# INFORMATION HANDOUT

**For Contract No. 05-0F7004**
**At 05-Mon-68-R17.4/R18.0**

**Identified by**
**Project ID 0500000049**

## PERMITS

California Department of Fish and Wildlife

Notification No. 1600-2013-0175-R4
Amendment, June 5, 2015

United States Army Corps of Engineers

Non-Reporting Nationwide 404

## WATER QUALITY

California Regional Water Quality Control Board, Central Coast,

1. Certification NO. 32713WQ05
2. AMENDMENT to Certification No. 32713WQ05

## AGREEMENTS

National Marine Fisheries Services(U.S. Fish and Wildlife)

Reference No. 2010/04103, dated May 24, 2011

# MATERIALS INFORMATION

Summary of Foundation Recommendation Reports

1. Revised Foundation Report (FR) for Salinas River Bridge, April 17, 2015
2. Addendum to Revised Foundation Report (FR) for Salinas River Bridge, April 24, 2015

Final Hydraulic Report

Salinas River, September 11, 2013

Location Hydraulic Study

Salinas River Bridge Widening, January 25, 2010

Average Daily Stage Flow Chart

Flood Insurance Rate Map

Selected USGS gages and Salinas river Miles

Asbestos and Lead-Containing Paint Survey Report, August 19, 2010

Alternative Crash Cushion System

Water Source Information

1. Non-potable water: California Utilities Service Inc.
2. Potable water: Alisal Water Corporation dba Alco Water Service

**CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE**
REGION 4 - CENTRAL REGION
1234 EAST SHAW AVENUE
FRESNO, CALIFORNIA 93710

# STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2013-0175-R4
SALINAS RIVER – MONTEREY COUNTY

PAUL HOLMES
**CALIFORNIA DEPARTMENT OF TRANSPORTATION**
**CALTRANS DISTRICT 5**
50 HIGUERA STREET
SAN LUIS OBISPO, CALIFORNIA 93401

**MON-68 SALINAS RIVER BRIDGE EA 05-0F700 (PROJECT)**

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and the California Department of Transportation, Caltrans District 5 (Permittee), represented by Paul Holmes

## RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified CDFW on October 4, 2013 that Permittee intends to complete the Project described herein.

WHEREAS, pursuant to FGC section 1603, CDFW has determined that the Project could substantially adversely affect existing fish or wildlife resources and has included Protective Measures in this Agreement necessary to protect those resources.

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

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

## PROJECT LOCATION

The Project is located on the Salinas River along Highway 68 between Post Mile (PM) 17.7-17.9, west of Foster road and east of Reservation Road, 1 mile north of the community of Spreckels and 1.3 miles east of the City of Salinas in Monterey County, State of California; Township 15 S, Range 3 E, United States Geological Survey (USGS) 7.5 Minute Quad Map Salinas, MDB & M; Latitude 36°37'52"N, Longitude 121° 40'17"W.

## PROJECT DESCRIPTION

The project includes activities related to widening the inside shoulders of both the eastbound and westbound bridges over the Salinas River to the current standard of 5 feet and widening the outside shoulders to 10 feet. The widening will expand the existing bridge width of 34 feet by 13 feet to a post construction bridge width of 47 feet. The pier and abutment footings will be upgraded and strengthened and the seven pier walls will be reinforced to meet current seismic retrofit standards. Maintenance access to the bridge footings will be improved by a stabilized construction roadway from the nearest highway to the bridge abutments. Ancillary improvements on the bridge deck include new over-side drainage systems to convey storm water runoff, adding approach and departure slabs, and reconfiguring metal beam guard rails, bridge rails, and hand rails.

The Project is limited to:

- The outside shoulders of the two bridges will each be widened by 10 feet. This will be accomplished by construction of a cast-in-place reinforced concrete box girder extension. False-work for the outside shoulder extensions will be supported during construction by 92 temporary steel pipe piles of 24 inches in diameter embedded up to a maximum of 10 feet deep into the river bottom soils adjacent to the eastbound and westbound bridges. Area of streambed impacts for the false-work for both the outside shoulders will not exceed 20 feet by 887 feet, a total of 35,080 square feet of temporary impacts within the 6 acres of the temporary construction easement.

- The inside shoulders of the two bridges will each be widened by 5 feet. This will be accomplished by construction of a cast-in-place reinforced concrete box girder extension. False-work for the inside shoulder widening will be supported by bracing attached to the existing reinforced concrete box girder on the underside of both bridge decks and will not enter the river bed.

- The abutments and their wing walls for both bridges will be modified to accommodate the widened shoulders. The abutments will have new sections connected to the existing structure. The four inner sections will be approximately 12 feet wide by 7 feet long and 3 feet high, with one 4-foot diameter Cast in Steel Shell (CISS) at each quadrant. The four outer sections will be approximately 16 feet wide by 13 feet long and 3 feet high, with two 4-foot diameter CISS piles at each quadrant. This will permanently impact 1,168 square feet of the streambed. Eight wingwalls will extend 18 feet out and will be 1.75 feet wide from each side of the abutments. This will permanently impact 252 square feet of the streambed.

- Each of the seven piers supporting each of the two bridge decks will be extended by adding new 2-foot diameter piles and pier footing caps. The 14 inside pier footings will be increased in size by 22 feet wide and 13 feet long for a permanently impact of 4,004 square feet. The 14 inside pier footings will be increased in size by 11 feet wide and 16 feet long for a permanently impact of 2,464 square feet. This will be accomplished by excavating 20 feet deep to install

the 2-foot diameter pilings, and will require the cut of a 3:1 slope for safety resulting in approximately 49,350 square feet of temporary.

- Maintenance access to the bridges from both the west bank and the east bank will require improvements to the existing roadways consisting of minor widening and installation of Class 2 Aggregate gravel road base to a maximum depth of 13 inches over a subgrade enhancement geotextile. Modifications and improvements to both roadways will comprise less than 0.8 acres of new permanent impacts.

- Installation of a water diversion will be required because in-stream flows from April through October average 300 cubic feet per second (cfs). The diversion will be composed of two coffer dams at either end of an open trapezoidal channel 5 feet deep, 14 feet across the bottom, and sides with a 2:1 slope, to concentrate the flow into the channel and through the work area. The upstream coffer dams will be located approximately 100 feet upstream of the Project site and will be built to a dimension of 30 feet wide by 220 feet long. The downstream cofferdam will be 30 feet wide by 200 feet long. The material for the coffer dam construction will be made up of native soils and/or triple washed gravel at least 0.5 inches in diameter. The water diversion channel will be installed to a depth of 5 feet with a width of 34 feet and a length of 820 feet. The channel will be lined with a smooth plastic geo-membrane liner that will extend from coffer dam to coffer dam and will be keyed into a 2.5-foot wide berm along either side of the channel. The temporary disturbance footprint for the construction of the two coffer dams and the channel will be a maximum of 58,900 square feet. The coffer dams on either side will be used as temporary stream crossings over the water diversion channel.

- The installation of the falsework and pile driving will require the use of a crane and will require a platform for stabilization. In order to move the crane around the work area, a flat, smooth area will be cleared. The maximum area of the river channel that will be temporarily disturbed is 6 acres.

- A total of 186 sandbar willows (*Salix exigua*) with trunks sized 4 to 8 inches in diameter at breast height (DBH) and larger will be removed as a result of Project implementation.

Work will be done in the dry weather construction season between April 15 and October 15. All work will occur during daylight hours. Construction will be phased and will begin above the ~~high water~~ mark starting April 15. After June 15, ~~successive~~ construction will commence to in-channel work with all Project activities concluding no later than October 15. Work will require two seasons to complete.

- Equipment that will be used during this Project includes a backhoe, loader, excavator, scraper, light and heavy duty trucks, water truck, bulldozer, crane, drill rig, concrete pumper, and pile driver.

## PROJECT IMPACTS

The Project will result in less than 1 acre of permanent impacts including 0.181 acres for expansion of the bridge structures and the remainder for access road improvements. Approximately 6 acres of river channel will be temporarily impacted. Other potential impacts related to disturbance during Project implementation include but are not limited to those resulting from noise, vibration, trampling/crushing, erosion, and surface water contact with new concrete or other construction-related materials.

This Agreement is intended to avoid, minimize, and mitigate adverse impacts to the fish and wildlife resources that occupy the Project area and the adjacent habitat. Absent implementation of the Protective Measures required by this Agreement, the species presented in Table A and their habitat could potentially be impacted, as well other birds, mammals, fish, reptiles, amphibians, invertebrates and plants that comprise the local ecosystem.

**TABLE A**
(Potentially Impacted Species)

| Name | Scientific Name | Listing | | |
|---|---|---|---|---|
| | | Federal | State | Other |
| **Special Status Wildlife** | | | | |
| Steelhead | *Oncorhynchus mykiss irideus* | T | | |
| California red-legged frog | *Rana aurora draytonii* | T | CSC | |
| Two-striped garter snake | *Thamnophis hammondii* | | CSC | |
| Western pond turtle | *Actinemys marmorata* | | CSC | |
| American badger | *Taxidea taxus* | | CSC | |
| Burrowing owl | *Athene cunicularia* | | CSC | |
| Prairie falcon | *Falco mexicanus* | | CSC | |
| Tricolor blackbird | *Agelaius tricolor* | | CSC | |
| | | | | |
| **Special Status Plants** | | | | |
| Congdon's tarplant | *Centromadia parryi ssp. Congdonii* | | | CNPS 1B.2 |
| Hutchinson's larkspur | *Delphinium hutchinsoniae* | | | CNPS 1B.2 |
| Santa Cruz clover | *Trifolium buckwestiorum* | | | CNPS 1B.1 |
| Eastwood's goldenbush | *Ericameria fasciculata* | | | CNPS 1B.1 |
| Sand gilia | *Gilia tenuiflora ssp. areanaria* | E | T | CNPS 1B.2 |
| Kellogg's horkelia | *Horkelia cuneata* | | | CNPS 1B.1 |
| seaside bird's beak | *Cordylanthus rigidus* | | | CNPS 1B.1 |
| Contra Costa goldfields | *Lasthenia conjugens* | E | | CNPS 1B.1 |
| Toro manzanita | *Arctostaphylos montereyensis* | | | CNPS 1B.2 |
| Pinnacles buckwheat | *Eriogonum nortonii* | | | CNPS 1B.3 |
| Carmel Valley bush mallow | *Malacothamnus palmeri* | | | CNPS 1B.2 |

T = Threatened, E = Endangered, FPS = Fully Protected Species, CSC = California Species of Concern, CNPS = California Native Plant Society, R = Rare, MMPA = Marine Mammal Protection Act

## MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

### 1 Administrative Measures

Permittee shall meet each administrative Protective Measure described below.

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

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

1.3 Notification of Conflicting Provisions. Permittee shall notify CDFW if Permittee determines or learns that a Protective Measure in this Agreement might conflict with a provision imposed on the Project by another local, State, or Federal agency. In that event, CDFW shall contact Permittee to resolve any conflict.

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

1.5 Legal Obligations. This Agreement does not exempt Permittee from complying with all other applicable local, State, and Federal law, or other legal obligations.

1.6 Unauthorized Take. This Agreement does not authorize the "take" (defined in Fish and Game Code Section 86 as to hunt, pursue, catch, capture, or kill; or attempt to hunt, pursue, catch, capture, or kill) of State- or Federally-listed threatened or endangered species. Any such take shall require separate permitting as may be required.

1.7 Property Not Owned by Permittee. To the extent that the Protective Measures of this Agreement provide for activities that require Permittee to enter on another owner's property, they are agreed to with the understanding that Permittee possesses the legal right to so enter.

1.8 Water Diversion. To the extent that the Protective Measures of this Agreement provide for the diversion of water, they are agreed to with the understanding that Permittee possesses the legal right to so divert such water.

1.9 Work Schedule. Permittee shall submit a work schedule to CDFW by mail or email to Laura.Peterson-Diaz@wildlife.ca.gov, with reference to Agreement No. 1600-2013-0175-R4, prior to beginning any activities covered by this Agreement.

Permittee shall also notify CDFW within 30 days upon the completion of the activities covered by this Agreement.

SSPs Notify Engineer 5 days

1.10 Training. Prior to starting any activity within the stream bed or bank, all employees, contractors, and visitors who will be present during Project activities shall receive training from a qualified individual on the contents of this Agreement, the resources at stake, and the legal consequences of non-compliance.

## 2 Avoidance and Minimization Measures

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

2.1 Construction/Work Hours. All non-emergency work activities shall be confined to daylight hours. For purposes of this Agreement, "daylight hours" are defined as that daytime period between sunrise and sunset.

2.2 Flagging/Fencing. Prior to any activity within the stream, Permittee shall identify the limits of the required access routes and encroachment into the stream. These "work area" limits shall be identified with brightly-colored flagging/fencing. Work completed under this Agreement shall be limited to this defined area only. Flagging/fencing shall be maintained in good repair for the duration of the Project. All CDFW jurisdictional areas beyond the identified work area limits shall be considered Environmentally Sensitive Areas (ESA) and shall not be disturbed.

2.3 Listed and Other Special Status Species.

(a) This Agreement does not allow for the take, or incidental take, of any State- or Federally-listed threatened or endangered species. Liability for any take, or incidental take, of such listed species remains the separate responsibility of Permittee for the duration of the Project.

(b) Permittee affirms that no take of listed species shall occur as a result of this Project and shall take prudent measures to ensure that all take is avoided. Permittee acknowledges and fully understands that it does not have State incidental take authority. If any State- or Federally-listed threatened or endangered species occur within the proposed work area or could be impacted by the work proposed, and thus taken as a result of Project activities, Permittee is responsible for obtaining and complying with required State and Federally threatened and endangered species permits or other written authorization before proceeding with this Project.

