmental Quality Act (CEQA) on August 31, 2010.

3. **ESA Compliance:** Permittee shall implement and adhere to the terms and conditions related to the Covered Species in the Biological Opinion for the Solano Highway 12, Currie Road to Liberty Island Road Shoulder Widening Project, Solano County, California (Caltrans EA 2A620) on the Threatened Central Valley Distinct Population Segment of the California Tiger Salamander (#81420-2009-F-0152-4) for the Project pursuant to the Federal Endangered Species Act (ESA), unless those terms and conditions are less protective of the Covered Species or conflict with the conditions of this ITP.

4. **ITP Time Frame Compliance:** Permittee shall fully implement and adhere to the conditions of this ITP within the time frames set forth below and as set forth in the Mitigation Monitoring and Reporting Program (MMRP), which is included as Attachment 1 to this ITP.

5. **General Provisions:**

   5.1. Designated Representative. Before starting Covered Activities, Permittee shall designate a representative (Designated Representative) responsible for communications with CDFW and overseeing compliance with this ITP. Permittee shall notify CDFW in writing before starting Covered Activities of the Designated Representative's name, business address, and contact information, and shall notify CDFW in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.

5.2. Designated Biologist. Permittee shall submit to CDFW in writing the name, qualifications, business address, and contact information of all biological monitors (Designated Biologists) at least 30 days before starting Covered Activities. Permittee shall ensure that Designated Biologists are knowledgeable and experienced in the biology, natural history, collecting and handling of the Covered Species. The Designated Biologists shall be responsible for monitoring Covered Activities to help minimize and fully mitigate or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain CDFW approval of Designated Biologists in writing before starting Covered Activities, and shall also obtain approval in advance in writing if Designated Biologists must be changed.

5.3. Designated Biologists Authority. To ensure compliance with the Conditions of Approval of this ITP, Designated Biologists shall communicate to the Resident Engineer any activity that is not in compliance with this ITP and the Resident Engineer shall immediately stop the activity that is not in compliance with this ITP. This authority extends to all utility relocation work, including Pacific Gas and Electric Company.

5.4. Education Program. Permittee shall conduct an education program for all persons employed or otherwise working in the Project Area before performing any work. The program shall consist of a presentation from a Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status pursuant to CESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided for any new workers before their performing work in the Project Area. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Project Area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures.

5.5. Construction Monitoring Notebook. Designated Biologists shall maintain a construction-monitoring notebook on-site throughout the construction period which shall include a copy of this ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring notebook is available for review at the Project site upon request by CDFW.

5.6. Trash Abatement. Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in closed (animal-proof) containers and removed regularly (at least once a week) to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs.

5.7. Dust Control. Permittee shall implement dust control measures during Covered Activities to facilitate visibility for monitoring of the Covered Species by Designated Biologists. Permittee shall keep the amount of water used to the minimum amount needed, and shall not allow water to form puddles.

5.8. Erosion Control Materials. Permittee shall prohibit use of erosion control materials potentially harmful to Covered Species and other species, such as mono-filament netting (erosion control matting) or similar material.

5.9. Delineation of Property Boundaries. Before starting Covered Activities along each part of the route in active construction, Permittee shall clearly delineate the boundaries of the Project Area with fencing, stakes or flags. Permittee shall restrict all Covered Activities to within the fenced, staked or flagged areas. Permittee shall maintain all fencing, stakes and flags until the completion of Covered Activities in that area.

5.10. Delineation of Habitat. Permittee shall clearly delineate habitat of the Covered Species within the Project Area with high visibility environmentally sensitive area fencing as necessary to minimize the disturbance of Covered Species' habitat.

5.11. Project Access. Project-related personnel shall access the Project Area using existing routes, or routes identified in the Project Description, and shall not cross Covered Species' habitat outside of or en route to the Project Area. Permittee shall restrict Project-related vehicle traffic to established roads, staging, and parking areas. Permittee shall ensure that vehicle speeds do not exceed 20 miles per hour on unpaved roads to avoid Covered Species on or traversing the roads. If Permittee determines construction of routes for travel are necessary outside of the Project Area, the Designated Representative shall contact CDFW for written approval before carrying out such an activity. CDFW may require an amendment to this ITP if additional take of Covered Species may result from Project modification.

5.12. Staging Areas. Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project Area using, to the extent possible, previously disturbed areas.

5.13. Hazardous Waste. Permittee shall immediately stop and following pertinent State and federal statutes and regulations arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the Project Area and shall properly contain and dispose of any unused or leftover hazardous products off-site.

5.14. CDFW Access. Permittee shall provide CDFW staff with reasonable access to the Project and mitigation lands under Permittee control, and shall otherwise cooperate

with CDFW efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.

5.15. Refuse Removal. Upon completion of Covered Activities, Permittee shall remove from the Project Area and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.

6. Monitoring, Notification and Reporting Provisions:

6.1. Notification Before Commencement. The Designated Representative shall notify CDFW 14 calendar days before starting Covered Activities and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.

6.2. Notification of Non-compliance. The Designated Representative shall immediately notify CDFW in writing if it determines that the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP and/or the MMRP. The Designated Representative shall report any non-compliance with this ITP to CDFW within 24 hours.

6.3. Compliance Monitoring. A Designated Biologist shall be on-site daily when Covered Activities occur. Designated Biologists shall conduct compliance inspections to (1) minimize incidental take of the Covered Species; (2) prevent unlawful take of species; (3) check for compliance with all measures of this ITP; (4) check all exclusion zones; and (5) ensure that signs, stakes, and fencing are intact, and that Covered Activities are only occurring in the Project Area. The Designated Representative or a Designated Biologist shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by this ITP. Designated Biologists shall conduct weekly compliance inspections during periods of inactivity and after clearing, grubbing, and grading are completed.

6.4. Photographic Documentation of Covered Activities. Prior to commencement of work, Permittee shall flag a minimum of one photo point every 1/8 of a mile along the Project alignment. The photo points shall provide comprehensive views of the Project Area and any Covered Species habitat that would be impacted by the Project. Prior to construction, Permittee shall photograph the Project Area from each of the flagged points, noting the direction and magnification of each photo. Permittee shall photograph construction activities before, during, and after construction activities from flagged photo points using the same direction and magnification as pre-construction photos. Labeled copies of photographs taken at each photo point shall be sent to CDFW as a component of required Quarterly compliance reports (see Condition 6.5).

6.5. Quarterly Compliance Report. The Designated Representative or a Designated Biologist shall compile the observation and inspection records identified in Condition 6.3 into a Quarterly Compliance Report and submit it to CDFW along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Quarterly Compliance Reports shall be submitted to CDFW's Regional Office at the office listed in the Notices section of this ITP and via e-mail to CDFW's Regional Representative. At the time of this ITP's approval, the CDFW Regional Representative is Melissa Escaron (Melissa.escaron@wildlife.ca.gov). CDFW may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If CDFW determines the reporting schedule must be changed, CDFW will notify Permittee in writing of the new reporting schedule.

6.6. Annual Status Report. Permittee shall provide CDFW with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of this ITP and continuing until CDFW accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all Quarterly Compliance Reports for that year identified in Condition 6.5; (2) a general description of the status of the Project Area and Covered Activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (5) all available information about Project-related incidental take of the Covered Species; (6) an accounting of the number of acres subject to both temporary and permanent disturbance, both for the prior calendar year, and a total since ITP issuance; and (7) information about other Project impacts on the Covered Species.

6.7. Final Mitigation Report. No later than 45 days after completion of all mitigation measures, Permittee shall provide CDFW with a Final Mitigation Report. The Designated Representative or a Designated Biologist shall prepare the Final Mitigation Report which shall include, at a minimum: (1) a summary of all Quarterly Compliance Reports and all ASRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.

6.8. Notification of Take or Injury. Permittee shall immediately notify a Designated Biologist if a Covered Species is taken or injured by a Project-related activity, or if a Covered Species is otherwise found dead or injured within the vicinity of the Project. A Designated Biologist or Designated Representative shall provide initial notification to CDFW by calling the Regional Office at (707) 944-5500. The initial notification to CDFW shall include information regarding the location, species, number of animals taken or injured and the ITP Number. Following initial notification, Permittee shall send CDFW a written report within two calendar days. The report shall include the date and time of the finding or incident, location of the animal or carcass, and if possible provide a photograph, explanation as to cause of take or injury, and any other pertinent information.

6.9. CNDDB Observations. Designated Biologists shall submit all observations of Covered Species to CDFW's California Natural Diversity Database (CNDDB) within 60 calendar days of the observation and the Designated Biologist shall include copies of the submitted forms with the next Quarterly Compliance Report or Annual Status Report, whichever is submitted first relative to the observation.

7. Take Minimization Measures:

The following requirements are intended to ensure the minimization of incidental take of Covered Species in the Project Area during Covered Activities. Permittee shall implement and adhere to the following conditions to minimize take of Covered Species:

7.1. At least 60 working days prior to the date of initial in-water, or ground- or vegetation-disturbing activities, Permittee shall prepare a relocation plan for moving any Covered Species discovered in harm's way while carrying out any Covered Activities. The plan shall identify specific areas where Covered Species can be relocated. The draft plan shall be submitted to the CDFW representative for approval prior to commencing any Covered Activities.

7.2. Permittee shall maintain on-site an aquarium or similar holding tank to temporarily keep Covered Species found in harm's way. The aquarium shall contain moist soil and cover material and be kept in a safe, cool location. Healthy individuals temporarily kept in the tank shall be relocated in accordance with the plan described in 7.2 as soon as the Covered Species can be safely relocated.

7.3. Nets or bare hands may be used to capture Covered Species. All Designated Biologists will not use soaps, oils or creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they are capturing and relocating Covered Species. To avoid transferring disease or pathogens between aquatic habitats during the course of surveys or handling Covered Species, Designated Biologists will limit the duration of handling and captivity of Covered Species and will follow the Declining Amphibian Populations Task Force's "Code of Practices" found at: http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html.

7.4. If an injured Covered Species is found during the project term, the individual shall be evaluated by a Designated Biologist and then moved to the aquarium described in 7.3. The Designated Biologist shall contact the CDFW representative and discuss the condition of the injured salamander. The general protocol will be the following: if the injury is minor and the Covered Species is likely to survive, it shall be released in accordance with the plan described in 7.2; if the injury appears severe or mortal, the Covered Species shall be kept in the aquarium until it recovers sufficiently to be released or transported to a CDFW-approved animal care facility. While in captivity, individual Covered Species shall be offered food and shall be kept in a cool, moist, aerated environment, such as a bucket containing a damp sponge.

7.5. No more than three (3) calendar days prior to any ground or vegetation disturbance in areas previously undisturbed by Covered Activities or in areas that have not been disturbed from October 16 to May 14 of each year, pre-construction surveys shall be conducted by a Designated Biologist for Covered Species within all portions of the Project Area. These surveys shall consist of walking surveys of the project limits where disturbance will occur to investigate all potential cover sites and clear the construction area. This includes investigation of mammal burrows to the extent feasible. Any Covered Species encountered shall be relocated in accordance with the plan described in 7.2.

7.6. Designated Biologists shall complete walking surveys of the Project Area for Covered Species prior to initiating Covered Activities and shall follow earthmoving equipment to look for Covered Species, safety permitting. Designated Biologists shall be on-site to observe all areas within the Project Area where take of Covered Species could occur at that moment. Any Covered Species encountered shall be relocated in accordance with the plan described in 7.2.

7.7. Prior to ground or vegetation disturbance activities, wildlife exclusion fencing (WEF) shall be installed to prevent Covered Species from gaining access to the Project Area. Permittee shall install WEF for the Covered Species around any work area within Covered Species' habitat immediately following pre-construction surveys, and a Designated Biologist shall be present to monitor installation of the WEF. WEF shall consist of taut fabric or mesh such as Ertec E-fence at least 14 inches in height, staked at least 10-foot intervals, with the bottom buried 6 inches below grade. WEF shall be maintained so that it is intact at all times while Covered Activities are taking place.

7.8. New culverts shall be designed and installed to allow passage for Covered Species in order to increase habitat connectivity and minimize the risk of road mortality post-construction. Culverts C-2, C-3, C-9 shall be upsized to 24, 18, and 12 inches, respectively. All replaced and new culverts shall be set below grade to facilitate the deposition of native material and promote culvert use by Covered Species and other wildlife.

7.9. Hydroseed shall not contain invasive exotic plant species. Prohibited exotic plant species include those identified in the California Exotic Pest Plant Council's database, which is accessible at: http://www.cal-ipc.org/ip/inventory/weedlist.php.

7.10. To prevent inadvertent entrapment of Covered Species during construction and periods of inactivity, a Designated Biologist shall ensure all excavated trenches and holes, both of which are greater than six inches deep with sides steeper than thirty degrees (30°), are provided with one or more escape ramps prior to sunrise each morning. Before such trenches or holes are filled, they will be thoroughly inspected for trapped animals by a Designated Biologist. If at any time a trapped animal is discovered, the Designated Biologist shall move the animal to a safe nearby location as described in Condition 7.2.

7.11. Permittee shall implement a Storm Water Pollution Prevention Plan and Construction Site Best Management Practices.

7.12. Upon completion of construction, the Permittee shall install wildlife directional fencing in an effort to prevent Covered Species roadway mortality by redirecting Covered Species to culverts for safe crossing under SR 12. The exclusionary fencing shall extend the length project site, adjacent to the right-of-way fence to ensure that Covered Species are not affected by future maintenance activities.

8. Habitat Management Land Acquisition and Restoration:
CDFW has determined that permanent protection and perpetual management of compensatory habitat is necessary and required pursuant to CESA to fully mitigate Project-related impacts of the taking on the Covered Species that will result with implementation of the Covered Activities. This determination is based on factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and CDFW's estimate of the acreage required to provide for adequate compensation. For the proposed Project, CDFW has applied an increased mitigation to compensate for potential impacts associated with permitting Covered Activities to occur outside of the dry season.

8.1. Covered Species Credits. Prior to initiating Covered Activities, the Permittee shall purchase at least 39.03 acres of Covered Species credits from a CDFW approved mitigation or conservation bank in the proper service area for the impacts associated with the proposed Project.

8.2. Bill of Sale. On July 13, 2012, the Permittee executed the purchase of the Covered Species credits required by Condition 8.1 above, at Burke Ranch Conservation Bank, and subsequently provided a copy of the Bill of Sale to CDFW.

8.3. Restoration of Disturbance. Permittee shall regrade the 10.63 acres of temporarily disturbed areas to match the existing topography and revegetate with hydroseed. Hydroseed shall not contain invasive exotic plant species. Prohibited exotic plant species include those identified in the California Exotic Pest Plant Council's database, which is accessible at:http://www.cal-ipc.org/ip/inventory/weedlist.php

9. Performance Security

The Permittee may proceed with Covered Activities only after the Permittee has ensured funding (Security) to complete any activity required by Condition 8 that has not been completed before Covered Activities begin. Permittee shall provide Security as follows:

9.1. Security Amount. The Security shall be in the amount of **$110,600**. This amount is based on the cost estimates ($10,405/acre) for the on-site restoration of 10.63 acres of temporarily impacted areas.

9.2. Security Form. The Security shall be in the form of a funding assurance letter signed by the Deputy District Directors of Environmental Planning and Engineering and Project Management, or another form of Security approved in advance in writing by CDFW's Office of the General Counsel or another mechanism approved in advance in writing by CDFW's Office of the General Counsel. The funding assurance letter shall reference the estimated security and provide a commitment to fund the full cost of all ITP measures;

9.3. Security Timeline. The Security shall be provided to CDFW before Covered Activities begin or within 30 days after the effective date of this ITP, whichever occurs first;

Amendment:

This ITP may be amended as provided by California Code of Regulations, Title 14, section 783.6, subdivision (c), and other applicable regulations and law. This ITP may also be amended without the concurrence of the Permittee as required by law, including if CDFW determines that continued implementation of the Project under existing ITP conditions would jeopardize the continued existence of the Covered Species or that Project changes or changed biological conditions necessitate an ITP amendment to ensure that impacts to the Covered Species are minimized and fully mitigated.

Stop-Work Order:

CDFW may issue Permittee a written stop-work order requiring Permittee to suspend any Covered Activity for an initial period of up to 25 days to prevent or remedy a violation of this ITP, including but not limited to the failure to comply with reporting or monitoring obligations, or to prevent the unauthorized take of any CESA endangered, threatened, or candidate species. Permittee shall stop work immediately as directed by CDFW upon receipt of any such stop-work order. Upon written notice to Permittee, CDFW may extend any stop-work order issued to Permittee for a period not to exceed 25 additional days. Suspension and revocation of this ITP shall be governed by California Code of Regulations, Title 14, section 783.7, and any other

applicable law. Neither the Designated Biologist nor CDFW shall be liable for any costs incurred in complying with stop-work orders.

Compliance with Other Laws:

This ITP contains CDFW's requirements for the Project pursuant to CESA. This ITP does not necessarily create an entitlement to proceed with the Project. Permittee is responsible for complying with all other applicable State, federal, and local laws.

Notices:

The Permittee shall deliver a fully executed duplicate original ITP by registered first class mail or overnight delivery to the following address:

Habitat Conservation Planning Branch
California Department of Fish and Wildlife
Attention: CESA Permitting Program
1416 Ninth Street, Suite 1260
Sacramento, CA 95814

Written notices, reports and other communications relating to this ITP shall be delivered to CDFW by registered first class mail at the following addresses, or at addresses CDFW may subsequently provide the Permittee. Notices, reports, and other communications shall reference the Project name, Permittee, and ITP Number (2081-2012-018-03) in a cover letter and on any other associated documents.

Original cover with attachment(s) to:

Scott Wilson, Acting Regional Manager
California Department of Fish and Wildlife
7329 Silverado Trail
Napa, CA 94558

Copy of cover without attachment(s) to:

Office of the General Counsel
California Department of Fish and Wildlife
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

And:

Habitat Conservation Planning Branch
California Department of Fish and Wildlife
1416 Ninth Street, Suite 1260
Sacramento, CA 95814

Unless Permittee is notified otherwise, CDFW's Regional Representative for purposes of addressing issues that arise during implementation of this ITP is:

Melissa Escaron
7329 Silverado Trail
Napa, CA 94558
Telephone (707) 339-0334
Email: melissa.escaron@wildlife.ca.gov

Compliance with California Environmental Quality Act (CEQA):

CDFW's issuance of this ITP is subject to CEQA. CDFW is a responsible agency pursuant to CEQA with respect to this ITP because of prior environmental review of the Project by the lead agency, California Department of Transportation. (See generally Pub. Resources Code, §§ 21067, 21069). The lead agency's prior environmental review of the Project is set forth in the Initial Study with Mitigated Negative Declaration (State Clearinghouse #2009022028) dated September 2010 that the California Department of Transportation adopted for the State Route 12, Currie Road to Liberty Island Road in Solano County on August 31, 2010. At the time the lead agency adopted the Mitigated Negative Declaration and approved the Project it also adopted all mitigation measures for the Covered Species as conditions of Project approval.

This ITP, along with CDFW's related CEQA findings, which are available as a separate document, provide evidence of CDFW's consideration of the lead agency's Mitigated Negative Declaration for the Project and the environmental effects related to issuance of this ITP [CEQA Guidelines, § 15096, subd. (f)]. CDFW finds that issuance of this ITP will not result in any previously undisclosed potentially significant effects on the environment or a substantial increase in the severity of any potentially significant environmental effects previously disclosed by the lead agency. Furthermore, to the extent the potential for such effects exists, CDFW finds adherence to and implementation of the Conditions of Project Approval adopted by the lead agency, and that adherence to and implementation of the Conditions of Approval imposed by CDFW through the issuance of this ITP, will avoid or reduce to below a level of significance any such potential effects. CDFW consequently finds that issuance of this ITP will not result in any significant, adverse impacts on the environment.

Findings Pursuant to CESA:

These findings are intended to document CDFW's compliance with the specific findings requirements set forth in CESA and related regulations. [Fish and Game Code § 2081, subs. (b)-(c); Cal. Code Regs., tit. 14, §§ 783.4, subds, (a)-(b), 783.5, subd. (c)(2)].

CDFW finds based on substantial evidence in the ITP application, the Mitigated Negative Declaration, U.S. Fish and Wildlife Service Biological Opinion, the results of site visits and consultations, and the administrative record of proceedings, that issuance of this ITP complies and is consistent with the criteria governing the issuance of ITPs pursuant to CESA:

(1) Take of Covered Species as defined in this ITP will be incidental to the otherwise lawful activities covered under this ITP;

(2) Impacts of the taking on Covered Species will be minimized and fully mitigated through the implementation of measures required by this ITP and as described in the MMRP. Measures include: (1) permanent habitat protection; (2) installation of wildlife exclusion fencing; (3) worker education; and (4) Monthly Compliance Reports. CDFW evaluated factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and CDFW's estimate of the acreage required to provide for adequate compensation. Based on this evaluation, CDFW determined that the protection and management in perpetuity of 39.03 acres of compensatory habitat that is contiguous with other protected Covered Species habitat and/or is of higher quality than the habitat being destroyed by the Project, along with the minimization, monitoring, reporting, and funding requirements of this ITP minimizes and fully mitigates the impacts of the taking caused by the Project;

(3) The take avoidance and mitigation measures required pursuant to the conditions of this ITP and its attachments are roughly proportional in extent to the impacts of the taking authorized by this ITP;

(4) The measures required by this ITP maintain Permittee's objectives to the greatest extent possible;

(5) All required measures are capable of successful implementation;

(6) This ITP is consistent with any regulations adopted pursuant to Fish and Game Code sections 2112 and 2114;

(7) Permittee has ensured adequate funding to implement the measures required by this ITP as well as for monitoring compliance with, and the effectiveness of, those measures for the Project; and

(8) Issuance of this ITP will not jeopardize the continued existence of the Covered Species based on the best scientific and other information reasonably available, and this finding includes consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (1) known population trends; (2) known threats to the species; and (3) reasonably foreseeable impacts on the species from other related projects and activities. Moreover, CDFW's finding is based, in part, on CDFW's express authority to amend the terms and conditions of this ITP without concurrence of the Permittee as necessary to avoid jeopardy and as required by law.

Attachments:

FIGURE 1	Map of Project
FIGURE 2	Map of Segments A and B
FIGURE 3	Map of Permanent and Temporary Impacts
ATTACHMENT 1	Mitigation Monitoring and Reporting Program

ISSUED BY THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

on January 18, 2013.

Scott Wilson

Scott Wilson, Acting Regional Manager
Bay Delta Region

ACKNOWLEDGMENT

The undersigned: (1) warrants that he or she is acting as a duly authorized representative of the Permittee, (2) acknowledges receipt of this ITP, and (3) agrees on behalf of the Permittee to comply with all terms and conditions

By: Jason Mac Date: 2/6/13

Printed Name: Jason Mac Title: PM

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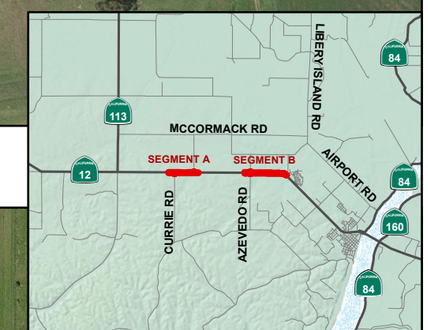
Figure 1: Project Location

Solano SR 12 Shoulder Widening and Clear Recovery Zone
Project Incidental Take Permit Application (3195-01)
March 2012

SEGMENT A



LEGEND

Project Area | Staging Area

SEGMENT B

N:\Proposals\6369\Reports\2081 ITP March 2012

Figure 2: Project Area

Solano SR 12 Shoulder Widening and Clear Recovery Zone Project Incidental Take Permit Application (3195-01)
March 2012

SEGMENT A

SEGMENT B

Figure 3: Permanent and Temporary Impacts in the Project Area

Solano SR 12 Shoulder Widening and Clear Recovery Zone Project Incidental Take Permit Application (3195-01)

March 2012

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)
CALIFORNIA ENDANGERED SPECIES ACT

INCIDENTAL TAKE PERMIT NO. 2081-2012-018-03

PERMITTEE: **California Department of Transportation, Jason Mac**

PROJECT: **Solano State Route 12 Shoulder Widening and Clear Recovery Zone Project**

PURPOSE OF THE MMRP

The purpose of the MMRP is to ensure that the impact minimization and mitigation measures required by the California Department of Fish and Wildlife (CDFW) for the above-referenced Project are properly implemented, and thereby to ensure compliance with section 2081(b) of the Fish and Game Code and section 21081.6 of the Public Resources Code. A table summarizing the mitigation measures required by CDFW is attached. This table is a tool for use in monitoring and reporting on implementation of mitigation measures, but the descriptions in the table do not supersede the mitigation measures set forth in the California Incidental Take Permit (ITP) and in attachments to the ITP, and the omission of a permit requirement from the attached table does not relieve the Permittee of the obligation to ensure the requirement is performed.

OBLIGATIONS OF PERMITTEE

Mitigation measures must be implemented within the time periods indicated in the table that appears below. Permittee has the primary responsibility for monitoring compliance with all mitigation measures and for reporting to CDFW on the progress in implementing those measures. These monitoring and reporting requirements are set forth in the ITP itself and are summarized at the front of the attached table.

VERIFICATION OF COMPLIANCE, EFFECTIVENESS

CDFW may, at its sole discretion, verify compliance with any mitigation measure or independently assess the effectiveness of any mitigation measure.

TABLE OF MITIGATION MEASURES

The following items are identified for each mitigation measure: Mitigation Measure, Source, Implementation Schedule, Responsible Party, and Status/Date/Initials. The Mitigation Measure column summarizes the mitigation requirements of the ITP. The Source column identifies the ITP condition that sets forth the mitigation measure. The Implementation Schedule column shows the date or phase when each mitigation measure will be implemented. The Responsible Party column identifies the person or agency that is primarily responsible for implementing the mitigation measure. The Status/Date/Initials column shall be completed by the Permittee during preparation of each Status Report and the Final Mitigation Report, and must identify the implementation status of each mitigation measure, the date that status was determined, and the initials of the person determining the status.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
BEFORE DISTURBING SOIL OR VEGETATION					
1	Before starting Covered Activities, Permittee shall designate a representative (Designated Representative) responsible for communications with CDFW and overseeing compliance with this ITP. Permittee shall notify CDFW in writing before starting Covered Activities of the Designated Representative's name, business address, and contact information, and shall notify CDFW in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.	ITP Condition # 5.1	Before commencing ground- or vegetation-disturbing activities	Permittee	
2	Permittee shall submit to CDFW in writing the name, qualifications, business address, and contact information of all biological monitors (Designated Biologists) at least 30 days before starting Covered Activities. Permittee shall ensure that Designated Biologists are knowledgeable and experienced in the biology, natural history, collecting and handling of the Covered Species. The Designated Biologists shall be responsible for monitoring Covered Activities to help minimize and fully mitigate or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain CDFW approval of Designated Biologists in writing before starting Covered Activities, and shall also obtain approval in advance in writing if Designated Biologists must be changed.	ITP Condition # 5.2	Before commencing ground- or vegetation-disturbing activities	Permittee	
3	Permittee shall conduct an education program for all persons employed or otherwise working in the Project Area before performing any work. The program shall consist of a presentation from a Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status pursuant to CESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided for any new workers before their performing work in the Project Area. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Project Area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures.	ITP Condition # 5.4	Before commencing ground- or vegetation-disturbing activities	Permittee	
4	Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in closed (animal-proof) containers and removed regularly (at least once a week) to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs.	ITP Condition # 5.6	Before commencing ground- or vegetation-disturbing activities/ Entire Project	Permittee	
5	Before starting Covered Activities along each part of the route in active construction, Permittee shall clearly delineate the boundaries of the Project Area with fencing, stakes or flags. Permittee shall restrict all Covered Activities to within the fenced, staked or flagged areas. Permittee shall maintain all fencing, stakes and flags until the completion of Covered Activities in that area.	ITP Condition # 5.9	Before commencing ground- or vegetation-disturbing activities/ Entire Project	Permittee	
6	Permittee shall clearly delineate habitat of the Covered Species within the Project Area with high visibility Environmentally Sensitive Area (ESA) fencing as necessary to minimize the disturbance of Covered Species' habitat.	ITP Condition # 5.9	Before commencing ground- or vegetation-disturbing activities/ Entire Project	Permittee	
7	The Designated Representative shall notify CDFW 14 calendar days before starting Covered Activities and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.	ITP Condition # 6.1	Before commencing ground- or vegetation-disturbing activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
8	No more than three (3) calendar days prior to any ground or vegetation disturbance in areas previously undisturbed by Covered Activities or in areas that have not been disturbed from October 16 to May 14 of each year, pre-construction surveys shall be conducted by a Designated Biologist for Covered Species within all portions of the Project Area. These surveys shall consist of walking surveys of the project limits where disturbance will occur to investigate all potential cover sites and clear the construction area. This includes investigation of mammal burrows to the extent feasible. Any Covered Species encountered shall be relocated in accordance with the plan described in 7.2.	ITP Condition #7.5	No more than 3 days prior to commencing ground- or vegetation-disturbing activities	Permittee	
9	Designated Biologists shall complete walking surveys of the Project Area for Covered Species prior to initiating Covered Activities and shall follow earthmoving equipment to look for Covered Species, safety permitting. Designated Biologists shall be on-site to observe all areas within the Project Area where take of Covered Species could occur at that moment. Any Covered Species encountered shall be relocated in accordance with the plan described in 7.2.	ITP Condition #7.6	Before commencing ground- or vegetation-disturbing activities	Permittee	
10	Prior to ground or vegetation disturbance activities, wildlife exclusion fencing (WEF) shall be installed to prevent Covered Species from gaining access to the Project Area. Permittee shall install WEF for the Covered Species around any work area within Covered Species' habitat immediately following pre-construction surveys, and a Designated Biologist shall be present to monitor installation of the WEF. WEF shall consist of taut fabric or mesh such as Ertec E-fence at least 14 inches in height, staked at least 10-foot intervals, with the bottom buried 6 inches below grade. WEF shall be maintained so that it is intact at all times while Covered Activities are taking place.	ITP Condition #7.7	Before commencing ground- or vegetation-disturbing activities	Permittee	
11	New culverts shall be designed and installed to allow passage for Covered Species in order to increase habitat connectivity and minimize the risk of road mortality post-construction. Culverts C-2, C-3, C-9 shall be upsized to 24, 18, and 12 inches, respectively. All replaced and new culverts shall be set below grade to facilitate the deposition of native material and promote culvert use by Covered Species and other wildlife.	ITP Condition #7.8	Before commencing ground- or vegetation-disturbing activities	Permittee	
12	Covered Species Credits. Prior to initiating Covered Activities the Permittee purchased at least 39.39 acres of Covered Species credits from a CDFW approved mitigation or conservation bank in the proper service area for the impacts associated with the proposed Project.	ITP Condition #8.1	Before commencing ground- or vegetation-disturbing activities.	Permittee	
13	Permittee has provided a copy of the Bill of Sale for the purchase or Covered Species credits prior to initiating Covered Activities.	ITP Condition #8.2	Before commencing ground- or vegetation-disturbing activities	Permittee	
14	Security Amount. The Security shall be in the amount of $110,600. This amount is based on the cost estimates ($10,405/acre) for the on-site restoration of 10.63 acres of temporarily impacted areas.	ITP Condition #9.1	Before commencing ground- or vegetation-disturbing activities or within 30 days after the effective date of the ITP	Permittee	
15	The Security shall be provided to CDFW before Covered Activities begin or within 30 days after the effective date of this ITP, whichever occurs first.	ITP Condition #9.3.	Before commencing ground- or vegetation-disturbing activities or within 30 days after the effective date of the ITP	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
DURING CONSTRUCTION					
16	To ensure compliance with the Conditions of Approval of this ITP, Designated Biologists shall communicate to the Resident Engineer any activity that is not in compliance with this ITP and the Resident Engineer shall immediately stop the activity that is not in compliance with this ITP. This authority extends to all utility relocation work, including Pacific Gas and Electric Company.	ITP Condition # 5.3	Entire Project	Permittee	
17	Designated Biologists shall maintain a construction-monitoring notebook on-site throughout the construction period which shall include a copy of this ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring notebook is available for review at the Project site upon request by CDFW.	ITP Condition # 5.5	Entire Project	Permittee	
18	Permittee shall implement dust control measures during Covered Activities to facilitate visibility for monitoring of the Covered Species by Designated Biologists. Permittee shall keep the amount of water used to the minimum amount needed, and shall not allow water to form puddles.	ITP Condition # 5.7	Entire Project	Permittee	
19	Permittee shall prohibit use of erosion control materials potentially harmful to Covered Species and other species, such as mono-filament netting (erosion control matting) or similar material.	ITP Condition # 5.8	Entire Project	Permittee	
20	Project-related personnel shall access the Project Area using existing routes, or routes identified in the Project Description, and shall not cross Covered Species' habitat outside of or en route to the Project Area. Permittee shall restrict Project-related vehicle traffic to established roads, staging, and parking areas. Permittee shall ensure that vehicle speeds do not exceed 20 miles per hour on unpaved roads to avoid Covered Species on or traversing the roads. If Permittee determines construction of routes for travel are necessary outside of the Project Area, the Designated Representative shall contact CDFW for written approval before carrying out such an activity. CDFW may require an amendment to this ITP if additional take of Covered Species may result from Project modification.	ITP Condition # 5.11	Entire Project	Permittee	
21	Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project Area using, to the extent possible, previously disturbed areas.	ITP Condition # 5.12	Entire Project	Permittee	
22	Permittee shall immediately stop and following pertinent State and federal statutes and regulations arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the Project Area and shall properly contain and dispose of any unused or leftover hazardous products off-site.	ITP Condition # 5.13	Entire Project	Permittee	
23	Permittee shall provide CDFW staff with reasonable access to the Project and mitigation lands under Permittee control, and shall otherwise cooperate with CDFW efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.	ITP Condition # 5.14	Entire Project	Permittee	
24	The Designated Representative shall immediately notify CDFW in writing if it determines that the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP and/or the MMRP. The Designated Representative shall report any non-compliance with this ITP to CDFW within 24 hours.	ITP Condition # 6.2	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
25	A Designated Biologist shall be on-site daily when Covered Activities occur. Designated Biologists shall conduct compliance inspections to (1) minimize incidental take of the Covered Species; (2) prevent unlawful take of species; (3) check for compliance with all measures of this ITP; (4) check all exclusion zones; and (5) ensure that signs, stakes, and fencing are intact, and that Covered Activities are only occurring in the Project Area. The Designated Representative or a Designated Biologist shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by this ITP. Designated Biologists shall conduct weekly compliance inspections during periods of inactivity and after clearing, grubbing, and grading are completed.	ITP Condition # 6.3	Entire Project	Permittee	
26	Prior to commencement of work, Permittee shall flag a minimum of one photo point every 1/8 of a mile along the Project alignment. The photo points shall provide comprehensive views of the Project Area and any Covered Species habitat that would be impacted by the Project. Prior to construction, Permittee shall photograph the Project Area from each of the flagged points, noting the direction and magnification of each photo. Permittee shall photograph construction activities before, during, and after construction activities from flagged photo points using the same direction and magnification as pre-construction photos. Labeled copies of photographs taken at each photo point shall be sent to CDFW as a component of required Quarterly compliance reports (see Condition 6.5).	ITP Condition # 6.4	Entire Project	Permittee	
27	The Designated Representative or a Designated Biologist shall compile the observation and inspection records identified in Condition 6.3 into a Quarterly Compliance Report and submit it to CDFW along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Quarterly Compliance Reports shall be submitted to CDFW's Regional Office at the office listed in the Notices section of this ITP and via e-mail to CDFW's Regional Representative. At the time of this ITP's approval, the CDFW Regional Representative is Melissa Escaron (Melissa.escaron@wildlife.ca.gov). CDFW may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If CDFW determines the reporting schedule must be changed, CDFW will notify Permittee in writing of the new reporting schedule.	ITP Condition # 6.5	Entire Project	Permittee	
28	Permittee shall provide CDFW with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of this ITP and continuing until CDFW accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all Quarterly Compliance Reports for that year identified in Condition 6.5; (2) a general description of the status of the Project Area and Covered Activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (5) all available information about Project-related incidental take of the Covered Species; (6) an accounting of the number of acres subject to both temporary and permanent disturbance, both for the prior calendar year, and a total since ITP issuance; and (7) information about other Project impacts on the Covered Species.	ITP Condition # 6.6	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
29	Final Mitigation Report. No later than 45 days after completion of all mitigation measures, Permittee shall provide CDFW with a Final Mitigation Report. The Designated Representative or a Designated Biologist shall prepare the Final Mitigation Report which shall include, at a minimum: (1) a summary of all Quarterly Compliance Reports and all ASRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.	ITP Condition # 6.7	Entire Project	Permittee	
30	Permittee shall immediately notify a Designated Biologist if a Covered Species is taken or injured by a Project-related activity, or if a Covered Species is otherwise found dead or injured within the vicinity of the Project. A Designated Biologist or Designated Representative shall provide initial notification to CDFW by calling the Regional Office at (707) 944-5500. The initial notification to CDFW shall include information regarding the location, species, number of animals taken or injured and the ITP Number. Following initial notification, Permittee shall send CDFW a written report within two calendar days. The report shall include the date and time of the finding or incident, location of the animal or carcass, and if possible provide a photograph, explanation as to cause of take or injury, and any other pertinent information.	ITP Condition # 6.8	Entire Project	Permittee	
31	Designated Biologists shall submit all observations of Covered Species to CDFW's California Natural Diversity Database (CNDDB) within 60 calendar days of the observation and the Designated Biologist shall include copies of the submitted forms with the next Quarterly Compliance Report or Annual Status Report, whichever is submitted first relative to the observation.	ITP Condition # 6.9	Entire Project	Permittee	
32	At least 60 working days prior to the date of initial in-water, or ground- or vegetation-disturbing activities, Permittee shall prepare a relocation plan for moving any Covered Species discovered in harm's way while carrying out any Covered Activities. The plan shall identify specific areas where Covered Species can be relocated. The draft plan shall be submitted to the CDFW representative for approval prior to commencing any Covered Activities.	ITP Condition # 7.1	Entire Project	Permittee	
33	Permittee shall maintain on-site an aquarium or similar holding tank to temporarily keep Covered Species found in harm's way. The aquarium shall contain moist soil and cover material and be kept in a safe, cool location. Healthy individuals temporarily kept in the tank shall be relocated in accordance with the plan described in 7.2 as soon as the Covered Species can be safely relocated.	ITP Condition # 7.2	Entire Project	Permittee	
34	Nets or bare hands may be used to capture Covered Species. All Designated Biologists will not use soaps, oils or creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they are capturing and relocating Covered Species. To avoid transferring disease or pathogens between aquatic habitats during the course of surveys or handling Covered Species, Designated Biologists will limit the duration of handling and captivity of Covered Species and will follow the Declining Amphibian Populations Task Force's "Code of Practices" found at: http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html.	ITP Condition # 7.3	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
35	If an injured Covered Species is found during the project term, the individual shall be evaluated by a Designated Biologist and then moved to the aquarium described in 7.3. The Designated Biologist shall contact the CDFW representative and discuss the condition of the injured salamander. The general protocol will be the following: if the injury is minor and the Covered Species is likely to survive, it shall be released in accordance with the plan described in 7.2; if the injury appears severe or mortal, the Covered Species shall be kept in the aquarium until it recovers sufficiently to be released or transported to a CDFW-approved animal care facility. While in captivity, individual Covered Species shall be offered food and shall be kept in a cool, moist, aerated environment, such as a bucket containing a damp sponge.	ITP Condition # 7.4	Entire Project	Permittee	
36	Hydroseed shall not contain invasive exotic plant species. Prohibited exotic plant species include those identified in the California Exotic Pest Plant Council's database, which is accessible at: http://www.cal-ipc.org/ip/inventory/weedlist.php.	ITP Condition # 7.9	Entire Project	Permittee	
37	To prevent inadvertent entrapment of Covered Species during construction and periods of inactivity, a Designated Biologist shall ensure all excavated trenches and holes, both of which are greater than six inches deep with sides steeper than thirty degrees (30°), are provided with one or more escape ramps prior to sunrise each morning. Before such trenches or holes are filled, they will be thoroughly inspected for trapped animals by a Designated Biologist. If at any time a trapped animal is discovered, the Designated Biologist shall move the animal to a safe nearby location as described in Condition 7.2.	ITP Condition # 7.10	Entire Project	Permittee	
38	Permittee shall implement a Storm Water Pollution Prevention Plan and Construction Site Best Management Practices.	ITP Condition # 7.11	Entire Project	Permittee	
POST-CONSTRUCTION					
39	Upon completion of construction, the Permittee shall install wildlife directional fencing in an effort to prevent Covered Species roadway mortality by redirecting Covered Species to culverts for safe crossing under SR 12. The exclusionary fencing shall extend the length project site, adjacent to the right-of-way fence to ensure that Covered Species are not affected by future maintenance activities.	ITP Condition # 7.12	Post-construction	Permittee	
40	Permittee shall regrade the 10.63 acres of temporarily disturbed areas to match the existing topography and revegetate with hydroseed. Hydroseed shall not contain invasive exotic plant species. Prohibited exotic plant species include those identified in the California Exotic Pest Plant Council's database, which is accessible at: http://www.cal-ipc.org/ip/inventory/weedlist.php.	ITP Condition # 8.3	Post-construction	Permittee	

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:
81420-2009-F-0152-4

APR 30 2010

Mr. James Richards
California Department Transportation
111 Grand Avenue
P.O. Box 23660
Oakland, California 94623-0660

Subject: Biological Opinion for the Solano Highway 12, Currie Road to Liberty Island Road Shoulder Widening Project, Solano County, California (Caltrans EA 2A620) on the Threatened Central Valley Distinct Population Segment of the California Tiger Salamander

Dear Mr. Richards:

This is in response to your November 3, 2008, request for formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Solano Highway 12, Currie Road to Liberty Island Road Shoulder Widening Project in Solano County, California. Your request was received in our Sacramento field office on November 5, 2008, and included the request for formal consultation on the threatened Central Valley distinct population segment (DPS) of the California tiger salamander (*Ambystoma californiense*). This document represents the Service's biological opinion on the effects of the proposed action on this listed species which from herein will be referred to as the California tiger salamander. 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).

Based on the results of 2008 focused surveys for Federal listed plants within the existing State Route 12 Caltrans right-of-way (ROW) portion of the proposed action area the Service has determined that the project is not likely to adversely affect the endangered soft bird's beak (*Cordylanthus mollis* ssp. *mollis*), endangered Contra Costa goldfields (*Lasthenia conjugens*) (goldfields), threatened Colusa grass (*Neostapfia colusana*), endangered Solano grass (*Tuctoria mucronata*), or endangered Suisun thistle (*Cirsium hydrophilum* var. *hydrophilum*). None of these Federal listed plants were found as a result of the April 14, May 4, and July 16, 2008, surveys led by botanist Ann Howald.

TAKE PRIDE IN AMERICA

Based upon the information provided, the Service has determined the proposed action may affect, and is not likely to adversely affect the threatened vernal pool fairy shrimp (*Branchinecta lynchi*), endangered Conservancy fairy shrimp (*Branchinecta conservatio*), and the threatened Delta green ground beetle (*Elaphrus viridis*).

The Service does not have sufficient information to concur that the proposed action is not likely to adversely affect the endangered vernal pool tadpole shrimp (*Lepidurus packardi*). The Service observed potential branchiopod habitat in the ponded areas up and downstream of, and within the box culvert near McClosky Road during the January 29, 2010, and February 5, 2010, visits to the proposed project site. Although a blue-line feature on the topographical map, this drainage system was characterized during the January and February 2010 field visits as a system of swales linked by areas of low water velocity. Based on our knowledge of occupied ponds, these ponds appeared to have the potential to support vernal pool tadpole shrimp. This assessment was made in the winter of 2010 following significant rain events.

According to Caltrans' 2008 fairy shrimp survey report, this ponded area was not sampled as part of the assessment of the proposed project's effects. The Service presumes that this area was not sampled during the protocol surveys because the 2008 rainfall conditions may not have been conducive to branchiopod habitat indicators, blue-line features are often not considered branchiopod habitat, and/or a lack of legal access.

The Service recommends that Caltrans conduct protocol branchiopod surveys of this area prior to construction. The Service recommends that the results of these surveys be submitted to the Service within ninety (90) calendar days prior to initial ground-breaking activities on the overall project. Caltrans should initiate formal consultation if listed species other than the California tiger salamander are encountered in order to be exempt from the prohibitions described under section 9 of the Act.

This biological opinion is based on: (1) a November 2008 Biological Assessment; (2) additional project information provided by the California Department of Transportation (Caltrans) on May 7, 2009; (3) May 2009, January 2010, and February 2010 field visits; (4) miscellaneous correspondence and electronic mail (email) messages concerning the proposed action between the Service and Caltrans from September 2008 to August 2009; and (5) other information available to the Service.

Consultation History

September 10, 2008 The Service received the *Ninety-Day Report for Listed Vernal Pool Branchiopods for the Caltrans Solano 12 Currie Road to Liberty Island Road Shoulder Widening Project*. The report was dated August 2008 and the accompanying cover letter was dated September 8, 2008.

September 29, 2008 The Service received the *SR 12* (State Route 12) *Currie Road to Liberty Island Road Shoulder Widening Project Ninety-Day Report for Federally Listed Fairy Shrimp Survey Results for the 2008 Dry Season*. The report was dated September 2008 and the accompanying transmittal was dated September 26, 2008.

November 5, 2008 The Service received the biological assessment from Caltrans along with a November 3, 2008, cover letter that included a request to initiate formal consultation on the California tiger salamander.

December 2, 2008 The Service sent an email message to Caltrans to inform them that the biological assessment was not adequate to complete formal consultation. Caltrans was informed that the Service was drafting an information request to outline the data needs necessary to complete formal consultation.

December 5, 2008 The Service issued the *Information Request for the Completion of the Consultation for the Solano Highway 12 Currie Road to Liberty Island Road Shoulder Widening Project, Solano County, California (Caltrans EA 2A620)*, Service file number 81420-2009-F-0152-1.

January 20, 2009 The Service received a Caltrans' response to the December 2008 information request. The response letter was dated January 15, 2009.

February 19, 2009 The Service met with Caltrans to discuss their January 2009 response to the Services' December 5, 2008, request for additional information. Caltrans declined to provide a completed response because they challenged the Service's purpose and authority to ask for any information that was not pertinent to a jeopardy decision. The Service's primary outstanding request was for: (1) a comprehensive line item list of their conservation measures/Best Management Practices (BMPs); (2) the special-status plant survey report; (3) an assessment of effects to vernal pool habitat including a 250 foot buffer from the project footprint; and (4) the dimensions and locations of proposed modified culverts. Caltrans also informed the Service that the project would result in the acquisition of new right-of-way (ROW) that may not have been included in the described action area or project description.

March 24, 2009 The Service attended a meeting with Caltrans to discuss strategies to facilitate efficient consultation on the project. Caltrans agreed to provide a revised response to the Service's December 2008 information request.

May 7, 2009 The Service received an email message from Caltrans that included an attached copy of their *Supplemental Responses to Information Request for*

the Completion of the Consultation for Solano Highway 12 Currie Road to Liberty Island Road Shoulder Widening Project, Solano County, CA. Three hardcopies of the document were received on May 11, 2009. The submitted information included: a January 23, 2008, habitat assessment for threatened and endangered invertebrates; an April 30, 2008, giant garter snake habitat assessment; and a September 2008, special-status plant survey report.

May 20, 2009 — The Service provided Caltrans with the project description section from the draft biological opinion for review via an attachment to an email message.

May 21, 2009 — The Service received design layout plans from Caltrans via an email message. Caltrans also informed the Service that the proposed project would require the acquisition of 5.46 acres of additional ROW that would be defined by a new ROW fence.

May 22, 2009 — The Service visited the project site with Caltrans to discuss the consultation status.

May 27, 2009 — The Service received an email message from Caltrans confirming that the additional 5.46 acres of required ROW acquisition was included in the approximately 13.62-acre action area described in the November 2008 Biological Assessment.

May 29, 2009 — The Service received a copy of Caltrans' revisions to the project description provided on May 20, 2009, via an attachment to an email message. In another email message received by the Service on the same day, Caltrans clarified that the proposed construction schedule would take 12 to 15 months.

June 4, 2009 — The Service received a digital copy of Caltrans GIS-generated map of the proposed project design superimposed on aerial photography.

June 24, 2009 — The Service informed Caltrans via an email message that the proposed 1:1 compensation to offset the effects to the California tiger salamander was not sufficient for the project and was not consistent with the 3:1 compensation that has been proposed by other applicants in Solano County and is included in the draft Solano County Habitat Conservation Plan (HCP).

June 24, 2009 To the above referenced email message, Caltrans responded that their proposed 1:1 compensation was based on the lack of California tiger salamander observations in the project area. Caltrans also stated that they are not obligated to be consistent with HCPs. To the Service's knowledge, the project area and the adjacent private land have never been surveyed for the species but are very similar to nearby habitat where the species is present. Caltrans stated in their habitat assessment that the project area contains suitable dispersal, aestivation, and breeding habitat for the California tiger salamander.

August 12, 2009 The Service provided information to Caltrans via an email message regarding potential California tiger salamander compensation at the 292-acre Thomas Ranch and the 1274-acre Peterson Ranch properties that are being pursued by the Solano Land Trust. In a second email message, the Service provided information regarding fencing material to direct California tiger salamanders towards culverts that could be used for safe passage by the species across State Route 12.

November 13, 2009 The Service received a letter from Caltrans dated November 10, 2009, in response to alternative design and compensation measures that were being explored by the staff Caltrans and Service biologists assigned to the Solano Highway 12, Currie Road to Liberty Island Road Shoulder Widening Project to minimize and avoid effects to the California tiger salamander.

In the letter Caltrans stated that the Service had proposed the additional measures beyond the regulatory deadline, however the purpose of the proposal was to find alternative solutions to the unresolved issues that were delaying the issuance of the biological opinion. In response to the proposed culvert upsizing, Caltrans modified the culvert design to facilitate a natural bottom substrate. Caltrans stated additional upsizing and the installation of box culverts to enhance California tiger salamander passage would not be consistent with the minor change rule. In regards to the installation of exclusion and directional fencing, Caltrans stated that they were unable to find convincing scientific data to support the measure, attaching additional fencing to their ROW fence would require additional ROW acquisition, and would not be consistent with the minor change rule. Caltrans maintained that culverts do not need to be designed to provide dry passage when water is flowing through the culverts because California tiger salamanders are an aquatic species. Caltrans stated that contributing to the Solano Land Trust's potential acquisition of nearby high quality California tiger salamander habitat would not be consistent with the minor

	change rule and would not minimize effects incurred by the proposed State Route 12 project.
January 7, 2010	The Service issued a letter to Caltrans in response to the November 10, 2009, correspondence.
January 29, 2010	The Service visited the action area to observe ponding in and adjacent to the action area.
February 5, 2010	The Service visited the action area to observe ponding in and adjacent to the action area and to assess the existing cross culverts in the action area for California tiger salamander passage across State Route 12.

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 to modify the State Route 12 roadway from Liberty Island Road west to approximately 0.15 miles beyond Currie Road to allow for the addition of standard shoulder widths, a clear recovery zone, and left turn pockets at three intersections. The proposed project activities vary by segment as described below.

According to a May 29, 2009 correspondence from Caltrans, the project description provided in this biological opinion is based on 35 percent design. Caltrans will be required to reinitiate consultation when and if there are changes to the project description that exceed the effects described in this biological opinion.

Liberty Island Road to Azevedo Road
Construction activities within the approximately one mile stretch between Liberty Island Road and Azevedo Road on the east end of the alignment, will include widening of the existing road shoulder on each side of the roadway to an eight foot standard width. Widening will involve tree removal and extension of the box culvert at Well Creek. Caltrans proposes to install a sheet pile retaining wall extending from the east side of the Well Creek box culvert to minimize the intrusion of the roadway widening into the creek. Widening between Liberty Island Road and Azevedo Road will also require modification of existing drainage features, including but not limited to the upgrading of culverts and the re-establishment of existing longitudinal ditches. Roadway widening in this segment will include the replacement of one existing culvert, relocation of one existing culvert, and the extension of three existing culverts.

Caltrans will need to acquire additional ROW to facilitate the project widening and installation of the left turn lanes. This additional ROW will be needed on both sides of the State Route 12 roadway from Liberty Island Road to Azevedo Road. The widening will include the removal of approximately 44 trees, most of which are between Liberty Island Road to Azevedo Road. Probable staging for the project is available within the Caltrans ROW and the described action area at an existing stockpile area on the east end of the project near Liberty Island Road.

Azevedo Road to Currie Road
The remaining approximately two miles of roadway from Azevedo Road west to approximately 0.15 miles west beyond the Currie Road intersection already has standard eight-foot shoulders. Left turn lanes will be added in this segment at Curry Road (PM 20.6), McCloskey Road (PM 21.3), and Azevedo Road (PM 22.7). Work within this segment will not require tree removal. Work within existing cross drainages is limited to the extension of a box culvert at the unnamed ephemeral stream at McCloskey Road. Roadway widening in this segment will include the replacement of three existing culverts and the extension of two existing culverts. Caltrans will need to acquire additional ROW at the McCloskey Road box culvert area.

Culverts
The proposed project will include replacement of four existing undersized culverts, the relocation of one existing culvert, and extension of five existing culverts to facilitate the shoulder widening.

These circular, galvanized steel culvert replacements will be upsized from the existing two year flood event dimensions to 25 year flood event dimensions. One 18-inch diameter culvert will be replaced with a 24-inch culvert, and two 12-inch culverts and one 15-inch culvert will be replaced with 18-inch culverts. The culverts to be replaced will be saw-cut, excavated, and removed. A self-compacting base and the new culverts will be laid with slurry backfill to existing asphaltic-concrete and patched with asphaltic-concrete to grade. All replacement culverts will be at least 20 percent larger than the pre-existing feature and flush with the existing grade on the up and downstream ends. According to Caltrans' November 10, 2009 letter to the Service, the culverts will be designed to facilitate the formation of a natural bottom substrate.

One existing ten-inch culvert, crossing beneath a private driveway access to State Route 12, will be relocated further up the private driveway and the crossing reestablished to accommodate the shoulder widening.

The five culvert extensions will be limited to the attachment of identical diameter culvert piping to the existing culverts to accommodate the new roadway width and the extension of the ten-foot by six-foot double box culvert at Well Creek. The extension of the Well Creek box culvert will also include the addition of concrete barriers to the outside shoulders of the roadway. The extension will require limited excavation of the existing drainage bed on either side of the existing culvert to lay the extensions flush with the grade.

Bio-filtration Devices
Caltrans will be constructing bio-filtration strips (biostrips) adjacent to the road shoulders in order to meet Regional Water Quality Control Board waste discharge requirements. The bio-filtration strips are broad vegetated surfaces designed to receive and discharge storm water as sheet flow from the roadway. Unlike bio-filtration swales (bioswales), biostrips are relatively flat areas that slope away from the roadway and are not designed for conveyance or to facilitate ponding. Biostrips are designed to remove pollutants by filtration through the vegetation, sedimentation, adsorption to soil particles, and infiltration through the soils. Bio-filtration strips are also effective at trapping litter, Total Suspended Solids, and particulate metals. The biostrips for the proposed project will be located within the Caltrans ROW and the described action area. Biostrips do not replace existing parallel road-side ditches. Instead, biostrips are physically placed between the shoulder and the parallel road-side ditch, biofiltering the roadway sheet flow as it leaves the roadway surface before entering the drainage ditches.

Biostrips have yet to be fully incorporated into the design plans and exact placement for optimal effectiveness has yet to be determined, since the project design is only at 35 percent. It has been determined that biostrips will be located within the described action area and will provide 100 percent coverage of all additional impervious surface created by the proposed project and all water credits have been obtained from the Caltrans Office of Water Quality. Typical biostrips are designed with a fore slope (i.e., the slope adjacent to the roadway) of 4:1, minimally, and a back slope of 2:1. The biostrips vegetative cover will be maintained at a height of approximately four to six inches for optimal biofiltering. There is no maximum depth for biostrips, however, the depth is limited by existing topography along the roadway and designed to be as long and flat as the site will allow, which maximizes treatment efficiency. Biostrips are not "deep ripped" or "over excavated."

Caltrans noted in their May 7, 2009, letter that the final design may be amended to incorporate bioswales. Bioswales convey storm water in shallow vegetated ditches designed to maximize percolation and minimize ponding. Bioswales are designed to a typical cross-sectional depth of one to two feet, six inch depth flow, and ten minute maximum hydraulic residence time. Caltrans will either request technical assistance from the Service or reinitiate formal consultation, if there is a significant change in the project description included in this biological opinion.

Utilities
The proposed project is expected to include utility relocations. Underground gas lines, telecommunication fiber optic lines, and electrical lines currently located in the Caltrans ROW may need to be relocated to accommodate the widening. The new alignments and distribution pole placements will be determined by the utility companies during later stages of the overall project design. However, the relocations will remain within the newly proposed ROW and within the described action area. Overhead transmission towers are anticipated to remain in place through the use of a design exception or guardrail placement. Caltrans will either request technical assistance from the Service or reinitiate formal consultation if there is a significant change in the project description included in this biological opinion.

Construction Methods
Construction equipment that will likely be needed to complete the proposed project includes graders, excavators, a crane, a vibratory sheet pile driver, an asphalt drum grinder, transfer and bottom dump semi-trucks and trailers, lowboy-style trucks and trailers, cement trucks, Gradall – style articulating four-wheel-drive forklifts, front-end loaders, vibramatic rollers, a hydro-seeding truck rig, and various pick-up trucks.

Construction signage will be installed at the east and west ends of the proposed project and California Highway Patrol COZEEP[1] operations will be in place prior to onset of any construction activity. One of the first orders of work will be placement of fencing to identify the action area limits and sensitive environmental areas. Left turn pockets and the Well Creek box culvert bridge extension will be installed prior to general roadway widening. The second order of work will be sheet pile bank-retaining wall installation, grading and shoulder excavations, along with roadway pavement repairs, and culverts replacement and extensions. Lastly, the asphalt overlay of the widened and repaired roadway will complete the project.

Box culvert replacement will involve the placement of false work and concrete forms in the drainage at McCloskey Road and in Well Creek. Corrugated Steel Pipe (CSP) replacements and culvert extensions will involve excavation (culvert removal at replacement locations) and installation of gravel bedding prior to new CSP placement followed by back-filling of the excavated area with either slurry or concrete prior to placement of an asphalt concrete patch over the excavated area. Spalling (cracking) and existing roadway pavement failures will be repaired by grinding out the damaged sections of roadway, making any sub-base repairs and placement of an asphalt concrete patch to match the existing road grade. The sheet pile retaining wall will be installed using a crane to lift sections of sheet pile into place before being mechanically driven or vibrated into the ground to the desired tip elevation. Each section of sheet pile mechanically locks into the edge of the previously placed section to create the retaining wall. Minor back-filling behind the retaining wall will prepare the area for the roadway widening. The last series of operations will involve placement of several lifts of asphaltic concrete to bring the final widening to the correct crown followed by replacement of the soft median barrier, road striping, and hydro-seeding.

Construction Schedule
Caltrans plans to begin construction in spring of 2011 and the work is expected to take 12 to 15 months.

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

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[1] Construction Zone Enhanced Enforcement Program (COZEEP): improves project safety through the use of supplemental California Highway Patrol (CHP) Units to assist in the management of traffic passing through the construction zone. COZEEP involves the presence of the CHP in certain construction zones to serve as a reminder to the motoring public to slow down, observe construction zone signs, and use care while driving through the work zone.

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 only be subject to standard operation and maintenance activities such as mowing and has the potential to be revegetated. 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.

Proposed Conservation Measures
According to their November 2008, Biological Assessment and the May 7, 2009, supplemental response, Caltrans proposes to avoid, minimize, and compensate for effects to listed species by implementing the following measures:

1. Caltrans will compensate for their effects to individual California tiger salamanders utilizing the 13.62-acre action area with the purchase of 13.62 acres of California tiger salamander habitat credits at a Service-approved conservation bank. Refer to the *Term and Condition* 2n for additional information on appropriate minimization through habitat acquisition.

2. A Service-approved biologist(s) will be designated for the activities that will affect California tiger salamander habitat which has been defined as the entire 13.62-acre project area. The qualified biologist(s) will be on-site during specific construction activities that may reasonably result in the take of the California tiger salamander. 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 coordinate through the Resident Engineer, to stop any work that may result in take of the California tiger salamander. If work is stopped, the biologist(s) will notify the Service by telephone and electronic mail within one (1) working day.

3. The Resident Engineer will halt work and immediately contact the Service-approved project biologist(s) and the Service in the event that a California tiger salamander gains access to a construction zone. The Resident Engineer will suspend construction activities within a 50 foot radius of the indentified animal that could reasonably result in a take of a California tiger salamander until the animal leaves the site voluntarily or is removed by the biologist(s) to a release site using Service-approved handling techniques. Information regarding California tiger salamander handling, transport, and release are included in *Term and Condition* 2j.

4. All construction supervisory personnel will attend an environmental education program delivered by the Service-approved biologist prior to working on the project site. The program will include an explanation as how to best avoid take of the California tiger salamander. The Service approved biologist(s) will conduct a training session that will be

scheduled as a mandatory informational field meeting by the Caltrans Resident Engineer for all construction contractor supervisory personnel. The field meeting will include topics on species identification, life history, descriptions, and habitat requirements during various life stages. Emphasis will be placed on the importance of the habitat and life stage requirements within the context of project maps showing areas where minimization and avoidance measures are being implemented. The program will include an explanation of Federal and State laws protecting the California tiger salamander as well as the importance of compliance with Caltrans and various resource agency conditions.

5. No more than thirty (30) calendar days prior to any ground disturbance, pre-construction surveys will be conducted by a Service-approved biologist for the California tiger salamander. These surveys will consist of walking surveys of the project limits and accessible adjacent areas to determine presence of the species. The biologist(s) will investigate all potential California tiger salamander cover sites. This includes thorough investigation of mammal burrows, appropriately sized soil cracks, and debris. The entrances and other refuge features will be collapsed or removed following investigation.

6. Should a California tiger salamander be found at the project site, an on-call consultant with the appropriate section 10(a)(1)(a) permit to handle the California tiger salamander will be utilized. Caltrans will submit the name and credentials of the Caltrans staff biologist(s) and the name and permit number of the on-call consultant to the Service prior to ground breaking on the project. Information regarding California tiger salamander handling, transport, and release are included in *Term and Condition* 2j.

7. For work that could reasonably result in a take of a California tiger salamander, a Service-approved biologist(s) will be on-site to monitor the initial ground disturbance activities for the road construction. The biologist(s) will perform a clearance survey immediately prior to the initial ground disturbance. Safety permitting, the Service-approved biologist(s) will investigate areas of disturbed soil for signs of listed species within thirty (30) minutes following the initial disturbance of that given area.

8. To minimize temporary disturbances in areas of California tiger salamander habitat, 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 practicable, will 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, except on County roads, and State and Federal highways. Off-road traffic outside of designated action areas for construction phases with potential California tiger salamander habitat will be prohibited. This measure will be implemented through contractors and subcontractors as part of the Caltrans standard BMPs and Storm Water Pollution Prevention Plan (SWPPP).

9. Work in the vicinity of water crossings will be scheduled to occur between May 15th and October 15th.

10. Temporary effects are those activities that are ancillary to permanent construction features and disturb an area for a specific limited period and which can be restored to pre-disturbance-type conditions prior to the beginning of the following year's rainy season (e.g. October 15). Areas temporarily affected by the State Route 12 Project will typically be restored after a single construction season. Where temporary soil disturbance occurs, Caltrans standard erosion control practices will restore cover prior to winter rains and within a single California tiger salamander breeding season. This measure will be implemented through contractors and subcontractors as part of the Caltrans standard BMPs and SWPPP.

11. Dust control measures will consist of regular truck watering of construction 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 ROW or out of the construction area during construction will be included in the contract special provisions. Watering guidelines for dewatering 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. This measure will be implemented through contractors and subcontractors as part of the Caltrans standard BMPs and SWPPP.

12. Project employees will be provided with written guidance governing vehicle use, speed limits on unpaved roads, fire prevention, and other hazards. This measure will be implemented through contractors and subcontractors as part of the Caltrans standard BMPs and SWPPP.

13. To eliminate an attraction to predators of the California tiger salamander, 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 action area. This measure will be implemented through contractors and subcontractors as part of the Caltrans standard BMPs and SWPPP.

14. To avoid injury or death of a California tiger salamander, no firearms will be allowed in the action area except for those carried by authorized security personnel, or local, State, or Federal law enforcement officials. This measure will be implemented through contractors and subcontractors as part of the Caltrans standard BMPs.

15. To prevent harassment, injury or mortality of a California tiger salamander or destruction of their refuge areas, no pets will be permitted in the action area. This measure will be

implemented through contractors and subcontractors as part of the Caltrans standard BMPs and SWPPP.

16. Use of rodenticides and herbicides in the action area will be used in such a manner to prevent primary or secondary poisoning of a California tiger salamander and the depletion of vegetation on which they depend. All uses of such compounds will observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other appropriate State and Federal regulations, as well as additional project-related restrictions deemed necessary by the Service or the California Department of Fish and Game. This measure will be implemented through contractors and subcontractors as part of the Caltrans standard BMPs and SWPPP.

17. Dedicated fueling and refueling practices will be designated as part of the approved SWPPP. Dedicated fueling areas will be protected from storm water run-on and run-off and will be located at least 50 feet from downslope drainage facilities and water courses. Fueling must be performed on level-grade areas. On-site fueling will only be used where it is impractical to send vehicles and equipment off-site for fueling. When fueling must occur on-site, the contractor will designate an area to be used subject to the approval of the Caltrans Resident Engineer. Drip pans or absorbent pads will be used during on-site vehicle and equipment fueling. This measure will be implemented through contractors and subcontractors as part of the Caltrans standard BMPs and SWPPP.

18. The potential for adverse effects to water quality will be avoided by implementing temporary and permanent BMPs outlined in section 7-1.01G of the Caltrans' Standard Specifications. Additional water quality protection measures required by other permits such as the California Department of Fish and Game's Lake and Streambed Alteration Agreement and the Regional Water Quality Control Board's 401 certification will be implemented. Caltrans SWPPP and erosion control BMPs will be used to minimize any wind or water-related erosion. The State Water Resources Control Board has issued a National Pollution Discharge Elimination System Statewide Storm Water Permit to Caltrans to regulate storm water and non-storm water discharges from Caltrans facilities. A SWPPP will be developed for the project, as one is required for all projects that have at least 1.0 acres of soil disturbance. The SWPPP complies with the Caltrans Storm Water Management Plan (SWMP). The SWMP includes guidance for Design staff to include provisions in construction contracts to include measures to protect sensitive areas and to prevent and minimize storm water and non-storm water discharges.

    The SWPPP is referenced to the Caltrans Construction Site BMPs Manual. This manual is comprehensive and includes many other protective measures and guidance to prevent and minimize pollutant discharges and can be found at the following website location: http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm. Protective measures will be included in the contract, including, at a minimum:

a. No discharge of pollutants from vehicle and equipment cleaning are allowed into the storm drain or water courses.

b. Vehicle and equipment fueling and maintenance operations must be at least 50 feet away from water courses.

c. Concrete wastes are collected in washouts and water from curing operations is collected and disposed of and not allowed into water courses.

d. Dust control will be implemented, including use of water trucks and tackifiers to control dust in excavation and fill areas, rocking temporary access road entrances and exits, and covering temporary stockpiles when weather conditions require.

e. Coir rolls will be installed along or at the base of slopes during construction to capture sediment and temporary organic hydro-mulching will be applied to all unfinished disturbed and graded areas.

f. Restoration of work areas where temporary disturbance has removed the pre-existing vegetation and re-seeding with a native seed mix.

g. Protection of graded areas from erosion using a combination of silt fences, fiber rolls along toe of slopes or along edges of designated staging areas, and erosion-control netting (such as jute or coir) as appropriate on sloped areas.

h. A Revegetation Plan will be prepared for restoration of temporary work areas. Pavement and base will be removed; topography blended with the surrounding area; and topsoil will be salvaged from the new alignment area to be placed over the restored area, which will then be revegetated with native grassland species.

19. Plastic mono-filament netting (erosion control matting) or similar material will not be used at the project site because California tiger salamander may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds. This measure will be implemented through contractors and subcontractors as part of the Caltrans standard BMPs and SWPPP.

20. 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 aquatic habitat, culvert, or drainage feature. This measure will be implemented through contractors and subcontractors as part of the Caltrans standard BMPs and SWPPP.

21. The limits of the construction zones 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 sensitive areas during construction activities.

The fencing will be removed only when all construction equipment is removed from the site. Activities within the action area will be limited to vehicle and equipment operation on existing roads. No project activities will occur outside the delineated project construction area.

22. Construction activity within the action area will be limited to vehicle and equipment operation within the Caltrans ROW and temporary construction easements unless otherwise noted.

23. If requested, before, during, or upon completion of ground breaking and construction activities, Caltrans will allow access by Service personnel to the action area to inspect project effects to California tiger salamanders and their habitats. Caltrans requests that all agency representatives contact the Resident Engineer prior to accessing the work site and review and sign the Safe Work Code of Practices, prior to accessing the work site for the first time.

24. The following will be implemented for staging, storage sites, vehicle parking, and access associated with the project:

    a. Contractors may independently seek off-site staging locations. Offsite staging locations will be subject to the requirements of resource agencies and permits will be the responsibility of the contractor.

    b. Caltrans will require as part of the construction contract that all contractors comply with the Act in the performance of the work as described in the project description of this biological opinion and conducted within the action area.

    c. If a staging, storage, access, or vehicle parking area that is in compliance with the Act is not available, the agency with jurisdiction and the contractor would be responsible for compliance with the Act.

Analytical Framework for the Jeopardy Determination

The following analysis relies on four components to support the jeopardy determination for the California tiger salamander: (1) the *Status of the Species*, which evaluates the species' rangewide 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 the direct effects associated with the approximately three-mile long, 13.62 acre construction footprint and the indirect effects within 1.3 miles of the construction footprint. As described in the following sections, the life history of the California tiger salamander can include long distance seasonal movements. Given the locations of potential breeding and upland habitat relative to the proposed construction footprint and our current knowledge of California tiger salamander movement, the action has the potential to adversely affect California tiger salamanders moving across the road that inhabit underground retreats at least 2200 feet and up to 1.3 miles from any given location from the proposed construction footprint.

Status of the Central Valley DPS of the California Tiger Salamander

The Central Valley DPS of the California tiger salamander was listed as a threatened species on August 4, 2004 (Service 2004b). Please refer to the final listing and final critical habitat rule for additional information on this species.

The California tiger salamander is a large, stocky, terrestrial salamander with a broad, rounded snout. Adults may reach a total length of 8.2 inches (Petranka 1998). California tiger salamanders exhibit sexual dimorphism with males typically larger than females. The coloration of the California tiger salamander is white or yellowish markings against black. As adults, California tiger salamanders tend to have creamy yellow to white spotting on the sides with much less on the dorsal surface of the animal, whereas other tiger salamander species have brighter yellow spotting that is heaviest on the top of the animals. California tiger salamander larvae have yellowish gray bodies, broad fat heads, large feathery external gills, and broad dorsal fins extending well up their back and range in length from approximately 0.45 to 0.56 inches (Petranka 1998).

The California tiger salamander has an obligate biphasic life cycle (Shaffer et al. 2004). Although larval California tiger salamanders develop in vernal pools and ponds in which they were born, they are otherwise terrestrial salamanders that spend most of their post-metamorphic lives in widely dispersed underground retreats (Shaffer et al. 2004; Trenham et al. 2001). Subadult and adult California tiger salamanders spend the dry summer and fall months of the year in the burrows of small mammals, such as California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*) (Storer 1925; Loredo and Van Vuren 1996; Petranka 1998; Trenham 1998a). The burrows provide protection from the sun and wind that can cause desiccation (drying out) of amphibian skin. Camel crickets (*Ceuthophilas* spp. and *Pristoceuthophilus* spp.) and other invertebrates within these burrows are likely prey for California tiger salamander. California tiger salamanders are also known to take refuge in logs, debris piles, and cracks in the ground (Holland et al. 1990). Not much is known about California tiger salamander feeding behavior but it is likely that they forage opportunistically in upland habitat in addition to documented feeding while in burrows and in breeding ponds (personal communication with Peter Trenham, April 7, 2010).

Tiger salamanders are members of the Family Ambystomatidae (mole salamanders); although members of this family are known as "burrowing salamanders," California tiger salamanders are not known to create their own burrows in the wild, perhaps due to the hardness of soils in the California ecosystems in which they are found. Because they live underground in the burrows of mammals, they are rarely encountered in the uplands by humans even where they are abundant. Recent surveys performed within the East Bay Regional Parks District (EBRPD) have demonstrated that California tiger salamanders may utilize less than 50 percent of suitable breeding habitat during any given year. This data indicates that even in ponds where the species appears to have been extirpated, regular breeding activities may still occur (Bobzien and DiDonato 2007). Burrows may be active (in use by small mammals) or inactive (small mammals are absent), but because burrows tend to be short lived without continued small mammal activity, they typically collapse within approximately 18 months if not maintained (Loredo et al. 1996). An active population of burrowing mammals is necessary to sustain sufficient underground refugia for the species. California tiger salamanders also may utilize leaf litter or desiccation cracks in the soil.

The upland burrows inhabited by California tiger salamanders have often been referred to as "aestivation" sites, which implies a state of inactivity, however, recent studies show that the animals move, feed, and remain active in their burrows (Trenham 2001; Van Hattem 2004). Researchers have long inferred that they are feeding while underground because the animals arrive at breeding ponds in good condition and are heavier when entering a pond than when leaving. Thus, upland habitat is a more accurate description of the terrestrial areas used by California tiger salamanders.

Once fall or winter rains begin, California tiger salamanders emerge from the upland sites on rainy nights to feed and to migrate to the breeding ponds (Stebbins 1985, 1989; Shaffer et al.

1993). Adult California tiger salamanders mate in the breeding ponds, after which the females lay their eggs in the water (Twitty 1941; Shaffer et al. 1993; Petranka 1998). Historically, California tiger salamanders utilized vernal pools, but the animals also currently breed in livestock ponds. Females attach their eggs singly, or in rare circumstances, in groups of two to four, to twigs, grass stems, vegetation, or debris (Storer 1925; Twitty 1941). In ponds with no or limited vegetation, they may be attached to objects, such as rocks and boards on the bottom (Jennings and Hayes 1994). California tiger salamander populations at eastern San Francisco Bay locations may have higher reproductive success in ponds with limited to no emergent vegetation, potentially due to a reduced number of aquatic predators that rely on more highly shaded areas (Bobzien and DiDonato 2007). After breeding, adults leave the pool and return to the small mammal burrows (Loredo et al. 1996; Trenham 1998a), although they may continue to emerge nightly for approximately the next two weeks to feed (Shaffer et al. 1993). In drought years, the seasonal pools may not fill and the adults can not breed (Barry and Shaffer 1994).

California tiger salamander eggs hatch in two to four weeks (Storer 1925; Shaffer and Trenham 2004). The larvae are aquatic with yellowish gray coloration and have broad fat heads, possess large, feathery external gills, and broad dorsal fins that extend well onto their back. The larvae feed on zooplankton, small crustaceans, and aquatic insects for about six weeks post hatching, after which they switch to larger prey (J. Anderson 1968). Larger larvae are known to consume tadpoles of Pacific tree frogs (*Pseudacris regilla*) and California red-legged frogs (*Rana aurora draytonii*) (J. Anderson 1968; P. Anderson 1968). The larvae are among the top aquatic predators in their seasonal pool ecosystems. Larval California tiger salamanders often rest on the bottom in shallow water; they may also be found at varying depths in locations where deep water is available. Young California tiger salamanders are typically wary and will often escape into vegetation on the bottom of the pool when approached by potential predators (Storer 1925).

The larval stage of the California tiger salamander usually last three to six months, as most seasonal ponds and pools dry up during the summer (Petranka 1998). The peak emergence of these metamorphs is typically between mid-June to mid-July (Loredo and Van Vuren 1996; Trenham et al. 2000) but in some areas as early as late February or early March. Amphibian larvae must grow to a critical minimum body size before they can metamorphose (change into a different physical form) to the terrestrial stage (Wilbur and Collins 1973). Individuals collected near Stockton in the Central Valley during April varied from 1.88 to 2.32 inches in length (Storer 1925). Feaver (1971) found that larvae metamorphosed and left the breeding pools 60 to 94 days after the eggs had been laid, with larvae developing faster in smaller, more rapidly drying pools. The longer the ponding duration, the larger the larvae and metamorphosed juveniles are able to grow, and the more likely they are to survive and reproduce (Pechmann et al. 1989; Semlitsch et al. 1988; Morey 1998; Trenham 1998b). The larvae will perish if a site dries before metamorphosis is complete (P. Anderson 1968; Feaver 1971). Pechmann et al. (1989) found a strong positive correlation with ponding duration and total number of metamorphosing juveniles in five salamander species. In Madera County, Feaver (1971) found that only 11 of 30 pools sampled supported larval California tiger salamanders, and five of these dried before metamorphosis could occur. Therefore, out of the original 30 pools, only six (20 percent)

provided suitable conditions for successful reproduction that year. Size at metamorphosis is positively correlated with stored body fat and survival of juvenile amphibians, and negatively correlated with age at first reproduction (Semlitsch et al. 1988; Scott 1994; Morey 1998). In the late spring or early summer, before the ponds dry completely, metamorphosed juveniles leave ponds and enter upland habitat. This emigration occurs in both wet and dry conditions (Loredo and Van Vuren 1996; Loredo et al. 1996). Unlike during their winter migration, the wet conditions when adult California tiger salamanders typically move do not generally occur during the months when their breeding ponds begin to dry. As a result, juveniles may be forced to leave their ponds on rainless nights. Under these conditions, they may move only short distances to find temporary upland sites for the dry summer months, waiting until the next winter's rains to move further into suitable upland refugia. Once juvenile California tiger salamanders leave their birth ponds for upland refugia, they typically do not return to ponds to breed for an average of four to five years (Trenham et al. 2000). However, the minimum age at sexual maturity has been observed to be two years for males and two to three years for females (Loredo and Van Vuren 1996; Trenham et al. 2000). Individuals remain active in the uplands, coming to the surface during rainfall events to disperse or forage (Trenham et al. 2000).

Lifetime reproductive success for California tiger salamanders is low. Trenham et al. (2000) found the average female bred 1.4 times and produced 8.5 young that survived to metamorphosis per reproductive effort. This resulted in roughly 11 metamorphic offspring over the lifetime of a female. Data suggests that the two reasons for the low reproductive success are that most individuals require two years to become sexually mature, but some individuals may be slower to mature (Shaffer et al. 1993); and some animals do not breed until they are four to six years old. While individuals may survive for more than ten years, many breed only once, and in some populations, less than five percent of marked juveniles survive to become breeding adults (Trenham 1998b). With such low recruitment, isolated populations are susceptible to unusual, randomly occurring natural events as well as from anthropogenic factors that reduce breeding success and individual survival. Factors that repeatedly lower breeding success in isolated pools can quickly extirpate a population.

Movements made by California tiger salamanders can be grouped into two main categories: (1) breeding migration; and (2) inter-pond dispersal. Breeding migration is the movement of California tiger salamanders to and from a pond and the surrounding upland habitat. After metamorphosis, juveniles move away from breeding ponds into the surrounding uplands, where they live continuously for several years. During a study in Monterey County, it was found that upon reaching sexual maturity, most individuals returned to their natal/ birth pond to breed, while 20 percent dispersed to other ponds (Trenham et al. 2001). Following breeding, adult California tiger salamanders return to upland habitats, where they may live for one or more years before breeding again (Trenham et al. 2000).

California tiger salamanders are known to travel long distances from breeding sites into upland habitats. Maximum distances moved are generally difficult to establish for any species, but California tiger salamanders in Santa Barbara County have been recorded to disperse 1.3 miles

from breeding ponds (Sweet 1998). California tiger salamanders are known to travel between breeding ponds; one study found that 20 to 25 percent of the individuals captured at one pond were recaptured later at ponds approximately 1,900 and 2,200 feet away (Trenham et al. 2001). In addition to traveling long distances during migration to or from ponds, California tiger salamanders may reside in burrows or other cover sites that are far from ponds. At one site in Contra Costa County, hundreds of California tiger salamanders have been captured three years in a row in upland habitat approximately 0.75 miles from the nearest breeding pond (Orloff 2003).

Although the observations above indicate that California tiger salamanders have the capacity for long distance movements, typically they stay closer to breeding ponds. Evidence suggests that subadult California tiger salamanders disperse further into upland habitats than adults. A trapping study conducted in Solano County during winter of 2002/2003 found that subadults used upland habitats further from breeding ponds than adults (Trenham and Shaffer 2005). More subadults were captured at distances of 328, 656, and 1,312 feet from a breeding pond than at 164 feet. Large numbers, approximately 20 percent of total captures, were found 1,312 feet from a breeding pond. Fitting a distribution curve to the data revealed that 95 percent of subadult at their study site could be found within 2,067 feet of the pond, with the remaining five percent being found at even greater distances. Results from the 2003-04 trapping efforts detected subadult California tiger salamanders at even further distances, with a large proportion of the total California tiger salamanders caught at 2,297 feet from the breeding pond (Service 2004a). Most subadults captured, even those at 2,100 feet, were still moving away from ponds (Service 2004a). This data suggests that many California tiger salamanders travel long distances while still in the juvenile/subadult stage. Post-breeding movements away from breeding ponds by adults appear to be much shorter. During post-breeding emigration, radio-tracked adult California tiger salamanders were located in burrows 62 to 813 feet from their breeding ponds (Trenham 2001). These reduced movements may be due to adult California tiger salamanders having depleted physical reserves post-breeding, or also due to the drier weather conditions that can occur during the period when adults leave the ponds.

Although the distances that California tiger salamanders may move likely depend on life stage, the location of available refugia and breeding ponds, presence of natural and constructed barriers, habitat continuity, climate conditions, individual propensities, and other factors, movements and dispersal corridors likely are critical to California tiger salamander population dynamics, particularly because the animals likely currently persist as metapopulations[2] with disjunct population centers.

California tiger salamanders are also known to use several successive burrows at increasing distances from an associated breeding pond. Although previously sited studies provide information regarding linear movement from breeding ponds, upland habitat features appear to have some influence on movement. Trenham (2001) found that radio-tracked adults favored grasslands with scattered large oaks, over more densely wooded areas. The same study showed

[2] A metapopulation consists of a group of spatially separated populations of the same species which interact at some level.

no indication that certain habitats type are favored as terrestrial travel corridors over others (Trenham 2001). In addition, at two ponds completely encircled by drift fences and pitfall traps, captures of arriving adults and dispersing new metamorphs were distributed roughly evenly around the ponds. Thus, it appears that dispersal into the terrestrial habitat occurs randomly with respect to direction and habitat types.