(c) Permittee shall immediately notify CDFW of the discovery of any such rare, threatened, or endangered species prior to and/or during Project implementation.

(d) Pre-activity surveys for potential rare, listed, or other sensitive species shall be conducted by a qualified biologist within 30 days prior to commencement

Notify engineer ~~30 days~~ no more than 30 days prior to commencement of constr. activities in SPAZ

of each Project activity, unless otherwise specified in species-specific measures below. Surveys shall be conducted on the work areas and all access routes to avoid and minimize incidental take, confirm previous observations, identify any areas occupied by listed or sensitive species, and clearly mark all resources to be avoided by Project activities.

(e) Steelhead: Permittee shall comply with the terms of the Biological Opinion (SWR/2010/04103) issued by National Marine Fisheries Service (NMFS) that addresses the Project activities covered by this Agreement including but not limited to:

(1) Provide the contractor with Best Management Practices and the Terms and Conditions of the biological opinion, and ensure they are followed.

(2) Handle steelhead that are captured for relocation with extreme care and keep in water to the maximum extent practicable during relocation activities. Keep fish in cool, shaded, and aerated water that is protected from excessive noise, jostling, and overcrowding when not in the stream. If necessary the biologist shall have at least two containers and segregate young-of-year steelhead from older steelhead and other potential predators. Relocate captured steelhead as soon as possible and give priority to steelhead over non-listed fish species. Release steelhead downstream of the Project area.

(3) Monitor in-channel activities and performance of sediment control or detention devices for the purpose if identifying and reconciling any condition that could result in take of listed salmonids. Monitor turbidity throughout construction and the removal of diversion facilities and for one day following each. from June 1 – Oct

(f) California Red-Legged Frog: A qualified biologist shall survey the Project site for California red-legged frog within 48 hours prior to commencing any Project activity. If any red-legged frogs are found prior to the Project or at any time during Project activities, work shall cease or shall not commence (whichever applies) until CDFW and the U.S. Fish and Wildlife Service (USFWS) have been contacted and have given written approval for work to continue. Additional Protective Measures may be warranted.

Notify engineer no more than 3 days prior to initiation project activities in SBA 1

(g) Two-striped garter snake and Pacific (western) pond turtle: Any individuals of these species discovered at the site immediately prior to or during Project activities shall be allowed to move out of the area of their own volition; if this is not feasible, individuals shall be captured by a qualified biologist who holds a Scientific Collecting Permit for the species and relocated out of harm's way to the nearest suitable habitat upstream or downstream from the Project site and outside the influence of the Project.

(h) American Badger: Any American badger detected within the Project area during Project-related activities shall be allowed to move out of the work area of its own volition. If American badger is denning on or immediately adjacent

to the Project site, Permittee shall consult with CDFW to determine whether the animal(s) may be evicted from the den. Eviction of badgers will not be approved by CDFW unless it is confirmed that no dependent young are present.

(i) Burrowing Owl: No Project-related activities shall be completed from February 1 through August 31 unless a qualified biologist surveys for nesting activity of burrowing owl within a 500-foot radius of the Project site. Surveys shall be conducted at appropriate nesting times. If any active burrowing owl burrows are observed, these burrows shall be designated an ESA, protected, and monitored by a qualified biologist during Project-related activities. A minimum 250-foot avoidance buffer shall be established and maintained around each owl burrow during the nesting season (February 1 through August 31). If active burrowing owl burrows are observed outside of the nesting season, a minimum 150-foot no disturbance buffer shall be established around each burrow. Eviction of burrowing owls from their burrows is not authorized by this Agreement.

(j) Sensitive Plant Species: Sensitive plants (including but not limited to Sand gilia and Contra Costa goldfields) have the potential of existing on the Project site; therefore, a qualified botanist shall conduct focused surveys for these plants within all areas of suitable habitat on the Project site well in advance of any planned ground-disturbing activities. Repeated floristic surveys shall be conducted by a qualified botanist multiple times during the appropriate floristic period(s) in order to adequately assess the potential Project-related impacts to listed plant species. Permittee shall submit the survey results to CDFW for review and written approval in advance of Project commencement. If sensitive plant species are identified, Permittee shall identify them with flagging and avoid with a 25-foot no-disturbance buffer during Project activities or take alternative protective action proposed by Permittee and approved by CDFW in writing in advance of Project commencement. If this avoidance is not feasible, Permittee shall consult with CDFW to determine whether alternative avoidance measures are possible. Alternatively, Permittee may apply for and acquire an Incidental Take Permit for the plant species.

2.4 Fish and Wildlife.

(a) If any fish or wildlife is encountered during the course of Project activities, said fish or wildlife shall be allowed to leave the Project area unharmed.

(b) Pursuant to FGC Sections 3503 and 3503.5, it is unlawful to take, possess, or destroy the nest or eggs of any bird or bird-of-prey. To protect nesting birds, no Project activity shall be completed from March 1 through August 31 unless the following surveys are completed by a qualified biologist within 30 days prior to commencing Project activities.

Raptors: Survey for nesting activity of raptors within a 500-foot radius of the Project site. Surveys shall be conducted at appropriate nesting times and concentrate on mature trees. If any active nests are observed, these nests and nest trees shall be designated an ESA and protected by a 500-foot radius until the young have fledged and are no longer reliant on the nest tree or parental care.

Other Avian Species: Survey for nesting activity within a 250-foot radius of the Project boundaries. If any active nests are observed, these nests shall be designated an ESA and protected with a minimum 250-foot buffer until the young have fledged and are no longer reliant on the nest site or parental care.

CDFW may consider variances from these buffers when there is a compelling biological or ecological reason to do so, such as when the Project area would be concealed from a nest site by topography.

2.5 Vegetation.

(a) Trimming and removal of vegetation shall be limited to the minimal amount necessary to complete the Project.

(b) Permittee shall document the number and species of all riparian woody-stemmed plants in excess of four (4) inches DBH that are cut, trimmed, or otherwise removed or are damaged during Project activities. Riparian trees and shrubs with a DBH of four (4) inches or greater that are damaged or removed shall be replaced by replanting appropriate native species at a 3:1 ratio (replaced to lost), except that heritage trees 24-inches or greater shall require replanting of like species at a 10:1 ratio in or immediately adjacent to the Project site, according to Compensatory Measure 3.1(a) Revegetation/Restoration.

(c) Vegetation or material removed from the Project site shall be disposed of at an appropriate and legal off-site location where the material cannot enter the stream channel. No such material shall be stockpiled in the streambed, banks, or channel, except that native vegetation removed from the channel may be chipped and the chips used as mulch for disturbed soil sites in or near the Project area.

SSPs

(d) All invasive, exotic plant species disturbed by Project activities shall be bagged, removed from the Project site, and appropriately disposed of. Non-native species shall not be used in mulching, composting, or otherwise placed in or around the Project site.

(e) Heavy equipment and other machinery shall be inspected for the presence of undesirable species and cleaned prior to on-site use to reduce the risk of introducing exotic plant species into the Project site.

SSP → Equipment arriving at the project site shall be cleaned and in a soil free and petroleum leak free condition.

2.5 Vehicles and Equipment.

(a) Vehicles shall not be operated in areas where surface water is present.

(b) Vehicle access to the stream bed and banks shall be limited to predetermined ingress and egress corridors on existing roads. All other CDFW jurisdictional areas adjacent to the work site shall be considered an ESA and shall remain off-limits to vehicles and equipment.

Put on Bplans?

(c) Any equipment or vehicles driven and/or operated within or adjacent to the stream shall be checked and maintained daily to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic and terrestrial life.

(d) Staging and storage areas for equipment, materials, fuels, lubricants, and solvents shall be located outside of the stream channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the stream, shall be positioned over drip-pans. Vehicles shall be moved away from the stream prior to refueling and lubrication.

2.7 Structures. Permittee confirms that any and all structures and constructed features, including the temporary diversion channel, shall be properly aligned and otherwise engineered, installed, and maintained, to assure resistance to washout, and to erosion of the stream bed, stream banks and/or fill and that they will not cause long-term changes in water flows that adversely modify the existing upstream or downstream stream bed/bank contours or increase sediment deposition. Permittee shall ensure that all structures and other constructed features are designed to accommodate and withstand 100-year flood events.

2.8. Stream Diversion and Dewatering.

(a) Check dams, cofferdams, or other barriers shall not be made of silt, sand and gravel, or other substances subject to erosion unless first enclosed by sheet piling, rock riprap, sandbags, or other protective material. The enclosure and supportive material shall be removed when the work is completed and removal shall normally proceed from downstream in an upstream direction. The barrier shall be constructed to prevent seepage to maximum extent possible.

(b) Any turbid water pumped from the work site itself to maintain it in a dewatered state shall be placed in a settling pool to allow the sediment to drop out. Once the water is clear, it shall be returned to the stream bed below the culvert to maintain water flow. Other filtration methods may be used depending upon site-specific conditions. Water pumped to upland areas shall be discharged in a manner as to not cause erosion (i.e., installation of velocity dissipaters at the outfall).

(c) Construction of the barrier and/or the temporary channel shall normally begin in the downstream area and continue in an upstream direction, and the

diversion shall only be implemented when construction of the diversion is completed.

2.9 Fill/Spoil.

(a) Spoil storage sites shall not be located within the stream, or where spoil will be washed into the stream. Rock, gravel, and/or other materials shall not be imported into or moved within the bed or banks of the stream, except as otherwise addressed in this Agreement.

(b) Fill shall be limited to the minimal amount necessary to accomplish the agreed activities. Excess fill material shall be moved off-site at Project completion.

2.10 Erosion.

(a) No work within the banks of the stream will be conducted during or within 24 hours following significant rainfall events (one quarter of 1-inch of rain in any 24-hour period) or when water is flowing within the channel.
- Work may resume when less than a 24hr. chance is forecast ← Needs to be removed from permit

(b) All disturbed soils within the Project site shall be stabilized to reduce erosion potential, both during and following construction. Temporary erosion control devices, such as straw bales, silt fencing, and sand bags, may be used, as appropriate, to prevent siltation of the stream. To minimize the risk of ensnaring and strangling wildlife, coir rolls, erosion control mats or blankets, straw or fiber wattles, or similar erosion control products shall be composed entirely of natural-fiber, biodegradable materials. Permittee shall not use "photodegradable" or other plastic erosion control materials.

(c) If it is determined that silt levels resulting from Project-related activities constitute a threat to aquatic life, activities associated with the siltation shall be halted until effective CDFW-approved control devices are installed, or abatement procedures are initiated.

2.11 Pollution.

(a) During Project implementation, Permittee shall not dump any litter or debris within the stream. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site.

(b) Raw cement, concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to fish or wildlife resulting from Project-related activities, shall be prevented from contaminating the soil and/or entering the "Waters of the State".

(c) Permittee shall install the necessary containment structures to control the placement of any wet concrete/cement and to prevent it from entering into the

channel outside of those structures. No concrete/cement shall be poured or applied below the top of bank if the 10-day weather forecast indicates any chance of rain. At all times when Permittee is pouring or working with wet concrete/cement there shall be a designated monitor to inspect the containment structures and ensure that no concrete or other debris enters into the channel outside of those structures. Poured concrete/cement shall remain isolated from surface waters and soils that could become saturated, and allowed to cure for a minimum of 30 days.

(d) Permittee and all contractors shall be subject to the water pollution regulations found in FGC Sections 5650 and 12015.

Submit to the engineer a ERSP Prior to commencing ~~Solar~~ any work in SPA 2
- ERSP is to contain
  - responsible persons names
  - materials to be kept at the site

(e) An Emergency Response Plan shall be prepared and submitted to CDFW for approval prior to the start of construction, and kept on-site during all Project activities. The Plan shall identify the actions that shall be taken in the event of a spill of petroleum products, wet concrete, contaminated soil, or other material harmful to fish, plants, or aquatic life. Emergency response materials shall be kept at the site and readily available to allow rapid containment and cleanup of any spilled material. In the event that a spill occurs, all Project activities shall immediately cease until cleanup of the spilled materials is completed. CDFW shall be notified immediately by Permittee of any spills.

SSPs → (f) All Project-generated debris, building materials, and rubbish shall be removed from the stream bed and banks, and from areas where such materials could be washed into the stream bed and banks.

2.12 Fish Rescue. If fish are present in the work site and dewatering is necessary, a qualified biologist shall rescue any fish within the work site prior to diverting water. Permittee shall ensure that all necessary State and Federal permits are secured prior to commencing fish rescue activities. Rescued fish shall be moved to the nearest appropriate site outside of the work area. A record shall be maintained of all fish rescued and moved. The record shall include, at a minimum, the date of capture and relocation, the method of capture, location of relocation in relation to the Project site, and the number and type of fish captured and relocated. The record shall be provided to CDFW within two (2) weeks of the fish rescue activity. Any fish rescue activity shall not conflict with the Biological Opinion (SWR/2010/04103) from NMFS obtained for this Project.

## 3 Compensatory Measures

To compensate for adverse impacts to fish and wildlife resources identified above that cannot be avoided or minimized, Permittee shall implement each Protective Measure listed below.

3.1 Revegetation and Restoration.

(a) For all trees four (4) inches in DBH or greater that are removed as part of the Project, Permittee shall develop a Revegetation Plan for the site and submit it

to CDFW for approval at least 30 days prior to Project commencement. The Revegetation Plan shall specifically address plantings, within one year of starting Project activities, of native trees and shrubs removed, as indicated in Avoidance and Minimization Measure 2.5(b) above, and include monitoring and maintenance to ensure a minimum of 70 percent survival for the plantings after five (5) years, including up to three (3) years with supplemental water and at least two (2) years without such assistance. The Plan shall also identify remedial action to be taken if the survival success criteria are not met, and methods for annual monitoring and reporting to CDFW.