Historically, California tiger salamanders inhabited low elevation grassland and oak savanna plant communities of the Central Valley, and adjacent foothills, and the inner Coast Ranges in California (Jennings and Hayes 1994; Storer 1925; Shaffer et al. 1993). The species has been recorded from near sea level to approximately 3,700 feet in the Coast Ranges and up to about 1,600 feet in the Sierra Nevada foothills (Shaffer et al. 2004). Along the Coast Ranges, the species occurred from the Santa Rosa area of Sonoma County south to the vicinity of Buellton in Santa Barbara County. In the Central Valley and surrounding foothills, the species occurred from northern Yolo County southward to northwestern Kern County and northern Tulare County. Three distinct California tiger salamander populations are recognized and correspond to the Santa Maria area within Santa Barbara County, the Santa Rosa Plain in Sonoma County, and vernal pool/grassland habitats throughout the Central Valley.

With continued habitat loss, degradation, modification, and fragmentation, the California tiger salamander is still encountered in areas where their archetypical habitat is no longer found. It is not uncommon to find California tiger salamanders breeding in stock ponds or taking refuge under structural foundations. A large adult female California tiger salamander was recently found in the Caltrans ROW during construction of a State Route 680 project (Caltrans EA 04-253751) in Alameda County (Derek Jansen, URS, pers. comm. on May 5, 2009). The California tiger salamander emerged from a burrow at the base of an overpass. The burrow was located in a disturbed area composed of fill material and separated from the nearest potential breeding pond, approximately 500 feet away, by a fenced storage area, four paved roads, road curbs, and a drainage ditch. These features are older than the salamander. This observation is also contrary to distribution provided in the Service's listing document which states that the listed salamander generally does not occur west of State Route 680 in Alameda and Contra Costa Counties (Service 2004a). California tiger salamanders have the potential to persist in disturbed areas as long as it provides at least one or more of their life history requirements. Our understanding of current distribution is incomplete.

Documented and/or potential predators on California tiger salamanders include coyotes (*Canis latrans*), raccoons, striped skunks, opossums (*Didelphis virginiana*), egrets (*Egretta* spp.), great blue herons (*Ardea herodias*), crows (*Corvus brachyrhynchos*), ravens (*Corvus corax*), garter snakes (*Thamnophis* spp.), bullfrogs (*Rana catesbeiana*), California red-legged frogs, mosquito fish, and crayfish (*Procrambus* spp.). In addition, predacious aquatic hexapods (arthropods) have also been shown to have a significant negative association with California tiger salamanders (Bobzien and DiDonato 2007). Domestic dogs (*Canis familiaris*) have been observed eating California tiger salamanders at Lake Lagunitas at Stanford University (Sean Barry, ENTRIX, pers. comm. July 2004).

Diseases may pose a significant threat though the specific effects of disease on the California tiger salamander are not known. Pathogens, fungi, water mold, bacteria, and viruses have been known to adversely affect other tiger salamander species and/or other amphibians. Pathogens are suspected of causing global amphibian declines (Davidson et al. 2003). Pathogen outbreaks have not been documented in the California tiger salamander, but chytrid fungus infections (chytridiomycosis) have been detected in California tiger salamander (Padgett-Flohr and Longcore 2005). Chytridiomycosis and ranaviruses are a potential threat to the California tiger salamander because these diseases have been found to adversely affect other amphibians, including tiger salamanders (Davidson et al. 2003; Lips et al. 2003). A deformity-causing infection, possibly caused by a parasite in the presence of other factors, has affected pond-breeding amphibians at known California tiger salamander breeding sites. This same infection has become widespread among amphibian populations in Minnesota and poses the threat of becoming widespread in California. Non-native species, such as bullfrogs and non-native tiger salamanders, are located within the range of the California tiger salamander 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 California tiger salamanders being more susceptible to the effects of disease. Disease will likely become a growing threat because of the relatively small and fragmented remaining California tiger salamander breeding sites, the many stresses on these sites due to habitat losses and alterations, and the many other potential disease-enhancing anthropogenic changes that have occurred both inside and outside the species' range.

Environmental Baseline for the Central Valley DPS of the California Tiger Salamander

The California tiger salamander is imperiled throughout its range by a variety of human activities (Service 2004b). Current factors associated with declining populations of the California tiger salamander include continued degradation and loss of habitat due to agriculture and urbanization, hybridization with non-native eastern tiger salamanders (*Ambystoma tigrinum*) (Fitzpatrick and Shaffer 2004; Riley et al. 2003), and introduced predators. Fragmentation of existing habitat and the continued colonization of existing habitat by non-native tiger salamanders (and other species) may represent the most significant current threats to California tiger salamanders, although populations are likely threatened by more than one factor. Isolation and fragmentation of habitats within many watersheds have precluded dispersal between sub-populations and jeopardized the viability of metapopulations (broadly defined as multiple subpopulations that occasionally exchange individuals through dispersal, and are capable of colonizing or "rescuing" extinct habitat patches). Other threats include predation and competition from introduced exotic species, possible commercial over utilization, various chemical contaminants, road-crossing mortality, and certain unrestrictive mosquito and rodent control operations. The various primary and secondary threats are not currently being offset by existing Federal, State, or local regulatory

mechanisms. The California tiger salamander is also vulnerable to chance environmental or demographic events, to which small populations are particularly vulnerable.
The land adjacent to the project area is under private ownership and is primarily undeveloped, other than widely spaced ranch homes. The project area occurs within Solano County jurisdiction and is zoned primarily for extensive agricultural uses.

The State Route 12 corridor in the Fairfield-Suisun-Rio Vista area has experienced rapid growth over the last several decades. The Association of Bay Area Governments (ABAG) anticipates continued growth in Solano County and expects the County to lead the Bay Area in percentage growth of both population and jobs through 2020. The California Department of Finance projects that Solano County's population will increase from 399,000 in 2000, to 564,900 by 2020, with most growth occurring within the County's three largest cities, Vallejo, Fairfield, and Vacaville. Rio Vista, while still a relatively small community, has led Solano County growth (on terms of percentage growth rate) for the last few years (LSA 2005). Increased demand for housing will likely result in loss of suitable habitat for the California tiger salamander as housing developments replace agricultural and ranch lands. Increased urbanization in the region will contribute to the degradation of water quality in streams, altered flow regimes, increased contaminated road runoff, loss of upland habitat, and increased human presence in natural areas.

As urban development continues, it will likely adversely affect upland areas that serve as dispersal and refuge habitat for California tiger salamanders. Continued development, modification, and maintenance of roadways to serve expanding urban areas may further fragment and isolate populations of California tiger salamanders 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 this listed salamander, thus impacting the reproductive success of this species.

The western terminus of the proposed State Route 12, Currie Road to Liberty Island Project (approximately 0.15 miles west of Currie Road) is approximately 4.25 miles south of the nearest California tiger salamander designated critical habitat unit, the Central Valley Region Unit 2 (Service 2004b). The project is within a rural area with few homes and relatively few paved roads. Heavy row crop agricultural development is primarily located east around the town of Rio Vista and approximately four miles north of the action area. For the most part the surrounding habitat north to previously mentioned disked fields, south to the Montezuma Hills, and northwest to Travis Air Force Base (AFB) is characterized by contiguous open grassland laced with ephemeral creeks and vernal pool hydrology. Some of the surrounding land has been subject to disking but the vernal pool signatures are still visible on aerial photography. The vast majority of this area is privately owned and grazed with relatively little recent development pressure. As a result, few biological surveys have been conducted in this general region. The proposed project is also located outside the City of Rio Vista urban growth limit. Based on the habitat similarities suggested by aerial photography and species occurrences from areas surrounding Travis AFB, including approved and proposed conservation banks, a host of vernal pool and grassland

associated listed species have the likelihood to be found throughout the general vicinity of the proposed project area. The entire project is located within the Jepson Prairie Vernal Pool Core Recovery Area (Service 2005).

The closest recorded California tiger salamander observation is from a 2009 survey associated with the Shiloh III Wind Project in the Montezuma Hills (personal communication with Brad Schafer of ICF Jones and Stokes, August 13, 2009). This observation was the result of a larval survey of a pond located approximately 0.7 miles south of State Route 12 and approximately 3.4 miles west-southwest of the western end of the proposed project. California tiger salamanders have been recently recorded in the Calhoun Cut Ecological Reserve (CNDDB 2009, occurrence # 547) approximately 6.9 miles northwest of the action area and within the Central Valley Region Critical Habitat Unit 2, approximately 4.25 miles northwest of the project where Brad Shaffer's laboratory out of the University of California has been conducting long running California tiger salamander research on the Jepson Prairie (CNDDB 2009). Another California tiger salamander was observed south of State Route 12 in 2007 as a result of surveys conducted in the Potrero Hills wind resource area (CNDDB 2009, occurrence #1037). Of note, this salamander was observed in a recently disced field and the record is approximately 4.45 miles west-southwest of the action area. California tiger salamanders have also been observed in stock ponds in the Potrero Hills approximately 8.0 miles west of the western terminus of the action area and south of State Route 12 as a result of surveys completed for a proposed landfill expansion (CNDDB 2009). Conservation land for the California tiger salamander has been proposed in the Potrero Hills by the Potrero Hills Landfill (LSA 2007). One of the proposed mitigation areas is immediately adjacent to State Route 12. Relative to the action area, these observations are beyond the known dispersal distance for an individual California tiger salamander however they demonstrate that this listed species is observed in the few areas in the general vicinity where protocol surveys have been conducted. The Service visited the action area on January 22, 2010, and found several large well inundated seasonal ponds within 0.5 miles of the construction footprint as well as a characteristic California tiger salamander breeding pond within the action area. This January 2010 visit was conducted following a full week of substantial rain, which is an optimal time to assess the locations of potential California tiger salamander breeding ponds. The California tiger salamander is likely to be breeding in vernal pools, stock ponds, and other water retention features within 1.3 miles of the action area.

The proposed project is within the coverage area for the Draft Solano County Multispecies Conservation Plan (Solano County HCP) (SWCA 2009). The draft Solano County HCP characterizes the action area as part of a large contiguous Valley Floor Grassland and Vernal Pool Community that is within the potential range of the California tiger salamander. Caltrans is not one of the member agencies participating in the HCP and its activities would not be covered under the HCP, however, reference to the HCP is relevant because it represents the culmination of the best available science and conservation strategy for the region and the special-status species within its coverage. As part of the reserve design and conservation approach presented in the draft HCP, the action area is located approximately 0.06 to 0.44 miles south of an area identified as having high preservation and restoration potential for grassland and vernal pool

habitat and the species associated with them. The HCP includes prescribed sub-regional mitigation requirements that are intended to meet the goals and objectives of the conservation strategy. The proposed Solano Highway 12, Currie Road to Liberty Island Road Shoulder Project would be within the Solano County HCP subarea 2I which includes direction to mitigate for direct impacts to upland habitat at 3:1 (with creation of 0.01 acres of breeding habitat per acre of upland habitat impacted). Mitigation in the form of habitat preservation and enhancement and construction of new breeding habitat is required for all covered activities in the Solano County HCP within areas defined as potential California tiger salamander habitat. The mitigation ratio represents a regional strategy to preserve viable California tiger salamander populations in the area despite a continued overall net loss of California tiger salamander habitat in Solano County while increasing the reproductive output and carrying capacity of the remaining habitat. In addition, it meets the HCP's objectives to protect and maintain important landscape corridors; and maximize the value, productivity, and carrying capacity of those preserved lands.

Despite the lack of access to the surrounding habitat beyond the existing Caltrans ROW, the Service and the Caltrans' contract California tiger salamander biologist used aerial photography and field observations from available access locations to identify available upland habitat for refugia and dispersal as well as potential breeding locations throughout the action area vicinity. The Caltrans salamander biologist identified at least 16 potential breeding locations within 1.24 miles north and south of the action area (Caltrans 2008). Of these, three were characterized as providing potential high quality breeding habitat. All three sites are less than one mile from the action area with the closest within 0.34 miles. Given the habitat assessment, all of the action area is located between 500 feet and 1.3 miles of potential breeding habitat. The Service observed more potential breeding ponds within 1.3 miles of the action area on January 22, 2010. The Service also observed ponding in the State Route 12 box culvert immediately east of McClosky Road during a May 22, 2009 field visit. It is possible that ponding in this area provides breeding habitat in years when winter rainfall results in sufficient ponding at this location rather than flow. When the Service visited the action area on January 29, 2010 and February 5, 2010, we found ponding of greater than four feet at the culvert near McClosky Road. The culvert is recessed such that the inundation was not accompanied by the flow that might render it unavailable for successful breeding.

No protocol-level California tiger salamander surveys have been completed within or adjacent to the action area. None of the potential breeding ponds identified occur within areas where Caltrans could obtain permission for entry and surveys from the landowners. Incidental take for the California tiger salamander was also issued for the adjoining Caltrans State Route 12 project from Currie Road to 0.68 miles west of Walters Road near Suisun City (Caltrans EA OT0900 and OT1010). Formal consultation for this adjacent project was completed on November 27, 2006 (Service file 1-1-04-F-0122) and the project remained in active construction in February 2010.

Without a road mortality study or movement analysis it is difficult to determine where the "hot spots" for seasonal California tiger salamander movement across State Route 12, and hence

increased road mortality risk would occur. Given that the entire project is within 1.24 miles of potential breeding locations and the lack of impermeable barriers it is difficult to discount the potential crossing in any give portion of the project alignment. California tiger salamanders do not appear to favor particular routes of in-mass travel but it is more likely that higher concentrations of traveling adults or dispersing juveniles would be found closer to a breeding pond. Based on the limited information regarding the nearby habitat functions it may be more likely to encounter a higher concentration of California tiger salamanders attempting to cross State Route 12 at the western end of the project between Currie Road and McClosky Road. Including the box culvert at McClosky Road, there are three existing road undercrossings between McClosky and Currie Road.

Like most California highways, State Route 12 was a county road prior to becoming part of the State highway system. The project segment of State Route 12 was identified as Route 12 by 1919 (California Highways website 2009). The proposed project includes roadway improvements intended to modify this former county road to meet State Highway design and safety standards. Like most of the State's highways, the roadway now identified as State Route 12 was constructed long before the establishment of the National Environmental Policy Act (NEPA; 1969), the Act (1973), or the California Environmental Quality Act (CEQA; 1970); as well as the Federal listing of the Central Valley DPS of the California tiger salamander (2004) or our current understanding regarding the effects roads have on wildlife and how roads can be designed to minimize those effects.

It is likely that the California tiger salamander population along State Route 12 has been subject to a prolonged history of road mortality. There are no discernable barriers to prevent California tiger salamanders from entering the existing State Route 12 roadway within the proposed project area. According to the traffic data on Caltrans' website, the annual average daily traffic in the proposed project vicinity on State Route 12 (monitored at the State Route 113 junction) increased from 9,400 vehicles in 1992 to 15,000 in 2008 (http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm). This represents a 62.7 percent increase in daily traffic over a 16 year period. This steep and steady increase in vehicular use has likely exacerbated the risk of California tiger salamander-vehicle collisions.

The existing State Route 12 is likely a habitat fragmenting feature, not due to physical barriers but because of road mortality. Road mortality creates a semi-permeable barrier because some individual California tiger salamanders are likely to safely cross the roadway however; over time the increase in mortality risk to California tiger salamanders within 1.3 miles of State Route 12 can have a significant effect on population viability as the integrity of the larger population is disrupted (Rudolph et al. 1999; Forman 2000; Hilty and Merenlender 2004; Petit et al. 1995; and Buza et al. 2000).

Culverts are often used as a solution to provide "safe" passage of amphibians across roadways. All of the existing culverts crossing under State Route 12 in the action area are designed to convey hydrology. Based on the modifications proposed in the project description, it is likely

that most of these culverts are undersized for current hydrology. The above-ground activity of adult California tiger salamanders coincides with seasonal rain events. California tiger salamanders typically avoid flowing water and therefore would likely be excluded from using the existing cross culverts for passage if they are inundated with flowing water during this critical activity period. However, based on the Service's January and February 2010 visits to the action area, it does not appear that any of the 16 existing cross culverts in the action area experience significant water flow following substantial winter rain events. The local rolling topography appears to be more conducive of ponding typical of vernal pool grassland areas. The "blue line" drainage near the McClosky Road intersection is the largest linear aquatic feature crossing the action area and was better characterized as a corridor of linked ponded swales rather than a stream following prolonged January 2010 precipitation. Although the structures could be modified to enhance their use, all 16 existing cross culverts in the action area appeared to provide potential safe passage for the California tiger salamander in January and February 2010. State Route 12 includes an existing parallel Caltrans ROW fence on both sides of the roadway but the fence is not designed to exclude California tiger salamanders from the roadway or direct them towards the 16 "safe" crossings.

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 tiger salamander is reasonably certain to occur within the action area because it is located within the species' range and current distribution and all the elements needed to support the species' life history are located within 0.5 miles of the action area as well as the biology and ecology of the animal, especially the ability of adults to move considerable distances between its breeding ponds and upland habitat. There are no constructed or natural features that would prevent California tiger salamanders from entering or inhabiting the Caltrans ROW. This listed species may use the existing cross culverts to inadvertently avoid the roadway but there are no barriers to direct them to these crossings. As mentioned on page 21, a California tiger salamander was recently discovered inhabiting a burrow in a constructed highway overpass. It is possible that this species could be breeding in the box culvert pond near McClosky Road in some years and/or be found taking refuge within the action area for the Solano Highway 12, Currie Road to Liberty Island Road Shoulder Widening Project and a greater likelihood that the species is making seasonal crossings of the roadway while traveling to or from any of the 16+ identified potential breeding ponds within 1.24 miles of the roadway.

Effects of the Proposed Action on the California Tiger Salamander

The efficacy of the proposed *Conservation Measures* depends on effective implementation. Effective implementation of *Conservation Measures* will likely minimize effects to the California tiger salamander but incidental take may still occur due to construction activities and habitat loss. Therefore, construction activities have the potential to result in a variety of adverse effects that would result in take of the California tiger salamander. Unless identified by the biological monitor or site personnel, and rescued by the biological monitor, individuals 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 tiger salamanders 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. Edible trash left during or after construction activities could attract predators, such as raccoons, crows, and ravens, to the sites, which could subsequently prey on the listed amphibian. Caltrans commitment to not using erosion control devices with mono-filament (Conservation Measure 19) should be effective in avoiding the associated risk of entrapment that can result in death by predation, starvation, or dessication (Stuart et al. 2001).

Caltrans often performs night work to avoid times of peak traffic, complete continuous activities, avoid extreme weather, and/or complete emergency work. Night work has a greater potential of adversely affecting nocturnal species such as the California tiger salamander. Wise and Buchanan (2006) reviewed the adverse effects that may result from night time illumination on salamander species. Artificial lighting used during night time construction may increase predation of California tiger salamanders, if it occurs during periods of fall, winter, or spring rains, because the amphibians will lose the cover of darkness for movement. Nocturnal foraging by salamander species may be affected by artificial lighting. In their study of the red-backed salamander (*Plethodon cinereus*), Wise and Buchanan (2006) observed that salamanders were less likely to emerge to forage within one to two hours following sunset in areas that were illuminated. During such foraging bouts, visual information was used for locating prey. Greater light levels delay emergence, resulting in less foraging time, but could have increased the ability of the salamanders to capture prey; however, they also could make the amphibians more vulnerable to predation. Many salamanders, such as the California tiger salamander, are terrestrial as adults but migrate to ponds to breed and lay eggs. The orientation of some of these terrestrial species away from and toward these ponds is influenced by the spectral characteristics of light (Wise and Buchanan 2006). Artificial lights that emit unusual spectra may disrupt these migration patterns.

In some years rainfall may result in ponding at the State Route 12 box culvert near McClosky Road rather than sufficient flow that would discourage California tiger salamander entry. A ponded situation would provide potential breeding habitat for the California tiger salamander. Extension of this box culvert is unlikely to result in modification of hydrologic conditions that would prevent the area from ponding in the future. Activities in the area could result in take of eggs, larvae, juvenile, and/or adult California tiger salamanders if any of these life stages is present while work is occurring at this location. According to *Conservation Measure 9*, Caltrans will only work on the box culvert between May 15 and October 15 to coincide with the driest period of the year. Additional biological monitoring will be needed if ponding persists during this work window.

The proposed project would result in the permanent loss of 13.62 acres of suitable upland habitat of the California tiger salamander. Habitat loss is one of the primary threats to this listed

amphibian. Locally, land conversion for row crop agriculture has been the primary reason for habitat loss. The California tiger salamander requires a large contiguous expanse of habitat to remain viable. It is reasonable to conclude that additional habitat loss would adversely affect the individuals that utilize the area for breeding, dispersal, and upland refugia. Additional habitat loss along an existing linear feature is likely to magnify the fragmentation created by the roadway as well as surface area in which a California tiger salamander is likely to be subjected to a vehicle collision.

The effect of habitat fragmentation on the California tiger salamander is potentially significant when there are insufficient features to facilitate safe and sufficient passage. Fragmentation can reduce access to habitat as well as habitat suitability, and disrupt movements, dispersal, and gene flow. The construction and widening of roads through California tiger salamander habitat may restrict or block movement between breeding ponds and upland habitat. The likelihood of this effect will increase with larger road size, higher traffic volume, and the presence of fences or median barriers in the absence of effective safe crossing features. In addition to limiting access to breeding ponds or upland habitat, roads also may reduce the suitability of habitat for the California tiger salamander by fragmentation into patches too small for effective use by the species. As a habitat patch decreases in size, the number of animals the patch can support also decreases. This increases the probability that the animals will be extirpated from each habitat patch. The possibility for recolonization will depend upon the nature of the factors, e.g., roads, canals, development, etc., that are causing the fragmentation.

Roads have been documented as barriers to movements by a diversity of species, and this effect varies with road size and traffic volume. The inhibition of animal movements caused by roads produces a significant effect by fragmenting habitats and populations (Joly and Morand 1997). Roads were found to be significant barriers to gene flow among common frogs (*Rana temporaria*) in Germany and this has resulted in genetic differentiation among populations separated by roads (Reh and Seitz 1990). Similarly, significant genetic subdivision was detected in bank voles (*Clethrionomys glarelous*) populations separated by a 164 foot wide highway in Germany (Gerlach and Musolf 2000).

The necessity of moving between multiple habitats and breeding ponds means that many amphibian species, such as the California tiger salamander 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. California tiger salamanders make seasonal movements as much as 1.3 miles and as described by Carr and Fahrig (2001), such vagile amphibians are more likely to encounter roads, increasing their risk of mortality.

The increased width of the State Route 12, decreased congestion, higher levels of vehicle traffic, and increased speed will result in higher numbers of California tiger salamanders killed during their movements between their upland habitat and breeding ponds due to increased surface area

for vehicle collisions to occur. Fahrig et al. (1995) found that high traffic two-lane paved roads had a much larger effect on amphibian 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., Ashley 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). 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). Most road mortality studies regularly document records from a slow moving vehicle (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 tiger salamander. Discovery of a California tiger salamander road mortality carcass is likely limited to a brief time following the incident due to their small size, soft bodies, rapid desiccation and decomposition, and the likelihood that the carcass will be repeatedly crushed by a succession of vehicles and or removed by a scavenger.

California tiger salamander mortality and injury occurs when the animals attempt to cross roads and are hit by cars, trucks, or motorcycles. The majority of strikes occur on rainy nights when the animals are moving to their breeding ponds. Thus, vehicle strikes are a direct source of mortality for the California tiger salamander. If vehicle strikes are sufficiently frequent in a given locality, this could result in reduced abundance of this animal. Especially problematic is the death of females prior to the laying of their eggs because this could result in the loss of an entire cohort, and therefore, reduced recruitment of new individuals into the population.

Vehicles constitute a consistent source of mortality for the animal, based on the frequency with which vehicle strikes occur. Although no systematic, range-wide studies have been conducted, it is known that significant numbers of California tiger salamanders are killed by vehicular traffic while crossing roads (Hansen and Tremper 1993; S. Sweet, in litt. 1993; Joe Medeiros, Sierra College, pers. comm. 1993). For example, during a one-hour period on a road bordering Lake Lagunita on the Stanford University campus, 45 California tiger salamanders were collected, 28 of which had been killed by cars (Twitty 1941). More recently, during one 15-day period in 2001 at a Sonoma County location, 26 road-kill California tiger salamanders were found (D. Cook, pers. comm. 2002). Overall breeding population losses of California tiger salamanders due to road mortality have been estimated to be between 25 and 72 percent (Twitty 1941; S. Sweet in litt. 1993; Launer and Fee 1996). Mortality may be increased by associated roadway curbs and berms as low as 3.5 to five inches, which allow California tiger salamanders access to roadways but prevent their exit from them (Launer and Fee 1996; S. Sweet in litt. 1998).

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).

The proposed project includes upsizing of four existing culverts that provide a perpendicular crossing under State Route 12. Although the culverts are solely designed to route existing hydrology under the roadway they also represent existing potential for California tiger salamander safe passage across the roadway. The planned replacement of one (1) 18-inch diameter culvert with a 24-inch culvert and two (2) 12-inch culverts and one (1) 15-inch culvert with 18-inch culverts has the potential to enhance the wildlife passage in the action area due to the larger size and natural bottom design.

The four replaced culverts and the other 12 existing cross culverts are unlikely to have sufficient water flow to deter California tiger salamanders from using them during the night-time rain events when the animal is most likely to be above ground and moving. These crossings appear to be ponded or moist during these critical wet periods. This condition should limit the risk of desiccation and death that can occur when amphibians enter dry culvert crossings. Although likely adequate, the crossing design could be enhanced by using the FHWA's *Wildlife Vehicle Collision Reduction Study* guidance on various crossing designs that promote air, soil humidity, and light conditions that are remain similar to those conditions found outside the tunnels (FHWA 2008).

Potential passage would be further enhanced if Caltrans were to incorporate design features that directed animals to culvert crossings. Exclusionary and directional curbs and/or fencing are integral to the success of wildlife crossings (McAllister 2009, Gagnon 2009, Pagnucco 2009, Dodd 2009, WTI 2006) and have been shown to be very successful relative to cost (Craighead 2009). Surveys of fenced and unfenced roads suggest that fencing greatly reduces road mortality of many vertebrate species (Boarman 1995). Preliminary results from a National Park Service and Caltrans study on State Route 23 indicate that enhancing existing culverts and installing directional fencing reduced road mortality and was likely responsible for a five fold increase in use of the passage (Sikich et al. 2009). The risk of becoming road kill outweighs possible predation risk of "funneling" salamanders to undercrossings (Little et al. 2002) and the presence of road mortality may increase the concentration of California tiger salamander predators near roadways. Caltrans is listed as a "cooperator" on the *Safe Passage* document developed by the Southern Rockies Ecosystem Project, Wildlife Consulting Resources, and the Center for Transportation and the Environment (http://www.carnivoresafepassage.org/index.htm). Caltrans staff is listed as a reviewer of the document. As stated on the document's website:

> "Fencing is as critical as the wildlife crossing structures and approaches. Most wildlife are extremely wary and will avoid confinement or unnatural situations. Given the choice between going through unfamiliar wildlife crossing structures and crossing highway

> pavement, many will choose the latter. Fencing forces wildlife to use the crossings. Over time, research indicates wildlife species will be more comfortable using wildlife crossings. Adaptations to using wildlife crossings may take up to five years...Without fencing, most of these animals would not use the structures."

Successful amphibian-specific road crossings and other wildlife crossing that could be used by amphibians have been designed and installed by local transportation agencies, other state transportation departments, and in Canada and Europe. Slow moving and inconspicuous species such as the California tiger salamander whose life history depends on successful seasonal movements are especially prone to the fragmentation, barriers, and other road effects presented by linear features such as State Route 12. Transportation enhancement or safety projects such as the proposed Solano Highway 12, Currie Road to Liberty Island Road Shoulder Widening Project present a cost-effective opportunity to address existing and future road effects on the California tiger salamander.

It is unclear how readily California tiger salamanders will use long concrete or corrugated metal culverts across a roadway that are not day-lighted, is only designed to contain the width of the drainage, 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 tiger salamanders, passages made for other salamander species, 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 and 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 targeted 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 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. With Caltrans' proposed culvert modifications and project design, no intent has been stated or demonstrated to (a) ensure California tiger salamanders are directed to crossings, (b) demonstrate that the existing culverts are properly placed relative to the California tiger salamanders' use of the surrounding landscape to provide a logical crossing location, and (c) maintain them in way that ensures that sediment and debris buildup over time does not preclude their use by crossing California tiger salamanders. The lack of fencing (such as ERTECH's high UV E-Fence, http://www.ertecsystems.com/) or California tiger salamander-impassible curbs to direct California tiger salamanders to the culverts will result in individuals crossing the roadway where they are more likely to be killed by vehicles.

Road studies suggest that properly designed passage can significantly reduce wildlife mortality, including amphibian mortality (Dodd et al. 2004). The Town of Amherst in the State of Massachusetts installed two culverts with directional 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 percent of animals that reached the tunnel entrances successfully passed through them (Jackson 1996).

Because their habitats have been fragmented, many endangered and threatened species exist as metapopulations (Verboom and Apeldoorn 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. As discussed in the Status section of this biological opinion, the natural history of the California tiger salamander relies on the movement between upland and aquatic habitats and corridors for that movement likely are critical to 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[3] species have a higher tolerance to habitat loss and fragmentation than less vagile species. But models that include dispersal mortality predict exactly the opposite:

[3] Vagile, meaning having the ability to freely move about and disperse in a given environment.

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 top 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 use frequent long-distance movements have higher mortality rates than do sedentary species.

Negative effects to wildlife populations, including the California tiger salamander from roads and urban development may extend some distance from the actual project footprint. The phenomenon can result from any of the effects already described in this biological opinion (e.g. direct mortality, vehicle-related mortality, habitat degradation, invasive exotic species, etc.). Forman and Deblinger (1998) described the area affected as the "road effect" zone. Along a four-lane road in Massachusetts, they determined that this zone extended for an average of approximately 980 feet to either side of the road for an average total zone width of approximately 1,970 feet. However, in some locations they detected an effect >0.6 mile from the road. Rudolph et al. (1999) detected reduced snake abundance up to 2,790 feet from roads in Texas. They estimated snake abundance out to 2,790 feet, so the effect may have been greater. Extrapolating to a landscape sale, they concluded the effect of roads on snake populations in Texas likely was significant, given that approximately 79 percent of the land area in Texas is within 1,640 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 1,575-6,560 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, but 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, 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" for the California tiger salamander has not been adequately investigated; however, it is possible it exists given the documented effects of roads and development on these animals. Given the differing proximity of at least 16 potential breeding ponds within 1.24 miles of the proposed project, the road effect zone to California tiger salamanders in the area may vary along the road alignment but have the potential to extend as much as 1.3 miles or more from the roadway given their ability to move such distances.

The proposed conservation measures are likely to minimize the take of California tiger salamanders that could result from the potential adverse effects associated with the proposed construction activities. Biological monitoring, worker education, the implementation of proper erosion control BMPs, contaminate control, pre-construction surveys, and proper limited

localized relocation of California tiger salamanders in immediate harm should reduce the death and injury to individual California tiger salamanders. Post-construction restoration of temporary work areas will likely limit the invasion of non-native vegetation. As proposed, the project does not address or alleviate the adverse effects described in the baseline for the existing roadway or minimize the collective adverse effects resulting from the proposed roadway widening.

Cumulative Effects within the Action Area

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.

Numerous non-Federal activities continue to negatively affect the California tiger salamander in Solano County. The Solano County Water Agency, in cooperation with the cities of Fairfield, Suisun, Rio Vista and several other applicants are currently preparing a regional habitat conservation plan (HCP) pursuant to section 10(a)(1)(B) of the Act that is expected to address the effects of land uses and associated conservation activities in this area on listed species (SWCA 2009). The draft HCP includes the action area and the California tiger salamander. This HCP anticipates that actual development will be substantially reduced from the potential 1,000 acres of zoned development land in Fairfield and Suisun (SWCA 2009). Implementation of the HCP will also result in the designation, acquisition, and management of conservation areas within Solano County for the California tiger salamander. Other threats include contamination, poisoning, increased predation, and competition from non-native species associated with human development. Small private actions that may adversely affect listed species, such as conversion of land, small mammal population control, disking, 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 respective Endangered Species Act.

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.

Cattle-grazing is a common land use practice in rural Solano County and is occurring along the north and south boundaries of the project footprint. Overgrazing results in degradation and loss of riparian vegetation, increased water temperatures, stream bank 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 California tiger salamander 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 California tiger salamanders. Rodent control in rural areas in Solano County could contribute to the decline of this listed amphibian 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 California tiger salamanders. Discing is a common practice on agricultural lands which can result in substantial losses of upland habitat for California tiger salamanders. Significant conversion of rural, undeveloped land to agricultural land, particularly vineyards, is currently occurring in Solano County, resulting in loss of upland habitat for listed species.

As urban development continues, it will likely adversely affect upland areas that serve as dispersal and refuge habitat for California tiger salamanders. Continued development and maintenance of roadways to serve expanding urban areas may further fragment and isolate populations of California tiger salamanders from other nearby populations and increased road mortality due to the construction and use of new roads and increased traffic in the overall region. 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 introduce exotic fish into breeding and non-breeding ponds impact the reproductive success of California tiger salamanders.

California tiger salamanders 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 California tiger salamanders.

Further habitat fragmentation; additional non-native species introduction; translocation of infected individuals, and increased access to aquatic habitat could facilitate or increase the spread of amphibian diseases within the range of the California tiger salamander. 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 centigrade during the 20th Century (IPCC 2001, 2007; Adger et al 2007). There is an international scientific consensus that most of the warming observed has been caused by human activities (IPCC 2001, 2007; Adger et al. 2007), and that it is "very likely" that it is largely due to increasing concentrations of greenhouse gases (carbon dioxide, methane, nitrous oxide, and others) in the global atmosphere from burning fossil fuels and other human activities (Cayan et al. 2006, EPA Global Warming webpage http://yosemite. epa.gov; Adger et al. 2007). Eleven of the twelve years between 1995

and 2006 rank among the twelve warmest years since global temperatures began in 1850 (Adger et al. 2007). The warming trend over the last fifty years is nearly twice that for the last 100 years (Adger et al. 2007). Looking forward, under a high emissions scenario, the International Panel on Climate Change estimates that global temperatures will rise another four degrees centigrade by the end of this Century; even under a low emissions growth scenario, the International Panel on Climate Change estimates that the global temperature will go up another 1.8 degrees centigrade (International Panel on Climate Change 2001).

The increase in global average temperatures affects certain areas more than others. The western United States, in general, is experiencing more warming than the rest of the Nation, with the 11 western states averaging 1.7 degrees Fahrenheit warmer temperatures than this region's average over the 20th Century (Saunders et al. 2008). California, in particular, will suffer significant consequences as a result of global warming (California Climate Action Team 2006). In California, reduced snowpack will cause more winter flooding and summer drought, as well as higher temperatures in lakes and coastal areas. The incidence of wildfires in California also will increase and the amount of increase is highly dependent upon the extent of global warming. No less certain than the fact of global warming itself is the fact that global warming, unchecked, will harm biodiversity generally and cause the extinction of large numbers of species. If the global mean temperatures exceed a warming of two to three degrees centigrade above pre-industrial levels, twenty to thirty percent of plant and animal species will face an increasingly high risk of extinction (International Panel on Climate Change 2001, 2007).

The mechanisms by which global warming may push already imperiled species closer or over the edge of extinction are multiple. Global warming increases the frequency of extreme weather events, such as heat waves, droughts, and storms (International Panel on Climate Change 2001, 2007; California Climate Action Team 2006; Lenihan et al. 2003). Extreme events, in turn may cause mass mortality of individuals and significantly contribute to determining which species will remain or occur in natural habitats. As the global climate warms, terrestrial habitats are moving northward and upward, but in the future, range contractions are more likely than simple northward or upslope shifts. Ongoing global climate change (Anonymous 2007; Inkley et al. 2004; Adger et al. 2007; Kanter 2007) likely imperils the California tiger salamander and the resources necessary for its 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 tiger salamander, the environmental baseline for the action area; the effects of the proposed Solano Highway 12, Currie Road to Liberty Island Road Shoulder Widening Project and the cumulative effects; it is the Service's biological opinion that the project, as proposed, is likely to result in take of California tiger salamander but is not likely to jeopardize the continued existence of this listed species.

The existing roadway bisects upland habitat for the species and potential breeding ponds are located within the action area and on either side of the roadway within the know travel distance of the California tiger salamander. The primary threat of the project is that it will likely increase the risk of road mortality by increasing the road surface area and increasing vehicle speeds by decreasing congestion. Although the existing road way and the proposed modifications are likely to continue to reduce the population within in at least 1.3 miles of the action area, the adverse effect to the larger population within Solano County is unlikely to significantly affect the recovery of the species. Given appropriate habitat compensation and the incorporation of appropriate design measures to deter California tiger salamanders from entering the roadway and directing them to safe crossings likely would alleviate the local risk to the species while maintaining some genetic connectivity and possibly result in a species recovery benefit.

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.

This biological opinion does not authorize take for the non-Federal actions associated with use, operation, and maintenance of State Route 12 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 tiger salamander.

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 tiger salamander will be difficult to detect because when California tiger salamanders are not in their breeding ponds, they inhabit underground refugia; they may be difficult to locate due to their cryptic appearance and behavior; the juvenile and adult animals may be located a long distance from the breeding ponds; above ground movement occurs during a limited activity period typically coinciding with rainy nights in the fall, winter, or spring; and the finding of an injured or dead individual, even as road kill, is unlikely because of their relatively small body size and rapid carcass deterioration. Recent project monitoring suggests that California tiger salamanders are difficult to find during preconstruction clearance surveys that include excavation of potential upland California tiger salamander refugia in close proximity to breeding ponds and other aquatic habitat. Due to the difficulty in quantifying the number of California tiger salamanders that will be taken as a result of the proposed action, the Service is quantifying take incidental to the project as the mortality or injury of two (2), and the harm, harassment, and capture of all of the California tiger salamanders inhabiting or utilizing the 13.62 acres of habitat that encompasses the entire action area during project construction. The incidental take is expected to be in the form of harm, harassment, capture, injury, and mortality to adult California tiger salamanders from habitat loss/degradation, construction-related disturbance, and capture and relocation. Incidental take is not issued for activities associated with future roadway, culvert, ROW fence, vegetation, or other maintenance or modification activities within the Caltrans ROW. Furthermore, incidental take is not issued for California tiger salamander-vehicle collisions following project completion.

Upon implementation of the following reasonable and prudent measures incidental take associated with the proposed action described above for the California tiger salamander 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 tiger salamander 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 tiger salamander. Caltrans will be responsible for the implementation and compliance with these measures:

1. Caltrans will implement the conservation measures in the project description as described in the revised project description provided on May 29, 2009, and this biological opinion.

2. Caltrans will implement additional actions to minimize adverse effects to the California tiger salamander.

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 March 2009 revised Caltrans response and appearing in the *Project Description* of this biological opinion.

   b. This biological opinion was based on project design plans that were 35 percent complete. Caltrans shall provide the completed design and project description for review a minimum of ninety (90) calendar days prior to construction. Caltrans shall reinitiate consultation if the final plans result in a larger action area and/or effects to listed species not adequately considered in this biological opinion.

   c. 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.

   d. Caltrans will not be required to obtain California Department of Fish and Game approval for the conservation actions described in this biological opinion if a State Endangered Species Take Permit for California tiger salamander is not required by California Department of Fish and Game at the time actions associated with the project may result in take of the California tiger salamander

   e. The applicants shall include a copy of this biological opinion within its solicitations for design and construction of the proposed project making the primary contractor responsible for implementing all requirements and obligations included within the biological opinion, and to educate and inform all other contractors involved in the project as to the requirements of the biological opinion. A copy of the solicitations containing the biological opinion also shall be provided to Coast-Bay Branch Chief at the Sacramento Fish and Wildlife Office.

2. The following Terms and Conditions implement Reasonable and Prudent Measure two (2):

   a. At least 30 calendar days prior to initiating construction activities, the project proponents shall submit the names and qualifications of the biological monitor(s) for the proposed project for Service approval.

   b. 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*.

   c. The Worker Environmental Awareness Training Program described in *Conservation Measure* 4 shall be provided for all construction personnel prior to their involvement in work activities. The program shall focus on the conservation measures that are relevant to employee's personal responsibility. Distributed materials should include wallet-sized cards with a distinctive photograph of the California tiger salamander, compliance reminders, and relevant contact information. Documentation of the training, including attendee sign-in sheets, shall be submitted to the Service with the annual compliance report described in the *Reporting Requirements* of this biological opinion. An outline of the program shall be submitted to Chris Nagano, Division Chief, Endangered Species Program within twenty (20) working days prior to the initial onset of construction activities. As needed, training shall be conducted in Spanish for Spanish language speakers. Documentation of the training, including individual signed affidavits, shall be kept on file and available on request.

   d. Only Service-approved biological monitors shall implement the monitoring duties outlined in this biological opinion including delivery of the Worker Environmental Awareness Training Program.

   e. The Service-approved biologist(s) shall be given the authority to communicate – verbally or by telephone, email message or hardcopy with Caltrans personnel, construction personnel or any other person(s) at the project site or otherwise associated with the project. The Service-approved biologist(s) shall have oversight over implementation of all the *Terms and Conditions* in this biological opinion, and shall have the direct authority to stop project activities if any of the requirements associated with these *Terms and Conditions* are not being fulfilled. If the Service-approved biologist(s) exercises this authority, the Service shall be notified by telephone and electronic mail within 24 hours. The Service contact is Chris Nagano,

Division Chief, Endangered Species Program, Sacramento Fish and Wildlife Office at (916) 414-6600.

f. A Service-approved biologist(s) shall be onsite during any ground disturbing activities. Prior to approval, the biologist(s) must submit a letter to the Service verifying that they possess a copy of this biological opinion and understand its *Terms and Conditions*. The biologist(s) shall keep a copy of this biological opinion in their possession when onsite. The biologist(s) shall have the authority to stop any work, through communication with the Resident Engineer or their designee that may result in the take of a listed species. If the biologist(s) exercises this authority, the Service and the California Department of Fish and Game shall be notified by telephone and email message within one (1) working day. The Service contact is Chris Nagano, Division Chief, Endangered Species Program, Sacramento Fish and Wildlife Office at (916) 414-6600 or by an email message at Chris_Nagano@fws.gov.

g. The onsite biological monitor shall check for animals under any equipment such as vehicles and stored pipes before the start of work each morning. The biological monitor shall check all excavated steep-walled holes or trenches greater than one foot deep for California tiger salamander.

h. A Service-approved biological monitor will inspect the project site within one week prior to a forecasted rain event to ensure that the adequate stormwater BMPs are properly installed. The biological monitor will also inspect the site during and/or within two (2) calendar days following the onset of the rain event to ensure that the stormwater BMPs are adequate in minimizing harm to California tiger salamanders and their habitat.

i. A Service-approved biological monitor will be onsite if ponding persists at the box culvert near McClosky Road or any where else in the action area at any time of the year. In such case the monitor will thoroughly inspect the ponded area for the California tiger salamander. If a California tiger salamander is found, the monitor will contact the Service and the California Department of Fish and Game prior to further activities within 250 feet of the aquatic feature.

j. In brief, each California tiger salamander 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 animal if it is not in danger; (2) move the animal to a nearby location if it is in danger; or (3) the animal may be taken into custody for educational outreach and/or scientific research if the first two options are unavailable.