(b) If the Project causes any exposed slopes or exposed areas on the stream banks, these areas shall be seeded (with weed-free straw or mulch) with a blend of a minimum of three (3) locally native grass species. One (1) or two (2) sterile non-native perennial grass species may be added to the seed mix provided that amount does not exceed 25 percent of the total seed mix by count. Locally native wildflower and/or shrub seeds may also be included in the seed mix. The seeding shall be completed as soon as possible, but no later than November 15 of the year Project activity ends. A seed mixture shall be submitted to CDFW for approval prior to application. At the discretion of CDFW, all exposed areas where seeding is considered unsuccessful after 90 days shall receive appropriate soil preparation and a second application of seeding, straw, or mulch as soon as is practical on a date mutually agreed upon.

(c) Where suitable vegetation cannot be reasonably expected to become established, non-erodible materials shall be used for such stabilization. Any installation of non-erodible materials not described in the original Project description shall be coordinated with CDFW. Coordination may include the negotiation of additional Protective Measures for this activity.

## 4 Reporting Measures

Permittee shall meet each reporting requirement described below.

4.1 Obligations of Permittee.

(a) Permittee shall have primary responsibility for monitoring compliance with all Protective Measures in this Agreement. Protective Measures must be implemented within the time periods indicated in this Agreement and according to the reporting described below.

(b) Permittee (or Permittee's designee) shall ensure the implementation of the Protective Measures of this Agreement, and shall monitor the effectiveness of the Protective Measures.

4.2 Reports. Permittee shall submit the following Reports to CDFW:

- Construction/work schedule, submitted to CDFW prior to Project commencement (Administrative Measure 1.9).

- Documentation of worker training submitted to CDFW within one (1) week of the training (Administrative Measure 1.10).

- Results of pre-activity surveys, submitted to CDFW at least one (1) week prior to commencing Project activities (Avoidance and Minimization Measure 2.3(d)).

- Results of surveys for California red-legged frog, submitted to CDFW within one (1) week of completing surveys (Avoidance and Minimization Measure 2.3(f)).

- Results of burrowing owl surveys, received by CDFW at least one (1) week prior to the start of Project activities (Avoidance and Minimization Measure 2.3(i)).

- Results of surveys for sensitive plants, received by CDFW at least one (1) week prior to the start of Project activities, if warranted by the presence of suitable habitat (Avoidance and Minimization Measure 2.3(j)).

- Results of surveys for nesting birds, if any work is scheduled during the avian nesting season, received by CDFW at least one (1) week prior to the start of each Project activity (Avoidance and Minimization Measure 2.4(b)).

- An Emergency Response Plan, submitted to CDFW for review and written approval at least 30 days prior to commencing Project activities (Avoidance and Minimization Measure 2.11(e)).

- Fish Rescue Record, submitted to CDFW within two (2) weeks of completing fish rescue activity (Avoidance and Minimization Measure 2.12).

- Documentation of woody-stemmed plants four (4) inches DBH or greater that are removed (Avoidance and Minimization Measure 2.5(b)) and a Revegetation Plan, submitted to CDFW for approval at least 30 days prior to Project commencement (Compensatory Measure 3.1(a)).

- A seed mixture to be used to control erosion, submitted to CDFW for written approval prior to application (Compensatory Measure 3.1(b)).

- A Final Project Report to be submitted to CDFW within 30 days after the Project is completed. The final report shall summarize the Project and describe the implementation of each Protective Measure of this Agreement, including documentation of species observed or moved per the terms of this Agreement. "Before and after" photo documentation of the Project site shall be included in the report.

## CONTACT INFORMATION

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

To Permittee:

California Department of Transportation (Caltrans) District 5
Paul Holmes
50 Higuera Street
San Luis Obispo, California 93401
Phone: (805) 549-3811
Fax: (805) 549-3233
Paul_Holmes@dot.ca.gov

To CDFW:

California Department of Fish and Wildlife
Region 4 – Central Region
1234 East Shaw Avenue
Fresno, California 93710
Attn: Lake and Streambed Alteration Program – Laura Peterson-Diaz
Notification No. 1600-2013-0175-R4
Phone: (559) 243-4017, extension 225
Fax: (559) 243-4020
Laura.Peterson-Diaz@wildlife.ca.gov

## LIABILITY

Permittee shall be solely liable for any violations of this 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 this Agreement authorizes.

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

## SUSPENSION AND REVOCATION

CDFW may suspend or revoke in its entirety this 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 this Agreement.

Before CDFW suspends or revokes this Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice

shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before CDFW suspends or revokes this Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused CDFW to issue the notice.

## ENFORCEMENT

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

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

## OTHER LEGAL OBLIGATIONS

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

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

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

## AMENDMENT

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

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

## TRANSFER AND ASSIGNMENT

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

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

## EXTENSIONS

In accordance with FGC section 1605(b), Permittee may request one (1) extension of this Agreement, provided the request is made prior to the expiration of this Agreement's term. To request an extension, Permittee shall submit to CDFW a completed CDFW "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in CDFW's fee schedule at the time of the request (see Cal. Code Regs., Title 14, § 699.5). CDFW shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend this Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the Project this Agreement covers (FGC, § 1605, subd. (f)).

## EFFECTIVE DATE

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

## TERM

This Agreement shall remain in effect for three (3) years beginning on the date signed by CDFW, unless it is terminated or extended before then. All Protective Measures in this Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any Protective Measures specified herein to protect fish and wildlife resources after this Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

## CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) COMPLIANCE

In approving this Agreement, CDFW is independently required to assess the applicability of CEQA. The features of this Agreement shall be considered as part of the overall Project description.

Permittee's concurrence signature on this Agreement serves as confirmation to CDFW that the activities conducted under the terms of this Agreement are consistent with the Project as described in the CEQA Mitigated Negative Declaration prepared by California Department of Transportation as the Lead Agency for the Salinas River Bridge Widening Project (State Clearinghouse No. 2011061015), approved on June 10, 2012. A copy of the Mitigated Negative Declaration was provided to CDFW by Permittee.

CDFW, as a CEQA Responsible Agency, shall submit a Notice of Determination to the State Clearinghouse upon signing this Agreement.

## EXHIBITS

The document listed below is included as an exhibit to this Agreement and is incorporated herein by reference.

Figure 1. Project Location USGS Quad Map.

## AUTHORITY

If the person signing this 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 terms herein.

## AUTHORIZATION

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

## CONCURRENCE

The undersigned accepts and agrees to comply with all the terms of this Agreement.

**FOR CALIFORNIA DEPARTMENT OF TRANSPORTATION**

Larry E. Bonner — 8-4-14

~~Paul Holmes~~ Larry E. Bonner
~~Associate~~ Environmental Planner
Senior

Date

**FOR CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE**

8/19/14

Jeffrey R. Single, Ph.D.
Regional Manager – Central Region

Date

Prepared by: Laura Peterson-Diaz
Environmental Scientist

Figure 1

Exhibit A

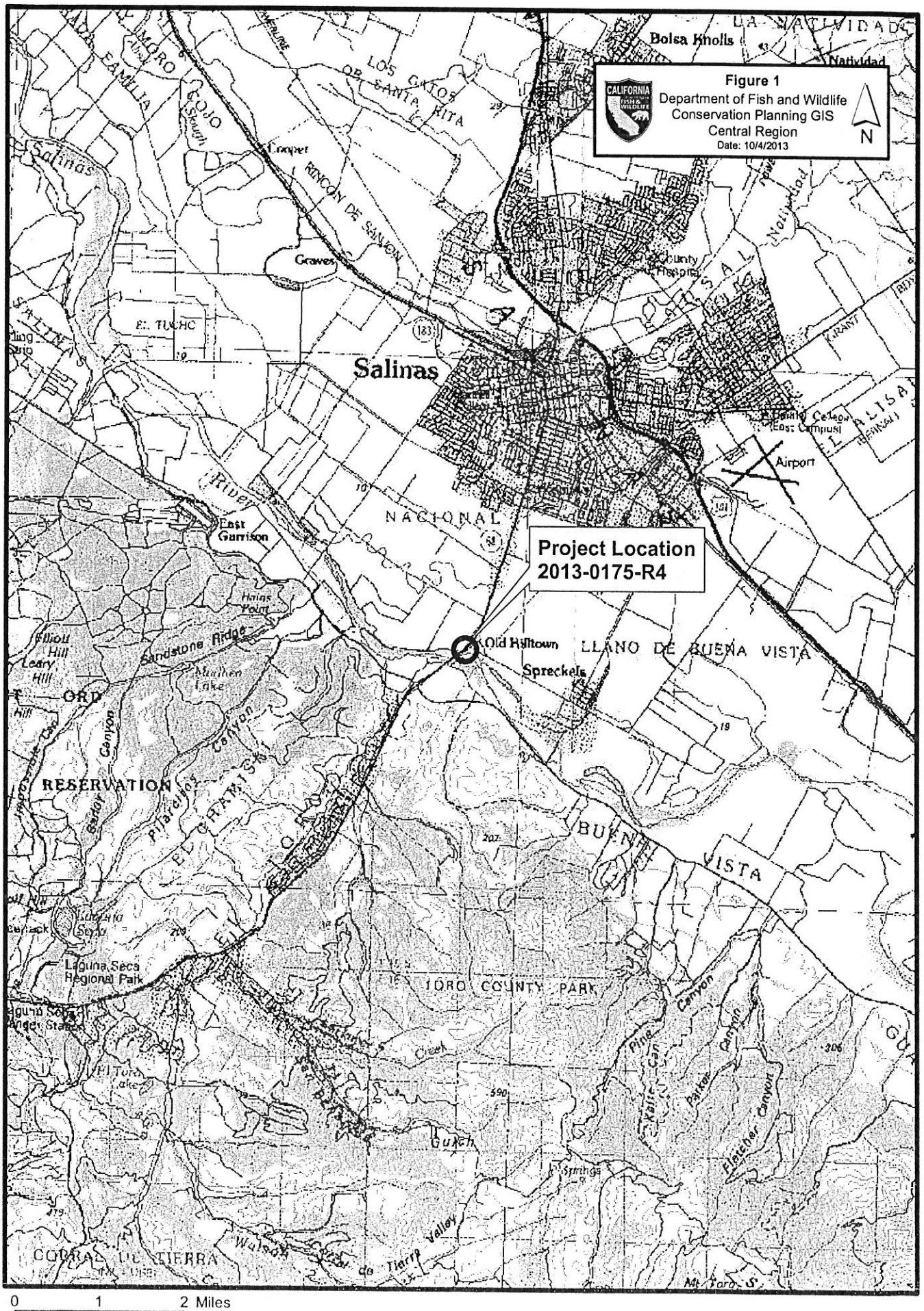
Figure 1
Department of Fish and Wildlife
Conservation Planning GIS
Central Region
Date: 10/4/2013
N
Project Location
2013-0175-R4
Salinas
Bolsa Knolls
Natividad
Old Hilltown
Spreckels
LLANO DE BUENA VISTA
RESERVATION
Laguna Seca
Regional Park
TORO COUNTY PARK
CORRAL DE TIERRA
East
Garrison
Airport
0
1
2 Miles

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4593
www.wildlife.ca.gov

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

June 5, 2015

Paul Holmes
California Department of Transportation
50 Higuera Street
San Luis Obispo, California 93401

Subject: Amendment of Streambed Alteration Agreement
Notification No. 1600-2013-0175-R4
Salinas River - Salinas River Bridge Widening - Monterey County

Dear Mr. Holmes:

The California Department of Fish and Wildlife (Department) has received your request to amend Streambed Alteration Agreement No. 1600-2013-0175-R4 (Agreement) and the required fee in the amount of $184.00 for a minor amendment. Your request to amend the Agreement includes allowing certain Project activities to be completed at night and clarifying work restrictions due to rain.

The Department hereby agrees to amend the Agreement with the following modifications (added language in bold, deleted language crossed out):

1. Amend the fifth bullet point of the Project Description on page 3 of the Agreement as follows:

   Work will be done in the dry weather construction season between April 15 and October 15. **Activities that require work within the wetted portion of the stream will be confined to the seasonal work window of June 1 through October 15 to minimize potential impacts to steelhead trout.** All work will occur during daylight hours **with the exception of replacing guardrails, restriping lanes, and repaving**. ~~Construction will be phased and will begin above the high water mark starting April 15. After June 15, successive construction will commence to in-channel work with all Project activities concluding no later than October 15.~~ Work will require two seasons to complete.

2. Amend Avoidance and Minimization Measure 2.1 as follows:

   Construction/Work Hours. All non-emergency work activities shall be confined to daylight hours, **with the specific exceptions of replacing guardrails, restriping road lanes, and repaving the road surface.** For purposes of this

Agreement, "daylight hours" are defined as that daytime period between sunrise and sunset.

3. Add the following subsection to Avoidance and Minimization Measure 2.4:

   **(c) Artificial lighting used at night shall be limited to the amount necessary to complete the Project activities specified in Avoidance and Minimization Measure 2.1. Lighting shall be directed to the work area and not illuminate adjacent riparian habitat or open water areas.**

4. Amend Avoidance and Minimization Measure 2.10(a) on page 11 of the Agreement as follows:

   No work within the banks of the stream ~~will~~ **shall** be conducted during or within 24 hours following significant rainfall events (**defined as** one ~~quarter of 1-~~ **half** inch of rain **or more** in any 24-hour period) or when water is flowing within the **stream** channel **and outside the water diversion channel**.

All other provisions in the Agreement remain in effect.