These three options are further described below.

1. When a California tiger salamander 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 the effects to the individual.

   Contact the Service once the site is secure. The primary contact for this situation is Chris Nagano (chris_nagano@fws.gov). If Chris Nagano is not available, then the biologist you should contact is Ryan Olah (ryan_olah@fws.gov) or John Cleckler (john_cleckler@fws.gov). All can be reached at (916) 414-6600. If you get voicemail message for all three 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 salamander and allow it to move out of the action area and danger 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 tiger salamander is encountered on the move during conditions that make their upland travel feasible (which is usually during the wet season and outside the typical work window). This does not apply to California tiger salamanders that are uncovered or otherwise exposed or in areas where there is not sufficient adjacent habitat to support the life history of the California tiger salamander should they move outside the construction footprint.

   Avoidance is the preferred option if the California tiger salamander 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 and a Service-approved biological monitor should be assigned to the area when work is taking place nearby.

   The above options are not always feasible and sometimes capture and moving the animal is the only option to prevent its death or injury.

2. 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 that the animal should not be moved outside of the area it would have traveled on its own. Under no circumstances should an animal

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.

Several amphibian diseases may be involved in amphibian declines and may be spread by relocating animals. Therefore, due to concerns regarding genetic and health issues and adverse effects to other California tiger salamanders, the Service does not approve of long distance relocation of California tiger salamanders on this project (i.e., out of the watershed or greater than 300 feet).

Only Service-approved biologists for the project can capture California tiger salamanders. Nets or bare hands may be used to capture California tiger salamanders. 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 tiger salamanders. To avoid transferring disease or pathogens between sites during the course of surveys or handling of the animals, 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/

a) 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 a salamander. Cleaned items should be rinsed with clean water before leaving each site.

b) Boots, nets, traps, etc., must then be scrubbed with either a 70 % 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% 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.

c) Disposable gloves must be worn and changed after handling each animal.

d) Used cleaning materials (liquids, etc.) must be disposed of safely, and if necessary, taken back to the lab for proper disposal. Used disposable gloves must be retained for safe disposal in sealed bags.

Service-approved biologists must limit the duration of handling and captivity. While in captivity, individual California tiger salamanders 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.

3. Based on the above guidance, if California tiger salamanders cannot be moved, the individuals should be used for outreach and/or research. We have developed a short list of likely recipients of California tiger salamanders. Delivery of individuals to the recipient shall be coordinated with the Service. Unless otherwise directed, California tiger salamanders shall be delivered to the Brad Shaffer Lab at the University of California at Davis. Mr. Shaffer and the lab staff may be reached at (530) 752-2939 and hbshaffer@ucdavis.edu.

k. To prevent inadvertent entrapment of California tiger salamander during construction, steep-walled holes or trenches more than two feet deep shall be covered at the close of each working day by plywood or similar materials. Alternatively, an additional four-foot high vertical barrier, independent of exclusionary fences, may be used to further prevent the inadvertent entrapment of California tiger salamander. If it is not feasible to cover an excavation or provide an additional four-foot high vertical barrier, independent of exclusionary fences, one or more escape ramps constructed of earth fill or wooden planks will be installed. 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 shall immediately place escape ramps or other appropriate structures to allow the animal to escape, or the Service shall be contacted by telephone for guidance. The Service shall be notified of the incident by telephone and electronic mail within one working day.

l. Materials left onsite overnight shall be inspected, because California tiger salamanders are attracted to cavity-like structures such as pipes and may seek refuge under construction equipment or debris, these species may become trapped or injured if such materials are moved. All construction pipes, culverts, or similar structures, construction equipment or construction debris left overnight within the action area shall be inspected prior to the beginning of each day's activities.

m. The biological monitor shall be required to report any take to the Service immediately by telephone at (916) 414-6600 and by email message or written letter addressed to Chris Nagano, Division Chief, Endangered Species Program, within one (1) working day of the incident.

n. The effects to the California tiger salamander from the permanent loss of 13.62 acres of habitat shall be compensated at an additional 2:1 to the 1:1 proposed by Caltrans in *Conservation Measure 1* for a total of 3:1 (40.86 acres) within occupied California tiger salamander habitat. Caltrans shall provide a Funding Assurance Letter stating that sufficient funds for habitat compensation have been budgeted in the Solano Highway 12, Currie Road to Liberty Island Road Shoulder Widening Project Expenditure Authorization. The Funding Assurance Letter shall be signed by the District Deputy Director of Project Management and the District Deputy Director of Environmental Planning and Engineering and approved to the Service and California Department of Fish and Game's Offices of the General Counsel. The Funding Assurance Letter provides evidence that Caltrans has allocated sufficient funding to implement the proposed compensation, monitoring and reporting requirements including habitat conservation credits or land acquisition costs, costs of managing the mitigation lands, and an endowment. Caltrans shall compensate for these effects through one of the options described below:

1) Caltrans shall purchase 40.86 conservation bank credits at a Service and California Department of Fish and Game -approved conservation bank whose service area encompasses the action area for the California tiger salamander. Conservation credits shall be purchased and documentation provided to the Service and the California Department of Fish and Game comprising the Agreement for Sale of Conservation Credits, Bill of Sale, Payment Receipt and Updated Credit Ledger within one-year following the start of construction.

2) Caltrans shall contribute toward the acquisition of habitat for the California tiger salamander approved by the Service and California Department of Fish and Game. The habitat shall be located within Solano County and shall have a conservation easement or other appropriate entitlement, management plan, and endowment to manage the habitat in perpetuity; all of which shall be reviewed and approved by the Service and California Department of Fish and Game, and completed within sixty (60) calendar days prior to the date of initial ground-breaking. Acquisition of land shall be in fee by an agreed upon third party land owner/manager. Acquisition of land shall either be through conservation easement or fee title. The conservation easement shall name the Service and California Department of Fish and Game as third-party beneficiaries and shall be held by an entity qualified to hold conservation easements subject to approval by the Service and California Department of Fish and Game. An endowment to manage the land and monitor the

conservation easement shall be secured using an escrow account or other funding assurance acceptable to and approved by the Service and California Department of Fish and Game. The endowment shall be held by a Service and California Department of Fish and Game -approved entity in an amount agreed to by the Service and the California Department of Fish and Game. A management plan shall be developed prior to or concurrent to the acquisition of land and shall include, but not limited to; a description of existing habitats and planned habitat creation, restoration and/or enhancement; monitoring criteria for the California tiger salamander; an integrated pest management and monitoring plan to control invasive species; habitat creation, restoration and/or enhancement success criteria; and adaptive management strategies if success criteria are not met or to incorporate new scientific data.

o. The culverts being replaced shall be designed and installed to allow passage for the California tiger salamander in order to minimize the risk of take due to road mortality following construction. Existing culverts that will remain in place but will be extended should be modified when possible to increase their probable and effective use by the California tiger salamander. Caltrans shall provide the Service with a report on how this measure will be implemented prior to construction and within thirty (30) calendar days following the issuance of the final drainage system design.

p. Fencing shall be attached to the Caltrans ROW fence in such a way to prevent California tiger salamanders from gaining access to the roadway and direct them towards the culvert crossings. The exclusionary and directional fencing shall extend a minimum of the length of the project and should terminate in such a way that California tiger salamanders are unlikely to gain ingress to the roadway. Installation of this fencing should also be effective in excluding California tiger salamanders from the fenced Caltrans ROW, therefore minimizing or removing the risk of take associated with non-Federal actions such as maintenance activities or for future Federal activities that would occur within the fenced ROW.

Reporting Requirements

Observations of California tiger salamanders or of any listed or sensitive animal species shall be reported to the California Natural Diversity Data Base (CNDDB).

Injured California tiger salamanders shall 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 shall be notified within one (1) working day of the discovery of death or injury to a California tiger salamander that occurs due to project related activities or is observed at the project site. Notification shall 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, Division Chief, Endangered Species Program, Sacramento Fish and Wildlife Office (916) 414-6600, and Dan Crum, 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 (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 following each year of construction or within sixty (60) calendar days of any break in construction activity lasting more than sixty (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 tiger salamander, if any; (v) occurrences of incidental take; (vi) documentation of employee environmental education; and (vii) other pertinent information. The reports shall be addressed to the Coast-Bay Branch Chief of the Endangered Species Program, Sacramento Fish and Wildlife Office.

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 an email message 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 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, Division Chief, Endangered Species Progran, Sacramento Fish and Wildlife Office at (916) 414-6600, and Resident Agent-in-Charge Dan Crum of the Service's Law Enforcement Division at (916) 414-6660.

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 Needs* section of environmental documents.

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 District 4 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 (FHWA 2008).

3. Roadways can constitute a major barrier to wildlife movement. Therefore, Caltrans should incorporate culverts, tunnels, or bridges on highways and other roadways that allow safe passage by the California tiger salamander, other listed animals, and wildlife. Include photographs, plans, and other information in 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.

4. Caltrans District 4 should coordinate with other Caltrans district offices, the Arizona DOT, the Montana DOT, the Washington State DOT, the Minnesota DOT, the Wisconsin DOT, and other state department of transportations to learn how such features can be effective and feasible.

5. Caltrans should use the system they have developed to keep track of road mortality records. For reference, the Washington State 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).

6. Caltrans should consider participating in regional habitat conservation planning in Solano County for the California tiger salamander, other listed species, and sensitive species.

7. Caltrans should consider establishing functioning preservation and creation conservation banking systems to further the conservation of the California tiger salamander and other listed 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.

8. 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 #1-1-07-F-0280) on future formal consultations with the Service.

9. 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 Solano Highway 12, Currie Road to Liberty Island Road Shoulder Widening Project in Solano County, 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 Solano Highway 12, Currie Road to Liberty Island Road Shoulder Widening Project in Solano County, California, please contact John Cleckler or Ryan Olah at the letterhead address or at (916) 414-6600.

Sincerely,

for Susan K. Moore
Field Supervisor

cc:
John Yeakel and Brian Brandert, California Department of Transportation, Oakland, California
Scott Wilson, Melissa Escaron, California Department of Fish and Game, Yountville, California

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State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND GAME
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
(707) 944-5500
www.dfg.ca.gov

EDMUND G. BROWN JR., *Governor*
CHARLTON H. BONHAM, *Director*

December 6, 2012

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

Subject: Final Lake or Streambed Alteration Agreement
Notification No. 1600-2012-0213-R3
State Route 12 Safety Widening and Clear Recovery Zone Project
Solano County

Dear Mr. Jensen:

Enclosed is the final Streambed Alteration Agreement ("Agreement") for the State Route 12 Safety Widening and Clear Recovery Zone Project ("Project"). Before the 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 December 6, 2012, based on information contained in the 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 Melissa Escaron, Staff Environmental Scientist, at (707) 339-0334 or mescaron@dfg.ca.gov.

Sincerely,

Craig J. Weightman
Acting Environmental Program Manager
Bay Delta Region

cc: Andrew Amacher, Caltrans
Warden Bolla
Warden Shelton
Melissa Escaron

CALIFORNIA DEPARTMENT OF FISH AND GAME
BAY DELTA REGION
7329 SILVERADO TRAIL
NAPA, CALIFORNIA 94558
(707) 944-5520
WWW.DFG.CA.GOV

STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2012-0213-R3
An Unnamed Drainage and Well Creek

CALIFORNIA DEPARTMENT OF TRANSPORTATION
STATE ROUTE 12 SHOULDER WIDENING AND CLEAR RECOVERY ZONE PROJECT

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Game (DFG) and California Department of Transportation (Permittee) or as represented Jeffrey G. Jensen.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified DFG on May 12, 2012 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, DFG has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

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

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

PROJECT LOCATION

The project is located in an unnamed drainage, and Well Creek, on State Route (SR) 12 at post miles (PM) 21.13 and 22.91 near the city of Rio Vista, in the County of Solano, State of California;

PROJECT DESCRIPTION

The proposed culvert work is being done as part of a larger Caltrans project that will modify SR 12 near Rio Vista, from west of Liberty Island Road to west of Currie Road to improve safety.

The existing concrete box culverts at PM 21.13 and PM 22.91will be extended to accommodate the roadway widening. The extensions will require excavation of the creek bed to install the extensions flush with the existing culvert grades.

No riparian trees will be removed to complete the proposed work.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include:

- Riparian habitat
- California tiger salamander dispersal habitat
- aquatic invertebrates

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

- Increased shading
- Permanent and temporary loss of natural bed and bank
- Habitat degradation
- Water quality degradation
- Short-term release of contaminants

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

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

1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and

amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

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

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

2. Avoidance and Minimization Measures

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

2.1 To minimize adverse impacts to fish and wildlife all work described in the project location and description shall be confined to the period of May 15 to October 15. Revegetation work is not confined to this time period.

2.2 At least 30-days prior to commencing project activities covered by this Agreement, the Permittee shall submit to DFG, for review and approval, the qualifications for a number of biologists (Qualified Biologist) that shall oversee the implementation of the conditions in this Agreement. At a minimum, the Qualified Biologists shall have a combination of academic training and professional experience in biological sciences and related resource management activities. The Qualified Biologists shall communicate to the Resident Engineer when any activity is not in compliance with this Agreement and the Resident Engineer shall immediately stop the activity that is not in compliance with this Agreement.

2.3 The Qualified Biologist shall perform a clearance survey immediately prior to initial ground disturbance. Safety permitting, the Qualified Biologist will investigate areas of disturbed soil for signs of sensitive species within 30 minutes following initial ground disturbance.

2.4 No riparian trees shall be removed.

2.5 To protect nesting birds, no project activities shall occur from February 15 through August 31 unless nesting bird surveys have been completed by a Qualified Biologist. To prevent nest abandonment, a Qualified Biologist shall survey within 500 feet of the proposed Project, as described above in the 1602 Project Description, for

nesting birds. If nests are found within the Project site or within 500 feet from the Project limits, then a Qualified Biologist shall establish a 50-foot buffer radius for nests of non-raptor bird species or a 300-foot buffer radius for raptor nests where the buffer intersects the Project limits. A Qualified Biologist shall monitor the nesting birds and shall increase the buffer, through the Resident Engineer, if it is determined the birds are showing signs of unusual or distressed behavior that may be the result of Project activities. To prevent encroachment, the established buffer(s) shall be clearly marked within the Project limits by high visibility material. Surveys shall be conducted during periods of peak activity (morning, dusk) and shall be of sufficient duration to observe movement patterns. Identified nests shall be reported to DFG. The buffer area shall be clearly marked by high visibility material within the Project limits, protected from work activities, and avoided until the young have fledged, as determined by a Qualified Biologist. During work, should birds indicate unusual or distressed behavior that could be indicative of future nest abandonment, a Qualified Biologist shall stop work immediately, through the Resident Engineer, and consult DFG on how to proceed.

2.6 A Qualified Biologist will be onsite if ponding persists at the box culvert near McClosky Road or anywhere else in the project area at any time of the year. In such a case a Qualified Biologist will thoroughly inspect the ponded area for California tiger salamander. If a state or federally listed species is found, DFG and/or US Fish and Wildlife Service (USFWS) will be contacted immediately and the Permittee shall, through the Resident Engineer, restrict construction activities within 250 feet of the animal, until permission to resume is granted by DFG and/or USFWS.

2.7 Any plan for water diversion shall ensure that all pump intake hose shall be screened and fitted with a steel nozzle with no greater than 1-inch screen holes. A Qualified Biologist shall be onsite to inspect for sensitive species. The downstream bypass outfall hose shall be fitted with filter cloth and placed on a straw bed for discharge either in uplands along the bank of the creek or directly within the channel depending upon flow conditions to minimize downstream erosion. The removal of the diversion will proceed in a downstream to upstream direction.

2.8 Trash Abatement. Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in closed (animal-proof) containers and removed regularly (at least once a week) to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs.

2.9 If any wildlife is encountered during the course of project activities, said wildlife shall be allowed to leave the area unharmed and on their own volition.

2.10 Permittee shall comply with all applicable state and federal laws, including the California and Federal Endangered Species Act. This Agreement does not authorize the take of any state or federally endangered listed species. Liability for any take or incidental take of such species remains the responsibility of the Permittee for the

duration of the project. Any unauthorized take of listed species may result in prosecution and nullification of the Agreement.

2.11 The perimeter of the work site shall be adequately fenced using high visibility Environmentally Sensitive Area (ESA) fencing to prevent damage to adjacent riparian habitat. No construction activities, within the riparian zone, will be allowed within the habitat protected by the ESA fencing.

2.12 Prior to ground or vegetation disturbance activities, Wildlife Exclusion Fencing (WEF) shall be installed and a Designated Biologist shall be present to monitor installation of the WEF. WEF shall consist of taut fabric or mesh such as Ertec E-fence at least 14 inches in height, staked at least 10-foot intervals, with the bottom buried 6 inches below grade. WEF shall be maintained so that it is intact at all times

2.13 Permittee shall conduct work defined in the above project description, and within the project area, during periods of dry weather. The project area is defined as the bed, bank, channel, and associated riparian habitat. The Permittee shall monitor forecasted precipitation. When ¼ inch or more of precipitation is forecasted to occur, the Permittee shall stop work before precipitation commences. No activity of the project may be started if its associated erosion control measures cannot be completed prior to the onset of precipitation. After any storm event, the Permittee shall inspect all sites currently under construction and all sites scheduled to begin construction within the next 72 hours for erosion and sediment problems and take corrective action as needed. Seventy-two hour weather forecasts from National Weather Service shall be consulted and work shall not start back up until runoff ceases and there is less than a 30% forecast for precipitation for the following 24-hour period.

2.14 Permittee shall utilize erosion control measures throughout all phases of operation where sediment runoff from exposed slopes threatens to enter waterways. At no time shall silt laden runoff be allowed to enter the stream or directed to where it may enter the stream. Erosion control installations shall be monitored for effectiveness and shall be repaired or replaced as recommended by a Water Quality Inspector to the Resident Engineer. As needed to prevent sediment transport, Permittee shall utilize soil stabilization and sediment control practices, which may include, but are not limited to, the following: hydroseeding, netting, erosion control mats, mulch, fiber rolls, silt fences, check dams, and flow velocity dissipation devices. Permittee shall stabilize construction site entrances and exits. Straw wattles (fiber rolls) and rolled erosion control products that contain monofilament or plastic shall not be used. Temporary erosion and sediment control measures shall be installed prior to unseasonable rain storms.

2.15 All disturbed areas shall be re-graded and hydroseeded. Disturbed soils shall be hydroseeded with native grass species prior to October 15th of the year of disturbance. Any temporarily impacted areas not re-graded and hydroseeded by October 15th of the impact year shall be considered permanently impacted and shall be mitigated for at a 3:1 acreage ratio as described in Condition 3.1.

2.16 Concrete shall be excluded from surface water for a period of 30-days after it is poured/sprayed. During that time the concrete shall be kept moist and runoff from the concrete shall not be allowed to enter any water body. Commercial sealants may be applied to the concrete surface where difficulty in excluding flow for a long period may occur. If sealant is used, water shall be excluded from the site until the sealant is cured. If groundwater comes into contact with fresh concrete, it shall be prevented from flowing towards surface water.

2.17 Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be located outside of the creek channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the creek shall be positioned over drip pans. Any equipment or vehicles driven and/or operated within or adjacent to the stream must be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.

2.18 Refueling of mobile construction equipment and vehicles shall not occur within 50 feet of any water body, or anywhere that spilled fuel could drain to a water body. Refueling of stationary equipment requiring breakdown and setup to move will remain in place. All equipment shall be refueled with appropriate drip pans, absorbent pads, and water quality Best Management Practices. Equipment and vehicles operating in the project area shall be checked and maintained daily to prevent leaks of fuels, lubricants, or other liquids.

3. Compensatory Measures

3.1 At least 60 days prior to commencement of construction, the Permittee shall submit, for DFG review and written approval, a detailed Offsite Habitat Mitigation Plan. The Offsite Habitat Mitigation Plan shall mitigate .03 acres (52 linear feet) of permanent riparian habitat impacts at a minimum of a 3:1 acreage ratio.

CONTACT INFORMATION

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

To Permittee:

California Department of Transportation
Jeffrey G. Jensen
111 Grand Ave.
(510)622-8729
Jeffrey_jensen@dot.ca.gov

To DFG:

Department of Fish and Game
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
Attn: Lake and Streambed Alteration Program – Melissa Escaron
Notification #1600-2012-0213-R3
mescaron@dfg.ca.gov

LIABILITY

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

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

SUSPENSION AND REVOCATION

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

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

ENFORCEMENT

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

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

OTHER LEGAL OBLIGATIONS

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

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 et seq. (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

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

AMENDMENT

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

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

TRANSFER AND ASSIGNMENT

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

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

EXTENSIONS

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

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

EFFECTIVE DATE

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

TERM

This Agreement shall expire on December 31, 2017, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

AUTHORITY

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

AUTHORIZATION

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

CONCURRENCE

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

FOR CALIFORNIA DEPARTMENT OF TRANSPORTATION

Jeffrey G. Jensen
Office Chief Biological Sciences and Permits

11/29/2012
Date

FOR DEPARTMENT OF FISH AND GAME

Craig Weightman
Acting Environmental Program Manager

12/7/12
Date

Prepared by: Melissa Escaron
Staff Environmental Scientist

Date Sent: September 25, 2012
Revision Sent: November 8, 2012
Revision Sent: November 29, 2012

FOR DEPARTMENT USE ONLY				
Date Received	Amount Received	Amount Due	Date Complete	Notification No.
6/28/12	$ 4,482.75	$		1600-2012-0213-3

Ck # 082-209241 California Dept of Transportation

Escamon Shelton Bolla Mason

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

Fish & Game
JUN 28 2012
Yountville

1. APPLICANT PROPOSING PROJECT

Name	Jeffrey G. Jensen		
Business/Agency	California Department of Transportation, District 4		
Street Address	111 Grand Avenue		
City, State, Zip	Oakland, CA 94623		
Telephone	(510) 622-8729	Fax	(510) 286-6374
Email	jeffrey_jensen@dot.ca.gov		

2. CONTACT PERSON (*Complete only if different from applicant*)

Name	Andrew Amacher		
Street Address	California Department of Transportation, District 4		
City, State, Zip	111 Grand Avenue, Oakland, CA 94623		
Telephone	(510) 622-8727	Fax	(510) 286-5600
Email	andrew_amacher@dot.ca.gov		

3. PROPERTY OWNER (*Complete only if different from applicant*)

Name	State of California; California Department of Transportation, District 4		
Street Address	111 Grand Avenue		
City, State, Zip	Oakland, CA 94623		
Telephone		Fax	
Email			

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name	Solano State Route 12 Shoulder Widening and Clear Recovery Zone
B. Agreement Term Requested	☑ Regular (*5 years or less*) ☐ Long-term (*greater than 5 years*)

C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (*year*)	Ending (*year*)	Start Date (*month/day*)	End Date (*month/day*)	
2013	2015	05/15	10/15	176.00

5. 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	

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: The Department may not process this notification until the correct fee has been received.***

	A. Project	B. Project Cost	C. Project Fee
1	Solano State Route 12 Shoulder Widening and Clear Recovery Zone	$5,000,000.00	$4,482.75
2			
3			
4			
5			
		D. Base Fee *(if applicable)*	
		E. TOTAL FEE ENCLOSED	$4,482.75

7. 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)*

8. PROJECT LOCATION

A. Address or description of 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*)

State Route 12, Currie Road to McClosksy Road (postmile 20.6/21.3) and Azevedo Road to Liberty Island Road (postmile 22.6/23.7), Solano County.

☐ *Continued on additional page(s)*

B. River, stream, or lake affected by the project.	Sacramento River
C. What water body is the river, stream, or lake tributary to?	Sacramento River
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	Solano County

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Rio Vista	4N	2E	14, 15	SE
Rio Vista	4N	2E	22	NE
Birds Landing	4N	2E	16, 17	SW
Birds Landing	4N	2E	20, 21	NW

☐ *Continued on additional page(s)*

K. Meridian (*check one*) ☐ Humboldt ☑ Mt. Diablo ☐ San Bernardino

L. Assessor's Parcel Number(s)

048-100-440, 048-100-530, 048-110-240, 048-120-420 and Caltrans' Right of Way

☐ *Continued on additional page(s)*

M. Coordinates (*If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes)*

Latitude/Longitude	*Latitude:* 38°11' 00.62" N	*Longitude:* 121° 46'08.67 W	
	☐ 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	

10. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

Caltrans proposes to modify the SR 12 roadway from west of Liberty Island Road to west of Currie Road to allow for the addition of standard shoulder widths, a clear recovery zone, left turn pockets at three intersections, and the improvement of existing nonstandard vertical sight distances by reconstructing the roadway profile at PMs 21.3, 23.1, and 23.2. The proposed Project activities vary by milepost, and the Project area is divided into two distinct segments, A and B (See attachment 1; Figures 1 and 2).

Please see Attachment 1, section 10-A for a more detailed project description.

☑ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

Construction equipment that will likely be needed to complete the proposed Project include graders, excavators, a crane, a vibratory sheet pile driver, an asphalt drum grinder, transfer and bottom dump semi-trucks and trailers, lowboy-style trucks and trailers, cement trucks, Gradall-style articulating 4-wheel-drive forklifts, front-end loaders, vibramatic rollers, a hydro-seeding truck rig, and various pick-up trucks.

☑ *Continued on additional page(s)*

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).	☐ Yes ☑ No (*Skip to box 11*)
D. Will the proposed project require work in the wetted portion of the channel?	☐ Yes (*Enclose a plan to divert water around work site*) ☐ No

12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.

A Storm Water Pollution Prevention Plan (SWPPP) and erosion control best management practices will be developed and implemented to minimize any wind or water-related erosion. The plans will comply with the requirements of the Regional Water Quality Control Board. Caltrans BMP Guidance Handbook will provide guidance for design staff to include provisions in construction contracts for measures to protect sensitive areas and prevent and minimize storm water and non-storm water discharges.

Please see Attachment 1, Section 12-A.

☑ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Please see Attachment 1, Section 12-B.

☑ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

Please see Attachment 1, Section 12-C.

☑ *Continued on additional page(s)*

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.	USACE Clean Water Act 404 Nationwide Permit-Application pending	☑ Applied	☐ Issued
B.	USFWS Biological Opinion	☐ Applied	☑ Issued
C.	CDFG 2081 ITP for California Tiger Salamander	☑ Applied	☐ Issued

D. Unknown whether ☐ local, ☐ state, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☐ *Continued on additional page(s)*

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

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.

Signed for

Signature of Applicant or Applicant's Authorized Representative

6.8.12

Date

Christopher T Stats Jeffery Jensen

Print Name

State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: MR. MICHAEL T. NGUYEN
District Branch Chief
Office of Design SHOPP

Date: December 16, 2010

Attention: W. Fong

File: 04-Sol-12- PM 20.6/23.7
0412- 2A6201
Left turn & Shoulder Widening

From: SAMUEL AWAD S. A
Transportation Engineer (Civil)
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

H. Nikoui
HOOSHMAND NIKOUI
Chief, Branch A
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

Subject: Foundation Report for Sheet Pile Wall

Per your request dated October 18, 2010, we are submitting the Foundation Report for the recommended Sheet Piles of the proposed shoulder widening and left turn lane of Route 12, within the Rio Vista City limit in Solano County. The following sections summarize our findings and foundation recommendations.

1. INTRODUCTION

According to the project report dated August 9, 2007, it is proposed to provide a standard 8 ft shoulder in both directions from Azevedo Road to Liberty Road (PM 22.7/23.7), and add left turn lanes at Azevedo Road (P.M. 22.7), McCloskey Road (P.M. 21.2) and Currie Road (P.M. 20.6). To accommodate the shoulder widening, the existing cross culvert will be extended, and utilities in conflict with the shoulder widening work and proposed drainage features will be relocated. In order to accommodate for the proposed widening and reduce environmental impacts along Well Creek, we recommend to install a permanent sheet pile wall on the North side of the highway between approximately Sta. 117+25 to Sta. 122+25 (PM 21.9 and 22.0).

2. SCOPE OF WORK

The following tasks were performed for the preparation of this Foundation Report:

- Field geotechnical exploration, including drilling 2 borings at the project site;
- Laboratory testing on selected samples;
- Foundation design analysis; and
- Preparation of this Foundation Report.

2. GEOLOGY

2.1 Regional Geology

The project area is located in the southeastern part of Solano County. Flat broad valleys, marshes, sloughs, bays, islands and low-lying hills associated with the Sacramento River. Alluvial Fans dominate the south and east parts of Solano County (Solano County, 2008)[1]. The project area is located at the northern side of one of the major topographic features of this area, the Montezuma Hills.

Older Alluvium (Pleistocene Alluvium) covers the most western end of the project at Curie Road (PM 20.6). Montezuma Formation (Plio-Pleistocene) covers the rest of the project area (USGS, 1987)[2]. The Franciscan Complex most likely underlies most of the county's geologic sub-units, but has surficial outcrops in the west and north of the Solano County (see the attached Geology Map).

Older Alluvium is dissected alluvial deposits. These less permeable sediments are basin, landslide interidal, terrace or riverbank deposits.

The Montezuma Formation is a delta-deposited conglomerate consisting of poorly consolidated reddish-orange mudstone, sands, silts, and gravels.

The Franciscan Complex is an aggregate of various marine rock types ranging from ultramafic volcanic rocks to sedimentary rocks. Franciscan sandstone is adjacent to and underlies the county.

[1] Solano County, 2008, General Plan EIR.
[2] USGS, 1987, Geologic Map of The Sacramento Quadrangle.

2.2 Seismicity

The project area is located in a seismically active region of north California. The project area lies on the eastern side of San Andreas Fault system region. It is located at the west of Midland Fault and east of Vaca-Kirby Hill Fault, Cordelia Fault and Green Valley Fault

Three of these faults are active: the Green Valley Fault, Vaca-Kirby Hill Fault, and San Andreas Fault. Other faults are considered inactive such as the Midland Fault and the Cordelia Fault. The Controlling Fault is the Vaca-Kirby Hill Fault. Ground shaking in the project area is classified as "moderate"(Abag,2003)[3].

Following is a table listing the distance from the project to nearby faults, the estimated maximum credible events, and the maximum credible rock acceleration anticipated within the project location.

Table 1. Predicted Maximum Credible Earthquake and Acceleration*

FAULT	Maximum Credible Earthquake (Mw)	Distance From Site (Km)	Maximum Expected Bedrock Acceleration* (g)
Midland	N/A	4.50	N/A
Vaca-Kirby Hill	6.75	8.50	0.37
Cordelia	6.5	28.25	0.13
Green Valley	6.75	29.25	0.16
San Andreas	8.0	87.50	0.13

* According to Mualchine (1996)

The Vaca -Kirby Hill Fault lies to the west of the project area. It was not zoned as active in the vicinity of the project area. It extends into Vaca Valley. This fault trends northwest along the northeast flank of the hills just south of Vacaville, and terminates at the alluvium in the southern end of Vaca Valley, just west of Vacaville. Wagner and others (1981) showed the Vaca Fault extending southerly across Travis Air Force Base to connect with the Kirby Hills Fault west of Montezuma Hills.

The Green Valley Fault is generally well defined and is characterized by geomorphic evidence of Holocene-active faulting. The Green Valley Fault Zone is a narrow zone of vertical and near vertical right – lateral strike-slip faulting. Landslides conceal the

[3] http://www.abag.ca.gov/cgi-bin/pickmapx.pl

northern projection of this fault. Branches are mostly not well defined and lack Holocene evidence of slip. Slip rates on this fault range from 2 to 24 mm/year with recurrence intervals for moderate to large events averaging hundreds of years (USGS-Earthquake probability, 1999).

The Green Valley Fault is considered a part of the Concord-Green Valley segment, which has a 6% probability of at least one M ≥ 6.7 earthquakes may occur before 2030.

The San Andreas Fault is paralleled offshore to the west by the San Gregorio-Hosgri fault system and displays large right- lateral offset. The northward movement of the Pacific plate relative to North America is manifested in coastal California as slip along the San Andreas Fault zone and the subsidiary faults. The rate of movement along the San Andreas Fault south of San Francisco is about 1.5cm/yr. The San Andreas Fault Zone was displaced up to several meters in San Mateo County during the 1906 earthquakes. Current estimates of total offset since 8 Ma (million years ago) are about 35 km for the San Andreas Fault zone in San Mateo County (USGS-OF98-137).

San Andreas Fault has a probability of 21% of at least one M ≥ 6.7 earthquakes may occur before 2030 (USGS, 1999 – Earthquake Probability, Fault Classification Study, Working Group
99).

3. FOUNDATION SOIL AND GROUNDWATER

The Office of Geotechnical Design-West, Division of Engineering Service, investigated the subsurface conditions at the site. The foundation investigations consisted of drilling two power borings (A-08-001 and A-08-002) near PM 22.91, Station 117+60 and Station 120+10, respectively. Both borings (A-08-001 and A-08-002) were drilled to the depth of 41.5 feet. Soil was sampled every 5 ft. using a Standard Penetration Test (SPT) sampling. The unconfined compressive strength of the clayey soil (using a pocket pentrometer) was estimated to range between 1.0 tsf and 4 tsf. The SPT blow count values ranged from 10 blows per foot to as high as 46 blows per foot.

Groundwater was not encountered in any of the auger borings at the time of drilling (May 2008). However, groundwater elevation fluctuates seasonally.

According to the samples extracted from the borings data, the project limits is underlain predominately by stiff to very stiff, medium plastic to highly plastic clays, and sandy clays over firm silt.

The moisture content of the subsurface soils ranged from 2.8 to 24.8 percent, indicating a dry to very moist condition.

Atterberg limits tests performed on seven soil samples of the near surface indicate that the soil is medium to highly plastic as represented by Liquid Limits ranging from 39 to 52 percent with corresponding Plasticity Index values ranging from 25 to 34 percent.

The laboratory test results on the soil samples taken during our site explorations are presented in the attached EXHIBIT A.

The foundation materials are shown on the attached Log of Test Borings (LOTBs) sheets Presented in EXHIBIT B.

4. SCOUR EVALUATION

Depth of the scour has been estimated by Mr. Ching Yen of Hydraulics to be about 2 feet below the existing Creek bed.

5. CORROSION INVESTIGATION

Corrosion studies are conducted in accordance with the requirements of California Test Method No. 643.
Caltrans currently considers a site to be corrosive to foundation elements if one or more of the following conditions exist: Chloride concentration is greater than or equal to 500 ppm, sulfate concentration is greater than or equal to 2000 ppm, or the pH is 5.5 or less. See attached Exhibit B for the test result of a corrosion test conducted on representative samples of the fill materials encountered in our investigation.

The following table provides our corrosion test summary:

Boring	*SIC Number*	*Sample Depth*	*Resistivity (Ohm-Cm)*	*pH*	*Chloride Content (ppm)*	*Sulfate Content (ppm)*
A-10-001	C 008-01	3-4	1599	7.2	N/A	N/A
A-10-002	C 008-02	2-3	1494	7.5	N/A	N/A

6. CONCLUSIONS/RECOMMENDATIONS FOR SHEET PILE

Based on the above geotechnical information, this area has a history of flooding due to the significant volume of the water in the Creek during rainstorms resulting in the slope failure. Thus, we recommend installing a sheet pile wall between Sta. 117+25 and Sta. 122+25 along the edge of the EB shoulder in order to accommodate the proposed widening and protect the roadway against future scour. As per submitted X-sections, only the top few feet of the sheet pile wall will be exposed. The wall is conservatively designed for future exposed height of 12 feet.

We recommend the size of the proposed sheet pile to be AZ or PZ having a minimum section modulus of 48.4 in^3/ft (2600 cm^3/m) as shown in Exhibit C. The proposed sheet pile should be driven 25 feet below the original ground within the entire limits stated above. The top of the sheet pile should be flush with roadway finish grade. See attached Special Provisions. The proposed concrete barrier should be placed 2 feet away from the of the sheet pile wall

If you have any questions or need additional information, please call me at (510) 622-5443 or Hooshmand Nikoui, Branch Chief at (510) 286-4811.

Attachments:

c: TPokrywka, HNikoui, SAwad, Daily File, Project File

SAwad /mm/04-2A6201(FR)

REGISTERED PROFESSIONAL ENGINEER
SAMUEL AWAD
No. 64589
Exp. 6/30/2011
CIVIL
STATE OF CALIFORNIA

EXIBIT A

TES 3: 10415 - 14

BILLED

DATE RECEIVED JUN 04 2008

CALC. BY _____ APPROVED BY _____

DATE REPORTED JUL 02 2008

☐ DISTRICT D. FOR ☐ TRANS. LAB.
☐ DIS. MAT LS. R. ☐ V'T. SECTION
☐ RESIDENT ENGINEER ☐ ACCOUNTING
☐ CONSTRUCTION ☐

GRADING ANALYSIS

SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT ☐
3"					
2½"					
2"					
1½"					
1"					
¾"					
½"					
⅜"	100				
4	99				
8	98				
16	97				
30	95				
50	91				
100	84				
200	72				
5μ	46				
1μ	41				

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION

REMARKS:

SURFACE

BASE

SUBBASE

GRAVEL EQUIVALENT FACTOR

TRAFFIC INDEX

R VALUE: EXUDATION PRESSURE

EXPANSION PRESSURE

AT EQUILIBRUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

REPORT OF TESTS ON

Soil

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D	E
DATE TESTED					
COMPACTOR FOOT PRESSURE P.S.I.					
INITIAL MOISTURE %					
SOAK WATER ML					
WATER ADDED-ML. (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET WT. OF BRIQUETTE-GMS					
HEIGHT OF BRIQUETTE-INCHES					
DRY DENSITY OF BRIQ.-# CU. FT.					
STABILOMETER P_H AT 2000 LBS.					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. P.S.I.					
THICK. BY STAB. FEET					
EXPANSION DIAL READING					
THICK. BY EXP. PRESS. FEET					
R-VALUE BY EXPANSION					

TEST RESULTS	SPEC.
LL. 41 P.L. 12 P.I. 29	
CV	
S.E. AS REC'D	
S.E. CRUSHED	
S.E. COMBINED	
LART GRADE 100 REV.	
LART GRADE 500 REV.	
DUR D_f	
DUR D_t	
% CRUSHED PARTICLES	

SP. GR. ☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT

	FINE	COARSE
AS REC'D.		
CRUSHED		

REL. COMPACTION DATA

	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

TL-361 (Rev. 10/78)

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/07)

CARD NO. C OC 001 2

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB
☐ SPECIAL TESTS

SAMPLE SENT TO:
☐ HDQTRS. LAB
☐ BRANCH LAB
☐ DIST. LAB

FIELD NO. Geotech Oak
DIST. LAB NO.
I.D. NO.
R.O. CHARGING AUTHORIZATION

10415-14P

JUN 04 2008

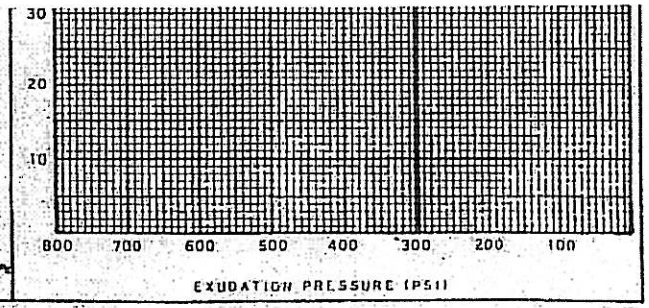
SAMPLE OF Soil
FOR USE IN Foundation
A-008 -002
SAMPLE FROM Sample #1
DEPTH
LOCATION OF SOURCE Native Soil

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS)
AND IS ONE OF A GROUP OF
SAMPLES REPRESENTING (NO. CARS, BLDS, ETC.)
OWNER OR MANUFACTURER
TOTAL QUANTITY AVAILABLE
TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY
DATE NEEDED

REMARKS MA & PI

COVER ADDITIONAL INFORMATION WITH LETTER
DATE SAMPLEED
BY S. Awad TITLE TE
DIST. CO. RTE. PM
OK-SOL-12-PM 22.9
LIMITS
CONT. NO. 04-2A6200
FED. NO. 1-160-P1525
RES. ENGR. OR SUPT.
ADDRESS Grand Ave, Oakland
CONTRACTOR

MAIL TO SAME DESTINATION AS SAMPLE



B7 46743

TEST 10115 — 15P

BILLED

DATE RECEIVED JUN 04 2008

CALC. BY _____ APPROVED BY _____

DATE REPORTED JUL 02 2008

☐ DISTRICT DI... OR ☐ TRANS. LAB.
☐ DIS. MAT LS. R. ☐ V'T. SECTION
☐ RESIDENT ENGINEER ☐ ACCOUNTING
☐ CONSTRUCTION ☐

GRADING ANALYSIS

SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF LIMITS ☐ SOUGHT ☐
3					
2½					
2					
1½					
1					
¾					
½					
⅜					
4					
8					
16					
30					
50					
100					
200					
5μ					
1μ					

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION

REMARKS

SURFACE

BASE

SUBBASE

GRAVEL EQUIVALENT FACTOR

TRAFFIC INDEX

R VALUE: EXUDATION PRESSURE / EXPANSION PRESSURE / AT EQUILIBRUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

REPORT OF TESTS ON

SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D	E
DATE TESTED					
COMPACTOR FOOT PRESSURE P.S.I.					
INITIAL MOISTURE %					
SOAK WATER ML					
WATER ADDED – ML. (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET WT. OF BRIQUETTE – GMS					
HEIGHT OF BRIQUETTE – INCHES					
DRY DENSITY OF BRIQ. – # CU. FT.					
STABILOMETER P_H AT 2000 LBS.					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. P.S.I.					
THICK. BY STAB FEET					
EXPANSION DIAL READING					
THICK. BY EXP. PRESS. FEET					
R-VALUE BY EXPANSION					

TEST RESULTS		SPEC.
LL. 52 P.L. 18 P.I. 34		
CV		
S.E.	AS REC'D.	
	CRUSHED	
	COMBINED	
LART	GRADE 100 REV.	
	500 REV.	
DUR	D_f	
	D_i	
% CRUSHED PARTICLES		

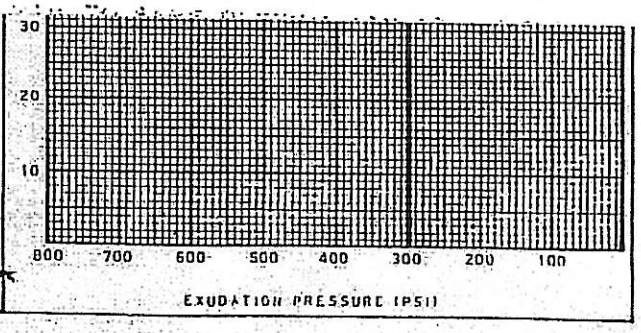
SP. OR. ☐ BULK (OVEN DR ☐ BULK (SSD) ☐ APPARENT

	FINE	COARSE
AS REC'D.		
CRUSHED		

REL. COMPACTION DATA

	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B



STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CAPE REF C008-002 03

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS

SAMPLE SENT TO: ☐ HDQTRS. LAB ☐ BRANCH LAB ☐ DIST. LAB

FIELD NO. Geotech Oak

DIST LAB NO.