Please sign and return one (1) copy of this letter to the Department, to acknowledge the amendment. Copies of the Agreement and this amendment must be readily available at project worksites and must be presented when requested by a Department representative or agency with inspection authority.

If you have any questions regarding this matter, please contact Laura Peterson-Diaz, Environmental Scientist, at (559) 243-4017 extension 225 or laura.peterson-diaz@wildlife.ca.gov.

Sincerely,

Gerald Hatler
Acting Regional Manager

**ACKNOWLEDGEMENT**

I hereby agree to the above-referenced amendment.

Print Name: Larry E. Bonner Date: 6-11-15

Signature: Larry E. Bonner

## Pratt, Sharon Y@DOT

**From:** Holmes, Paul W@DOT
**Sent:** Thursday, August 20, 2015 1:50 PM
**To:** Pratt, Sharon Y@DOT
**Cc:** Sistek, George W@DOT
**Subject:** RE: Salinas River Bridge Widening Project, 05-0F7001

**Categories:** red

Sharon,

This is what CDFW (in red) responded with: Instead of formally amending the agreement this will be part of the project folder and CDFW will keep a copy as well.

1. The CDFW Permit Amendment does not allow work in the wetted portion of the stream from Oct 16 to May 31. It appears these restrictions would not allow bridge superstructure work to continue through the winter months because the False Work posts could not be left in place prior to the onset of Winter. Suspending the work will increase the overall duration of the project and the potential for more impacts. The NMFS (BO) Permit , page 7, allows use of False Work in the channel for this very reason.

   Measure 2.7 Structures. Permittee confirms that any and all structures and constructed features, including the temporary diversion channel, shall be properly aligned and otherwise engineered, installed, and maintained, to assure resistance to washout, and to erosion of the stream bed, stream banks and/or fill and that they will not cause long-term changes in water flows that adversely modify the existing upstream or downstream stream bed/bank contours or increase sediment deposition. Permittee shall ensure that all structures and other constructed features are designed to accommodate and withstand 100-year flood events.

2. CDFW requires curing concrete be covered with plastic for 30 days. I understand the intent is to prevent the river from turning alkaline however leaving the pier wall excavations open for 30 days has negative schedule impacts (I am sure they do not want us to bury the plastic in a sandy river channel). If this applies to all pier wall concrete within the river channel is it possible to have this modified in the permit so the pier walls are covered with a water based latex paint that can be backfilled as the work is completed?

   The measure in the SAA does not actually specify "plastic". It says:
   2.11 Pollution. (c) last sentence - Poured concrete/cement shall remain **isolated** from surface waters and soils that could become saturated, and allowed to cure for a minimum of 30 days. (bold added) If the water based latex paint will serve as a barrier to prevent alkalinity from leaching out of the curing concrete into either running water or ground water, then it meets the requirement. My one caveat would be that CDFW is not requiring the use of the paint, and the choice to use it is up to Caltrans. Your engineers need to be sure the concrete will still cure properly if it is coated in such a manner. So IF it will serve as a barrier and IF the concrete will still cure properly, then you are OK.

expected high flows (properly anchored trees and treetops may be used in low energy areas); and,

(g) The activity is not a stream channelization activity.

This NWP also authorizes temporary structures, fills, and work necessary to construct the bank stabilization activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Invasive plant species shall not be used for bioengineering or vegetative bank stabilization.

*Notification:* The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if the bank stabilization activity: (1) Involves discharges into special aquatic sites; or (2) is in excess of 500 feet in length; or (3) will involve the discharge of greater than an average of one cubic yard per running foot along the bank below the plane of the ordinary high water mark or the high tide line. (See general condition 31.) (Sections 10 and 404)

14. *Linear Transportation Projects.* Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than ½-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

*Notification:* The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) The loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 31.) (Sections 10 and 404)

**Note:** Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

15. *U.S. Coast Guard Approved Bridges.* Discharges of dredged or fill material incidental to the construction of a bridge across navigable waters of the United States, including cofferdams, abutments, foundation seals, piers, and temporary construction and access fills, provided the construction of the bridge structure has been authorized by the U.S. Coast Guard under Section 9 of the Rivers and Harbors Act of 1899 and other applicable laws. Causeways and approach fills are not included in this NWP and will require a separate section 404 permit. (Section 404)

16. *Return Water From Upland Contained Disposal Areas.* Return water from an upland contained dredged material disposal area. The return water from a contained disposal area is administratively defined as a discharge of dredged material by 33 CFR 323.2(d), even though the disposal itself occurs in an area that has no waters of the United States and does not require a section 404 permit. This NWP satisfies the technical requirement for a section 404 permit for the return water where the quality of the return water is controlled by the state through the section 401 certification procedures. The dredging activity may require a section 404 permit (33 CFR 323.2(d)), and will require a section 10 permit if located in navigable waters of the United States. (Section 404)

17. *Hydropower Projects.* Discharges of dredged or fill material associated with hydropower projects having: (a) Less than 5000 kW of total generating capacity at existing reservoirs, where the project, including the fill, is licensed by the Federal Energy Regulatory Commission (FERC) under the Federal Power Act of 1920, as amended; or (b) a licensing exemption granted by the FERC pursuant to Section 408 of the Energy Security Act of 1980 (16 U.S.C. 2705 and 2708) and Section 30 of the Federal Power Act, as amended.

*Notification:* The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 31.) (Section 404)

18. *Minor Discharges.* Minor discharges of dredged or fill material into all waters of the United States, provided the activity meets all of the following criteria:

(a) The quantity of discharged material and the volume of area excavated do not exceed 25 cubic yards below the plane of the ordinary high water mark or the high tide line;

(b) The discharge will not cause the loss of more than 1/10-acre of waters of the United States; and

(c) The discharge is not placed for the purpose of a stream diversion.

*Notification:* The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) The discharge or the volume of area excavated exceeds 10 cubic yards below the plane of the ordinary high water mark or the high tide line, or (2) the discharge is in a special aquatic site, including wetlands. (See general condition 31.) (Sections 10 and 404)

19. *Minor Dredging.* Dredging of no more than 25 cubic yards below the plane of the ordinary high water mark or the mean high water mark from navigable waters of the United States (i.e., section 10 waters). This NWP does not authorize the dredging or degradation through siltation of coral reefs, sites that support submerged aquatic vegetation (including sites where submerged aquatic vegetation is documented to exist but may not be present in a given year), anadromous fish spawning areas, or wetlands, or the connection of canals or other artificial waterways to navigable waters of the United States (see 33 CFR 322.5(g)). (Sections 10 and 404)

20. *Response Operations for Oil and Hazardous Substances.* Activities conducted in response to a discharge or release of oil and hazardous substances that are subject to the National Oil and Hazardous Substances Pollution

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

**Central Coast Regional Water Quality Control Board**

April 4, 2014

Paul Holmes
Caltrans
50 Higuera St.
San Luis Obispo, CA 93401
Email: Paul.holmes@dot.ca.gov

**VIA ELECTRONIC MAIL**

Dear Mr. Paul Holmes:

**TECHINICALLY-CONDITIONED WATER QUALITY CERTIFICATION NUMBER 32713WQ05 FOR SALINAS RIVER BRIDGE WIDENING PROJECT, MONTEREY COUNTY**

Thank you for the opportunity to review your October 1, 2013 application for water quality certification of the Salinas River Bridge Widening Project (Project). The application was completed on October 30, 2013. The project, if implemented as described in your application and with the additional mitigation and other conditions required by this Clean Water Action Section 401 Water Quality Certification (Certification), appears to be protective of beneficial uses of State waters. We are issuing the enclosed Technically-Conditioned Certification.

At this time, we do not anticipate issuing additional requirements based on your application. Should new information come to our attention that indicates a water quality problem, we may require additional monitoring and reporting, issue Waste Discharge Requirements, or take other action.

Your Certification application and California Environmental Quality Act (CEQA) documents indicate that project activities have the potential to affect beneficial uses and water quality. The Central Coast Regional Water Quality Control Board (Central Coast Water Board) issues this Certification to protect water quality and associated beneficial uses from project activities. We need reports to determine compliance with this Certification. All technical and monitoring reports requested in this Certification, or any time after, are required per Section 13267 of the California Water Code.

Failure to submit reports required by this Certification, or failure to submit a report of technical quality acceptable to the Executive Officer, may subject you to enforcement action per Section 13268 of the California Water Code. The Central Coast Water Board will base enforcement actions on the date of certification. Any person affected by this Central Coast Water Board action may petition the State Water Resources Control Board (State Water Board) to review this action in accordance with California Water Code Section 13320; and Title 23, California Code of Regulations, Sections 2050 and 3867-3869. The State Water Board, Office of Chief Counsel, PO Box 100, Sacramento, CA 95812, must receive the petition within 30 days of the date of this Certification. We will provide upon request copies of the law and regulations applicable to filing petitions.

If you have questions please contact **David Innis** at (805) 549-3150 or via email at David.Innis@waterboards.ca.gov, or Phil Hammer at (805) 549-3882. Please mention the above certification number in all future correspondence pertaining to this project.

Sincerely,

Digitally signed by Phillip Hammer
Date: 2014.04.03 17:26:35 -07'00'

for
Kenneth A. Harris, Jr.
Executive Officer

Enclosure: Action on Request for CWA Section 401 Water Quality Certification

cc: Via email with enclosures

Paula Gill
U.S. Army Corps of Engineers
San Francisco District
Regulatory Division
1455 Market Street, Floor 16
San Francisco, CA. 94103-1398
email: Paula.C.Gill@usace.army.mil

Dr. Jeffrey Single, Regional Manager
California Department of Fish and Wildlife
Lake and Streambed Alteration
1234 E. Shaw Avenue
Fresno, CA 93710
email: Jeff.Single@wildlife.ca.gov

Linda Connolly, Staff Environmental Scientist
California Department of Fish and Wildlife
Lake and Streambed Alteration
1234 E. Shaw Avenue
Fresno, CA 93710
email: Linda.Connolly@wildlife.ca.gov

Laura Peterson-Diaz
California Department of Fish and Wildlife
1234 E. Shaw Avenue
Fresno, CA 93710
email: Laura.Peterson-Diaz@wildlife.ca.gov

401 Program Manager
State Water Resources Control Board
Division of Water Quality
email: Stateboard401@waterboards.ca.gov

U.S. Environmental Protection Agency
email: R9-WTR8-Mailbox@epa.gov

Ashley Betance-Kearn,
Central Coast Water Board
email: Ashley.Betance-Kearn@waterboards.ca.gov

David Innis
Central Coast Water Board
email: David.Innis@waterboards.ca.gov

R:\RB3\Shared\401\Certifications\Monterey\2013\32713WQ05Salinas River Br Widen\R3_SalinasRvrBrdg_32713WQ05_TechCert_140404_final.doc

Action on Request for
Clean Water Act Section 401 Water Quality Certification
for Discharge of Dredged and/or Fill Materials

**PROJECT:** Salinas River Bridge Widening

**APPLICANT:** Paul Holmes
Caltrans
50 Higuera St.
San Luis Obispo, CA 93401

**ACTION:**
1. ☐ Order for Standard Certification
2. ■ Order for Technically-conditioned Certification
3. ☐ Order for Denial of Certification

## I. STANDARD CONDITIONS

1. This Certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment per section 13330 of the California Water Code and section 3867 of Title 23 of the California Code of Regulations (23 CCR).

2. This Certification action is not intended 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 per 23 CCR subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license was being sought.

3. The validity of any non-denial Certification action (Actions 1 and 2) is conditioned upon total payment of the fee required under 23 CCR section 3833, unless otherwise stated in writing by the certifying agency.

## II. ADMINISTRATIVE CONDITIONS:

1. This Certification is subject to the acquisition of all local, regional, state, and federal permits and approvals as required by law. Failure to meet any conditions contained herein or any conditions contained in any other permit or approval issued by the State of California or any subdivision thereof may result in the revocation of this Certification and civil or criminal liability.

2. In the event of a violation or threatened violation of this Certification, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under state law. For purposes of Section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this Certification.

3. In response to a suspected violation of any condition of this Certification, the Central Coast Water Board may require the holder of any permit or license subject to this Certification to furnish, under penalty of perjury, any technical or monitoring reports the Central Coast Water Board deems appropriate, provided that the burden, including costs, of the reports shall have a reasonable relationship to the need for the reports and the benefits obtained from the reports.

4. In response to any violation of the conditions of this Certification, the Central Coast Water Board may add to or modify the conditions of this Certification as appropriate to ensure compliance.

5. The Central Coast Water Board reserves the right to suspend, cancel, or modify and reissue this Certification, after providing notice to the applicant, if the Central Coast Water Board determines that the Project fails to comply with any of the terms or conditions of this Certification.

6. A copy of this Certification, the application, and supporting documentation must be available at the Project site during construction for review by site personnel and agencies. A copy of this Certification must also be provided to the contractor and all subcontractors who will work at the Project site. All personnel performing work on the proposed Project shall be familiar with the content of this Certification and its posted location on the Project site.

7. The Applicant shall grant Central Coast Water Board staff, or an authorized representative, upon presentation of credentials and other documents as may be required by law, permission to enter the Project site at reasonable times, to ensure compliance with the terms and conditions of this Certification and/or to determine the impacts the Project may have on waters of the State.

8. The Applicant must, at all times, fully comply with the application, engineering plans, specifications, and technical reports submitted to support this Certification; all subsequent submittals required as part of this Certification; and the attached Project Information and Conditions. The conditions within this Certification and attachment(s) supersede conflicting provisions within applicant submittals.

9. The Applicant shall notify the Central Coast Water Board within 24 hours of any unauthorized discharge to waters of the U.S. and/or State; measures that were implemented to stop and contain the discharge; measures implemented to clean-up the discharge; the volume and type of materials discharged and recovered; and additional BMPs or other measures that will be implemented to prevent future discharges.