LOT NO.

INDEPENDENT ASSURANCE TESTS ☐ DIST. LAB ☐ TRANS. LAB

☐ SPECIAL TESTS

10115-15P

JUN 04 2008

SAMPLE OF Soil

FOR USE IN Foundation A-008-002

SAMPLE FROM Sample # 2A

DEPTH

LOCATION OF SOURCE Native Soil

THIS SAMPLE IS SHIPPED IN (NO CONTAINERS) | AND IS ONE OF A GROUP OF | SAMPLES REPRESENTING (TONS, BALS, BACK, ETC.)

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY | DATE NEEDED

REMARKS 2 PT

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED

BY S. Awad TITLE TE

DIST. CO. RTE. PM

OK-SOL-12-PM 22.9

LIMITS

CONT. NO. 04-2A6200

FED. NO 1-160-P1525

RES. ENGR. OR SUPT.

ADDRESS Grand Ave, Oakland

CONTRACTOR

-TL-361 (Rev. 10/78)

TES 1015 - 16

BILLED

DATE RECEIVED JUN 04 2008

CALC. BY _____ APPROVED BY _____

DATE REPORTED JUL 02 2008

☐ DISTRICT DIR. OR ☐ TRANS. LAB.
☐ DIS. MAT'LS. R. ☐ V.T. SECTION
☐ RESIDENT ENGINEER ☐ ACCOUNTING
☐ CONSTRUCTION ☐

GRADING ANALYSIS

SIEVE	AS RECEIVED	RET CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT ☐
3					
2½					
2					
1½					
1					
¾					
½					
⅜	100				
4	99				
8	99				
16	98				
30	97				
50	95				
100	87				
200	77				
5μ	45				
1μ	24				

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION

REMARKS

SURFACE

BASE

SUBBASE

GRAVEL EQUIVALENT FACTOR

TRAFFIC INDEX

R VALUE: EXUDATION PRESSURE

EXPANSION PRESSURE

AT EQUILIBRUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

REPORT OF TESTS ON

SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D	E
DATE TESTED					
COMPACTOR FOOT PRESSURE P.S.I.					
INITIAL MOISTURE %					
SOAK WATER ML					
WATER ADDED-ML. (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET WT. OF BRIQUETTE-GMS					
HEIGHT OF BRIQUETTE-INCHES					
DRY DENSITY OF BRIQ. - # CU. FT.					
STABILOMETER P_H AT 2000 LBS.					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. P.S.I.					
THICK. BY STAB. FEET					
EXPANSION DIAL READING					
THICK. BY EXP. PRESS. FEET					
R-VALUE BY EXPANSION					

TEST RESULTS			SPEC.
LL 39	P.L 14	P.I. 25	
CV			
S.E.	AS REC'D		
	CRUSHED		
	COMBINED		
LART.	GRADE	100 REV.	
		500 REV.	
DUR.	D_f		
	D_c		
% CRUSHED PARTICLES			

SP. GR. ☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT

	FINE	COARSE
AS REC'D.		
CRUSHED		

REL. COMPACTION DATA

	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

TL-361 (Rev. 10/78)

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/87)

C008-00.04

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
☐ INDEPENDENT ASSURANCE TESTS ☐ DIST. LAB ☐ TRANS. LAB
☐ SPECIAL TESTS

SAMPLE SENT TO: ☐ HQ TRS. LAB ☐ BRANCH LAB

FIELD NO. Geotech Only

DIST. LAB NO.

1015-16P

JUN 04 2008

SAMPLE OF Soil

FOR USE IN Foundation

SAMPLE FROM Sample # 3

A-008-002

DEPTH

LOCATION OF SOURCE

Native Soil

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) | AND IS ONE OF A GROUP OF | SAMPLES REPRESENTING (TONS, GALS, ETC.)

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY | DATE NEEDED

REMARKS

MA & PI

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLEED

BY S. Awad TITLE TE

DIST. CO. RTE. PM

ok-Sol-12-PM 22.9

LIMITS

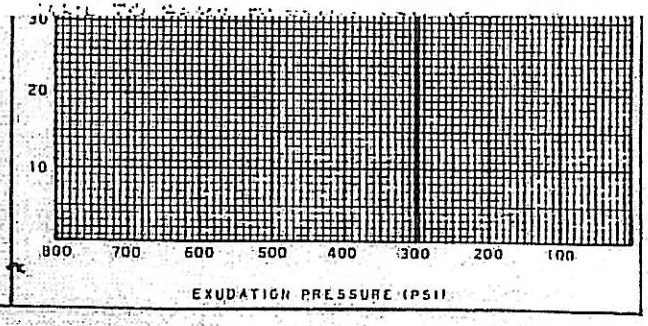
CONT. NO. 04-EA 6200

FED. NO. 1-160-P1525

RES. ENGR. OR SUPT.

ADDRESS Grand Ave, Oakland

CONTRACTOR



TES 10115 - F1

BILLED

DATE RECEIVED JUN 04 2008

CALC. BY _____ APPROVED BY _____

DATE REPORTED JUL 02 2008

☐ DISTRICT DIR OR ☐ TRANS. LAB.
☐ DIS. MAT LS. OR ☐ MT. SECTION
☐ RESIDENT ENGINEER ☐ ACCOUNTING
☐ CONSTRUCTION ☐

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD
TL-0101 (REV 10/07)

CARD NO. C008-002-05 REV. 1

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
☐ INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB
☐ SPECIAL TESTS

SAMPLE SENT TO:
☐ HQ OTRS. LAB
☐ BRANCH LAB
☐ DIS. LAB
☐ SHIPMENT TO
☐ MATERIALS ORIGIN

FIELD NO. Gleech Cnty
DIST. LAB NO.
LOT NO.
SAMPLE NO. 10115-17P

SAMPLE OF Soil
FOR USE IN Foundation
A-008-002
SAMPLE FROM Sample #3
DEPTH
LOCATION OF SOURCE Native Soil

THIS SAMPLE IS SHIPPED IN (NO CONTAINER)
AND IS ONE OF A GROUP OF
SAMPLES REPRESENTING (CONS. UNIT, DIST, STATE ETC.)
OWNER OR MANUFACTURER
TOTAL QUANTITY AVAILABLE
TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY
DATE NEEDED
REMARKS 2 PT

COVER ADDITIONAL INFORMATION WITH LETTER
DATE SAMPLED
BY S. Awad TITLE TE
DIST. CO. RTE. PM 04-SOL-12-PM 22.9
LIMITS
CONT. NO. 04-2A6200
FED. NO. 1-160-P1525
RES. ENGR. OR SUPT.
ADDRESS Grand Ave, Oakland
CONTRACTOR

GRADING ANALYSIS

SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS ☐ SOUGHT ☐
3					
2½					
2					
1½					
1					
¾					
½					
⅜					
4					
8					
16					
30					
50					
100					
200					
5μ					
1μ					

GRADING AS USED WAS OBTAINED AS FOLLOWS:
% BY WT. % BY VOL. TEST NO. DESCRIPTION

REMARKS

SURFACE
BASE
SUBBASE
GRAVEL EQUIVALENT FACTOR
TRAFFIC INDEX
R VALUE: EXUDATION PRESSURE
EXPANSION PRESSURE
AT EQUILIBRUM SPEC.
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

REPORT OF TESTS ON SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D	E
DATE TESTED					
COMPACTOR FOOT PRESSURE P.S.I.					
INITIAL MOISTURE %					
SOAK WATER ML					
WATER ADDED—ML (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET WT. OF BRIQUETTE—GMS.					
HEIGHT OF BRIQUETTE—INCHES					
DRY DENSITY OF BRIQ. — # CU. FT.					
STABILOMETER P_h AT 2000 LBS.					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. P.S.I.					
THICK. BY STAB. FEET					
EXPANSION DIAL READING					
THICK. BY EXP. PRESS. FEET					
R-VALUE BY EXPANSION					

TEST RESULTS

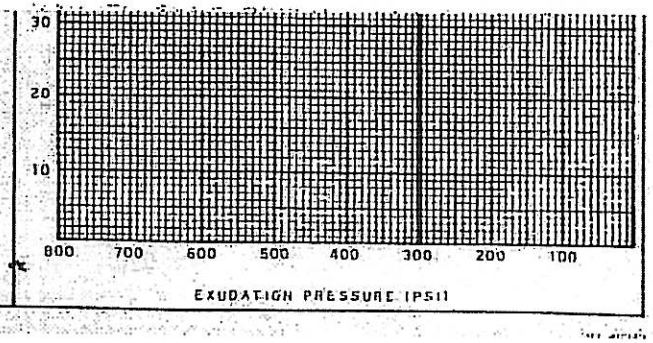
LL 46 P.L. 16 P.I. 30 SPEC.
CV
S.E. AS REC'D.
CRUSHED
COMBINED
DUR. GRADE 100 REV.
500 REV.
DUR. D_f
D_c
% CRUSHED PARTICLES

S.P. G.R. ☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT

	FINE	COARSE
AS REC'D.		
CRUSHED		

REL. COMPACTION DATA

	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		



RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

-TL-361 (Rev. 10/78)

10119 - 1F

BILLED

DATE RECEIVED JUN 04 2008

CALC. BY _____ APPROVED BY _____

DATE REPORTED JUN 30 2008

☐ DISTRICT D. OR ☐ TRANS. LAB.
☐ DIS. MAT LS. R. ☐ V'T. SECTION
☐ RESIDENT ENGINEER ☐ ACCOUNTING
☐ CONSTRUCTION ☐

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD
TL-0101 (REV. 10/97)

CARD NUMBER C008-001-1

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB
☐ SPECIAL TESTS

SAMPLE SENT TO:
☐ HDQTRS. LAB
☐ BRANCH LAB

FIELD NO. Geotech Cx/K
DIST. LAB NO.
LOT NO.
S.C. GR. SECTION

10119-1F

JUN 04 2008

SAMPLE OF Soil
FOR USE IN Foundation
A008-001
SAMPLE FROM Sample # 2
DEPTH
LOCATION OF SOURCE Native Soil

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS)
AND IS ONE OF A GROUP OF
SAMPLES REPRESENTING (TONS, GALS, ACRES, STA. ETC.)
OWNER OR MANUFACTURER
TOTAL QUANTITY AVAILABLE
TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY
DATE NEEDED
REMARKS MPS PI

COVER ADDITIONAL INFORMATION WITH LETTER
DATE SAMPLED
BY S. Awad TITLE TE
DIST. CO. RTE. PM
ok-SOL-12-PM 22.9
UNITS
CONT. NO. OH-2A6200
FED. NO. I-160-P1525
RES. ENGR. OR SUPT.
ADDRESS Grand Ave, Oakland
CONTRACTOR

GRADING ANALYSIS

SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT ☐
3					
2½					
2					
1½					
1					
¾	100				
½	99				
⅜	99				
4	98				
8	97				
16	96				
30	95				
50	92				
100	83				
200	71				
5μ	46				
1μ	35				

GRADING AS USED WAS OBTAINED AS FOLLOWS:
% BY WT. % BY VOL. TEST NO. DESCRIPTION

REMARKS

SURFACE
BASE
SUBBASE

GRAVEL EQUIVALENT FACTOR
TRAFFIC INDEX

R-VALUE: EXUDATION PRESSURE
EXPANSION PRESSURE
AT EQUILIBRUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

REPORT OF TESTS ON Soil

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D	E
DATE TESTED					
COMPACTOR FOOT PRESSURE P.S.I.					
INITIAL MOISTURE %					
SOAK WATER ML					
WATER ADDED-ML (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET WT. OF BRIQUETTE-GMS					
HEIGHT OF BRIQUETTE-INCHES					
DRY DENSITY OF BRIQ. - # CU. FT.					
STABILOMETER P_H AT 2000 LBS.					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. P.S.I.					
THICK. BY STAB. FEET					
EXPANSION DIAL READING					
THICK. BY EXP. PRESS. FEET					
R-VALUE BY EXPANSION					

TEST RESULTS			SPEC.
LL. 43 P.L. 13 P.I. 30			
CV			
S.E.	AS REC'D.		
	CRUSHED		
	COMBINED		
LART	GRADE	100 REV.	
		500 REV.	
DUR	D_f		
	D_i		
% CRUSHED PARTICLES			

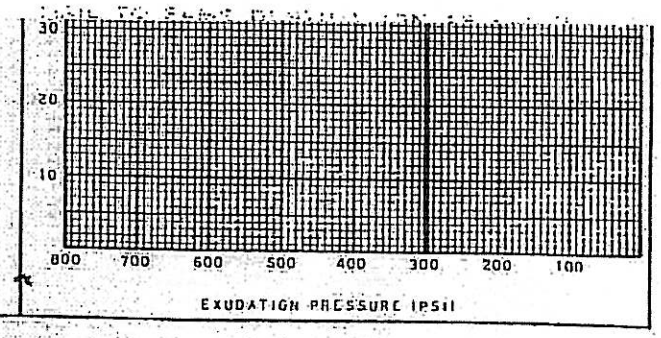
SP. GR. ☐ BULK (OVEN-DRY) ☐ BULK (SSD) ☐ APPARENT

	FINE	COARSE
AS REC'D.		
CRUSHED		

REL. COMPACTION DATA

	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B



TL-361 (Rev. 10/78)

TE NO. 10115_12

BILLED

DATE RECEIVED JUN 04 2008

CALC. BY _____ APPROVED BY _____

DATE REPORTED JUL 02 2008

☐ DISTRICT L OR ☐ TRANS. LAB.
☐ DIS. MAT LS. R ☐ V'T. SECTION
☐ RESIDENT ENGINEER ☐ ACCOUNTING
☐ CONSTRUCTION ☐

GRADING ANALYSIS

SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT ☐
3					
2½					
2					
1½					
1					
¾					
½					
⅜					
4					
8	100				
16	99				
30	98				
50	96				
100	90				
200	80				
5μ	57				
1μ	23				

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION

REMARKS.

SURFACE

BASE

SUBBASE

GRAVEL EQUIVALENT FACTOR

TRAFFIC INDEX

R VALUE: EXUDATION PRESSURE

EXPANSION PRESSURE

AT EQUILIBRUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

REPORT OF TESTS ON

SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D	E
DATE TESTED					
COMPACTOR FOOT PRESSURE P.S.I.					
INITIAL MOISTURE %					
SOAK WATER ML					
WATER ADDED—ML. (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET WT. OF BRIQUETTE—GMS					
HEIGHT OF BRIQUETTE—INCHES					
DRY DENSITY OF BRIQ.—# CU. FT.					
STABILOMETER P_H AT 2000 LBS.					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. P.S.I.					
THICK. BY STAB. FEET					
EXPANSION DIAL READING					
THICK. BY EXP. PRESS. FEET					
R-VALUE BY EXPANSION					

TEST RESULTS

		SPEC.
LL. 43 P.L. 15 P.I. 28		
CV		
S.E.	AS REC'D.	
	CRUSHED	
	COMBINED	
L.A. RT.	GRADE 100 REV.	
	500 REV.	
DUR.	D_f	
	D_i	
% CRUSHED PARTICLES		

SP. GR. ☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT

	FINE	COARSE
AS REC'D.		
CRUSHED		

REL. COMPACTION DATA

	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

-TL-361 (Rev. 10/78)

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD
TL-0101 (REV. 10/97)

CAL NUMBER C008-001 J3

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB
☐ SPECIAL TESTS

SAMPLE SENT TO:
☐ HDQTRS. LAB
☐ BRANCH LAB
☐ DIST. LAB

FIELD NO. Geotech Corp
DIST. LAB NO.
LOT NO.
P.O. OR REQ. NO.
AUTHORIZATION

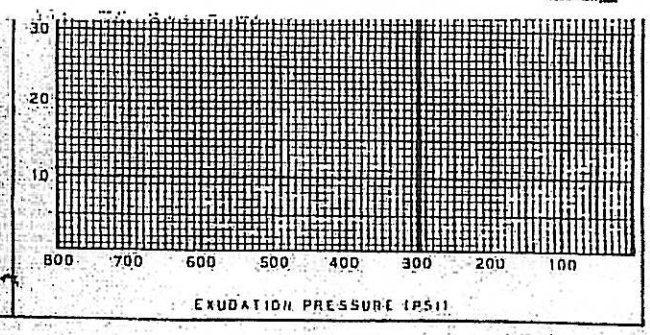
10115-12p

JUN 04 2008

SAMPLE OF Soil
FOR USE IN Foundation
SAMPLE FROM A-008-001 Sample # 3
DEPTH
LOCATION OF SOURCE Native Soil

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS)
AND IS ONE OF A GROUP OF
SAMPLES REPRESENTING (LOTS, DEL. DATE, ETC.)
OWNER OR MANUFACTURER
TOTAL QUANTITY AVAILABLE
TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY
DATE NEEDED
REMARKS
MA & PI

CONTRACT INSTRUCTIONS, INFORMATION WITH LETTER
DATE SAMPLED
BY S. Awad TITLE TE
DIST. CO. RTE. PM OK-SOL-12-PM 22.9
LIMITS
CONT. NO. OH-2A6200
FED. NO. 1-160-P1525
RES. ENGR. OR SUPT.
ADDRESS Grand Ave, Oakland
CONTRACTOR



TV 46241

TES 10115 - 13P

DATE RECEIVED JUN 04 2008

CALC. BY _____ APPROVED BY _____

DATE REPORTED JUL 02 2008

BILLED

☐ DISTRICT DI... ☐ TRANS. LAB.
☐ DIS. MAT LS. ☐ V.T. SECTION
☐ RESIDENT ENGINEER ☐ ACCOUNTING
☐ CONSTRUCTION ☐

GRADING ANALYSIS

SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS ☐ SOUGHT ☐
3					
2½					
2					
1½					
1					
¾					
½					
⅜					
4					
8					
16					
30					
50					
100					
200					
5μ					
1μ					

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION

REMARKS:

SURFACE

BASE

SUBBASE

GRAVEL EQUIVALENT FACTOR

TRAFFIC INDEX

R VALUE: EXUDATION PRESSURE / EXPANSION PRESSURE / AT EQUILIBRUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

REPORT OF TESTS ON

SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D	E
DATE TESTED					
COMPACTOR FOOT PRESSURE P.S.I.					
INITIAL MOISTURE %					
SOAK WATER ML					
WATER ADDED-ML (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET WT. OF BRIQUETTE-GMS					
HEIGHT OF BRIQUETTE-INCHES					
DRY DENSITY OF BRIQ. - # CU. FT.					
STABILOMETER P_H AT 2000 LBS.					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. P.S.I.					
THICK. BY STAB FEET					
EXPANSION DIAL READING					
THICK. BY EXP. PRESS. FEET					
R-VALUE BY EXPANSION					

TEST RESULTS		SPEC.
LL 52 P.L. 19 P.I. 33		
CV		
S.E.	AS REC'D	
	CRUSHED	
	COMBINED	
LART	GRADE 100 REV.	
	500 REV.	
DUR	D_I	
	D_{II}	
% CRUSHED PARTICLES		

SP. GR. ☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT

	FINE	COARSE
AS REC'D.		
CRUSHED		

REL. COMPACTION DATA

	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

TL-361 (Rev. 10/78)

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CAS CU 8-00 4

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS

SAMPLE SENT TO: ☐ HDQTRS. LAB ☐ BRANCH LAB ☐ DIST. LAB

INDEPENDENT ASSURANCE TESTS ☐ DIST. LAB ☐ TRANS. LAB ☐ SPECIAL TESTS

FIELD NO. Geotech Oak

DIST. LAB NO.

LOT NO.

10115-13P

JUN 04 2008

SAMPLE OF Soil

FOR USE IN Foundation

A-008-001

SAMPLE FROM Sample #5A

DEPTH

LOCATION OF SOURCE

THIS SAMPLE IS SHIPPED IN (NO CONTAINER) | AND IS ONE OF A GROUP OF | SAMPLES REPRESENTING (TONS, GALS, BBLS, STA, ETC)

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY | DATE NEEDED

REMARKS PI

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLEED

BY S. Awad TITLE TE

DIST. CO. RTE. PM 04-SOL-12-PM 22.9

LIMITS

CONT. NO. 04-2A6200

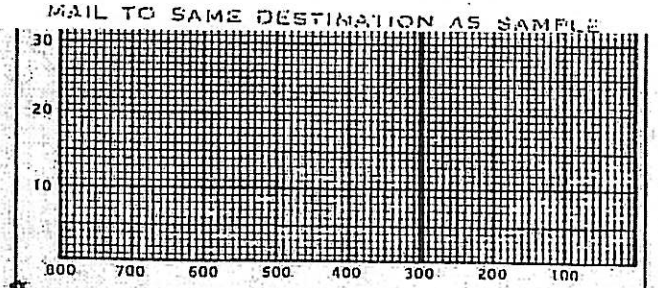
FED. NO. 1-160-P152S

RES. ENGR. OR SUPT.

ADDRESS Grand Ave, Oakland

CONTRACTOR

MAIL TO SAME DESTINATION AS SAMPLE



MOISTURE CONTENT DETERMINATION
(CTM 226)

County : SOL | Route : 12 | P.M. : 22.91 | E.A.: 2A6200 | Job No. : 10115

Limits : | R.E. : SAMUEL AWAD

Date Received : 06/06/08 | Date Calculated : 06/09/08

Date Reported : JUN 0 9 2008 | By : AU | PAGE : 1 OF 2

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT Wet	GROSS WEIGHT Dry	TARE Weight	NET WEIGHT Wet	NET WEIGHT Dry	MOISTURE Weight	% Moisture
08-001	1	5'	MC	201.6	198.8	99.7	101.9	99.1	2.8	2.8%
	2	10'	MC/MA/PI	1962.0	1727.7	100.1	1861.9	1627.6	234.3	14.4%
	3	15'	MC/MA/PI	1124.1	986.2	102.0	1022.1	884.2	137.9	15.6%
	4	20'-21.5'	MC	1287.7	1099.0	99.8	1187.9	999.2	188.7	18.9%
	5	25'-25.5'	MC	383.7	339.1	101.5	282.2	237.6	44.6	18.8%
	5A	25.5'-26.5'	MC/MA/PI	824.9	696.7	101.3	723.6	595.4	128.2	21.5%
	6	30'-31.5'	MC	1589.9	1293.9	99.3	1490.6	1194.6	296.0	24.8%
	7	35'-36.5'	MC	1079.6	890.8	98.5	981.1	792.3	188.8	23.8%
	8	40'-40.5'	MC	333.4	295.1	100.6	232.8	194.5	38.3	19.7%
08-002	1	5'-6.5'	MC/MA/PI	999.6	881.3	98.9	900.7	782.4	118.3	15.1%
	2	10'-11.5'	MC	753.7	692.1	99.9	653.8	592.2	61.6	10.4%
	2A	11'-11.5'	MC/PI	445.7	389.4	102.0	343.7	287.4	56.3	19.6%
	3	15'-16.5'	MC/MA/PI	1393.8	1201.8	101.4	1292.4	1100.4	192.0	17.4%
	4	20'-21.5'	MC	1435.9	1226.4	98.9	1337.0	1127.5	209.5	18.6%
	5	25'-26.5'	MC/PI	1405.4	1205.1	100.8	1304.6	1104.3	200.3	18.1%
	6	30'-31.5'	MC	1052.0	889.2	101.0	951.0	788.2	162.8	20.7%
	7	35'-36.5'	MC	1076.5	914.6	101.0	975.5	813.6	161.9	19.9%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

LVALDEZ, DL4, REV. 06-2003

MOISTURE CONTENT DETERMINATION
(CTM 226)

County : SOL | Route : 12 | P.M. : 22.91 | E.A.: 2A6200 | Job No. : 10115

Limits : | R.E. : SAMUEL AWAD

Date Received : 06/06/08 | Date Calculated : 06/09/08

Date Reported : JUN 09 2008 | By : AU | PAGE : 2 OF 2

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT Wet	GROSS WEIGHT Dry	TARE Weight	NET WEIGHT Wet	NET WEIGHT Dry	MOISTURE Weight	% Moisture
	8	40'-41.5'	MC	880.4	778.5	303.8	576.6	474.7	101.9	21.5%
	8A	41'-41.5'	MC	671.7	629.7	246.9	424.8	382.8	42.0	11.0%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

LVALDEZ, DL4, REV. 06-2003

TES 3.
10115 -- 10P

BILLED

DATE RECEIVED JUN 04 2008
CALC. BY _____ APPROVED BY _____
DATE REPORTED JUL 14 2008

☐ DISTRICT DI. OR ☐ TRANS. LAB.
☐ DIS. MAT'LS. & ☐ PAV'T. SECTION
☐ RESIDENT ENGINEER ☐ ACCOUNTING
☐ CONSTRUCTION ☐

GRADING ANALYSIS

SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT ☐
3					
2½					
2					
1½					
1					
¾					
½					
⅜					
4					
8					
16					
30					
50					
100					
200					
5μ					
1μ					

GRADING AS USED WAS OBTAINED AS FOLLOWS:
% BY WT. % BY VOL. TEST NO. DESCRIPTION

RESISTIVITY = 1494 Ω-cm
spec: 1000 Ω-cm (min)

REMARKS PH = 7.5
spec: 5.0 (min)

SURFACE
BASE
SUBBASE

GRAVEL EQUIVALENT FACTOR
TRAFFIC INDEX

R VALUE
EXUDATION PRESSURE
EXPANSION PRESSURE
AT EQUILIBRUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

REPORT OF TESTS ON

Soil

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D	E
DATE TESTED					
COMPACTOR FOOT PRESSURE P.S.I.					
INITIAL MOISTURE %					
SOAK WATER ML					
WATER ADDED—ML (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET WT. OF BRIQUETTE—GMS					
HEIGHT OF BRIQUETTE—INCHES					
DRY DENSITY OF BRIQ. — # CU. FT.					
STABILOMETER P_H AT 2000 LBS.					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. P.S.I.					
THICK. BY STAB FEET					
EXPANSION DIAL READING					
THICK. BY EXP. PRESS. FEET					
R-VALUE BY EXPANSION					

TEST RESULTS

			SPEC.
LL.	P.L	P.I.	
CV			
S.E	AS REC'D		
	CRUSHED		
	COMBINED		
LART	GRADE 100 REV.		
	500 REV.		
DUR	D_f		
	D_t		
% CRUSHED PARTICLES			

SP. GR. ☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT

	FINE	COARSE
AS REC'D.		
CRUSHED		

REL. COMPACTION DATA

	IN-PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

-TL-361 (Rev. 10/78)

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/87)

CAF NUMBER C-Ox 002-1

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB
☐ SPECIAL TESTS

SAMPLE SENT TO:
☐ HDOTRS. LAB
☐ BRANCH LAB
☐ DIST. LAB
☐ EQUIPMENT NO.
☐ ORGANIZATION

FIELD NO. Gabriela Creek
DIST. LAB NO.
LOT NO.
CONTRACTOR REC. NO.

10115-10P

JUN 04 2008

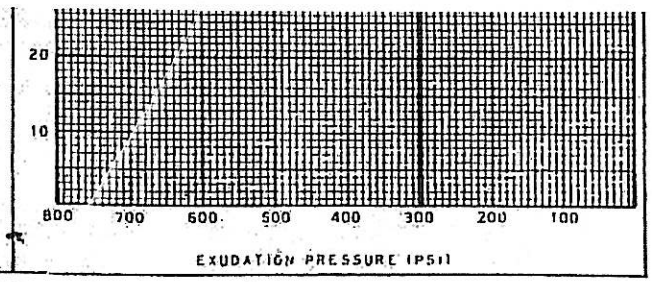
SAMPLE OF Soil
FOR USE IN
SAMPLE FROM #002
DEPTH 2-3'
LOCATION OF SOURCE
Native Soil / embankment material

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) | AND IS ONE OF A GROUP OF | SAMPLES REPRESENTING (LONG, CAL, ROLL, STA, ETC.)
OWNER OR MANUFACTURER
TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY | DATE NEEDED
REMARKS
Corrosion

COVER ADDITIONAL INFORMATION WITH LETTER
DATE SAMPLEED
BY S. Awad TITLE TE
DIST, CO, RTE, PM
Ox-50L-12-PM 20.6/23.7
LIMITS Ox-2A6200

CONT. NO.
FED. NO.
RES. ENGR. OR SUPT.
ADDRESS
CONTRACTOR

MAIL TO SAME DESTINATION AS SAMPLE



07 46243

TES 5.

10115 — 9P

BILLED

DATE RECEIVED JUN 04 2008

CALC. BY _____ APPROVED BY _____

DATE REPORTED JUL 14 2008

☐ DISTRICT D OR ☐ TRANS. LAB
☐ DIS. MAT LS. R. ☐ PAV'T. SECT
☐ RESIDENT ENGINEER ☐ ACCOUNTING
☐ CONSTRUCTION ☐

GRADING ANALYSIS

SIEVE	AS RECEIVED	RET. GR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT ☐
3					
2½					
2					
1½					
1					
¾					
½					
⅜					
4					
8					
16					
30					
50					
100					
200					
5μ					
1μ					

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT. % BY VOL. TEST NO. DESCRIPTION

RESISTIVITY = 1,599 Ω-cm
SPECS. 1000 Ω-cm (min)

REMARKS

pH = 7.2
SPECS: 5.0 (min)

SURFACE

BASE

SUBBASE

GRAVEL EQUIVALENT FACTOR

TRAFFIC INDEX

R VALUE: EXUDATION PRESSURE

EXPANSION PRESSURE

AT EQUILIBRUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

REPORT OF TESTS ON

SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D
DATE TESTED				
COMPACTOR FOOT PRESSURE P.S.I.				
INITIAL MOISTURE %				
SOAK WATER ML				
WATER ADDED—ML (TOTAL)				
WATER ADDED %				
MOISTURE AT COMPACTION %				
WET WT. OF BRIQUETTE—GMS				
HEIGHT OF BRIQUETTE—INCHES				
DRY DENSITY OF BRIQ. — # CU. FT.				
STABILOMETER P_H AT 2000 LBS.				
DISPLACEMENT				
R-VALUE BY STABILOMETER				
EXUDATION PRES. P.S.I.				
THICK. BY STAB FEET				
EXPANSION DIAL READING				
THICK. BY EXP. PRESS. FEET				
R-VALUE BY EXPANSION				

TEST RESULTS			SPEC.
LL.	P.L.	P.I.	
CV			
S.E.	AS REC'D		
	CRUSHED		
	COMBINED		
LART	GRADE	100 REV.	
		500 REV.	
DUR	D_f		
	D_c		
% CRUSHED PARTICLES			

SP. GR. ☐ BULK (OVEN D ☐ BULK (SSD) ☐ APPARENT

	FINE	COA
AS REC'D.		
CRUSHED		

REL. COMPACTION DA

	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

-TL-361 (Rev. 10/78)

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATI

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CARD C008-001-1

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB
☐ SPECIAL TESTS

SAMPLE SENT TO:
☐ HDQTRS. LAB
☐ BR. NO.
☐ DIS. LA
☐ RESIDENT ENG.
☐ AUTHORIZATION

FIELD NO. GEOTECH SOIL
DIST. LAB NO.
LOT NO.
OR SEQ.

10115-9P

SAMPLE OF SOIL

FOR USE IN

SAMPLE FROM 001

DEPTH 3-4'

LOCATION OF SOURCE Native soil/erbank. material

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) | AND IS ONE OF A GROUP OF | SAMPLES REPRESENTING (TONS, GAL, BELT, STA. ETC.)

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY | DATE NEEDED

REMARKS

Corrosion

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED

BY S. Awad TITLE TE

DIST. CO. RTE. PM

04-SOL-12-PM 22.9

LIMITS 04-2A6200

CONT. NO.

FED. NO.

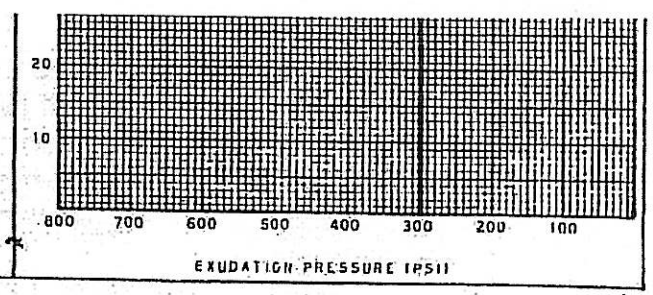
RES. ENGR. OR SUPT. S. Awad 510-622-5443

ADDRESS 111 Grand Ave, Oakland

CONTRACTOR

MAIL TO SAME DESTINATION AS SAMPLE

JUN 04 2008



EXIBIT B

Log of Test Borings

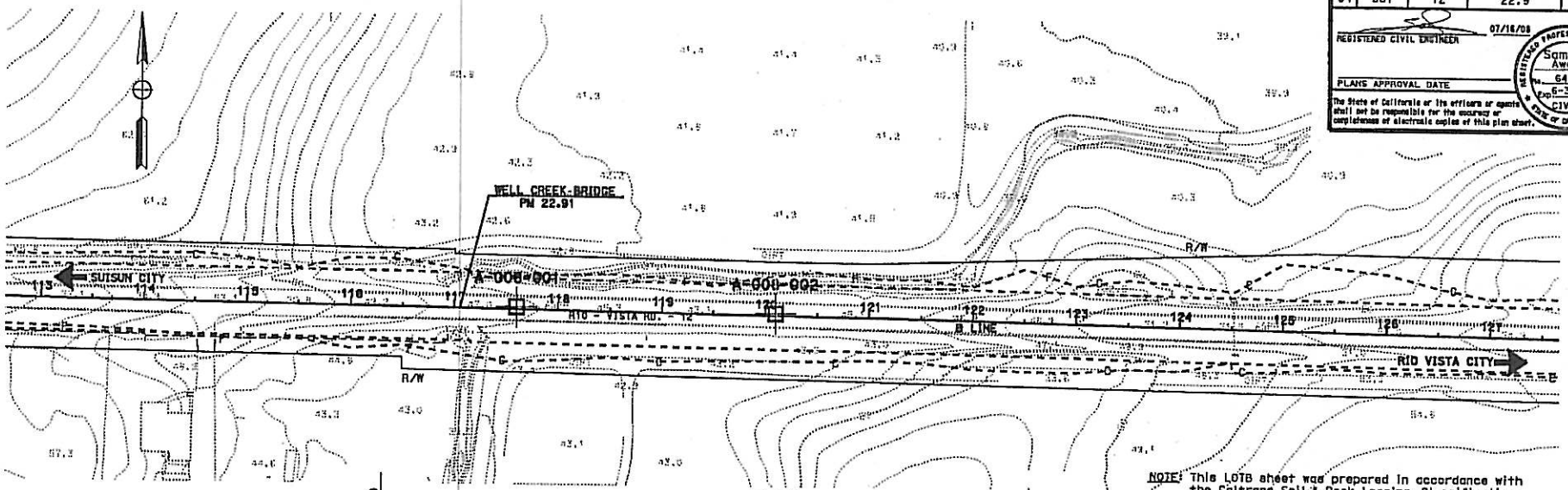
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Sol	12	22.9		

REGISTERED CIVIL ENGINEER 07/16/08

PLANS APPROVAL DATE

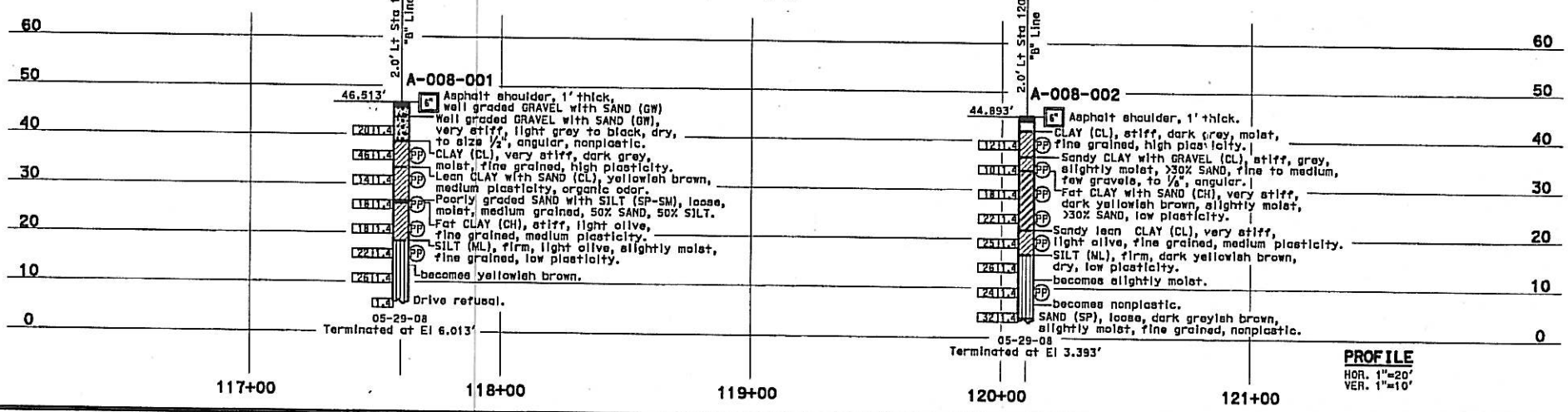
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER Samuel Awad No. 64589 Exp. 6-30-09 CIVIL STATE OF CALIFORNIA



NOTE: This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (June 2007).

PLAN
1"=50'



PROFILE
HOR. 1"=20'
VER. 1"=10'

ENGINEERING SERVICES		GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	GEOTECHNICAL SERVICES OFFICE OF GEOTECHNICAL DESIGN BRANCH	BRIDGE NO. / POST MILES 22.9	LEFT TURN LANE LOG OF TEST BORINGS
FUNCTIONAL SUPERVISOR NAME:	DRAWN BY: M. Reynolds: 07-08 CHECKED BY: A. Kaddoura	FIELD INVESTIGATION BY: S. Awad				

HDS CIVIL LOG OF TEST BORINGS SHEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 04223
EA 2A6200

FILE => 42A620w01.dgn

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES

SHEET 1 OF 3

USERNAME => $TIDB22 DATE PLOTTED => 25-NOV-2008 TIME PLOTTED => 10:18

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Sol	12	22.9		

REGISTERED CIVIL ENGINEER 07-16-08 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Samuel Awad No. 64589 Exp. 6-30-09 CIVIL STATE OF CALIFORNIA

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CEMENTATION

Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

CONSISTENCY OF COHESIVE SOILS

Description	Unconfined Compressive Strength (tsf)	Pocket Penetrometer Measurement (tsf)	Torvane Measurement (tsf)	Field Approximation
Very Soft	< 0.25	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	0.25 to 0.50	0.25 to 0.50	0.12 to 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 to 1.0	0.50 to 1.0	0.25 to 0.50	Penetrated several inches by thumb with moderate effort
Stiff	1 to 2	1 to 2	0.50 to 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2 to 4	2 to 4	1.0 to 2.0	Readily indented by thumbnail
Hard	> 4.0	> 4.0	> 2.0	Indented by thumbnail with difficulty

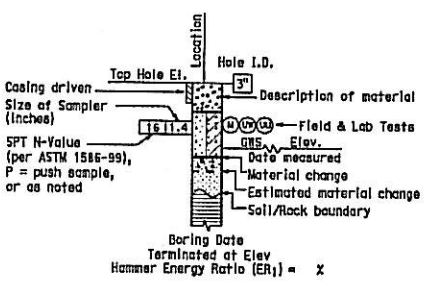
BOREHOLE IDENTIFICATION

Symbol	Hole Type	Description
	A	Auger Boring
	R P	Rotary drilled boring Rotary percussion boring (air)
	R	Rotary drilled diamond core
	HD HA	Hand driven (1-inch soil tube) Hand Auger
●	D	Dynamic Cone Penetration Boring
▲	CPT	Cone Penetration Test (ASTM D 5778-95)
[ ]	O	Other

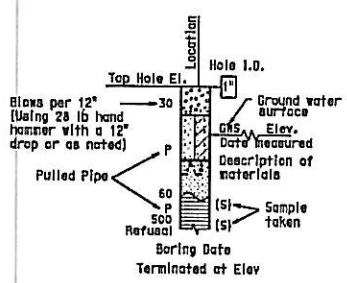
Note: Size in inches.