10. This Certification is not transferable to any person except after notice to the Executive Officer of the Central Coast Water Board. The Applicant shall submit this notice in writing at least 30 days in advance of any proposed transfer. The notice must include a written agreement between the existing and new responsible party containing a specific date for the transfer of this Certification's responsibility and coverage between the current responsible party and the new responsible party. This agreement shall include an acknowledgement that the existing responsible party is liable for compliance and violations up to the transfer date and that the new responsible party is liable from the transfer date on.

11. This Certification expires if Project construction does not begin (a) prior to expiration of the associated U.S. Army Corps of Engineers (Corps) authorization or permit for the Project, or

(b) within five years from the date of this Certification. If a Corps authorization or permit was unnecessary for this Project due to coverage under a non-reporting Nationwide Permit (NWP), and Project construction has not begun, this Certification expires when the non-reporting NWP expires. If the Corps issues a one-year grace period for uncompleted projects that began under a NWP that has since expired, this Certification is valid during the grace period for such projects. If this Certification does not expire as described above, it remains in effect until the Applicant complies with all Certification requirements and conditions.

12. The total fee for this project is $25,585.00. The remaining fee payable to the Central Coast Water Board is $165.

13. The applicant shall implement the project as described in the application, and abide by the requirements of the United States Army Corps of Engineers (Corps) Nationwide Permit 14, the California Department of Fish and Wildlife (CDFW) Streambed Alteration Agreement Notification No. 1600-2013-0175-R4, and the NOAA National Marine Fisheries Service (NMFS) Biological Opinion (Track No. SWR/2010/04103).

## III. TECHNICAL CONDITIONS

1. The applicant shall notify the Central Coast Water Board in writing prior to the start of any in-water activities.
2. Except for activities permitted by this Certification, 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 applicant shall conduct continuous turbidity, temperature, dissolved oxygen, and flow monitoring of the Salinas River throughout the dewatering and diversion process at the water impoundment immediately upstream of the earthen dam #1 and at the point of bypass discharge (downstream of earthen dam #2). The applicant shall also take daily grab samples at these same locations and analyze the same constituents as monitored and recorded continuously (except for flow). Independent measures of temperature, dissolved oxygen, and turbidity shall be used to verify electronic probe data and provide a backup in case of equipment failure.
4. If dewatering is required, the applicant shall have a turbidity treatment system operational at the start of work in the dewatering area (within the downstream side of the dam and cofferdam) capable of reducing potential turbidity increases below water quality objectives (WQOs) for the anticipated flow volume and rate. If discharge from the turbidity treatment system is in excess of WQOs, the applicant shall cease discharging to the Salinas River immediately and improve the turbidity treatment system such that dewatering flows to the Salinas River are equal or lower than WQOs. If turbidity treatment cannot achieve WQOs, then alternative treatment measures must be designed and implemented, including potential disposal of turbid water to appropriate upland areas. All water disposals to upland areas shall prevent any poor quality runoff back to the Salinas River or riparian habitat. The applicant shall implement erosion and sedimentation best management practices to prevent erosion and sedimentation impacts to the Salinas River during dewatering discharge, as well. If dewatering flows pumped into the turbidity treatment system are lower than receiving water turbidity, the applicant may request relief from turbidity treatment and directly discharge to the Salinas River downstream of the Clear Water Diversion. The request shall be submitted to Central Coast Water Board staff. Turbidity treatment may only be stopped if approved by Central Coast Water Board staff.
5. Activities shall not cause turbidity increases in surface waters to exceed:

a. where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU;
b. where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent;
c. where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs;
d. where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

6. The above turbidity limits will be eased during in-water setting and retrieving of pumps and cofferdams to allow temporary turbidity increases up to 15 NTU (or 15 percent, if natural turbidity is greater than 100 NTUs) over background turbidity, as measured in surface waters 50-100 feet downstream from the working area.
7. The applicant must construct and operate the dewatering and diversion systems such that at no time or place will the Salinas River temperature be increased by more than 5° F above natural receiving water temperature, nor will the Salinas River dissolved oxygen concentration be reduced below 7.0 mg/L. "Natural receiving water" temperature is defined for the purpose of this Certification as the temperature of Salinas River water entering the temporary impoundment (upstream of earthen dam #1). One week prior to the start of Clear Water Diversion operations, CalTrans shall submit a contingency plan for approval by Central Coast Water Board staff to safely shut down operations and restore degraded conditions and impaired water quality, in the case of violation of these or other water quality objectives. The contingency plan must describe all monitoring protocols in detail.
8. The applicant shall provide weekly summaries of the continuous and grab sample data and observations in emailed reports to the Central Coast Water Board at a fixed schedule (e-copy to r3_stormwater@waterboards.ca.gov). A summary of the number of readings exceeding turbidity, dissolved oxygen, and/ or temperature limits must be included in each weekly report.
9. All disturbed areas outside of the Salinas River's normal flow path shall be replanted or seeded to achieve growth of native vegetation (grasses, shrubs, or trees) compatible with the existing habitat or mitigation requirements. A qualified botanist or restoration ecologist shall specify a native seed mixture and native plant palette. Native seed shall be applied with appropriate irrigation and soil amendments (e.g., finely graded compost) to sustain vegetation and enrich the soil.

**CENTRAL COAST WATER BOARD CONTACT PERSON:**

David Innis
(805) 549-3150
David.Innis@waterboards.ca.gov

Please refer to the above certification number when corresponding with the Central Coast Water Board concerning this project.

**WATER QUALITY CERTIFICATION:**

I hereby issue an order certifying that as long as all the conditions listed in this Certification are met, any discharge from the Salinas River Bridge Widening Project shall comply with the applicable provisions of sections 301 ("Effluent Limitations"), 302 ("Water Quality Related Effluent Limitations"), 303 ("Water Quality Standards and Implementation Plans"), 306 ("National Standards of Performance"), and 307 ("Toxic and Pretreatment Effluent Standards") of the Clean Water Act. This discharge is also regulated pursuant to State Water Board Water

Quality Order No. 2003-0017-DWQ, which requires compliance with all conditions of this Certification.

Except insofar as may be modified by any preceding conditions, all Certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the applicant's project description and the attached Project Information and Conditions, and (b) compliance with all applicable requirements of the Central Coast Water Board's policies and Water Quality Control Plan (Basin Plan).

Digitally signed by Phillip Hammer
Date: 2014.04.03 17:27:04 -07'00'

for _____ April 4, 2014
Kenneth A. Harris, Jr. Date
Executive Officer
Central Coast Water Board

**PROJECT INFORMATION AND CONDITIONS**

| | |
|---|---|
| Application Date | Received: October 1, 2013<br>Completed: October 30, 2013 |
| Applicant | California Department of Transportation (Caltrans)<br>50 Higuera St.<br>San Luis Obispo, CA 93401 |
| Applicant Representative | Paul Holmes<br>Paul.holmes@dot.ca.gov<br>805-549-3811 |
| Project Name | Salinas River Bridge Widening |
| Application Number | 32713WQ05 |
| Type of Project | Bridge Widening |
| Project Location | Salinas<br>Latitude: 36° 37' 52" N Longitude: 121° 40' 17" W |
| County | Monterey |
| Receiving Water(s) | Salinas River (Downstream of Spreckles Gage)<br>309.11 Salinas Hydrologic Unit |
| Water Body Type | River |
| Designated Beneficial Uses | Municipal and Domestic Supply (MUN)<br>Agricultural Supply (AGR)<br>Non-Contact Recreation (REC-2)<br>Wildlife Habitat (WILD)<br>Cold Fresh Water Habitat (COLD)<br>Warm Fresh Water Habitat (WARM)<br>Migration of Aquatic Organisms (MIGR)<br>Freshwater Replenishment (FRSH)<br>Commercial and Sport Fishing (COMM) |
| Project Description (purpose/goal) | The purpose of this project is to widen and seismically retrofit State Route 68 Bridges 44-40L and 44-40R at the Salinas River from Post Miles 17.7 to 17.9<br><br>Central Coast Regional Water Quality Control Board (Central Coast Water Board) staff understands that the project includes the following activities:<br>1. Widen each inside bridge shoulder to 5 feet;<br>2. Widen each outside shoulder to 10 feet;<br>3. Reinforce pier columns;<br>4. Improve maintenance access to the bridge footings;<br>5. Improve inadequate hydraulic systems, by adding approach and departure slabs, and re-configuring guard, bridge, and hand rails; and<br>6. Construct and operate a Clear Water Diversion system. |
| U.S. Army Corps of Engineers Permit No | Nationwide Permit 14 – Linear Transportation Projects |
| Federal Public Notice | NA |

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| Dept. of Fish and Wildlife Streambed Alteration Agreement | Streambed Alteration Agreement 1600-2013-0175-R4 is pending. Final, signed copy shall be forwarded immediately upon execution. |
| Status of CEQA Compliance | Mitigated Negative Declaration<br>Lead Agency: Caltrans |
| Total Certification Fee | $25,585 ($165 due) |
| Area of Disturbance | Approximately 4.25/754 (acres/linear feet) total.<br>Jurisdictional Wetlands: 0.002/30 (acres/linear feet) permanent, 0/0 (acres/linear feet) temporary<br>Riparian Area: 0/0 (acres/linear feet) permanent,<br>0.90/159 (acres/linear feet) temporary<br>Streambed: 0/0 (acres/linear feet) permanent, 3.35/595 (acres/linear feet) temporary |
| Dredge Volume | Approximately 9 cubic yards (fill as RSP) |
| Compensatory Mitigation Requirements | 1. The project shall include the following compensatory mitigation:<br>a. 0.002/30 (acres/linear feet) of permanent Jurisdictional Wetlands impacts shall be mitigated at a 3:1 ratio through the restoration of 0.006 acres of wetland habitat.<br>b. 3.35/595 (acres/linear feet) of temporary streambed impacts shall be mitigated at an approximate 1:1 ratio through the restoration of 3.39 acres of streambed habitat.<br>c. 0.90/159 (acres/linear feet) of temporary riparian impacts shall be mitigated at an approximate 1:1.8 ratio through the restoration of 1.6 acres of streambed/riparian habitat.<br>2. The Applicant shall implement compensatory mitigation installation, maintenance, and monitoring as described in the Conceptual Mitigation Plan (latest revision April 27, 2012).<br>3. Where practical, onsite compensatory mitigation shall be installed during the project (before October 2016) and finalized at the completion of project construction per contractual Move-In/Move-Out Erosion Control Specifications. |
| Project Requirements | <u>Project practices that are required to comply with 401 Water Quality Certification are as follows:</u><br>1. All work performed within waters of the State shall be completed in a manner that minimizes impacts to beneficial uses and habitat. Measures shall be employed to minimize land disturbances that will adversely impact the water quality of waters of the State. Disturbance or removal of vegetation shall not exceed the minimum necessary to complete Project implementation.<br>2. No construction activities shall be conducted below top of creek banks or in other waters of the State during the winter period (October 1 – May 15), unless prior written approval has been obtained from Central Coast Water Board staff. Requests to conduct construction activities below top of creek banks or in other waters of the State during the winter period shall be submitted to Central Coast Water Board staff at least 21 days prior to the planned winter period work date.<br>3. Erosion and sediment control measures shall be on site prior to the start of construction and kept on site at all times so they are |

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| | immediately available for installation in anticipation of rain events.<br>4. The Applicant shall implement and maintain an effective combination of erosion and sediment control measures (e.g., revegetation, fiber rolls, erosion control blankets, hydromulching, compost, straw with tackifiers, temporary basins) to prevent erosion and capture sediment. The Applicant shall implement and maintain washout, trackout, dust control, and any other applicable source control BMPs.<br>5. Erosion and sediment control measures and other construction BMPs shall be implemented and maintained in accordance with all specifications governing their proper design, installation, operation, and maintenance.<br>6. The Applicant shall not conduct construction activities below top of creek banks or in other waters of the State during rain events. The Applicant shall implement effective erosion control, sediment control, and other protective measures prior to the start of any rain events. If work below top of creek banks or in other waters of the State is allowed during the time period between October 1 and May 15 (pursuant to Project Requirement No. 2 above), the Applicant shall not conduct construction activities below top of creek banks or in other waters of the State on any day for which the National Weather Service has predicted a 25% or more chance of at least 0.1 inch rain in 24 hours. In preparation for any such predicted rain event between October 1 and May 15, the Applicant shall install effective erosion control, sediment control, and other protective measures no later than the day prior to the predicted rain event. Construction activities below top of creek banks or in other waters of the State may resume after the rain has ceased, the National Weather Service predicts clear weather, and site conditions are dry enough to continue work without discharge of sediment or other pollutants from the project site.<br>7. Any material stockpiled that is not actively being used during construction shall be covered with plastic unless reserved for seed banking, which requires alternative erosion and dust control BMPs.<br>8. The Applicant shall retain a spill plan and appropriate spill control and clean up materials (e.g., oil absorbent pads) onsite in case spills occur.<br>9. The Applicant shall confine all trash and debris in appropriate enclosed bins and dispose of the trash and debris at an approved site at least weekly.<br>10. All construction vehicles and equipment used on site shall be well maintained and checked daily for fuel, oil, and hydraulic fluid leaks or other problems that could result in spills of toxic materials.<br>11. The Applicant shall designate a staging area for equipment and vehicle fueling and storage at least 100 feet away from waterways, in a location where fluids or accidental discharges cannot flow into waterways. |

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| | 12. All vehicle fueling and maintenance activity shall occur at least 100 feet away from waterways, and in designated staging areas.<br>13. Dewatering and stream diversion measures are authorized based on the application. If the project requires dewatering or diversion, the Applicant shall submit detailed dewatering/ diversion plans for Central Coast Water Board staff approval at least 60 days prior to any dewatering or diversion. Dewatering/diversion plans shall include the area to be dewatered, timing of dewatering, and method of dewatering to be implemented. All temporary dewatering/diversion methods shall be designed to have the minimum necessary impacts to waters of the State to isolate the immediate work area. All dewatering/diversion methods shall be installed such that natural flow is maintained upstream and downstream of the project area. Any temporary dams or diversions shall be installed such that the diversion does not cause sedimentation, siltation, or erosion upstream or downstream of the project area. All dewatering/diversion methods shall be removed immediately upon completion of dewatering/diversion activities. Dewatering or diversion shall not commence until applicant has obtained Central Coast Water Board staff approval of the dewatering/diversion plans.<br>14. Dewatering or diversion shall comply with monitoring and reporting specifications outlined in the technical conditions.<br>15. All post-construction BMPs shall be implemented and functioning prior to completion of the project.<br>16. All construction-related equipment, materials, and any temporary BMPs no longer needed shall be removed and cleaned from the site upon completion of the project.<br>17. Central Coast Water Board staff shall be notified if mitigations as described in the 401 Water Quality Certification application for this project are altered by the imposition of subsequent permit conditions by any local, state or federal regulatory authority. The Applicant shall inform Central Coast Water Board staff of any modifications that interfere with compliance with this Certification. |
| Monitoring and Reporting Requirements | The Applicant shall conduct the following monitoring:<br>1. Continuously monitor water quality parameters (i.e., turbidity, dissolved oxygen, and temperature) to ensure aquatic conditions associated with the Clear Water Diversion meet Central Coast Water Board Basin Plan Water Quality Objectives for the Salinas River and as specified in the Technical Conditions.<br>2. Visually inspect the project site and areas of waters of the State adjacent to project impact areas following completion of project construction and for two subsequent rainy seasons to ensure that the project is not causing excessive erosion, stream instability, or other water quality problems. If the project does cause water quality problems, contact the Central Coast Water Board staff member overseeing the project. You will be responsible for obtaining any additional permits necessary for implementing plans for restoration to prevent further water |

quality problems.

3. Monitor the compensatory mitigation site for two years. If success criteria are not achieved within that time, continue annual monitoring and maintenance until success criteria are achieved. Compensatory mitigation monitoring shall include assessment of growth, survival, percent cover, general health and stature, signs of reproduction, progress towards achieving success criteria, and any other measures identified in the Conceptual Mitigation Plan (latest revision April 27, 2012).

The Applicant shall provide the following reporting to RB3_401Reporting@waterboards.ca.gov :

1. Weekly water quality monitoring reports as specified in the Technical Conditions.
2. Project Commencement Notification - Contact Central Coast Water Board staff when the project begins to allow for a site visit.
3. Streambed Alteration Agreement - Submit a signed copy of the Department of Fish and Wildlife's streambed alteration agreement to the Central Coast Water Board immediately upon execution and prior to any discharge to waters of the State.
4. Project Completion Report - Within 30 days of project completion, submit a project completion report that contains:
   a. Date of construction initiation;
   b. Date of construction completion;
   c. Status of post-construction BMPs;
   d. A summary of daily activities, monitoring and inspection observations, and problems incurred and actions taken;
   e. Clearly identified photo-documentation of all areas of permanent and temporary impact, prior to and after project construction;
   f. Clearly identified representative photo-documentation of other project areas, prior to and after project construction; and
   g. Photo-documentation of all permanent post-construction BMPs.
5. Annual Report – The Applicant shall submit to the Central Coast Water Board an Annual Report by May 31 of each year following the issuance of this Certification (beginning in 2015), regardless of whether project construction has started or not. The Applicant shall submit Annual Reports until the Applicant has conducted all required monitoring, mitigation has achieved all success criteria, and the Applicant has notified the Central Coast Water Board of mitigation completion. Each Annual Report shall include at a minimum:
   a. The status of the project: construction not started, construction started, or construction complete.
   b. The date of construction initiation, if applicable.
   c. The date of construction completion, if applicable
   d. If project construction is complete, a description of the results of the annual visual inspection of the project site and

areas of waters of the State adjacent to project impact areas, including:

i. Erosion conditions;
ii. Stream stability conditions;
iii. Water quality and beneficial use conditions;
iv. Representative photographs of the project site and areas of waters of the State adjacent to project impact areas; and
v. If the post-construction visual inspection monitoring period is over, but water quality problems persist, the Annual Report shall identify corrective measures to be undertaken, including extension of the monitoring period until the project is no longer causing excessive erosion, stream instability, or other water quality problems.

e. If the Clear Water Diversion is completed and river restored, a description of water quality monitoring, including:
   i. Summary tables of water quality monitoring data (e.g., weekly max, min, average turbidity, dissolved oxygen, and temperature) and analyses to demonstrate the monitored parameters met water quality objectives (refer to Technical Conditions); and
   ii. If data shows exceedances of water quality objectives, documentation of the duration of exceedences and explanation of the measures that were used to correct the exceedances.
f. Mitigation reporting, if mitigation installation has started, including the following information:
   i. Date of initiation of mitigation installation and date mitigation installation was completed;
   ii. If mitigation installation was completed, confirmation mitigation was installed according to the requirements of this Certification and as described in the application, the Conceptual Mitigation Plan (latest revision April 27, 2012), and any other associated submittals;
   iii. Quantification of site restoration vegetation growth, percent cover, survival, general health and stature, signs of reproduction, and documentation of progress toward achieving all compensatory mitigation performance criteria;
   iv. Qualitative and quantitative comparisons of current mitigation conditions with preconstruction conditions and previous mitigation monitoring results;
   v. Any remedial or maintenance actions taken or needed;
   vi. Any additional information specified in the Conceptual Mitigation Plan (latest revision April 27, 2012).; and
   vii. Annual photo-documentation representative of all mitigation areas, taken from vantage points from which Central Coast Water Board staff can identify changes in size and cover of plants. Compare photos of installed mitigation with photos of the mitigation areas prior to installation.

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| | g. A description of mitigation completion status, that identifies the amount of mitigation monitoring and maintenance remaining, or certifies that mitigation is complete and all required mitigation monitoring and maintenance has been conducted and all success criteria achieved. If the monitoring period is over, but all success criteria have not been achieved, the Annual Report shall identify corrective measures to be undertaken, including extension of the monitoring period until the criteria are met. |

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Central Coast Regional Water Quality Control Board

November 13, 2014

Paul Holmes
Caltrans
50 Higuera St.
San Luis Obispo, CA 93401
Email: Paul.holmes@dot.ca.gov

**VIA ELECTRONIC MAIL**

Dear Mr. Holmes:

**AMENDMENT TO TECHNICALLY CONDITIONED WATER QUALITY CERTIFICATION NUMBER 32713WQ05 FOR THE SALINAS RIVER BRIDGE WIDENING PROJECT, MONTEREY COUNTY**

The California Department of Transportation (Caltrans) has requested a clarification in the monitoring requirements for the Salinas River Bridge Widening Project (Project), as stated in the April 4, 2014 Technically Conditioned Water Quality Certification No. 32713WQ05. Caltrans requests these changes to clarify what constitutes continuous monitoring. The changes to the April 4, 2014 Technically Conditioned Water Quality Certification are illustrated through underlined and strikethrough text below:

*Technical Condition No. 3*

*The applicant shall conduct ~~continuous~~ turbidity, temperature, dissolved oxygen, and flow monitoring of the Salinas River ~~throughout~~ during the dewatering and diversion process at the water impoundment immediately upstream of the earthen dam #1 and at the point of bypass discharge (downstream of earthen dam #2). The applicant shall ~~also~~ take ~~daily~~ grab samples at these ~~same~~ locations every other hour during operation of the diversion system, starting with the first hour of operation. ~~and analyze the same constituents as monitored and recorded continuously (except for flow). Independent measures of temperature, dissolved oxygen, and turbidity shall be used to verify electronic probe data and provide a backup in case of equipment failure.~~*

*Monitoring and Reporting Requirement No. 1*

*~~Continuously m~~Monitor water quality parameters (i.e., turbidity, dissolved oxygen, and temperature) to ensure aquatic conditions associated with the Clear Water Diversion meet Central Coast Water Board Basin Plan Water Quality Objectives for the Salinas River and as specified in the Technical Conditions.*

These changes should not result in additional impacts to water quality, provided Caltrans implements the Project as set forth in the original application, the April 4, 2014 Technically Conditioned Water Quality Certification, and this Amendment. Therefore, we are amending Technically Conditioned Water Quality Certification No. 32713WQ05 for the Salinas River

Bridge Widening Project to reflect these changes. This letter serves as authorization for the revised project; a new Water Quality Certification is not required.

If you have questions please contact Phil Hammer at phammer@waterboards.ca.gov or (805) 549-3882. Please mention the above certification number in all future correspondence pertaining to this project.

Sincerely,

Digitally signed by Phillip Hammer
Date: 2014.11.13 13:53:05 -08'00'

for
Kenneth A. Harris, Jr.
Executive Officer

cc:

Paula Gill
U.S. Army Corps of Engineers
San Francisco District
Regulatory Division
1455 Market Street, Floor 16
San Francisco, CA. 94103-1398
email: Paula.C.Gill@usace.army.mil

Dr. Jeffrey Single, Regional Manager
California Department of Fish and Wildlife
Lake and Streambed Alteration
1234 E. Shaw Avenue
Fresno, CA 93710
email: Jeff.Single@wildlife.ca.gov

Linda Connolly, Staff Environmental Scientist
California Department of Fish and Wildlife
Lake and Streambed Alteration
1234 E. Shaw Avenue
Fresno, CA 93710
email: Linda.Connolly@wildlife.ca.gov

Laura Peterson-Diaz
California Department of Fish and Wildlife
1234 E. Shaw Avenue
Fresno, CA 93710
email: Laura.Peterson-Diaz@wildlife.ca.gov

401 Program Manager
State Water Resources Control Board
Division of Water Quality
email: Stateboard401@waterboards.ca.gov

U.S. Environmental Protection Agency
email: R9-WTR8-Mailbox@epa.gov

Ashley Betance-Kearn
Central Coast Water Board
email: Ashley.Betance-Kearn@waterboards.ca.gov

Phil Hammer
Central Coast Water Board
email: phammer@waterboards.ca.gov

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

**May 24, 2011**

In response refer to:
2010/04103

Chuck Cesena
Senior Environmental Planner
California Department of Transportation, District 5
50 Higuera Street
San Luis Obispo, California, 93401

Dear Mr. Cesena,

Thank you for your letter of July 28, 2010, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). Effective July 1, 2007, the Federal Highway Administration (FHWA) assigned, and the California Department of Transportation (Caltrans) has assumed all responsibilities for consultation and approval on most highway projects in California. Therefore, Caltrans is now considered the federal action agency for ESA consultations with NMFS for federally funded projects. This letter transmits NMFS biological opinion for Caltrans proposed Salinas River Bridge Widening project on Highway 68, located in northern Monterey County, California. The enclosed biological opinion describes NMFS' analysis of the effect of implementing the proposed project on the threatened South-Central California Coast (S-CCC) steelhead (*Oncorhynchus mykiss*) Distinct Population Segment (DPS) and its designated critical habitat.

Based on the best available information, the enclosed biological opinion concludes the Salinas River Bridge Widening project on Highway 68 may affect but is not likely to jeopardize the continued existence of S-CCC steelhead, and is not likely to result in the destruction or adverse modification of its designated critical habitat. An incidental take statement is included with the enclosed biological opinion. The incidental take statement includes non-discretionary terms and conditions that are expected to minimize the impacts of incidental take of listed steelhead as a result of the bridge widening activities. In addition, conservation recommendations have been included in the enclosed biological opinion.

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

Sincerely,

for Rodney R. McInnis
Regional Administrator

cc: Chris Yates, NMFS, Long Beach
Laura Peterson Diaz, CDFG, Fresno
Steve Kirkland, USFWS, Ventura
Copy to file 151422-SWR-2010-SR00339

# BIOLOGICAL OPINION

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|---|---|
| **AGENCY:** | California Department of Transportation (Caltrans) |
| **ACTION:** | Salinas River Bridge Widening Project on Highway 68 in Monterey County |
| **CONSULTATION CONDUCTED BY:** | National Marine Fisheries Service, Southwest Region |
| **FILE NUMBER:** | 2010/04103 |
| **DATE ISSUED:** | May 24, 2011 |

## I. CONSULTATION HISTORY

Caltrans will be acting as the lead agency as per the agreement with the Federal Highway Administration (FHWA) in accordance with Section 6005 (a) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (PL-109-59) to assume the FHWA Secretary's responsibilities under the National Environment Policy Act of 1969 (42 USC § 4351, *et seq.*) and all or part of the FHWA Secretary's responsibilities for environmental review, consultation, or other action required under any environmental law with respect to one or more highway projects within the state.

NOAA's National Marine Fisheries Service (NMFS) received a consultation request from Caltrans for the Salinas River Bridge Widening project on Highway 68 in Monterey County, California on August 4, 2010. Caltrans' letter requested formal consultation pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*) based on their determination the action, as proposed, is likely to adversely affect listed South-Central California Coast (S-CCC) steelhead but is not expected to adversely modify[1] critical habitat.

On September 20, 2010, NMFS and Caltrans staff participated in a conference call to discuss components of the project including site characteristics (*i.e.*, anticipated hydrologic conditions and vegetation communities), dewatering plans, and the project timeline. Upon further discussion with Caltrans staff, NMFS submitted a letter requesting additional information on October 6, 2010. Caltrans responded to the submitted request via electronic mail on October 28, 2010. NMFS determined the information presented in the response to the initial request was not sufficient to complete the initiation package and begin the consultation.