PLASTICITY OF FINE-GRAINED SOILS

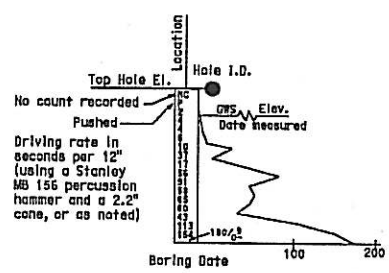
Description	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.



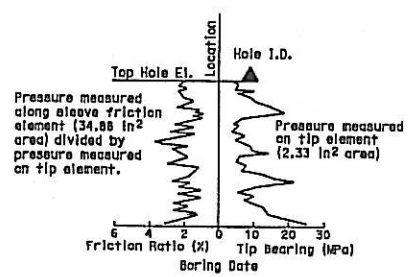
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) SOUNDING

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	GEOTECHNICAL SERVICES OFFICE OF GEOTECHNICAL DESIGN BRANCH	DISTRICT NO. / POST MILE 22.9	SOIL LEGEND / LOG OF TEST BORINGS
M. Reynolds PREPARED BY					
A. Kaddoura CHECKED BY	S. Awad				

02 LOTS SOIL LEGEND

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04223
EA 2A6200
FILE => 42A620X02.dgn

REVISED DATES

SHEET 2 OF 3

USERNAME => s-awad22 DATE PLOTTED => 24-JUL-2008 TIME PLOTTED => 14:03

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Sol	12	22.9		

REGISTERED CIVIL ENGINEER 07-16-08 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Samuel Awad # 64589 Exp 6-30-09 CIVIL STATE OF CALIFORNIA

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

GROUP SYMBOLS AND NAMES

Graphic/Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)
GM	SILTY GRAVEL SILTY GRAVEL with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL
SP	Poorly graded SAND Poorly graded SAND with GRAVEL
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)
SM	SILTY SAND SILTY SAND with GRAVEL
SC	CLAYEY SAND CLAYEY SAND with GRAVEL
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL
PT	PEAT
	COBBLES COBBLES and BOULDERS BOULDERS

Graphic/Symbol	Group Names
CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY ORGANIC elastic SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND

FIELD AND LABORATORY TESTING

- (C) Consolidation (ASTM D 2435)
- (CL) Collapse Potential (ASTM D 5333)
- (CP) Compaction Curve (CTM 216)
- (CR) Corrosivity Testing (CTM 643, CTM 422, CTM 417)
- (CU) Consolidated Undrained Triaxial (ASTM D 4767)
- (DS) Direct Shear (ASTM D 3080)
- (EI) Expansion Index (ASTM D 4829)
- (M) Moisture Content (ASTM D 2216)
- (OC) Organic Content-% (ASTM D 2974)
- (P) Permeability (CTM 220)
- (PA) Particle Size Analysis (ASTM D 422)
- (PI) Plasticity Index (AASHTO T 90) Liquid Limit (AASHTO T 89)
- (PL) Point Load Index (ASTM D 5731)
- (PM) Pressure Meter
- (PP) Pocket Penetrometer
- (R) R-Value (CTM 301)
- (SE) Sand Equivalent (CTM 217)
- (SG) Specific Gravity (AASHTO T 100)
- (SL) Shrinkage Limit (ASTM D 427)
- (SW) Swell Potential (ASTM D 4546)
- (TV) Pocket Torvane
- (UC) Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
- (UU) Unconsolidated Undrained Triaxial (ASTM D 2850)
- (UW) Unit Weight (ASTM D 4767)
- (VS) Vane Shear (AASHTO T 223)

APPARENT DENSITY OF COHESIONLESS SOILS

Description	SPT N_{60} (Blows / 12 inches)
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE

Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS

Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

PARTICLE SIZE

Description		Size
Boulder		> 12"
Cobble		3" to 12"
Gravel	Coarse	3/4" to 3"
	Fine	No. 4 to 3/4"
Sand	Coarse	No. 10 to No. 4
	Medium	No. 40 to No. 10
	Fine	No. 200 to No. 40

ENGINEERING SERVICES

M. Reynolds 07-08 PREPARED BY

A. Kaddoura CHECKED BY

GEOTECHNICAL SERVICES

S. Awad

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL SERVICES OFFICE OF GEOTECHNICAL DESIGN BRANCH

DISTRICT NO. 04 POST MILE 22.9

CU 04223 EA 2A6200

FILE => 42A620x03.dgn

SOIL LEGEND
LOG OF TEST BORINGS

SHEET 3 OF 3

SR LATB SOIL LEGEND

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

DATE PLOTTED => 24-NOV-2008 TIME PLOTTED => 14:07

EXHIBIT C

(Typical X-Section Sheet Pile)

.c2.10-1.__ **STEEL SHEET PILES;**.--Steel sheet piling shall consist of furnishing and driving steel sheet piling in conformance with the details shown on the plans and these special provisions.

2

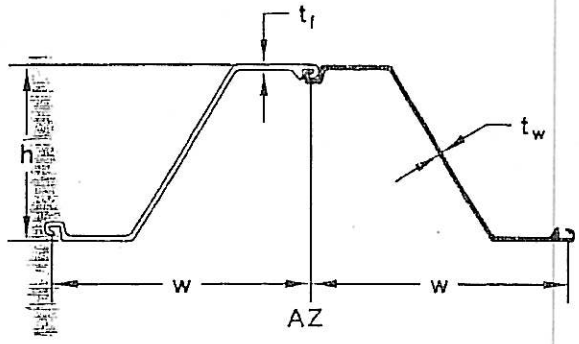
The Contractor may submit, for approval by the Engineer, an alternative steel sheet pile section which conforms to the design requirements and details shown on the plans and these special provisions.

3

The steel shall be ASTM designation A-572 Grade 50. The Section Index shall be AZ26 with a minimum section modulus of 48.4 in^3/ft . The minimum sheet thickness shall be 0.48 inch

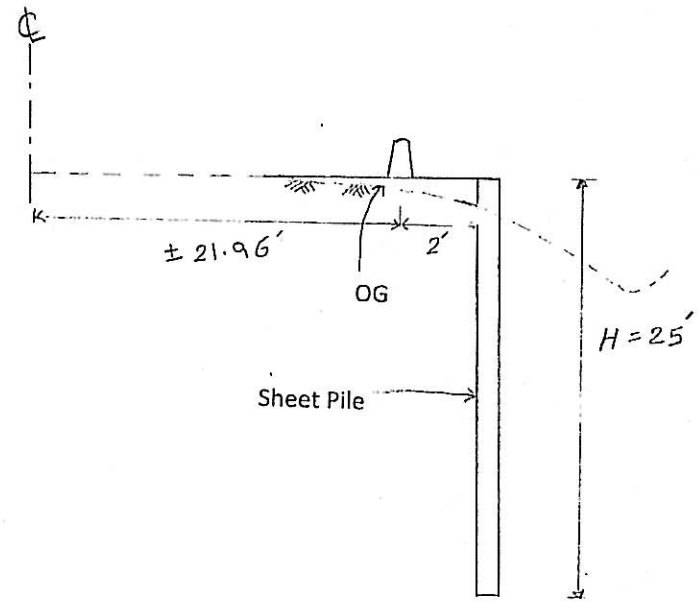
4

Piles damaged in handling and driving shall be replaced at the Contractor's expense. Unless otherwise permited by the Engineer, the piles shall be driven the full depth as shown on the plans. Care shall be taken to avoid damage to the piles and to maintain the interlock.



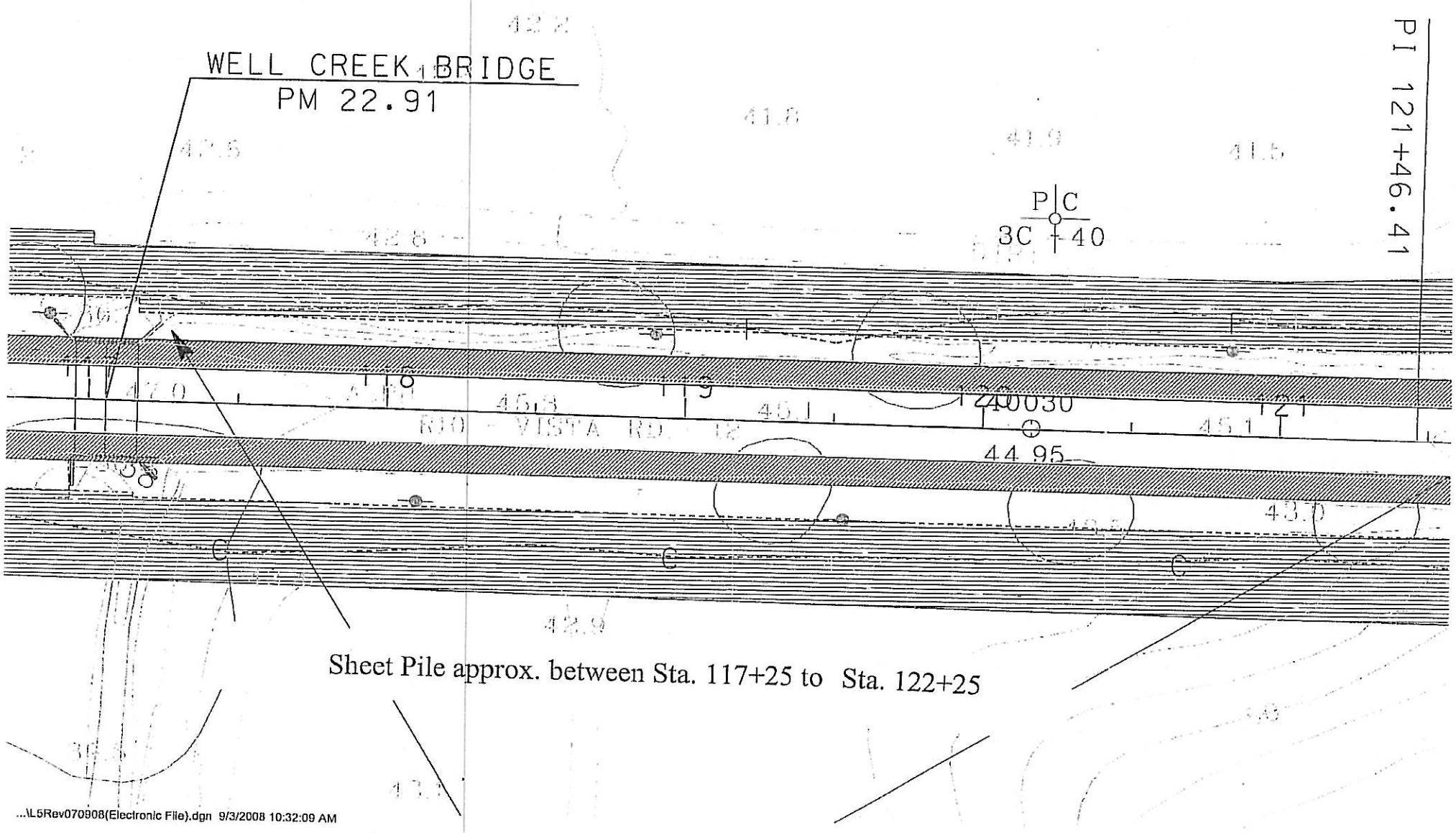
AZ 26

(tw) Thickness of web in– 0.480
(tf) Thickness of flange in – 0.512
Steet pile weight Ib/ft² - 31.79
Wall weight Ib/ft² - 65.72
wx (section modulus) in³/ft – 48.4
(h) Height in - 16.81
(w) Width in – 24.80



Typical X-Section Sheet Pile

(From Sta. 117+25 to Sta. 122+25)


WELL CREEK BRIDGE
PM 22.91
PI 121+46.41
P C
3C 40
R10 - VISTA RD. 12
44.95
Sheet Pile approx. between Sta. 117+25 to Sta. 122+25
...\L5Rev070908(Electronic File).dgn 9/3/2008 10:32:09 AM

State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: MICHAEL T. NGUYEN
District Branch Chief
Office of Design - SHOPP

Attention: William Fong

Date: January 14, 2011

File: 04-SOL-12
PM 20.6/21.3 & 22.6/23.7
04-2A6201
Shoulder Widening with
Turn Pockets

From: LEONARDO DELEON
Materials Design Engineer
Engineering Services I - Materials A

Concurred by: TINU MISHRA, P.E.
District Materials Engineer
District Branch Chief - Materials A

Subject: Materials Recommendations for PS&E

This memorandum is in response to your request for pavement structure recommendations and SSP's for the PS&E on the above captioned project on Route 12 from Currie Road to Liberty Island Road in Solano County. The project proposes to widen the shoulders between Azevedo and Liberty Island roads (PM 22.7/23.7), reconstruct the roadway profile between PM 23.1 and PM 23.2, and overlay the existing mainline at PM 21.3 and between Azevedo Road (PM 22.7) and Liberty Island Road (PM 23.7) with six inches of HMA-A. In addition, this project will provide left-turn pockets at Currie Road (PM 20.6), McCloskey road (PM 21.3), and Azevedo Road (PM 22.7).

Our pavement structure recommendations are based on the anticipated future widening on the corridor or future shoulder conversion into a lane. Therefore, the 20-year design period and the mainline Traffic Index (TI) were used for the design of the pavement structure.

Design Factors

The office of Advance Planning / Modeling and Traffic Forecasting has provided the 20-year (2032 one-way) Mainline TI of 12.5.

Our office has collected two soil samples within the shoulder widening areas from the east and west side of Route 12. These soil samples were tested to determine the R-value for this project. The test results show that the R-value ranges from 8 to 14. We have

chosen to use a more conservative R-value of 5 for the design calculations of the pavement structure.

I. Structural Section for Mainline and Shoulder

For a T.I. (20) = 12.5 and an R-value = 5, we recommend the following pavement structure:

Standard Section (ft)

	0.65'	HMA (A)
	1.05'	AB (2)
	1.60'	AS (4)
Total	**3.30'**	

Full Depth Section (ft)

	1.55'	HMA (A)
	0.50'	AS (4)
Total	**2.05'**	

II. Temporary Structural Section for 1-year Service Life

For a TI (1) = 8 (extrapolated from TI (20) = 12.5) and R-Value = 5, we recommend the following pavement structure:

Standard Section (ft)

	0.40'	HMA (A)
	0.65'	AB (2)
	1.00'	AS (4)
Total	**2.05**	

Full Depth Section (ft)

	0.90'	HMA (A)
	0.50'	AS (4)
Total	**1.40'**	

Abbreviations:
HMA (A) = Hot Mix Asphalt - Type A
AB (2) = Aggregate Base - Class 2
AS (4) = Aggregate Subbase - Class 4

Attached are our edited versions of the Standard Special Provisions for the HMA (A), AB (2), AS (4), and Cold Plane AC for inclusion to your PS&E.

If you have any questions, please call Leonardo Deleon at 622-5444.

c: TMishra, Daily File, Route File
L. Deleon/dg/SOL-12 Shoulder Widening

State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: STEWART LEE
District Branch Chief
Office of Design - SHOPP

Attention: William Fong

Date: September 26, 2012

File: 04-SOL-12 PM 20.6/21.3,
PM 22.6/23.7
EA 04-2A6201
Shoulder Widening with
Turn Pockets

From: LEONARDO DELEON
Materials Design Engineer
Engineering Services I - Materials A

Concurred by: TINU MISHRA, P.E.
District Materials Engineer
District Branch Chief - Materials A

Subject: Pavement Recommendations

This is in response to your email requesting a revised pavement recommendations for the 350 feet stretch from Station B 118+00 to 121+50 within the above referenced project limits. Our initial recommendation is to overlay the existing roadway with 0.5' HMA-A to match the 20-year design life of the new widening. The increase in profile grade will however exacerbate the flooding situation since the stretch of the road is a floodplain, as delineated in the Federal Emergency Management Agency's Flood Insurance Rate Map. District 4 Hydraulics has investigated the flood concerns and concluded that raising the existing profile grade would make the flood stages worse on the land. Hence, you are seeking an exception to use a 20-year pavement design on the existing pavement and provide a pavement section that will maintain the existing profile of the roadway.

Existing Pavement Section

Pavement Coring was provided by District Materials on April 26, 2012 on eastbound lane no. 1 from Stations B 126+25 to 131+85. The results of the cores show that the existing pavement consists of an average 0.75'AC / 0.40' PCC/ AB/ Subgrade Material. The floodplain area may however have a different pavement section since they are on different stations.

Pavement Recommendation to Maintain the Existing Profile

In order to maintain the existing profile, we recommend you mill the existing pavement to a depth of 0.50' and replace with:

0.35' HMA-A
GPI – Geosynthetic Pavement Interlayer (2010 Std Specs Sec. 39-1.09 A & D)
0.15' HMA-A
0.50' - Total*

*Note that this pavement section may not provide the 20-year service life.

Also, when milling the existing AC pavement to a depth of 0.50' and the Aggregate Base or the Subgrade Material is exposed, then the granular material should be recompacted to 95% relative compaction before placing the recommended HMA section above.

If you have any questions, please call Leonardo Deleon at (510) 622-5444.

c: Daily File, Route File, Tinu Mishra
L. Deleon/ld/revised pavement recommendations to maintain the profile.

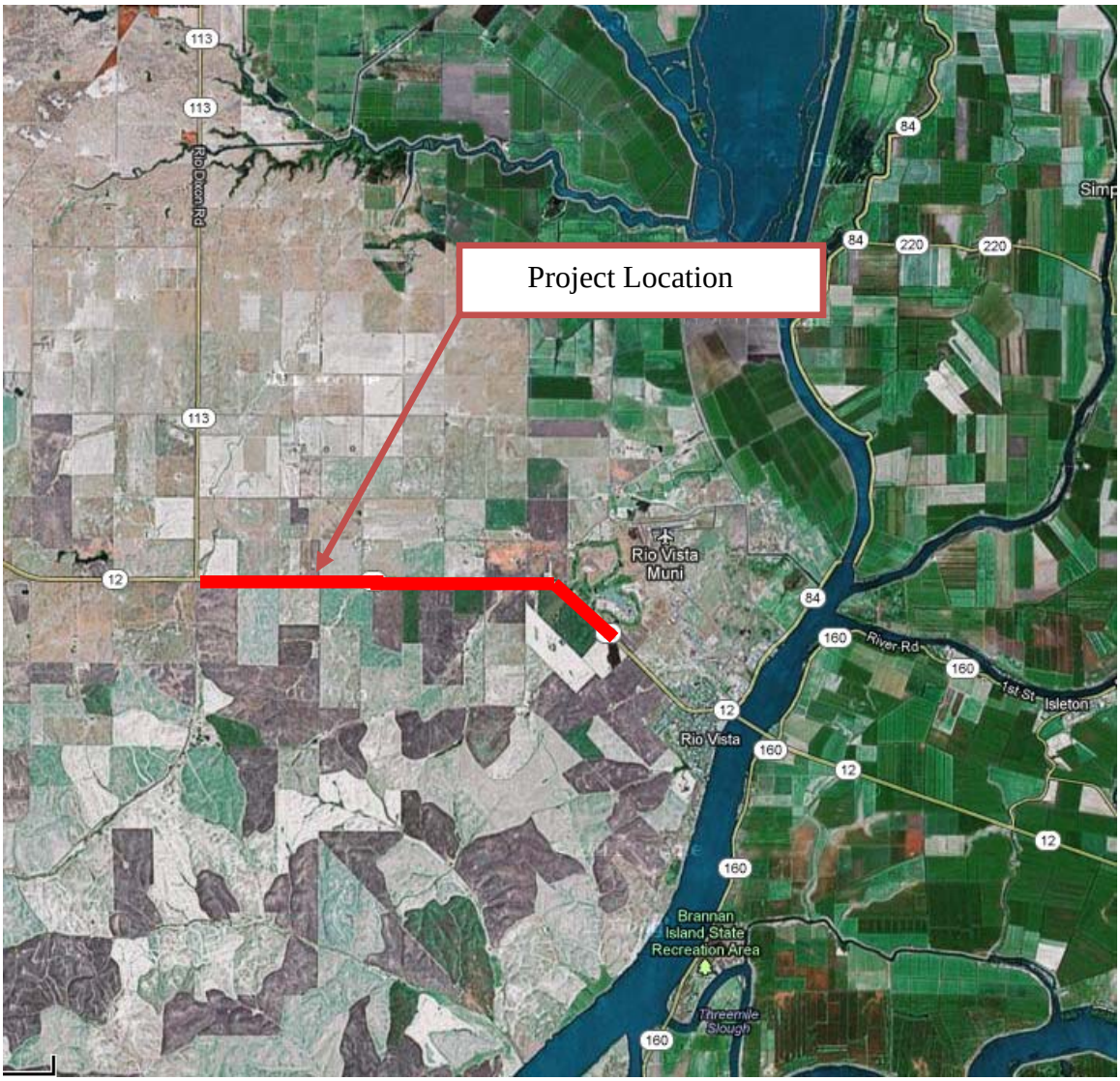
STORM WATER INFORMATION HANDOUT
CONTRACT NO. 04-2A620
04-SOL-12-PM 20.6/23.7
Shoulder Widening Vertical Curve Correction Overlay and Three Left Turn Pockets

California Department of Transportation
District 4
Water Quality Program
111 Grand Avenue
Oakland, California 94612

Disclaimer

A “Disclaimer” is required specifying that the information provided in the Storm Water Information Handout is just a guideline and is to be used for information purposes only and should not be considered a sole source document to adhere to the requirements of the new National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP), Number CAS000002, adopted on September 2, 2009. The contractor is required to provide water quality monitoring, sampling and implement best management practices (BMPs) based on standard industry operations, field conditions and conditions encountered based on the contractor’s means and methods. The information in this handout is not to be construed in any way as a waiver of the provisions in the CGP. Bidders and contractors are cautioned to make independent investigations and examinations as they deem necessary to satisfy the conditions encountered in performance of work, with respect to the following: sampling and monitoring locations, distribution of watershed areas for sizing of BMPs, and selection of BMPs in order to conform to the requirement of the contract documents and the CGP.

Project Vicinity


Project Location
113
113
Rio Dixon Rd
113
12
84
84
220
220
Rio Vista
Muni
84
160
River Rd
160
1st St
Isleton
12
Rio Vista
160
12
12
160
Brannan
Island State
Recreation Area
Threemile
Slough
160

Risk Assessment

	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**		26.06
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**		0.25
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**		0.44
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**	2.87	
16	**Site Sediment Risk Factor**	**Low**	
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

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) or has a **USEPA approved TMDL implementation plan for sediment**?: 2006 Approved Sediment-impared WBs Worksheet http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml	**no**	**Low**
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		

Combined Risk Level Matrix

Receiving Water Risk	Sediment Risk: Low	Sediment Risk: Medium	Sediment Risk: High
Low	Level 1	Level 2	
High	Level 2		Level 3

Project Sediment Risk: Low

Project RW Risk: Low

Project Combined Risk: Level 1

Rainfall Data

Rainfall Intensity can be obtained by the following link:

http://www.wrcc.dri.edu/pcpnfreq/nca5y24.gif

Refer to chapters 800, Highway Drainage Design of Highway Design Manual for information on runoff coefficient and shed map. The weighted runoff coefficient of 0.55 is recommended for the project area.

Project Discharge Locations

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Sol	12	20.6/23.5		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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

NOTE:

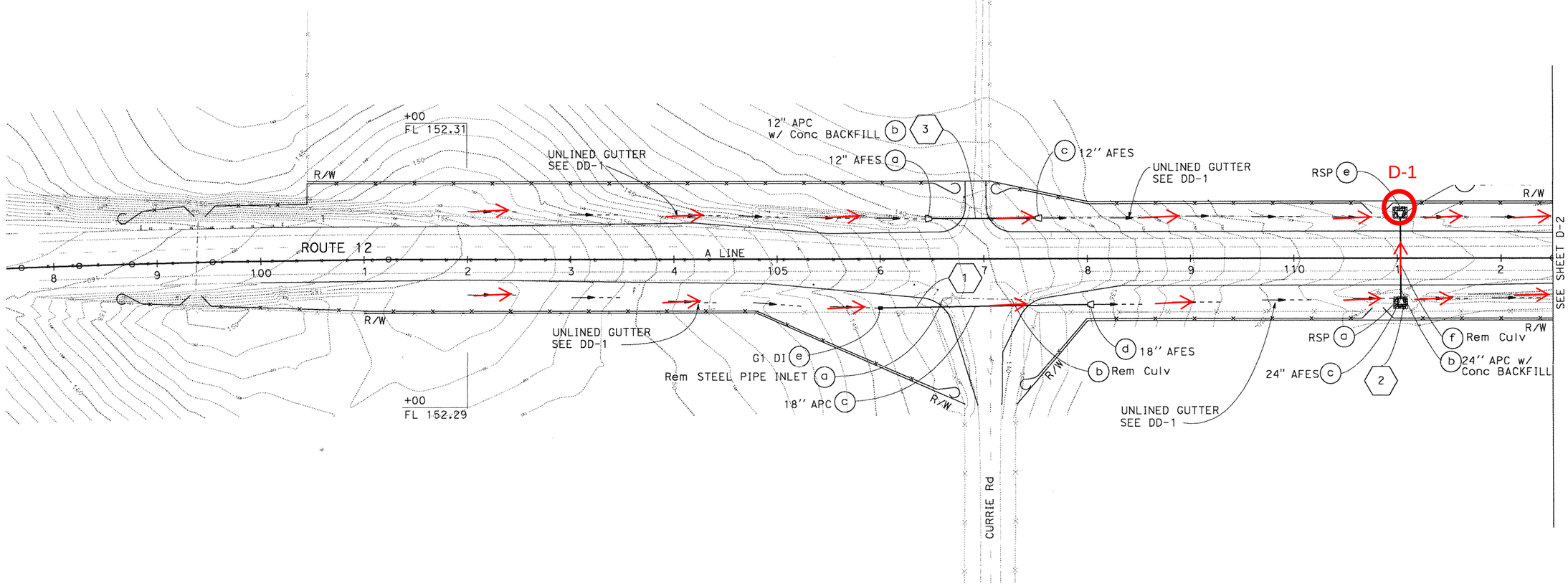
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

LEGEND

- No. — DRAINAGE SYSTEM NUMBER
- a — DRAINAGE UNIT
- UNLINED GUTTER
- GRADE TO DRAIN
- ROCK SLOPE PROTECTION

ABBREVIATIONS

w/	WITH
Rem	REMOVE



NOTES:

1. ALL TIES TO DRAINAGE STRUCTURE ARE TO CENTER OF THE BASE UNLESS OTHERWISE NOTED.
2. FLOWLINE ELEVATIONS SHOWN ARE THE OUTFLOW ELEVATIONS UNLESS OTHERWISE NOTED.
3. EXISTING DRAINAGE LOCATIONS ARE APPROXIMATE ONLY. VERIFY LOCATION AND ELEVATION BEFORE MODIFYING EXISTING DRAINAGE FACILITIES.
4. CONTRACTOR TO VERIFY ALL CONTROLLING FILED DIMENSIONS BEFORE ORDERING OF FABRICATING ANY MATERIALOF FABRICATING ANY MATERIAL.

THIS PLAN FOR DRAINAGE WORK ONLY

DRAINAGE PLAN

SCALE: 1'' = 50'

D-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

DESIGN

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

LAST REVISION 08-02-12

DATE PLOTTED => 15-AUG-2012

TIME PLOTTED => 12:46

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Sol	12	20.6/23.5		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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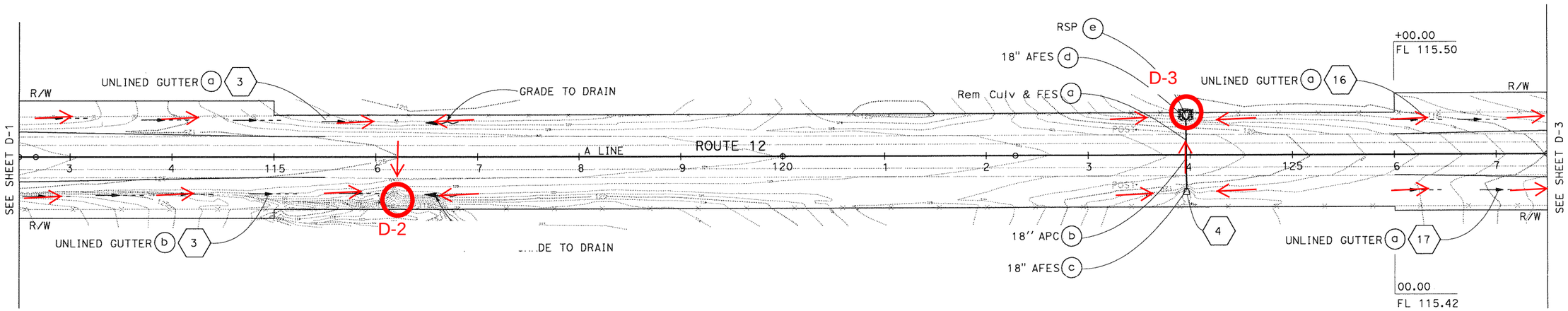

DRAINAGE PLAN

SCALE: 1" = 50'

D-2

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Sol	12	20.6/23.5		

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PLANS APPROVAL DATE

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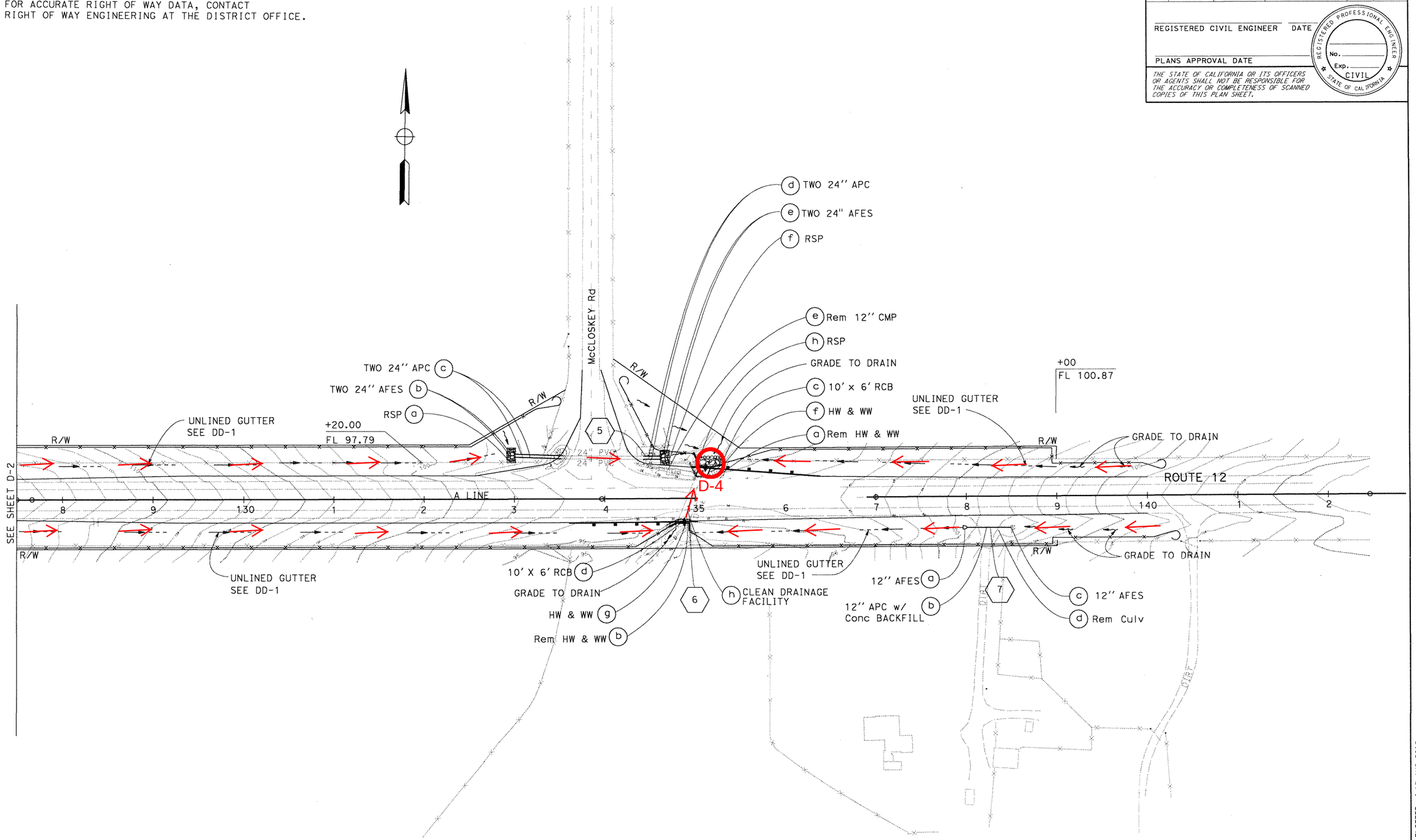

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY

DRAINAGE PLAN

SCALE: 1'' = 50'

D-3

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A	A

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Sol	12	20.6/23.5		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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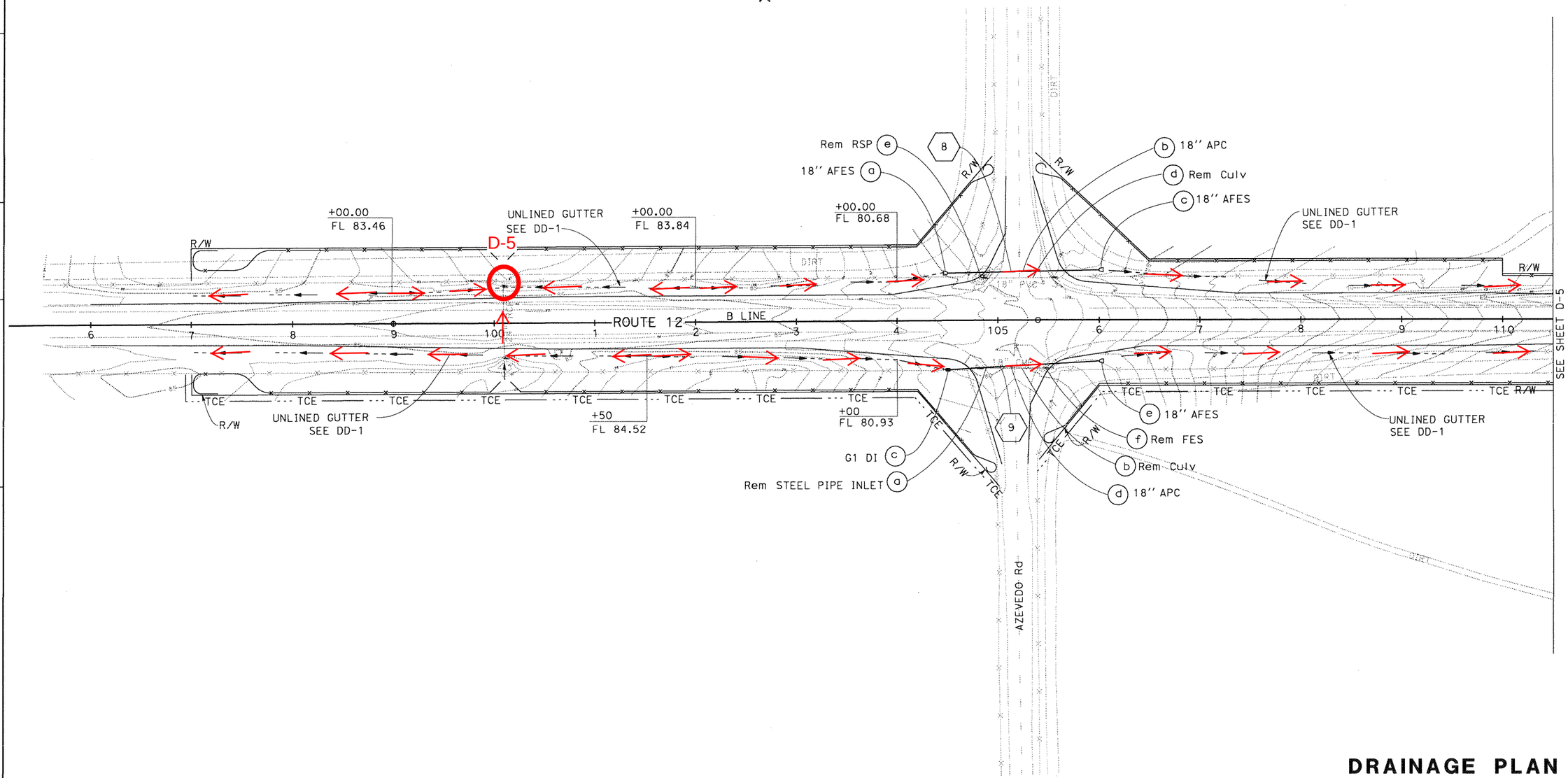

DRAINAGE PLAN

SCALE: 1'' = 50'

D-4

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

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08-01-12

BORDER LAST REVISED 7/2/2010

USERNAME => s130819
DGN FILE => 04000008321d004.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0701

PROJECT NUMBER & PHASE 04000008321

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Sol	12	20.6/23.5		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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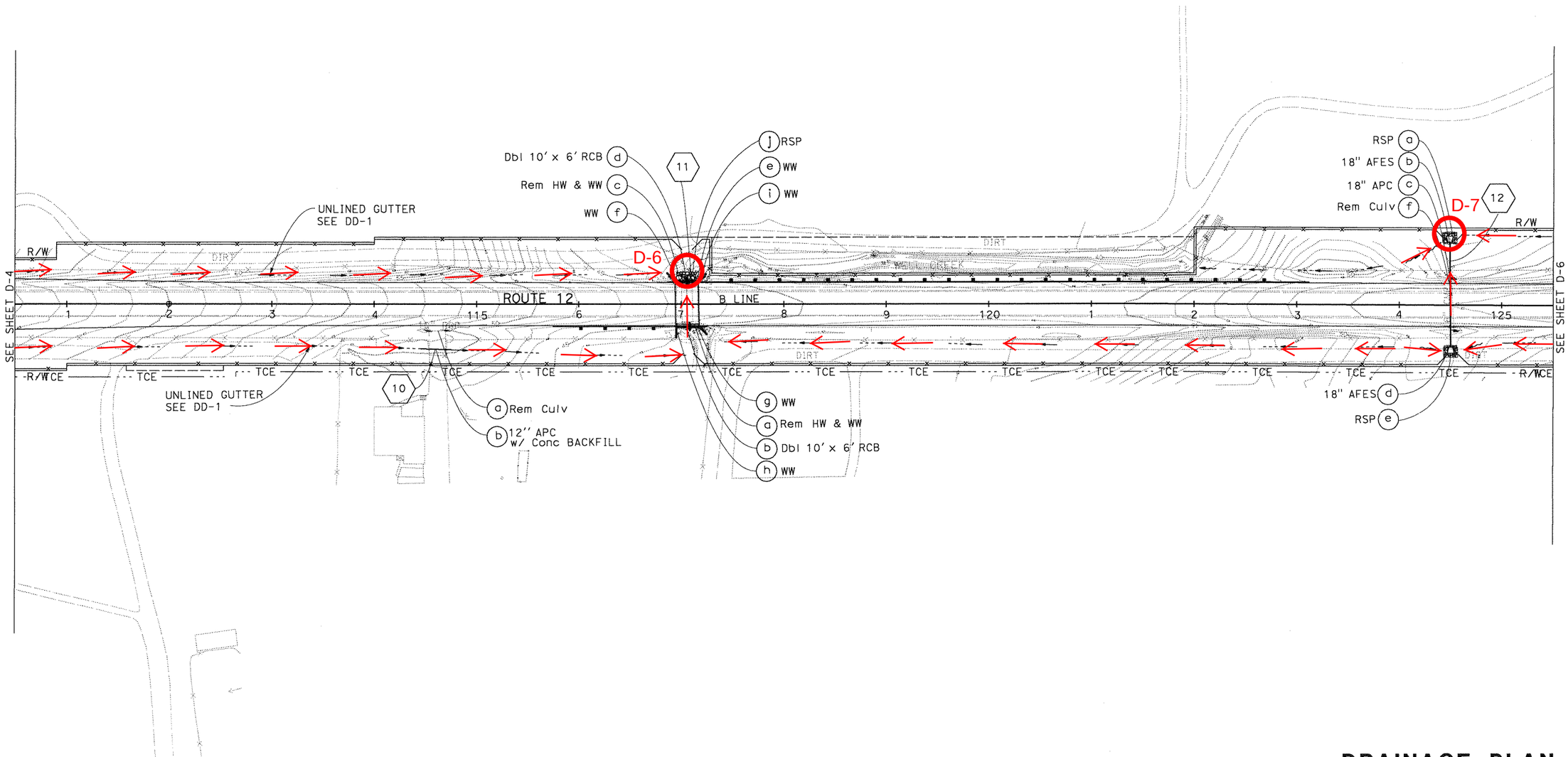