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[1] Here, Caltrans is inferring that the actions would "adversely affect" and was not attempting to make a determination of the impact of their project on critical habitat at the designation level (*i.e.*, adverse modification).

On November 23, 2010, Caltrans staff contacted NMFS via telephone to discuss adding additional project activities not originally proposed in the project's Biological Assessment (BA). The activities included the collection of channel sediment bore samples for geotechnical studies, which were determined to be necessary in order to complete the overall bridge widening project. NMFS concluded that while the channel sediment bore sampling (and associated activities) would occur at least one year, if not more than one year, prior to the remainder of the project, these activities were part of the overall project and would need to be included in the consultation for the proposed Highway 68 Bridge widening project. NMFS requested Caltrans to submit supplemental information specific to the new project activities. The original proposal for sediment core drilling submitted on November 23, 2010, included sixteen locations throughout the channel bottom and adjacent banks. Several of these (up to eight) bores were proposed to occur in flowing waters during the dry season. NMFS advised Caltrans that channel dewatering and fish relocation activities would also be required in order to conduct sediment boring in flowing waters. Due to these concerns, NMFS requested additional information on dewatering and fish relocation for these activities.

On January 18, 2011, Caltrans submitted revised information on the channel sediment bore sampling to NMFS via electronic mail (email). In order to avoid a water diversion during the sediment boring sample collection, Caltrans agreed not to collect sediment bore samples in areas with flowing or standing waters. Caltrans also provided Best Management Practices (BMPs) for areas where samples will be collected on dry ground. Also on January 18, 2011, NMFS and Caltrans discussed, by telephone, the general approach to the surface water diversion plan for the bridge widening activities. Based on the anticipated stream flow volumes in the action area during summer months, NMFS and Caltrans staff agreed to use one or more large steel pipes to bypass waters through the work area.

NMFS contacted Caltrans on February 8, 2011, to discuss the need for an updated delineation of waters and wetland in the project's action area. Original estimates provided by Caltrans (2010) were made in 2008 prior to the implementation of the Salinas Valley Water Project (SVWP), which has increased summer water availability and presumably the amount of wetlands in the action area. Caltrans agreed a revised delineation was needed and indicated they were scheduled to meet at the project location with the Army Corps of Engineers (Corps) in March 2011 to conduct a formal delineation of wetlands and waters based on more current conditions. In addition, Caltrans indicated they had contacted the California Department of Fish and Game (CDFG) regarding the development of a riparian vegetation recovery monitoring plan for the project action area. The plan is to be developed over the next several months and a final copy will be shared with NMFS once completed. On February 8, 2011, NMFS determined the information provided was sufficient to initiate consultation.

On April 8, 2011, Caltrans transmitted via email the revised water and wetland delineations for the project area as determined by the Corps.

## II. DESCRIPTION OF THE PROPOSED ACTION

Caltrans proposes to widen and seismically retrofit the Highway 68 Bridge over the Salinas River located between post miles 28.5 and 28.8 in northern Monterey County, California. The project is needed because the bridge is functionally obsolete, does not meet current seismic safety standards, and lacks adequate hydraulic systems. These factors reduce the efficiency and safe operation of the highway for the traveling public. Caltrans proposes to widen the bridge structure to accommodate standard shoulder widths, upgrade the pier and abutment footings, and reinforce the pier columns to meet current seismic standards, and improve the bridge's hydraulic systems. The project will occur in two phases. Phase 1 includes a geotechnical subsurface investigation and Phase 2 includes bridge widening and the seismic retrofit. The entire project will require up to three years to complete, and is expected to start between 2012 and 2015. In-channel work for Phase 2 will occur between June 15 and October 15 of each year.

Phase 1's geotechnical subsurface investigation will facilitate foundation design for the seismic retrofitting and widening of the bridge. This will involve the collection of sediment bores from dry portions of the river channel and banks, some riparian vegetation removal, and the development of temporary access roads. Phase 2 of the project (widening and the seismic retrofit) will necessitate dewatering of the river channel, fish relocation, and the removal of additional riparian vegetation (areas not already cleared and subsequent regrowth of vegetation following the initial clearing for the bore sample collections). The collection of channel sediment bore samples will require one year and the bridge widening construction phase will occur over a two year period.

After consulting with Caltrans on projects in the immediate vicinity of the action area (Paul Holmes, Caltrans, personal communication, April 2011), NMFS does not anticipate any interdependent or interrelated actions associated with the proposed action.

### A. Description of Project Activities

1. Staging Areas and Access

Two staging areas will provide for storage of construction equipment and materials and to gain access to the river channel and upslope areas where construction activities will occur. One of these is near the northwest portion of the bridge, and will be accessed via an existing farm road. The access road starts at Spreckels Boulevard, and continues southerly for about 1,500 feet at the edge of an existing field. Caltrans anticipates the road will be improved to assure construction equipment can enter and leave the site under normal weather conditions. The storage and staging

area is within an existing agricultural field, and is large enough for a tractor-trailer combination to make a comfortable turn. This area is approximately one-half acre in area.

The other staging area (also approximately one-half acre in area) is located near the southeast abutment and occupies an area typically used by the nearby farm for storage of material and equipment. Access to this staging area is from Reservation Road, then on Hilltown Road to its end, about 2,000 feet total. Access continues for approximately 1,800 feet along the northerly edge of an existing agricultural field, then under the bridges on the river bank adjacent to another agricultural field. Caltrans anticipates the final 1,800 feet of the access road will be improved to assure construction equipment can enter and leave the site under normal weather conditions.

2. Channel Sediment Bore Sample Collection

Caltrans will conduct a geotechnical subsurface investigation to support foundation design for the seismic retrofitting and widening of the bridge. Up to 16, four-inch diameter by 150-feet deep rotary borings will be collected. Caltrans proposes to collect samples from the channel bottom as well as the stream banks and upper terraces in close proximity to existing bridge piers for the purpose of identifying engineering properties of underlying soil strata and for laboratory analysis. The number of samples collected will ultimately depend on the extent of surface waters present during sampling. Caltrans has agreed to limit sample collections to areas where the channel is dry, and will avoid collecting samples in areas where surface waters are present. Approximately half of these borings will be completed with 1.5-inch diameter polyvinyl chloride (PVC) cased monitoring wells (for collection of groundwater elevation data) and the remaining wells will be backfilled with hydrated bentonite (clay) upon completion. The backfilling of the wells will be conducted to eliminate the potential for cross contamination of shallow and deep aquifers. The filling with bentonite, which is inert, will be terminated below the channel surface to account for channel scouring during winter months.

As part of the sediment bore sample collections, drilling equipment access would be established along the existing agricultural roads on either side of the bridge. This will include improvement of access down to the river channel which will also be used during Phase 2 (*i.e.,* bridge widening construction). The improvement of channel access will include minor grading and the removal of some riparian vegetation. However, the grading and much (if not all) of the vegetation removal would be required for access during Phase 2 of the project.

3. Dewatering Activities

*a. Stream flow Diversion and Crossing the Low Flow Channel*

Due to the schedule of stream flow releases from upstream reservoirs that are anticipated as part of the SVWP operations, stream flow volumes ranging from 10 to 60 cubic feet per second (cfs)

[2], or higher, will likely be present in the action area during the dry season. To create a dry working environment, Caltrans proposes to use a dike (*i.e.,* levee or cofferdam) at the upstream end to concentrate and direct stream flow into one or more large pipes, which will bypass the stream flows through the work area. It is anticipated the dike will be at or near the proposed 100-foot construction easement boundary upstream of the existing bridge. However, the precise location of the upstream dike will be determined during the project design phase. A similar dike will likely be constructed at the downstream boundary of the project work area to stop river flows from backing into the project work area. This dike will be similar to the one constructed at the upstream end.

Although construction details and specifications will not be complete until the project design phase, Caltrans (2010) provided three alternatives for constructing the dikes. One alternative included a dike made of excavated native substrate which would direct stream flow to a low flow channel through the construction zone. This method would be low in cost, but would disturb native soil more than the other two methods. The second alternative method would use non-native, clean gravel suitable as a bedding material, which would be moderate in cost, but would result in fewer impacts to native substrate. The third alternative would use geotextile liners supported by metal frames to form the dike. This method would be relatively high in cost, yet would minimally disturb the native substrate.

Once the dike(s) is constructed, depending on the volume of river flow, Caltrans may use one of two methods to divert river flows around the project's action area and create a dry working environment. If flow in the river is low enough, Caltrans will divert the river flow using one or more large pipes. Alternatively, if flows in the river are too high to effectively use pipes for the diversion, Caltrans will use the dikes to re-direct flows to a defined channel in the river bed. The channel will be excavated or built using berms consisting of channel sediments in a dry portion of the channel bottom and will bypass flows through the action area.

Caltrans expects the entire area contained within the construction easement in the river bottom will be leveled and smoothed to meet construction needs. The ground in all portions of the dry construction area is expected to be disturbed, including the removal of most, if not all, of the vegetation present. In areas where heavy equipment must be able to move on the river bottom, Caltrans proposes using one or more layers of engineering fabric or geotextile, which would be placed on leveled and smoothed native material. Clean gravel would then be placed on top of the geotextile and compacted to meet the bearing capacity required by the construction equipment. Caltrans estimates 500 cubic yards or more of aggregate will be required to achieve these conditions. The gravel and geotextile would be removed at the end of the project and would be removed before the start of each wet season.

*b. Cofferdam Methods for Foundation Construction*

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2. These estimates are based on the stream flows recorded at the Unites States Geological Survey's (USGS) gage at the Highway 68 Bridge site during the summer and fall of the first year of SVWP implementation in 2010.

Cofferdams will be used to isolate the pier foundation areas from groundwater intrusion. Cofferdams for foundation construction will extend well below the bottom of the footings and will be well braced and as watertight as practical. The interior dimensions of cofferdams will provide sufficient clearance inside the walls for constructing forms and driving piles and to permit pumping outside the forms. After completion of the substructure, the cofferdams with all sheeting and bracing will be removed. Although specific details are not finalized, Caltrans expects its contractors will use steel sheet piles as support walls and bracing to maintain structural integrity of the opening and may pour a concrete floor to reduce infiltration of ground water into the work area. Water will be pumped out of the cofferdams as needed (discussed below), and river soils will be removed to the working depth and stockpiled nearby. The stockpiled channel soils will be replaced when the cofferdam is removed, but prior to the removal of the river diversion. The sheet pile shoring is often placed with a combination of vibratory and impact hammer methods and are typically removed with a vibratory hammer. Assuming nine pier walls with four locations at each wall, and two days at each location, Caltrans anticipates approximately 72 days of sheet pile installation and 36 days to remove them. All construction materials will be removed from the channel once the project is completed.

In locations where groundwater intrusion may not require a cofferdam, Caltrans expects to use open excavations. In this case, the openings are excavated to the bottom of each footing with side slopes at a minimum of 1:1. It may or may not be necessary to pump water from the open excavation.

Water from within construction areas, including groundwater exposed during bridge footing work, will either be pumped into retention basins located upslope of the construction area, or, if no stream flow is present, will be allowed to percolate into the river bed below the construction area. This water will not be allowed to directly enter flowing waters or isolated pools in the Salinas River, but will percolate through the detention basin and become part of subsurface flows. If a pump is necessary to assist with dewatering of the action area, the pump will be double-screened to prevent fish entrainment. The mesh on the screens will meet NMFS and CDFG guidelines for fish screening criteria.

4. Fish Collection and Relocation

Fish collection and relocation from the work area will be conducted by a NMFS/CDFG approved biologist. Prior to and during the channel dewatering, the authorized biologist will be on-site to capture and move steelhead and other aquatic species from the areas that will be dewatered. Relocation methods will be limited to one or more of the following methods: electrofishing, dip net, or seine. The fish will be relocated downstream of the work area and placed in suitable habitats containing flowing waters and sufficient cover.

5. Bridge Construction Activities

The Highway 68 Bridge over the Salinas River consists of two separate bridge decks (a north bound and south bound deck) which rest on shared supports, including 2 abutments and 7 pier walls. Each bridge deck is divided into eight spans. The proposed project includes widening both sides of each bridge (*i.e.,* north and south bound decks), extending abutments, piers and foundation systems, upgrading bridge and guard railings, and installing structure approach slabs. The bridge widening will consist of cast-in-place reinforced concrete box girders. Falsework will be used to support the temporary loads associated with building the new box girders, and fabricating the deck and rails.

*a. Falsework and Supports*

Caltrans has proposed to construct falsework which will be supported by steel posts that rest on temporary piles. An alternative to this would be to place wood or steel posts on timber pads directly on the leveled native soil. This would not require supports driven into the river bed. However, Caltrans' project engineer is concerned this method is vulnerable to loss of stability when stream flows are present during the dry season. Also, the falsework would have to be completely removed at the end of the dry season, and therefore a more rigid method, including the installation of temporary piles and posts, was recommended.

For the falsework, Caltrans will install 12, 24-inch steel piles using either a vibratory or impact hammer. The piles, approximately 60 feet in length, would be driven approximately 30 feet into the river bed. This design will be capable of withstanding a 100-year flow event and therefore work on the bridge deck will continue year-round. This will reduce the total number of working days needed to complete the project.

With eight bridge spans, and assuming each span will require three divisions and two piles on the outside widening portion of each span and division for each bridge (*i.e.,* north bound and south bound bridge decks), Caltrans estimates 96 temporary piles would be required. Caltrans estimates a total of 16 days to place all temporary piles and posts for the falsework support. However, Caltrans' more conservative estimate would require approximately 320 temporary piles, which would include three piles on the outside portion and two on the inside portion of each span. Under this scenario, it would require more than 50 days to place the 320 piles.