DRAINAGE PLAN

SCALE: 1'' = 50'

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY

D-5

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USERNAME => s130819

DGN FILE => 0400000832ia005.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0701

PROJECT NUMBER & PHASE 04000008321

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Sol	12	20.6/23.5		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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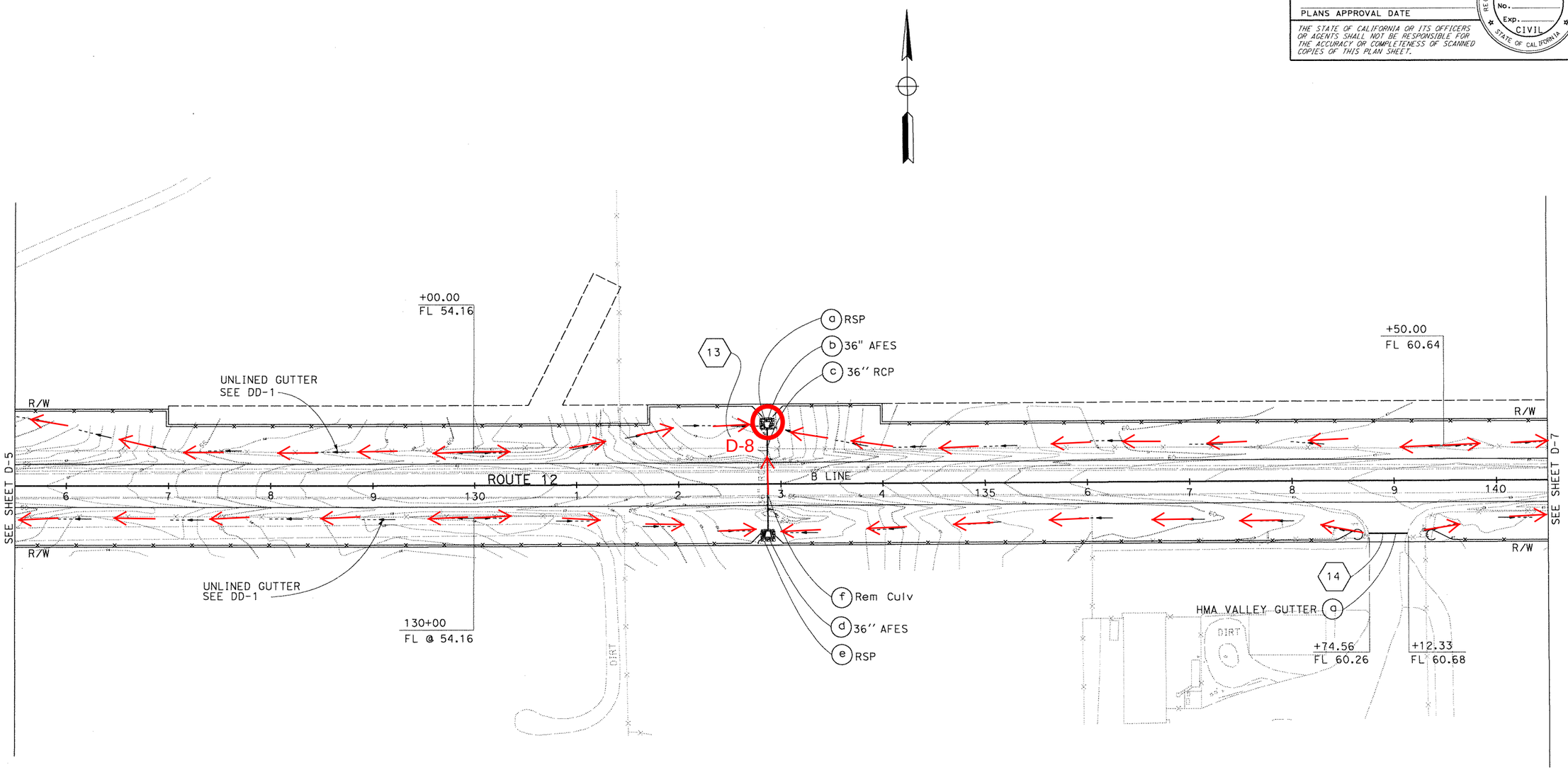

DRAINAGE PLAN

SCALE: 1" = 50'

D-6

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY

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USERNAME => s130819

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RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0701

PROJECT NUMBER & PHASE 04000008321

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Sol	12	20.6/23.5		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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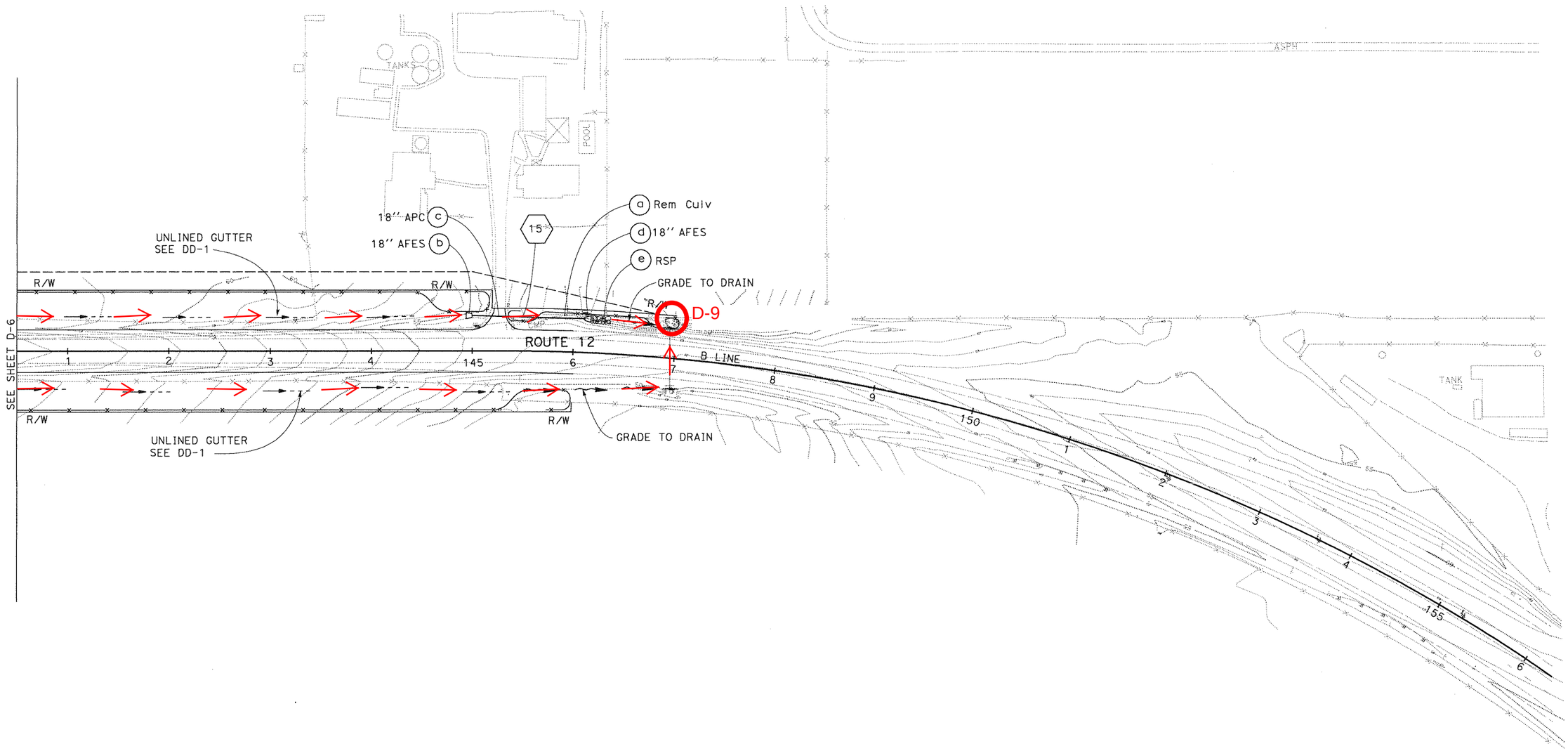

DRAINAGE PLAN

SCALE: 1'' = 50'

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY

D-7

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A	A

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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DATE PLOTTED => 15-AUG-2012
TIME PLOTTED => 12:46

401 Impact Map

Legend

- Proposed Wildlife Directional Fencing
- Proposed Cut and Fill Line (65% Final Design)
- Proposed Culverts
- Proposed ESA Fencing
- Photo Location & Direction

Potential Waters of the U.S.
(Based on Preliminary JD, July 22, 2009)

- Ephemeral Drainage
- Isolated Wetland
- Roadside Drainage
- Seasonal Wetland

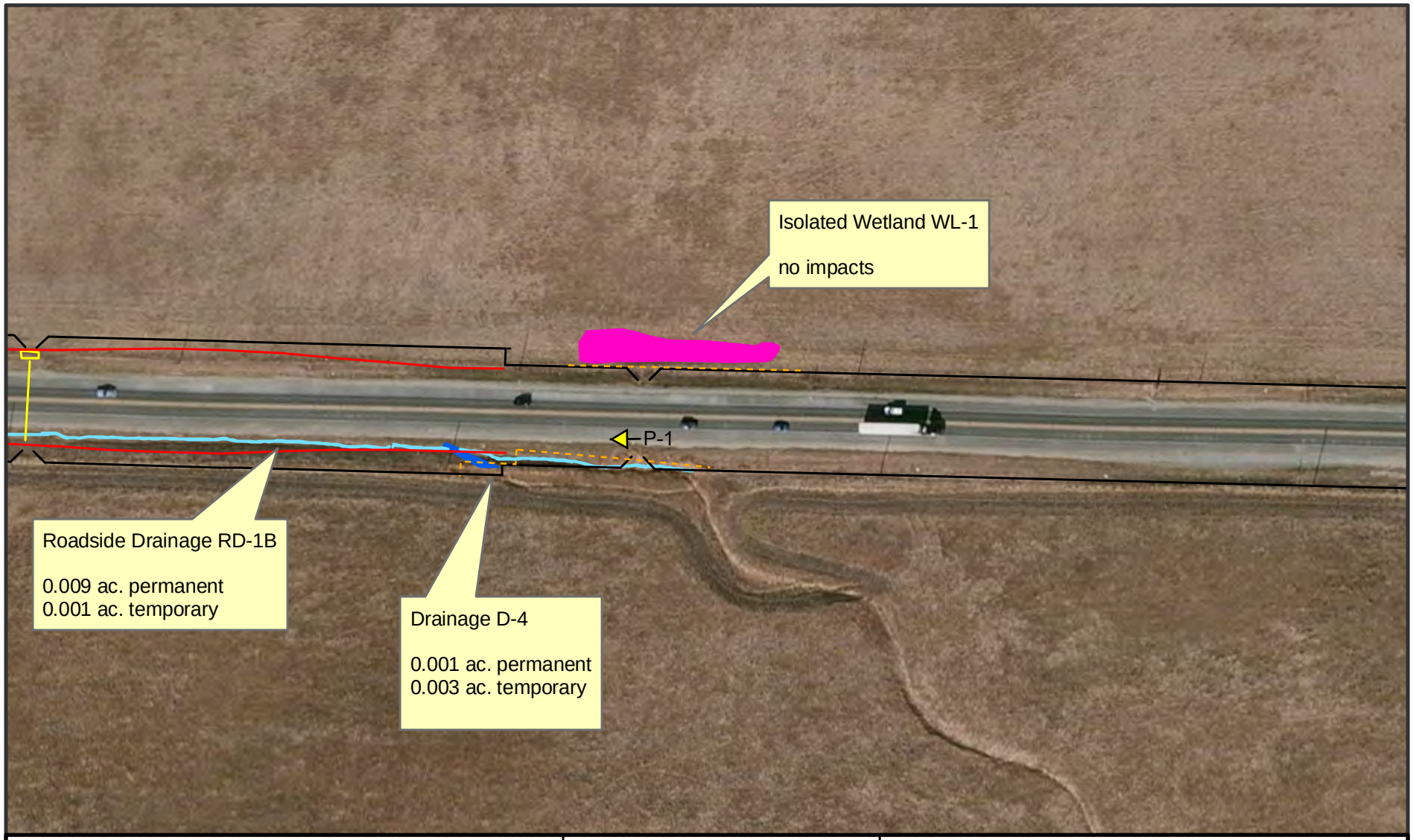
N

0 100 200 Feet

Figure 3-5
Map 1 of 9
Proposed Impacts to Potential Waters of the U.S. - Segment A

Solano County
State Route 12
Shoulder Widening and Clear Recovery Zone Project (2A620)

Received from Caltrans Biology on 8/22/2012



Legend

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- Proposed Culverts
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- Photo Location & Direction

Potential Waters of the U.S.
(Based on Preliminary JD, July 22, 2009)

- Ephemeral Drainage
- Isolated Wetland
- Roadside Drainage
- Seasonal Wetland

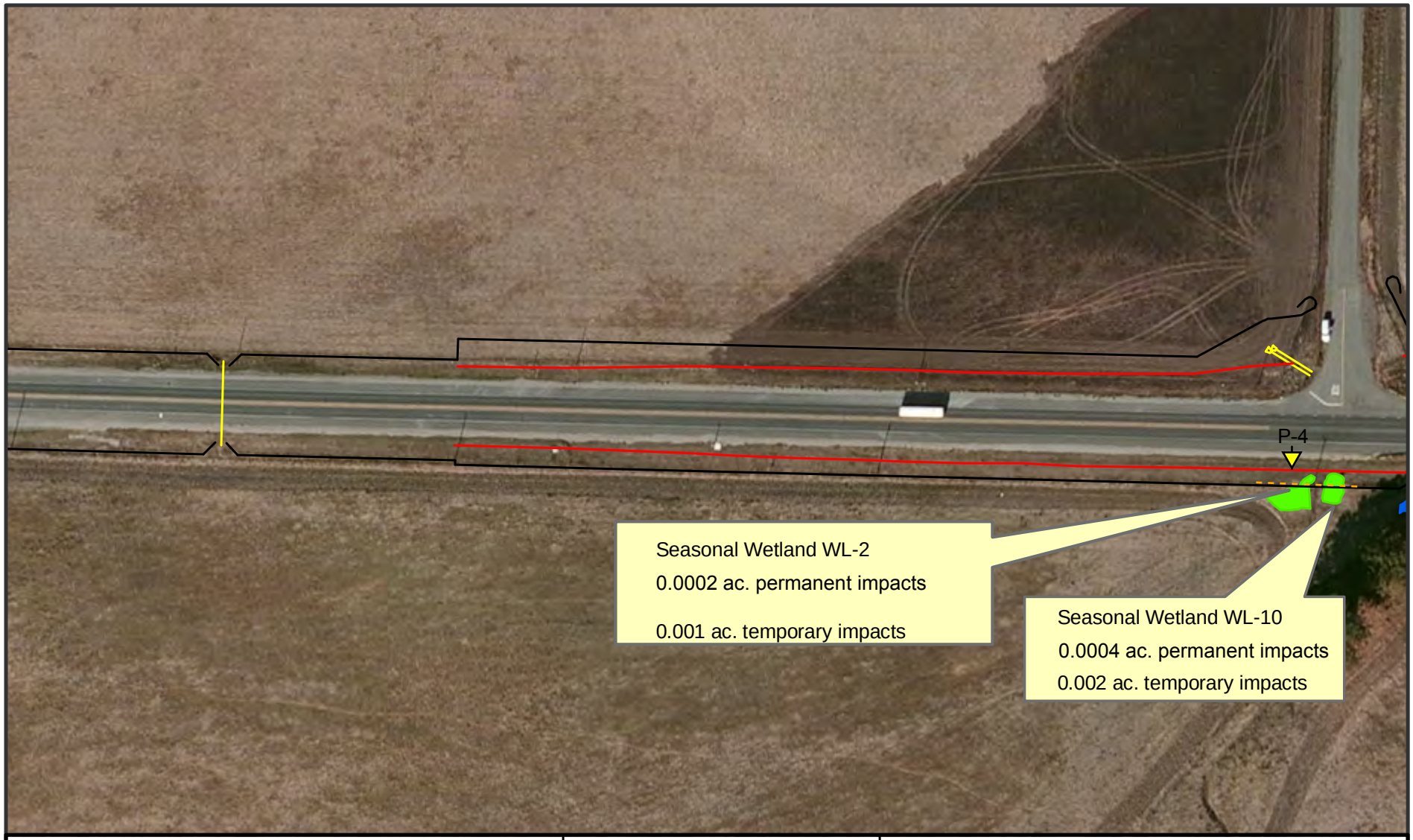
N

0 100 200 Feet

Figure 3-5
Map 2 of 9
Proposed Impacts to Potential Waters of the U.S. - Segment A

Solano County
State Route 12
Shoulder Widening and Clear Recovery Zone Project (2A620)

Received from Caltrans Biology on 8/22/2012



Legend

- Proposed Wildlife Directional Fencing
- Proposed Cut and Fill Line (65% Final Design)
- Proposed Culverts
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- Photo Location & Direction

Potential Waters of the U.S.
(Based on Preliminary JD, July 22, 2009)

- Ephemeral Drainage
- Isolated Wetland
- Roadside Drainage
- Seasonal Wetland

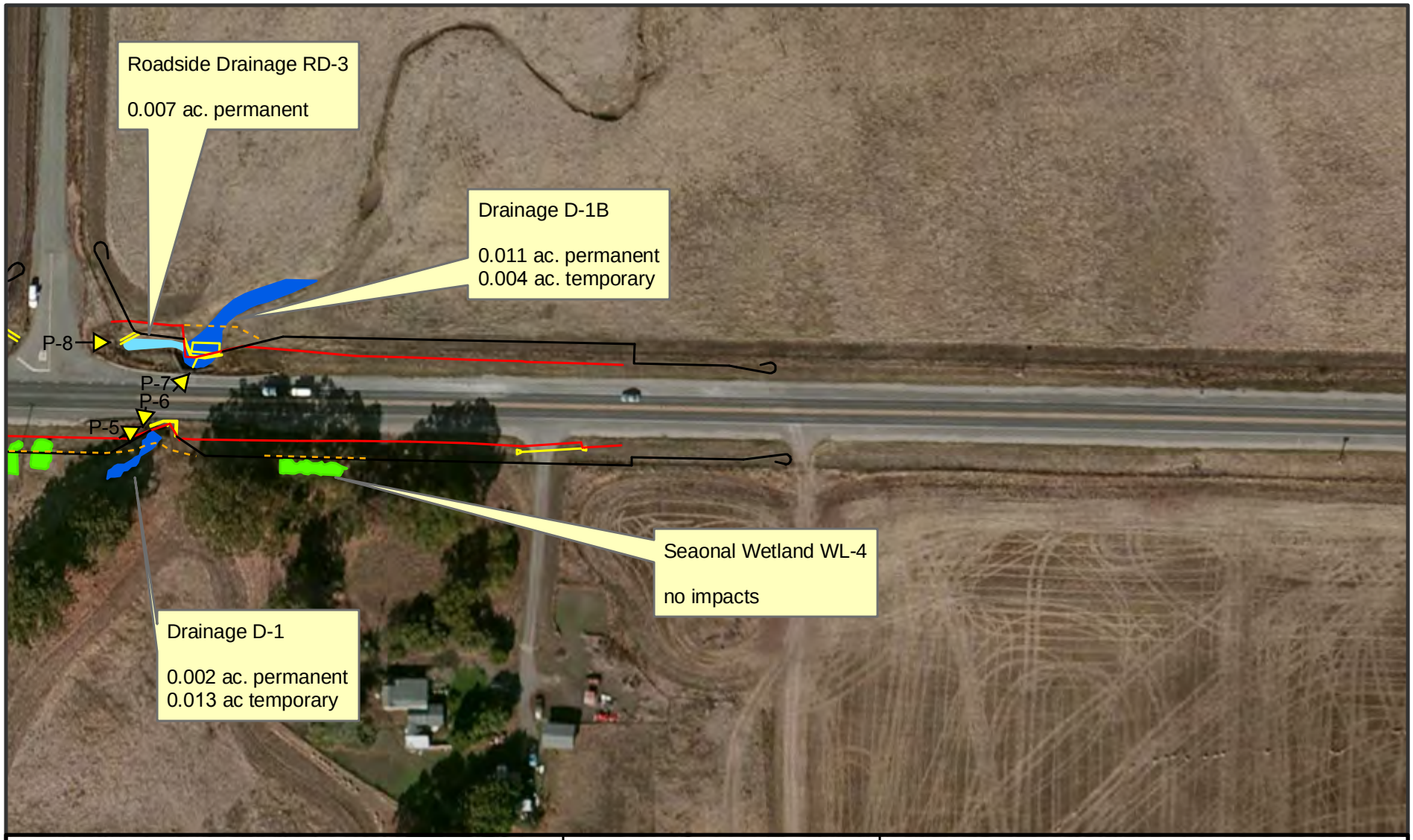
N

0 100 200 Feet

Figure 3-5
Map 3 of 9
Proposed Impacts to Potential Waters of the U.S. - Segment A

Solano County
State Route 12
Shoulder Widening and Clear Recovery Zone Project (2A620)

Received from Caltrans Biology on 8/22/2012



Legend

- Proposed Wildlife Directional Fencing
- Proposed Cut and Fill Line (65% Final Design)
- Proposed Culverts
- Proposed ESA Fencing
- Photo Location & Direction

Potential Waters of the U.S.
(Based on Preliminary JD, July 22, 2009)

- Ephemeral Drainage
- Isolated Wetland
- Roadside Drainage
- Seasonal Wetland

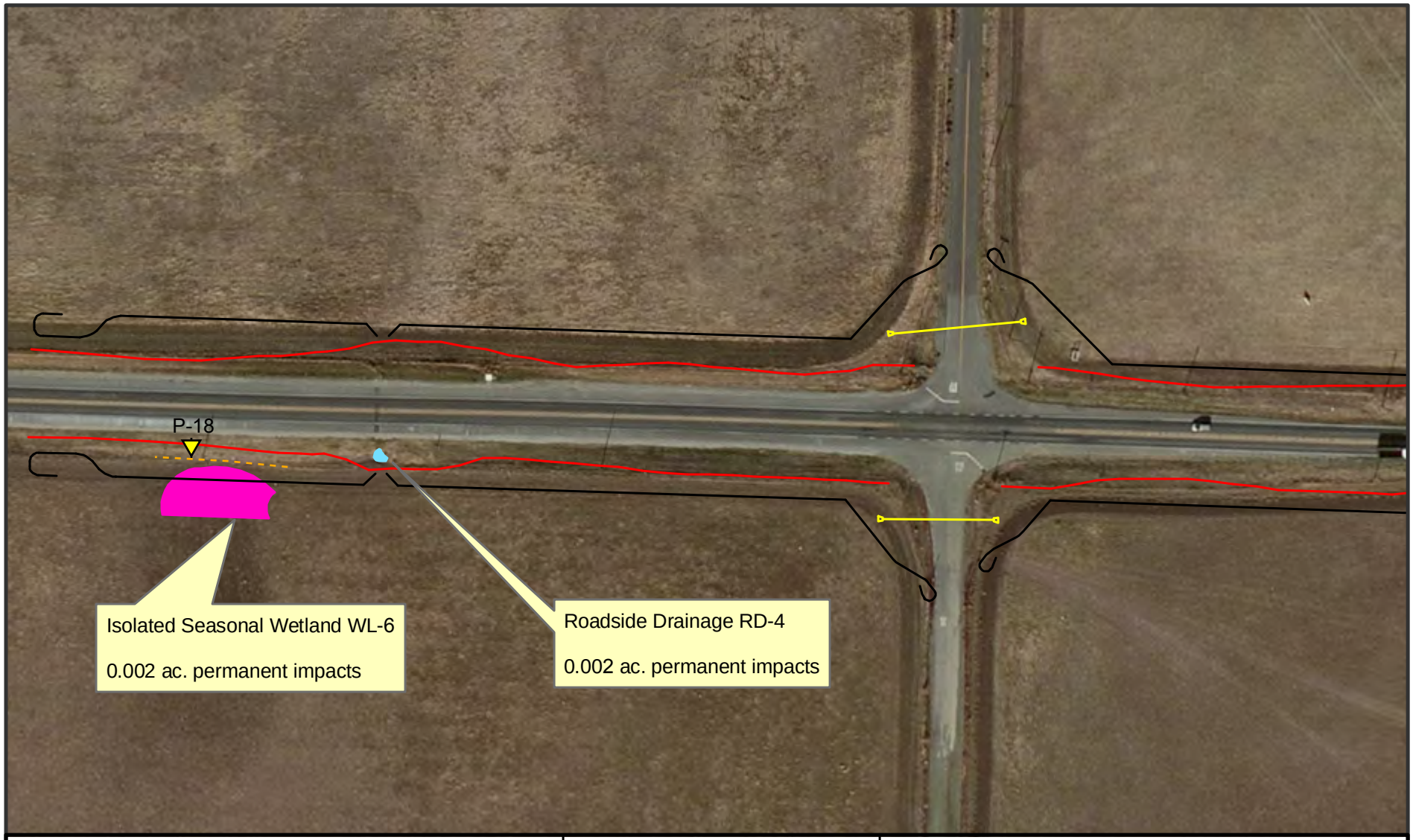
N

0 100 200 Feet

Figure 3-5
Map 4 of 9
Proposed Impacts to Potential Waters of the U.S. - Segment A

Solano County
State Route 12
Shoulder Widening and Clear Recovery Zone Project (2A620)

Received from Caltrans Biology on 8/22/2012



Legend

- Proposed Wildlife Directional Fencing
- Proposed Cut and Fill Line (65% Final Design)
- Proposed Culverts
- Proposed ESA Fencing
- Photo Location & Direction

Potential Waters of the U.S.
(Based on Preliminary JD, July 22, 2009)

- Ephemeral Drainage
- Isolated Wetland
- Roadside Drainage
- Seasonal Wetland

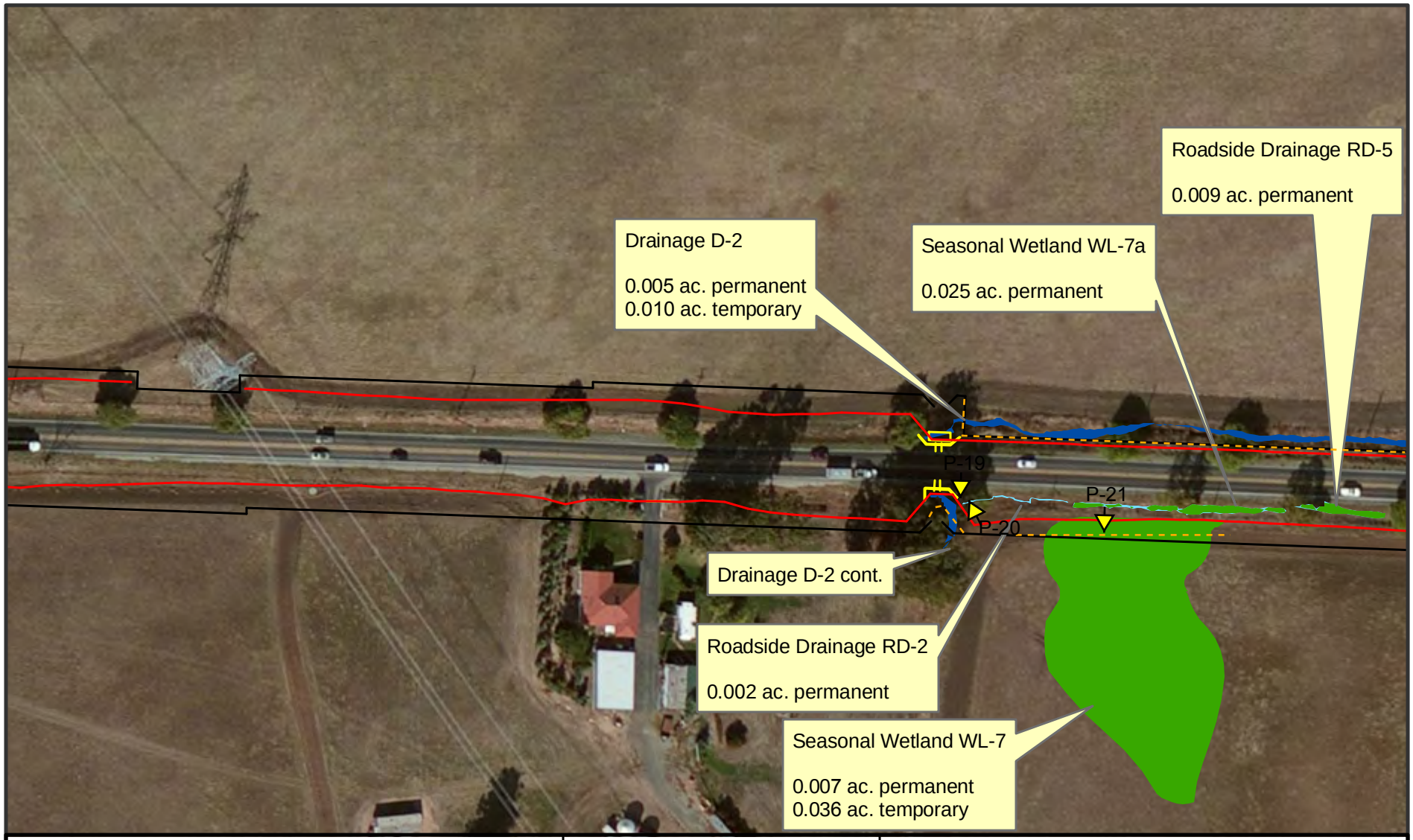
N

0 100 200 Feet

Figure 3-5
Map 5 of 9
Proposed Impacts to Potential Waters of the U.S. - Segment B

Solano County
State Route 12
Shoulder Widening and Clear Recovery Zone Project (2A620)

Received from Caltrans Biology on 8/22/2012



Legend

- Proposed Wildlife Directional Fencing
- Proposed Cut and Fill Line (65% Final Design)
- Proposed Culverts
- Proposed ESA Fencing
- Photo Location & Direction

Potential Waters of the U.S.
(Based on Preliminary JD, July 22, 2009)

- Ephemeral Drainage
- Isolated Wetland
- Roadside Drainage
- Seasonal Wetland

N

0 100 200 Feet

Figure 3-5
Map 6 of 9
Proposed Impacts to Potential Waters of the U.S. - Segment B

Solano County
State Route 12
Shoulder Widening and Clear Recovery Zone Project (2A620)

Received from Caltrans Biology on 8/22/2012

Legend

- Proposed Wildlife Directional Fencing
- Proposed Cut and Fill Line (65% Final Design)
- Proposed Culverts
- Proposed ESA Fencing
- Photo Location & Direction

Potential Waters of the U.S.
(Based on Preliminary JD, July 22, 2009)

- Ephemeral Drainage
- Isolated Wetland
- Roadside Drainage
- Seasonal Wetland

N

0 100 200 Feet

Figure 3-5
Map 7 of 9
Proposed Impacts to Potential Waters of the U.S. - Segment B

Solano County
State Route 12
Shoulder Widening and Clear Recovery Zone Project (2A620)

Received from Caltrans Biology on 8/22/2012

Legend

- Proposed Wildlife Directional Fencing
- Proposed Cut and Fill Line (65% Final Design)
- Proposed Culverts
- Proposed ESA Fencing
- Photo Location & Direction

Potential Waters of the U.S.
(Based on Preliminary JD, July 22, 2009)

- Ephemeral Drainage
- Isolated Wetland
- Roadside Drainage
- Seasonal Wetland

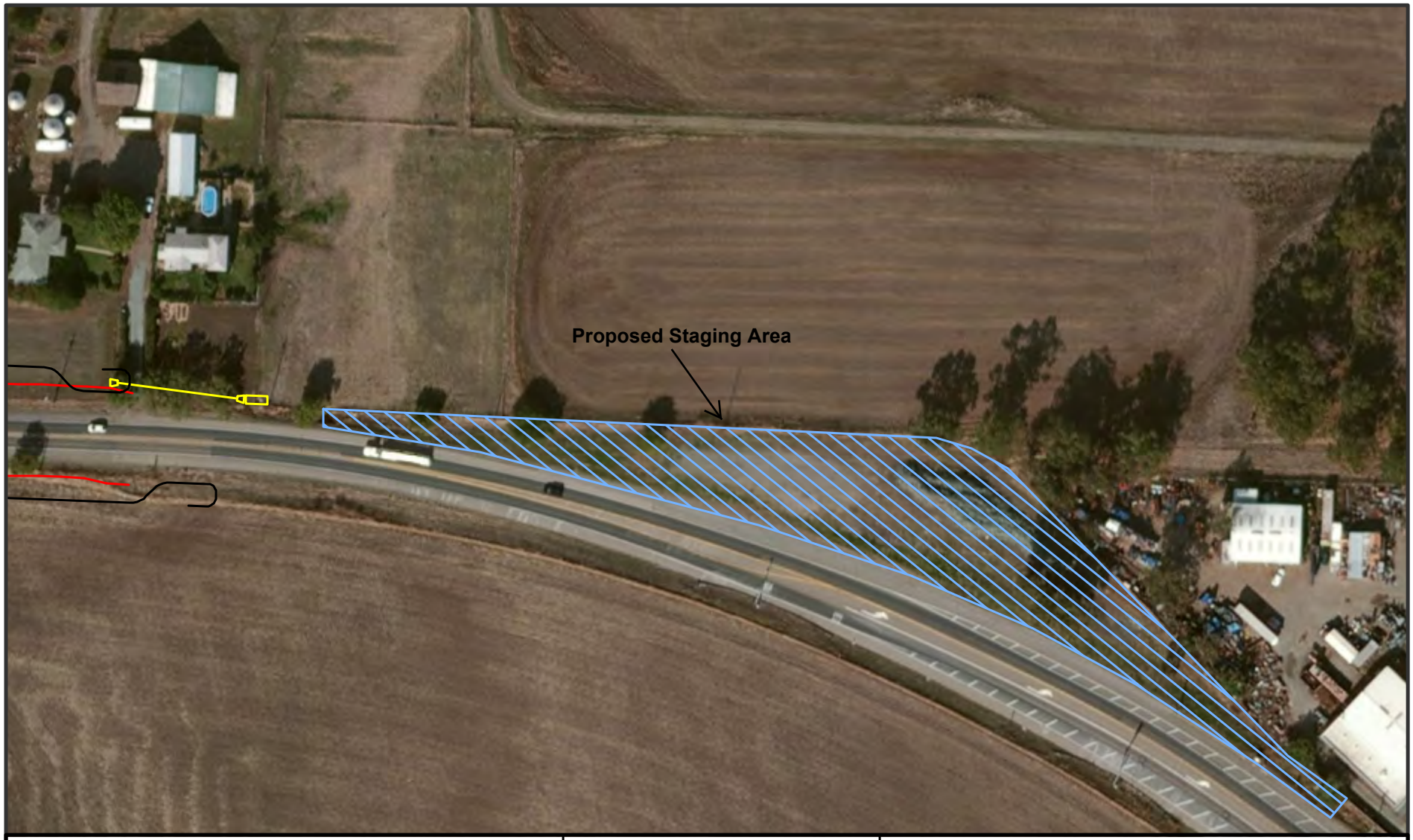
N

0 100 200 Feet

Figure 3-5
Map 8 of 9
Proposed Impacts to Potential Waters of the U.S. - Segment B

Solano County
State Route 12
Shoulder Widening and Clear Recovery Zone Project (2A620)

Received from Caltrans Biology on 8/22/2012



Legend

- Proposed Wildlife Directional Fencing
- Proposed Cut and Fill Line (65% Final Design)
- Proposed Culverts
- Proposed ESA Fencing
- Photo Location & Direction

Potential Waters of the U.S.
(Based on Preliminary JD, July 22, 2009)

- Ephemeral Drainage
- Isolated Wetland
- Roadside Drainage
- Seasonal Wetland

N

0 100 200 Feet

Figure 3-5
Map 9 of 9
Proposed Impacts to Potential Waters of the U.S. - Segment B

Solano County
State Route 12
Shoulder Widening and Clear Recovery Zone Project (2A620)

Received from Caltrans Biology on 8/22/2012

Permits

- **California Department of Fish & Game**
  Streambed Alternation Agreement
  Notification No. 1600-2012-0213-R3

- **Clean Water Act 401**
  Technically Conditioned Water Quality Certification
  Solano State Route 12 Shoulder Widening Project
  WDID #5A48CR00114

****

Please ensure the highlighted item of #16 of Clean Water Act 401 is addressed in Contractor's SWPPP prior to Approval of SWPPP: ***Develop and maintain onsite a project-specific Spill Preventive, Containment and Cleanup Plan outlining the practices to prevent, minimize and/or clean up potential spills during construction of the project.***

Contractor must meet both requirements as highlighted #22 in Clean Water Act 401 and # 2.16 in Dept. Fish & Game 1602 regarding contacts and disposal of any surface water during concrete curing.

Please pay close attention to the highlighted item of #1 of Clean Water Act 401: ***The California Department of Transportation shall notify the Central Valley Water Board in writing 7 days in advance of the start of any work within waters of the United States and State. The notification shall include the name of the project and the WDID number.***

State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND GAME
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
(707) 944-5500
www.dfg.ca.gov

EDMUND G. BROWN JR., *Governor*
CHARLTON H. BONHAM, *Director*

December 6, 2012

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

Subject: Final Lake or Streambed Alteration Agreement
Notification No. 1600-2012-0213-R3
State Route 12 Safety Widening and Clear Recovery Zone Project
Solano County

Dear Mr. Jensen:

Enclosed is the final Streambed Alteration Agreement ("Agreement") for the State Route 12 Safety Widening and Clear Recovery Zone Project ("Project"). Before the 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 December 6, 2012, based on information contained in the 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 Melissa Escaron, Staff Environmental Scientist, at (707) 339-0334 or mescaron@dfg.ca.gov.

Sincerely,

Craig J. Weightman
Acting Environmental Program Manager
Bay Delta Region

cc: Andrew Amacher, Caltrans
Warden Bolla
Warden Shelton
Melissa Escaron

CALIFORNIA DEPARTMENT OF FISH AND GAME
BAY DELTA REGION
7329 SILVERADO TRAIL
NAPA, CALIFORNIA 94558
(707) 944-5520
WWW.DFG.CA.GOV

STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2012-0213-R3
An Unnamed Drainage and Well Creek

CALIFORNIA DEPARTMENT OF TRANSPORTATION
STATE ROUTE 12 SHOULDER WIDENING AND CLEAR RECOVERY ZONE PROJECT

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Game (DFG) and California Department of Transportation (Permittee) or as represented Jeffrey G. Jensen.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified DFG on May 12, 2012 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, DFG has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

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

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

PROJECT LOCATION

The project is located in an unnamed drainage, and Well Creek, on State Route (SR) 12 at post miles (PM) 21.13 and 22.91 near the city of Rio Vista, in the County of Solano, State of California;

PROJECT DESCRIPTION

The proposed culvert work is being done as part of a larger Caltrans project that will modify SR 12 near Rio Vista, from west of Liberty Island Road to west of Currie Road to improve safety.

The existing concrete box culverts at PM 21.13 and PM 22.91will be extended to accommodate the roadway widening. The extensions will require excavation of the creek bed to install the extensions flush with the existing culvert grades.

No riparian trees will be removed to complete the proposed work.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include:

- Riparian habitat
- California tiger salamander dispersal habitat
- aquatic invertebrates

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

- Increased shading
- Permanent and temporary loss of natural bed and bank
- Habitat degradation
- Water quality degradation
- Short-term release of contaminants

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

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

1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and

amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

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

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

2. Avoidance and Minimization Measures

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

2.1 To minimize adverse impacts to fish and wildlife all work described in the project location and description shall be confined to the period of May 15 to October 15. Revegetation work is not confined to this time period.

2.2 At least 30-days prior to commencing project activities covered by this Agreement, the Permittee shall submit to DFG, for review and approval, the qualifications for a number of biologists (Qualified Biologist) that shall oversee the implementation of the conditions in this Agreement. At a minimum, the Qualified Biologists shall have a combination of academic training and professional experience in biological sciences and related resource management activities. The Qualified Biologists shall communicate to the Resident Engineer when any activity is not in compliance with this Agreement and the Resident Engineer shall immediately stop the activity that is not in compliance with this Agreement.

2.3 The Qualified Biologist shall perform a clearance survey immediately prior to initial ground disturbance. Safety permitting, the Qualified Biologist will investigate areas of disturbed soil for signs of sensitive species within 30 minutes following initial ground disturbance.

2.4 No riparian trees shall be removed.

2.5 To protect nesting birds, no project activities shall occur from February 15 through August 31 unless nesting bird surveys have been completed by a Qualified Biologist. To prevent nest abandonment, a Qualified Biologist shall survey within 500 feet of the proposed Project, as described above in the 1602 Project Description, for

nesting birds. If nests are found within the Project site or within 500 feet from the Project limits, then a Qualified Biologist shall establish a 50-foot buffer radius for nests of non-raptor bird species or a 300-foot buffer radius for raptor nests where the buffer intersects the Project limits. A Qualified Biologist shall monitor the nesting birds and shall increase the buffer, through the Resident Engineer, if it is determined the birds are showing signs of unusual or distressed behavior that may be the result of Project activities. To prevent encroachment, the established buffer(s) shall be clearly marked within the Project limits by high visibility material. Surveys shall be conducted during periods of peak activity (morning, dusk) and shall be of sufficient duration to observe movement patterns. Identified nests shall be reported to DFG. The buffer area shall be clearly marked by high visibility material within the Project limits, protected from work activities, and avoided until the young have fledged, as determined by a Qualified Biologist. During work, should birds indicate unusual or distressed behavior that could be indicative of future nest abandonment, a Qualified Biologist shall stop work immediately, through the Resident Engineer, and consult DFG on how to proceed.

2.6 A Qualified Biologist will be onsite if ponding persists at the box culvert near McClosky Road or anywhere else in the project area at any time of the year. In such a case a Qualified Biologist will thoroughly inspect the ponded area for California tiger salamander. If a state or federally listed species is found, DFG and/or US Fish and Wildlife Service (USFWS) will be contacted immediately and the Permittee shall, through the Resident Engineer, restrict construction activities within 250 feet of the animal, until permission to resume is granted by DFG and/or USFWS.

2.7 Any plan for water diversion shall ensure that all pump intake hose shall be screened and fitted with a steel nozzle with no greater than 1-inch screen holes. A Qualified Biologist shall be onsite to inspect for sensitive species. The downstream bypass outfall hose shall be fitted with filter cloth and placed on a straw bed for discharge either in uplands along the bank of the creek or directly within the channel depending upon flow conditions to minimize downstream erosion. The removal of the diversion will proceed in a downstream to upstream direction.

2.8 Trash Abatement. Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in closed (animal-proof) containers and removed regularly (at least once a week) to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs.

2.9 If any wildlife is encountered during the course of project activities, said wildlife shall be allowed to leave the area unharmed and on their own volition.

2.10 Permittee shall comply with all applicable state and federal laws, including the California and Federal Endangered Species Act. This Agreement does not authorize the take of any state or federally endangered listed species. Liability for any take or incidental take of such species remains the responsibility of the Permittee for the

duration of the project. Any unauthorized take of listed species may result in prosecution and nullification of the Agreement.

2.11 The perimeter of the work site shall be adequately fenced using high visibility Environmentally Sensitive Area (ESA) fencing to prevent damage to adjacent riparian habitat. No construction activities, within the riparian zone, will be allowed within the habitat protected by the ESA fencing.

2.12 Prior to ground or vegetation disturbance activities, Wildlife Exclusion Fencing (WEF) shall be installed and a Designated Biologist shall be present to monitor installation of the WEF. WEF shall consist of taut fabric or mesh such as Ertec E-fence at least 14 inches in height, staked at least 10-foot intervals, with the bottom buried 6 inches below grade. WEF shall be maintained so that it is intact at all times

2.13 Permittee shall conduct work defined in the above project description, and within the project area, during periods of dry weather. The project area is defined as the bed, bank, channel, and associated riparian habitat. The Permittee shall monitor forecasted precipitation. When ¼ inch or more of precipitation is forecasted to occur, the Permittee shall stop work before precipitation commences. No activity of the project may be started if its associated erosion control measures cannot be completed prior to the onset of precipitation. After any storm event, the Permittee shall inspect all sites currently under construction and all sites scheduled to begin construction within the next 72 hours for erosion and sediment problems and take corrective action as needed. Seventy-two hour weather forecasts from National Weather Service shall be consulted and work shall not start back up until runoff ceases and there is less than a 30% forecast for precipitation for the following 24-hour period.

2.14 Permittee shall utilize erosion control measures throughout all phases of operation where sediment runoff from exposed slopes threatens to enter waterways. At no time shall silt laden runoff be allowed to enter the stream or directed to where it may enter the stream. Erosion control installations shall be monitored for effectiveness and shall be repaired or replaced as recommended by a Water Quality Inspector to the Resident Engineer. As needed to prevent sediment transport, Permittee shall utilize soil stabilization and sediment control practices, which may include, but are not limited to, the following: hydroseeding, netting, erosion control mats, mulch, fiber rolls, silt fences, check dams, and flow velocity dissipation devices. Permittee shall stabilize construction site entrances and exits. Straw wattles (fiber rolls) and rolled erosion control products that contain monofilament or plastic shall not be used. Temporary erosion and sediment control measures shall be installed prior to unseasonable rain storms.

2.15 All disturbed areas shall be re-graded and hydroseeded. Disturbed soils shall be hydroseeded with native grass species prior to October 15th of the year of disturbance. Any temporarily impacted areas not re-graded and hydroseeded by October 15th of the impact year shall be considered permanently impacted and shall be mitigated for at a 3:1 acreage ratio as described in Condition 3.1.

2.16 Concrete shall be excluded from surface water for a period of 30-days after it is poured/sprayed. During that time the concrete shall be kept moist and runoff from the concrete shall not be allowed to enter any water body. Commercial sealants may be applied to the concrete surface where difficulty in excluding flow for a long period may occur. If sealant is used, water shall be excluded from the site until the sealant is cured. If groundwater comes into contact with fresh concrete, it shall be prevented from flowing towards surface water.

2.17 Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be located outside of the creek channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the creek shall be positioned over drip pans. Any equipment or vehicles driven and/or operated within or adjacent to the stream must be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.

2.18 Refueling of mobile construction equipment and vehicles shall not occur within 50 feet of any water body, or anywhere that spilled fuel could drain to a water body. Refueling of stationary equipment requiring breakdown and setup to move will remain in place. All equipment shall be refueled with appropriate drip pans, absorbent pads, and water quality Best Management Practices. Equipment and vehicles operating in the project area shall be checked and maintained daily to prevent leaks of fuels, lubricants, or other liquids.

3. Compensatory Measures

3.1 At least 60 days prior to commencement of construction, the Permittee shall submit, for DFG review and written approval, a detailed Offsite Habitat Mitigation Plan. The Offsite Habitat Mitigation Plan shall mitigate .03 acres (52 linear feet) of permanent riparian habitat impacts at a minimum of a 3:1 acreage ratio.

CONTACT INFORMATION

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

To Permittee:

California Department of Transportation
Jeffrey G. Jensen
111 Grand Ave.
(510)622-8729
Jeffrey_jensen@dot.ca.gov

To DFG:

Department of Fish and Game
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
Attn: Lake and Streambed Alteration Program – Melissa Escaron
Notification #1600-2012-0213-R3
mescaron@dfg.ca.gov

LIABILITY

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

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

SUSPENSION AND REVOCATION

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

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

ENFORCEMENT

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

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

OTHER LEGAL OBLIGATIONS

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

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 et seq. (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

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

AMENDMENT

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

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

TRANSFER AND ASSIGNMENT

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

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

EXTENSIONS

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

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

EFFECTIVE DATE

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

TERM

This Agreement shall expire on December 31, 2017, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

AUTHORITY

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

AUTHORIZATION

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

CONCURRENCE

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

FOR CALIFORNIA DEPARTMENT OF TRANSPORTATION

Jeffrey G. Jensen
Office Chief Biological Sciences and Permits

11/29/2012
Date

FOR DEPARTMENT OF FISH AND GAME

Craig Weightman
Acting Environmental Program Manager

12/7/12
Date

Prepared by: Melissa Escaron
Staff Environmental Scientist

Date Sent: September 25, 2012
Revision Sent: November 8, 2012
Revision Sent: November 29, 2012

FOR DEPARTMENT USE ONLY				
Date Received	Amount Received	Amount Due	Date Complete	Notification No.
6/28/12	$ 4,482.75	$		1600-2012-0213-3

Ck # 082-209241 California Dept of Transportation

Escamon Shelton Bolla Mason

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

Fish & Game
JUN 28 2012
Yountville

1. APPLICANT PROPOSING PROJECT

Name	Jeffrey G. Jensen		
Business/Agency	California Department of Transportation, District 4		
Street Address	111 Grand Avenue		
City, State, Zip	Oakland, CA 94623		
Telephone	(510) 622-8729	Fax	(510) 286-6374
Email	jeffrey_jensen@dot.ca.gov		

2. CONTACT PERSON (*Complete only if different from applicant*)

Name	Andrew Amacher		
Street Address	California Department of Transportation, District 4		
City, State, Zip	111 Grand Avenue, Oakland, CA 94623		
Telephone	(510) 622-8727	Fax	(510) 286-5600
Email	andrew_amacher@dot.ca.gov		

3. PROPERTY OWNER (*Complete only if different from applicant*)

Name	State of California; California Department of Transportation, District 4		
Street Address	111 Grand Avenue		
City, State, Zip	Oakland, CA 94623		
Telephone		Fax	
Email			

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name	Solano State Route 12 Shoulder Widening and Clear Recovery Zone
B. Agreement Term Requested	☑ Regular (*5 years or less*) ☐ Long-term (*greater than 5 years*)

C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (*year*)	Ending (*year*)	Start Date (*month/day*)	End Date (*month/day*)	
2013	2015	05/15	10/15	176.00

5. 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	

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: The Department may not process this notification until the correct fee has been received.***

	A. Project	B. Project Cost	C. Project Fee
1	Solano State Route 12 Shoulder Widening and Clear Recovery Zone	$5,000,000.00	$4,482.75
2			
3			
4			
5			
		D. Base Fee *(if applicable)*	
		E. TOTAL FEE ENCLOSED	$4,482.75

7. 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)*

8. PROJECT LOCATION

A. Address or description of 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*)

State Route 12, Currie Road to McClosksy Road (postmile 20.6/21.3) and Azevedo Road to Liberty Island Road (postmile 22.6/23.7), Solano County.

☐ *Continued on additional page(s)*

B. River, stream, or lake affected by the project.	Sacramento River
C. What water body is the river, stream, or lake tributary to?	Sacramento River
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	Solano County

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Rio Vista	4N	2E	14, 15	SE
Rio Vista	4N	2E	22	NE
Birds Landing	4N	2E	16, 17	SW
Birds Landing	4N	2E	20, 21	NW

☐ *Continued on additional page(s)*

K. Meridian (*check one*) ☐ Humboldt ☑ Mt. Diablo ☐ San Bernardino

L. Assessor's Parcel Number(s)

048-100-440, 048-100-530, 048-110-240, 048-120-420 and Caltrans' Right of Way

☐ *Continued on additional page(s)*

M. Coordinates (*If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes)*

Latitude/Longitude	*Latitude:* 38°11' 00.62" N	*Longitude:* 121° 46'08.67 W	
	☐ 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	

10. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

Caltrans proposes to modify the SR 12 roadway from west of Liberty Island Road to west of Currie Road to allow for the addition of standard shoulder widths, a clear recovery zone, left turn pockets at three intersections, and the improvement of existing nonstandard vertical sight distances by reconstructing the roadway profile at PMs 21.3, 23.1, and 23.2. The proposed Project activities vary by milepost, and the Project area is divided into two distinct segments, A and B (See attachment 1; Figures 1 and 2).

Please see Attachment 1, section 10-A for a more detailed project description.

☑ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

Construction equipment that will likely be needed to complete the proposed Project include graders, excavators, a crane, a vibratory sheet pile driver, an asphalt drum grinder, transfer and bottom dump semi-trucks and trailers, lowboy-style trucks and trailers, cement trucks, Gradall-style articulating 4-wheel-drive forklifts, front-end loaders, vibramatic rollers, a hydro-seeding truck rig, and various pick-up trucks.

☑ *Continued on additional page(s)*

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).	☐ Yes ☑ No (*Skip to box 11*)
D. Will the proposed project require work in the wetted portion of the channel?	☐ Yes (*Enclose a plan to divert water around work site*) ☐ No

12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.

A Storm Water Pollution Prevention Plan (SWPPP) and erosion control best management practices will be developed and implemented to minimize any wind or water-related erosion. The plans will comply with the requirements of the Regional Water Quality Control Board. Caltrans BMP Guidance Handbook will provide guidance for design staff to include provisions in construction contracts for measures to protect sensitive areas and prevent and minimize storm water and non-storm water discharges.

Please see Attachment 1, Section 12-A.

☑ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Please see Attachment 1, Section 12-B.

☑ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

Please see Attachment 1, Section 12-C.

☑ *Continued on additional page(s)*

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.	USACE Clean Water Act 404 Nationwide Permit-Application pending	☑ Applied	☐ Issued
B.	USFWS Biological Opinion	☐ Applied	☑ Issued
C.	CDFG 2081 ITP for California Tiger Salamander	☑ Applied	☐ Issued

D. Unknown whether ☐ local, ☐ state, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☐ *Continued on additional page(s)*

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

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.

Signed for

Signature of Applicant or Applicant's Authorized Representative

6.8.12

Date

Christopher T Stats Jeffery Jensen

Print Name

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

21 December 2012

Jason Mac
California Department of Transportation, District 4
111 Grand Avenue
Oakland, CA 94612

CERTIFIED MAIL
7011 2970 0003 8939 7318

CLEAN WATER ACT §401 TECHNICALLY CONDITIONED WATER QUALITY CERTIFICATION; CALIFORNIA DEPARTMENT OF TRANSPORTATION, SOLANO STATE ROUTE 12 SHOULDER WIDENING PROJECT (WDID#5A48CR00114), SOLANO COUNTY

This Order responds to your 7 November 2012 application submittal for the Water Quality Certification of a road widening project permanently impacting 0.059 acre and temporarily impacting 0.069 acre of waters of the United States and permanently impacting 0.04 acre and temporarily impacting 0.01 acre of waters of the State.

This Order serves as certification of the United States Army Corps of Engineers' Nationwide Permit #14 (SPK #2009-00309) under § 401 of the Clean Water Act, and a Waste Discharge Requirement under the Porter-Cologne Water Quality Control Act.

WATER QUALITY CERTIFICATION STANDARD CONDITIONS:

1. This Order serves as a Water Quality Certification (Certification) action that is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to § 13330 of the California Water Code and § 3867 of the California Code of Regulations.

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

3. The validity of any non-denial Certification action shall be conditioned upon total payment of the full fee required under § 3833 of the California Code of Regulations, unless otherwise stated in writing by the certifying agency.

4. This Certification is valid for the duration of the described project. This Certification is no longer valid if the project (as currently described) is modified, or coverage under § 404 of the Clean Water Act has expired.

5. All reports, notices, or other documents required by this Certification or requested by the Central Valley Regional Water Quality Control Board (Central Valley Water Board) shall be signed by a person described below or by a duly authorized representative of that person.

   (a) For a corporation: by a responsible corporate officer such as (1) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function; (2) any other person who performs similar policy or decision-making functions for the corporation; or (3) the manager of one or more manufacturing, production, or operating facilities if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
   (b) For a partnership or sole proprietorship: by a general partner or the proprietor.
   (c) For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.

6. Any person signing a document under Standard Condition number 5 shall make the following certification:

   "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 gathered and evaluated 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 there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

TECHNICAL CERTIFICATION CONDITIONS:

In addition to the above standard conditions, the California Department of Transportation shall satisfy the following:

1. The California Department of Transportation shall notify the Central Valley Water Board in writing 7 days in advance of the start of any work within waters of the United States and State. The notification shall include the name of the project and the WDID number, and shall be sent to the Central Valley Water Board Contact indicated in this Certification.

2. Except for activities permitted by the United States Army Corps of Engineers under § 404 of the Clean Water Act soil, silt, or other organic materials shall not be placed where such materials could pass into surface water or surface water drainage courses.

3. The California Department of Transportation shall maintain a copy of this Certification and supporting documentation (Project Information Sheet) at the Project site during construction for review by site personnel and agencies. All personnel (employees, contractors, and subcontractors) performing work on the proposed project shall be adequately informed and trained regarding the conditions of this Certification.

4. The California Department of Transportation shall perform surface water sampling: 1) when performing any in-water work; 2) in the event that project activities result in any materials reaching surface waters; or 3) when any activities result in the creation of a visible plume in surface waters. The monitoring requirements in Table 1 shall be conducted upstream out of the influence of the project, and 300 feet downstream of the work area. The sampling frequency may be modified for certain projects with written approval from Central Valley Water Board staff.

Table 1:

Parameter	Unit	Type of Sample	Minimum Sampling Frequency	Required Analytical Test Method
Turbidity	NTU	Grab(1)	Every 4 hours during in-water work	(2)
Settleable Material	mL/L	Grab(1)	Every 4 hours during in-water work	(2)
Visible construction related pollutants (3)	Observations	Visual Inspections	Continuous throughout the construction period	—
pH(4)	Standard Units	Grab(1)	Every 4 hours during in-water work	(2)

(1) Grab sample shall not be collected at the same time each day to get a complete representation of variations in the receiving water.
(2) Pollutants shall be analyzed using the analytical methods described in 40 Code of Federal Regulations Part 136; where no methods are specified for a given pollutant, method shall be approved by Central Valley Water Board staff.
(3) Visible construction-related pollutants include oil, grease, foam, fuel, petroleum products, and construction-related, excavated, organic or earthen materials.
(4) pH water quality monitoring is required due to the use of concrete and/or cement slurry within the project area.

A surface water monitoring report shall be submitted to the Central Valley Water Board Contact indicated in this Certification within two weeks of initiation of sampling and every two weeks thereafter. In reporting the monitoring data, the California Department of Transportation shall arrange the data in tabular form so that the sampling locations, date, constituents, and concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the project complies with Certification requirements. The report shall include surface water sampling results, visual observations,

and identification of the turbidity increase in the receiving water applicable to the natural turbidity conditions specified in the turbidity criteria below.

5. The Central Valley Water Board adopted a *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised October 2011 (Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Turbidity, settleable matter, and pH limits are based on water quality objectives contained in the Basin Plan and are part of this Certification as follows:

   A. Activities shall not cause turbidity increases in surface water to exceed:

      i. where natural turbidity is less than 1 Nephelometric Turbidity Units (NTUs), controllable factors shall not cause downstream turbidity to exceed 2 NTUs;
      ii. where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU;
      iii. where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent;
      iv. where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs; and
      v. where natural turbidty is greater than 100 NTUs, increases shall not exceed 10 percent.

      Except that these limits will be eased during in-water working periods to allow a turbidity increase of 15 NTUs over background turbidity. In determining compliance with the above limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. Averaging periods may only be used with prior approval of the Central Valley Water Board staff.

   B. Activities shall not cause settleable matter to exceed 0.1 mL/L in surface waters as measured in surface waters within 300 feet downstream of the project.

   C. Activities shall not cause pH to be depressed below 6.5 nor raised above 8.5 in surface water.

6. The California Department of Transportation shall notify the Central Valley Water Board immediately if the above criteria for turbidity, pH, and settleable matter or other water quality objectives are exceeded.

7. The discharge of petroleum products or other excavated materials to surface water is prohibited. Activities shall not cause visible oil, grease, or foam in the receiving water. The California Department of Transportation shall notify the Central Valley Water Board immediately of any spill of petroleum products or other organic or earthen materials.

8. The California Department of Transportation shall comply with all California Department of Fish and Game requirements, including but not limited to those requirements described in Lake or Streambed Alteration Agreement No.1600-2012-0213-R3.

9. The California Department of Transportation shall comply with all United States Fish and Wildlife Service requirements, including but not limited to those requirements described in Biological Opinion 81420-2009-F-0152-4, provided to the United States Army Corps of Engineers, dated 30 April 2010.

10. The use of netting material (e.g., monofilament-based erosion blankets) that could trap aquatic dependent wildlife is prohibited within the project area. (Figure 1 and Figure 2)

11. All temporarily affected areas will be restored to pre-construction contours and conditions upon completion of construction activities.

12. All areas disturbed by project activities shall be protected from washout or erosion.

13. In-stream work will occur during periods of low flow and no precipitation.

14. This Certification does not allow permanent water diversion of flow from the receiving water. This Certification is invalid if any water is permanently diverted as a part of the project.

15. Refueling of equipment within the floodplain or within 300 feet of the waterway is prohibited. If critical equipment must be refueled within 300 feet of the waterway, spill prevention and countermeasures must be implemented to avoid spills. Refueling areas shall be provided with secondary containment including drip pans and/or placement or absorbent material. No hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, or other construction-related potentially hazardous substances should be stored within a floodplain or within 300 feet of a waterway. The California Department of Transportation must perform frequent inspections of construction equipment prior to utilizing it near surface waters to ensure leaks from the equipment are not occurring and are not a threat to water quality.

16. The California Department of Transportation shall develop and maintain onsite a project-specific Spill Prevention, Containment and Cleanup Plan outlining the practices to prevent, minimize, and/or clean up potential spills during construction of the project. The Plan must detail the project elements, construction equipment types and location, access and staging and construction sequence. The Plan must also address the potential of responding to a spill or prevention of spills occurring within the project site.

17. If temporary surface water diversions and/or dewatering are anticipated, the California Department of Transportation shall develop and maintain on-site a Surface Water Diversion and/or Dewatering Plan(s). The Plan(s) shall include the proposed method and duration of diversion activities. The Surface Water Diversion and/or Dewatering Plan(s) must be consistent with this Certification.

18. When work in a flowing stream is unavoidable and any dam or other artificial obstruction is being constructed, maintained, or placed in operation, sufficient water shall at all times be allowed to pass downstream, to maintain beneficial uses of waters of the State below the dam. Construction, dewatering, and removal of temporary cofferdams shall not violate Technical Certification Condition 5 of this Certification.

19. Any temporary dam or other artificial obstruction constructed shall only be built from clean materials such as sandbags, gravel bags, water dams, or clean/washed gravel which will cause little or no siltation. Stream flow shall be temporarily diverted using gravity flow through temporary culverts/pipes or pumped around the work site with the use of hoses.

20. During construction, silt fencing, straw wattles, or other effective management practices must be used along the construction zone to minimize soil or sediment along the embankments from migrating into the waters of the United States and State.

21. Raw cement, concrete (or washing thereof), asphalt, drilling fluids, lubricants, paints, coating material, oil, petroleum products, or any other substances which could be hazardous to fish and wildlife resulting from or disturbed by project-related activities, shall be prevented from contaminating the soil and/or entering waters of the United States and State.

22. Concrete must completely be cured before coming into contact with waters of the United States and State. Surface water that contacts wet concrete must be pumped out and disposed of at an appropriate off-site commercial facility which is authorized to accept concrete wastes.

23. All materials resulting from the project shall be removed from the site and disposed of properly.

24. If unanticipated discharges to the waters of the United States and State, and/or soil occur, the California Department of Transportation shall notify the Central Valley Water Board Contact indicated in this Certification in writing within 5 calendar days of occurrence. Unanticipated discharges may include, but are not limited to, any construction materials, hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, raw cement, concrete, asphalt, paint, coating material, drilling fluids, or other construction-related potentially hazardous substances.

25. The California Department of Transportation shall obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities Order No. 2009-0009-DWQ for discharges to surface waters comprised of storm water associated with construction activity, including, but not limited to, demolition, clearing, grading, excavation, and other land disturbance activities of one or more acres, or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres.

26. The Conditions in this Certification are based on the information in the attached "Project Information Sheet." If the actual project, as described in the attached Project Information Sheet, is modified or changed, this Certification is no longer valid until amended by the Central Valley Water Board.

27. The California Department of Transportation shall implement each of the mitigation measures specified in the approved Negative Declaration for the project, as they pertain to biology, hydrology and water quality impacts as required by § 21081.6 of the Public Resource Code and CEQA Guidelines, § 15097 of the California Code of Regulations.

28. In the event of any violation or threatened violation of the conditions of this Certification, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under state and federal law. The applicability of any state law authorizing remedies, penalties, process, or sanctions for the violation or threatened violation constitutes a limitation necessary to ensure compliance with this Certification.

    (a) If the California Department of Transportation or a duly authorized representative of the project fails or refuses to furnish technical or monitoring reports, as required under this Certification, or falsifies any information provided in the monitoring reports, the applicant is subject to civil liability, for each day of violation, and/or criminal liability.

    (b) In response to a suspected violation of any condition of this Certification, the Central Valley Water Board may require the California Department of Transportation to furnish, under penalty of perjury, any technical or monitoring reports the Central Valley Water Board deems appropriate, provided that the burden, including cost of the reports, shall be in reasonable relationship to the need for the reports and the benefits to be obtained from the reports.

    (c) The California Department of Transportation shall allow the staff(s) of the Central Valley Water Board, or an authorized representative(s), upon the presentation of credentials and other documents, as may be required by law, to enter the project premises for inspection, including taking photographs and securing copies of project-related records, for the purpose of assuring compliance with this Certification and determining the ecological success of the project.

29. The California Department of Transportation shall provide a Notice of Completion (NOC) no later than 30 days after the project completion. The NOC shall demonstrate that the project has been carried out in accordance with the project's description in the Certification and in any amendments approved. The NOC shall include a map of the project location(s), including final boundaries of any on-site restoration area(s), if appropriate, and representative pre and post construction photographs. Each photograph shall include a descriptive title, date taken, photographic site, and photographic orientation.

CENTRAL VALLEY WATER BOARD CONTACT:

Trevor Cleak, Environmental Scientist
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114
tcleak@waterboards.ca.gov
(916) 464-4684

CALIFORNIA ENVIRONMENTAL QUALITY ACT:

The California Department of Transportation is the Lead Agency responsible for compliance with the California Environmental Quality Act for the Solano State Route 12 Shoulder Widening Project pursuant to § 21000 et seq. of the Public Resources Code. The California Department of Transportation certified a Negative Declaration on 31 August 2010 (State Clearinghouse Number 2009022028). The California Department of Transportation filed a Notice of Determination with the State Clearinghouse on 27 April 2011.

The Central Valley Water Board is a responsible agency for the project. The Central Valley Water Board has determined that the Negative Declaration is in accordance with the requirements of the California Environmental Quality Act and is valid pursuant § 21167.3(b) of the Public Resources Code.

WATER QUALITY CERTIFICATION:

I hereby issue an Order certifying that any discharge from the California Department of Transportation, Solano State Route 12 Shoulder Widening Project (WDID#5A48CR00114) will comply with the applicable provisions of § 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. This discharge is also regulated under State Water Resources Control Board Water Quality Order No. 2003-0017 DWQ "Statewide General Waste Discharge Requirements For Dredged Or Fill Discharges That Have Received State Water Quality Certification (General WDRs)".

Except insofar as may be modified by any preceding conditions, all Certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in compliance with the conditions of this Certification, the California Department of Transportation's application package, and the attached Project Information Sheet, and (b) compliance with all applicable requirements of the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised October 2011.

for Pamela C. Creedon
Executive Officer

Enclosure: Project Information

Attachment: Figure 1-Project Location Map (Segment A)
Figure 2-Project Location Map (Segment B)

cc: Distribution List, page 16

PROJECT INFORMATION SHEET

Application Date: 7 November 2012

Applicant: Jason Mac
California Department of Transportation, District 4
111 Grand Avenue
Oakland, CA 94612

Applicant Representatives: Cyrus Vafai
California Department of Transportation, District 4
111 Grand Avenue
Oakland, CA 94612

Project Name: Solano State Route 12 Shoulder Widening Project (Project)

Application Number: WDID#5A48CR00114

Type of Project: Road Widening

Timeframe of Project Implementation: January 2013 through January 2016

Project Location: Section 14-17, Township 2 North, Range 4 East, MDB&M.
Latitude: 38°11'00"N and Longitude: 121°16'08" W

County: Solano County

Receiving Water(s) (hydrologic unit): Wells Creek, Sacramento Joaquin Hydrologic Basin, Valley Putah-Cache Hydrologic Unit #511.10, Elmira HA

Water Body Type: Wetland, Agricultural Ditch

Designated Beneficial Uses: The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised October 2011 (Basin Plan) has designated beneficial uses for surface and ground waters within the region. Beneficial uses that could be impacted by the project include, but are not limited to: Municipal and Domestic Water Supply (MUN); Agricultural Supply (AGR); Industrial Supply (IND); Hydropower Generation (POW); Groundwater Recharge (GWR); Water Contact Recreation (REC-1); Non-Contact Water Recreation (REC-2); Warm Freshwater Habitat (WARM); Cold Freshwater Habitat (COLD); Preservation of Biological Habitats of Special Significance (BIOL); Rare, Threatened, or Endangered Species (RARE); Migration of Aquatic Organisms (MIGR); Spawning, Reproduction, and/or Early Development (SPWN); and Wildlife Habitat (WILD). A comprehensive and specific list of the Beneficial Uses applicable for the project area can be found at http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/index.shtml.

303(d) List of Water Quality Limited Segments: Well Creek is the receiving water for the Project. Well Creek is not listed on the 303(d) list. The project will not impact an already impaired water body. The most recent list of approved water quality limited segments can be found at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml.

Project Description: The Project involves modifications to State Route 12 from west of Liberty Island Road to west of Currie Road to allow for standard shoulder widths, clear recovery zone, left-turn pockets and improvements to vertical sight distances. The Project is located 3 miles northwest of Rio Vista, in Solano County.

Liberty Island Road to Azevedo Road (Segment A): Within a 1.1 mile stretch of State Route 12, between Liberty Island Road and Azevedo Road in Solano County, activities will include widening the existing shoulder on each side of the roadway to an eight foot standard width. Widening will require tree removal and extension of the box culvert at Well Creek. Widening will also require modifications of existing drainage features, including culverts and roadside ditches. Drainage improvements in Segment A include the replacement of six existing culverts and the extension of one existing culvert (Table 1).

Azevedo Road to Currie Road (Segment B): Drainage improvements in Segment B will include installation of three new culverts, replacement of four existing culverts, and extensions of one existing culvert located on a unnamed ephemeral drainage near McClosky Road (Table 1).

Table 1-Culverts to be Extended, Installed, Replaced or Relocated:

Segment	Station	Post Mile	Culvert ID**	Existing Type*	Existing Size	Repair Method
A	106+50	20.59	C-0	None	None	Install 12-inch APC
A	107+00	20.60	C-2	CMP	18"	Install 18-inch APC, remove 18-inch CMP
A	111+03	20.68	C-3	RCP	18"	Install 24-inch APC, remove 18-inch RCP
A	123+95	20.92	C-5	CMP	12"	Install 18-inch APC, remove 12-inch CMP
A	133+00	21.09	C-6	None	None	Install two 24-inch APC
A	134+88	21.13	C-7	RCB	10"x6"	Extend south and north
A	138+00	21.27	C-8	RCP	12"	Install 12-inch APC, remove 12-inch RCP

Segment	Station	Post Mile	Culvert ID**	Existing Type*	Existing Size	Repair Method
B	104+54 N	22.67	C-10	PPC	18"	Install 18-inch APC, remove 18-inch CMP
B	104+50 S	22.67	C-11	CMP	18"	Install 18-inch APC, remove 18-inch CMP
B	114+50	22.86	C-12	RCP	10"	Install 12-inch APC, remove 10-inch RCP
B	117+05	22.91	C-13	RCB	Double 10"x6"	Extend south and north
B	124+52	23.04	C-14	CMP	16"	Install 18-inch APC, remove 16-inch CMP
B	132+87	23.21	C-15	RCP	36"	Install 36-inch APC, remove 36-inch RCP
B	145+00	23.44	C-17	CMP	18"	Install 18-inch APC, remove 12-inch CMP

*APC =alternative pipe culvert; CMP=corrugated metal pipe; CSP=corrugated steel pipe; PPC=plastic pipe culvert; RCB=reinforced concrete box; RCP=reinforced concrete pipe
**Culverts are shown on Figures 1 and 2.

Box culvert extension will involve the placement of false work and concrete forms in the unnamed ephemeral drainage at McClosky Road and in Wells Creek. The box culverts extension will require the use of slurry and/or wet concrete and asphalt. This work will be completed between 15 May and 15 October of each construction year. Heavy equipment will not be staged within the unnamed ephemeral drainage at McClosky Road and within Wells Creek.

The Project will result in 0.069 acre of temporary impacts and 0.059 acre of permanent impacts to waters of the United States, and 0.01 acre of temporary impacts and 0.04 acre of permanent impacts to waters of the State.

Preliminary Water Quality Concerns: Construction activities may impact surface waters with increased turbidity and settleable matter.

Proposed Mitigation to Address Concerns: The California Department of Transportation will implement Best Management Practices to control sedimentation and erosion. All temporary affected areas will be restored to pre-construction contours and conditions upon completion of construction activities. The California Department of Transportation will conduct turbidity and

settleable matter testing during in-water work, stopping work if Basin Plan criteria are exceeded or are observed.

Excavation/Fill Area: Approximately 122.15 cubic yards of rock slope protection, native soil, alternative pipe culvert and concrete will be placed into 0.01 acre of waters of the United States and waters of the State.

Dredge Volume: None

United States Army Corps of Engineers File Number: SPK #2009-00309

United States Army Corps of Engineers Permit Type: Nationwide Permit #14

California Department of Fish and Game Lake or Streambed Alteration Agreement: 1600-2012-0213-R3.

Possible Listed Species: California tiger salamander

Status of CEQA Compliance: The California Department of Transportation approved a Negative Declaration on 31 August 2010. The California Department of Transportation filed a Notice of Determination with the State Clearinghouse on 27 April 2011 (State Clearinghouse Number 2009022028).

The Central Valley Water Board filed a Notice of Determination with the State Clearinghouse as a responsible agency within 5 days of the date of this Certification.

Compensatory Mitigation: The Central Valley Water Board is not requesting compensatory mitigation for the Project.

Application Fee Provided: Total fees of $ 1,431.00 have been submitted to the Central Valley Water Board as required by § 3833(b)(3)(A) and § 2200(a)(3) of the California Code of Regulations.

Figure 1 – Project Location (Segment A)

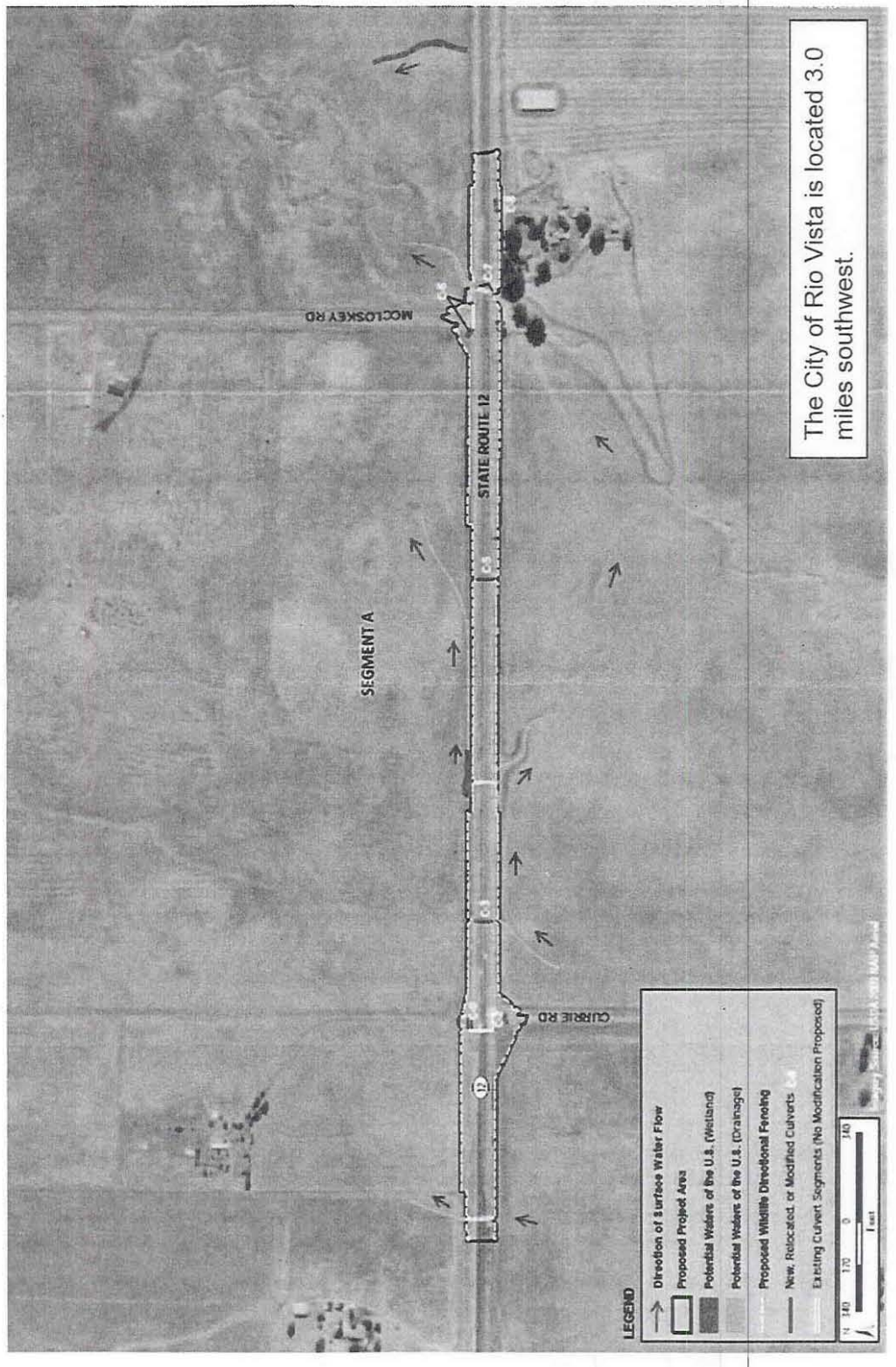
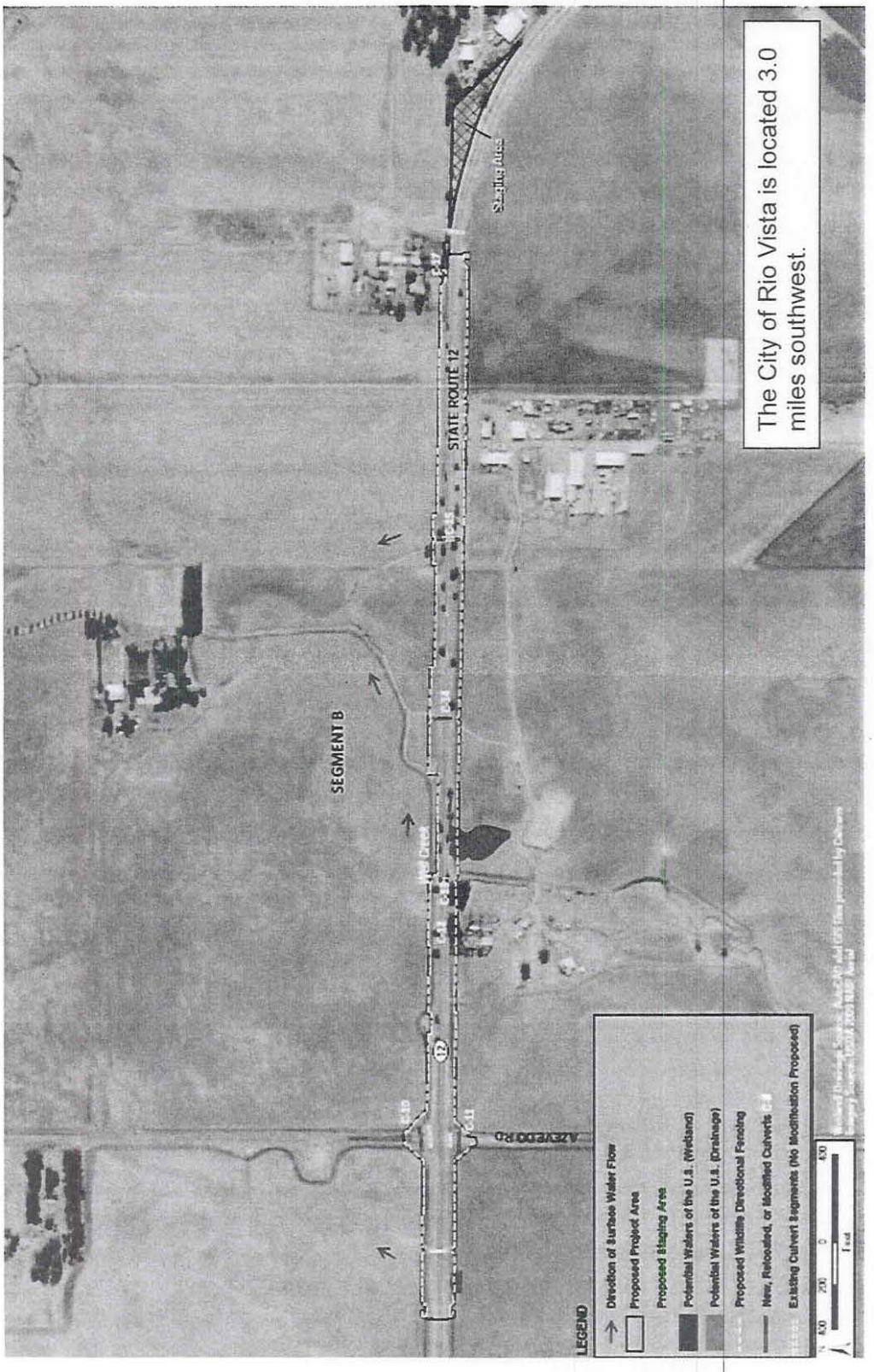


Figure 2- Project Location (Segment B)



DISTRIBUTION LIST

Marc Fugler
United States Army Corps of Engineers
Sacramento District Office
Regulatory Division
1325 J Street, Suite 1350
Sacramento, CA 95814-2922

Jim Starr
Department of Fish and Game
7329 Silverado Trail
Napa, CA 94558

Bill Jennings
CA Sportfishing Protection Alliance
3536 Rainier Avenue
Stockton, CA 95204

Bill Orme (Electronic copy only)
401 Certification and Wetlands Unit Chief
State Water Resources Control Board

Jason A. Brush (Electronic copy only)
Wetlands Office Supervisor (WTR-8)
United States Environmental Protection Agency

Cyrus Vafai
California Department of Transportation, District 4
111 Grand Avenue
Oakland, CA 94612