Once the falsework is no longer needed, it will be taken down and removed from the project area. For either scenario, the piles will be extracted and completely removed with a vibratory hammer.

*b. Permanent Pile Installation*

Based on Caltrans' preliminary analyses and foundation report, a total of 128, 24-inch steel pipe piles will be permanently installed. The piles will be installed at two bridge abutments and seven piers with a total of 8 piles at each abutment and 16 piles at each pier. All piles will be installed

in a dewatered channel using an impact hammer with approximately 400-600 strikes per pile and 1.2-1.5 second rest between strikes. Caltrans estimates this will require 18 days to complete assuming one day per side at nine locations (*i.e.*, 2 abutments and 7 pier walls). However, with pile crane mobilization and site preparation, it could take as long as ten weeks to complete the entire pile driving activities. Caltrans anticipates the pile driving will occur between the months of July and October.

Caltrans anticipates it will generate excess materials during excavation that is not used as structure backfill. The disposal of this material will follow the requirements of Caltrans' 2006 Standard Specifications (Caltrans 2006).

5. Best Management Practices and Minimization Measures

The final selection of specific BMPs will be completed during the final project design phase. Caltrans (2010) describes general BMPs that will be used during the project. These include measures to prevent erosion and stabilize disturbed areas, efforts to maximize vegetative surfaces (*i.e.*, minimizing disturbance to vegetative surfaces, replanting, and vegetation community enhancement), the implementation of waste management and pollution control measures, and the implementation of environmental training sessions by a qualified biologist to familiarize all construction personnel with identification of all special-status species likely to occur, their habitat, general provisions, and protections afforded by CDFG, United States Fish and Wildlife Service (USFWS), and NMFS. Caltrans will also implement a site Restoration and Replanting Plan (see Appendix D, Caltrans 2010) to reduce overall project impacts on wetlands and riparian vegetation in the action area, which will ultimately minimize impacts to steelhead critical habitat.

**B. Description of the Action Area**

The action area includes "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR § 402.02). For this proposed project Caltrans estimates the Salinas River bed and banks will be impacted for a distance of approximately 100 feet upstream and downstream (a total 200 feet) of the existing bridge piers and abutments (*i.e.*, their easement). The existing bridge piers are 140 feet wide (upstream to downstream), and therefore the overall length of channel disturbance is estimated to be approximately 340 feet. However, the entire length of the action area will extend approximately 1,000 feet downstream of the Highway 68 Bridge due to indirect effects associated with turbidity. NMFS assumes any temporary increases in turbidity originating from the work area during the installation and removal of the cofferdams and the rewetting of the river channel following the removal of the diversion, will either settle in the river channel and/or will become diluted to negligible levels below this point.

## III. ANALYTICAL FRAMEWORK

### A. Jeopardy Analysis

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

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

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

### B. Adverse Modification Determination

This biological opinion does not rely on the regulatory definition of destruction or adverse modification of critical habitat at 50 CPR 402.023. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

In accordance with policy and regulation the adverse modification analysis in this biological opinion relies on four components: (1) the Status of Critical Habitat, which evaluates the range-wide condition of critical habitat for S-CCC steelhead DPS in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended conservation value of the critical habitat overall; (2) the Environmental Baseline, which evaluates the condition of critical habitat in the action area, the factors responsible for that condition, and the conservation

3. This regulatory definition has been invalidated by Federal Courts.

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

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

### C. Use of Best Available Scientific and Commercial Information

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

## IV. STATUS OF THE SPECIES/CRITICAL HABITAT

This biological opinion analyzes the effects of the proposed action on S-CCC steelhead, listed as threatened under the ESA (71 FR 834). The Salinas River, including the action area, is within designated critical habitat for S-CCC steelhead (70 FR 52488).

### A. Species Description, Life History, and Status

In this opinion, NMFS assesses four population viability parameters to help us understand the status S-CCC steelhead DPS and the population's ability to survive and recover. These population viability parameters are: abundance, population growth rate, spatial structure, and diversity (McElhany *et al.* 2000). While there is insufficient information to evaluate the population's viability parameters in a thorough quantitative sense, NMFS has used existing

information to determine the general condition of the population and factors responsible for the current status of the DPS.

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

*1. Life History*

Steelhead are anadromous forms of *O. mykiss*, spending some time in both freshwater and saltwater. Steelhead can be divided into two reproductive ecotypes, based upon their state of sexual maturity at the time of river entry (*i.e.*, winter or summer runs) and the duration of their spawning migration. Winter-run steelhead, the more common form of the two ecotypes, typically migrate upstream during high flow events between November and April. In many streams, the timing of upstream migration begins only after stream flows are high enough to breach the sand bars at the stream mouths. Summer-run steelhead migrate upstream from March through September. In contrast to other species of *Oncorhynchus*, steelhead may spawn more than one season before dying (iteroparity); although one-time spawners represent the majority (Shapovalov and Taft 1954). Steelhead young usually rear in freshwater for one to three years before migrating to the ocean as smolts in the spring. Steelhead may remain in the ocean for one to five years (two to three years is most common) before returning to their natal streams to spawn (Shapovalov and Taft 1954, Busby *et al.* 1996). The distribution of steelhead in the ocean is not well known. Coded wire tag recoveries indicate most steelhead tend to migrate north and south along the continental shelf (Barnhart 1986).

Outmigration appears to be more closely associated with size than age and a decline in the hydrograph (Shapovalov and Taft 1954). In Waddell Creek, Shapovalov and Taft (1954) found steelhead juveniles migrating downstream at all times of the year, with the largest numbers of young-of-year (YOY) and age 1+ steelhead moving downstream during spring and summer.

For steelhead embryos, survival to emergence is inversely related to the proportion of fine sediment in the spawning gravels. Steelhead are slightly more tolerant than other salmonids, with significant reductions in survival when particles less than 0.25 inches in diameter comprise 20 to 25 percent of the substrate. Fry typically emerge from the gravel two to three weeks after hatching (Barnhart 1986). Upon emerging from the gravel, fry rear in edge-water habitats and move gradually to deeper and faster habitats as they grow (Chapman and Bjornn 1969, Everest and Chapman 1972, Smith and Li, 1983). Older fry establish territories which they defend. During this period, cover (*i.e.*, overhanging and emergent vegetation, boulders, and woody

material) is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation (Meehan and Bjornn 1991).

As juveniles, steelhead tend to use riffles and other fast water habitats (*i.e.,* runs and heads of pools) during summer where food, in the form of drifting invertebrates, is more abundant (Smith and Li 1983). Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. In winter, juvenile steelhead become less active and hide in available cover, including gravel or woody debris, under cut banks, and dense streamside vegetation.

Steelhead typically spend much of their juvenile lifestage in freshwater habitats, particularly inland populations. For most coastal systems, the use of estuaries and seasonal lagoons by juvenile salmonids for rearing is much more extensive. Studies have confirmed estuaries (including seasonal, bar-built lagoons) play an important role in the lifecycle of salmonids because they are typically more productive than upstream riverine habitats, and because size at ocean entry can affect ocean survival substantially (Smith 1990, Bond 2006, Hayes *et al.* 2008).

In riverine habitats, adequate flow, temperature, and food availability are important factors for survival and growth. Water temperature can influence the metabolic rate, distribution, abundance, and habitat use of rearing juvenile steelhead (Barnhart 1986, Bjornn and Reiser 1991, Myrick and Cech 2005, Casagrande 2010). Optimal temperatures for steelhead growth range between 10 and 20 degrees (°) Celsius (C) (Hokanson *et al.* 1977, Wurtsbaugh and Davis 1977, Myrick and Cech 2005). Variability in the diurnal water temperature range is also important for the survivability and growth of salmonids (Busby *et al.* 1996, Casagrande 2010). Stream water temperature is regulated by multiple factors including air temperature, stream channel dimension and orientation, and the presence and abundance of riparian vegetation (Poole and Berman 2001).

Suspended sediment concentrations, or turbidity, also can influence the distribution and growth of steelhead (Bell 1973, Sigler et al. 1984, Newcombe and Jensen 1996). Bell (1973) found suspended sediment loads of less than 25 milligrams per liter (mg/L) were typically suitable for rearing juvenile steelhead.

*2. Status S-CCC Steelhead DPS*

Populations of S-CCC steelhead throughout the DPS have exhibited a long-term negative trend since the mid-1960s. In the mid-1960s, total spawning populations were estimated at 17,750 individuals (Good *et al.* 2005). Available information shows S-CCC steelhead population abundance continued to decline from the 1970s to the 1990s (Busby *et al.* 1996) and more recent data indicate this trend continues (Good *et al.* 2005). Current S-CCC steelhead run-sizes in the five largest systems in the DPS (Pajaro River, Salinas River, Carmel River, Little Sur River, and Big Sur River) are likely greatly reduced from 4,750 adults in 1965 (CDFG 1965) to less than 500 returning adult fish in 1996. More recent estimates for total run-size do not exist for the S-

CCC steelhead DPS (Good *et al.* 2005).

Recent analyses conducted by NMFS (NMFS 2006, Boughton *et al.* 2007) indicate the S-CCC steelhead DPS consists of 12 discrete sub-populations which represent localized groups of interbreeding individuals, and none of these sub-populations currently meet the definition of viable. Most of these sub-populations can be characterized by low population abundance, variable or negative population growth rates, and reduced spatial structure and diversity. The sub-populations in the Pajaro River and Salinas River watersheds are in particularly poor condition (relative to watershed size) and exhibit a greater lack of viability than many of the coastal subpopulations.

Steelhead populations are present in most streams in the S-CCC DPS (Good *et al.* 2005), however, these populations are fragmented and unstable (NMFS 2006a). In addition, severe habitat degradation and compromised genetic integrity of some populations pose a serious risk to the survival and recovery of the S-CCC steelhead DPS (Good *et al.* 2005). NMFS' most recent status review concluded S-CCC steelhead remain "likely to become endangered in the foreseeable future" (Good *et al.* 2005). NMFS confirmed the listing of S-CCC steelhead as threatened under the ESA on January 5, 2006 (71 FR 834). In the 2008/09 and 2009/10 winters, adult returns in many streams within the DPS were considerably reduced relative to higher returns at the beginning of the decade. This was likely attributed largely to poor ocean conditions along the eastern Pacifica Ocean (Lindley *et al.* 2009). However, during the winter of 2010/11, adult returns appeared to rebound toward numbers seen at the beginning of the decade, based on a significant increase in adult returns counted at San Clemente Dam on the Carmel River[4], and a notable increase in the number of observed adults in Uvas Creek of the Pajaro Watershed (Jon Ambrose, NMFS, personal communication, May 2011).

*3. Status of S-CCC Critical Habitat*

The condition of critical habitat for S-CCC steelhead, specifically its ability to provide for their conservation, has been degraded from conditions known to support viable salmonid populations. NMFS has determined the present depressed population conditions are, in part, the result of the following human-induced factors affecting critical habitat: agriculture, grazing, and mining activities, urbanization, stream channelization, construction of dams and other migration impediments, wetland loss, and water resource development, including unscreened diversions for irrigation, and recreational harvest. Impacts of concern include alteration of stream bank and channel morphology, alteration of water temperatures, fragmentation of habitat, loss of downstream recruitment of spawning gravels and large woody debris, degradation of water quality, alteration of riparian vegetation communities, water extraction and stream desiccation, and fish passage constraints (Busby *et al.* 1996, Casagrande *et al.* 2003, 70 FR 52488).

Depletion and storage of natural river and stream flows have drastically altered natural

[4] http://www.mpwmd.dst.ca.us/fishcounter/fishcounter.htm

hydrologic cycles in many of the streams in S-CCC steelhead DPS, including the Salinas River (Casagrande *et al.* 2003, Good *et al.* 2005, NMFS 2007). Alteration of flows results in migration delays, loss of suitable habitat due to dewatering and blockage; stranding of fish from rapid flow fluctuations; entrainment of juveniles into poorly screened or unscreened diversions, and increased water temperatures harmful to steelhead. Overall, the current condition of S-CCC steelhead critical habitat is degraded, and may not provide the conservation value necessary for the full recovery of the species.

**B. Factors Responsible for Steelhead Stock Declines**

NMFS cites many reasons (primarily anthropogenic) for the decline of steelhead (Busby *et al.* 1996, Good *et al.* 2005). The foremost reason for the decline in S-CCC steelhead populations is the degradation and/or destruction of freshwater and estuarine habitat. Good *et al.* (2005) noted numerous land- and water-use activities which have contributed to the degradation of salmonid habitat within the S-CCC steelhead DPS. These activities include dewatering of streams for agricultural and urban water-use, agricultural and urban development on floodplains and riparian areas, and artificial breaching of lagoons during periods when they are normally closed off from the ocean by a sandbar (Smith 1990, Bond 2006). Good *et al.* (2005) also concluded minor habitat blockages (defined as barriers which block less than 259 square kilometers of watershed from access by anadromous steelhead) are likely numerous throughout the S-CCC steelhead DPS. Habitat degradation as a result of poor land-use practices and extensive dam and reservoir construction is particularly evident in the Pajaro River and Salinas River watersheds, which are the two largest river systems in the S-CCC steelhead DPS.

Artificial propagation and inter-basin transfer of steelhead has persisted at various times and in various locations within the S-CCC steelhead DPS, resulting in adverse affects to the genetic composition of existing stocks (Waples 1991, Sundermeyer 1999, Titus *et al.* 2006). Sundermeyer (1999) found many steelhead in the Pajaro River watershed are genetically indistinguishable from steelhead in the San Lorenzo River (which is included in the CCC steelhead DPS) due to the long history of hatchery transfers between these two systems. Since 1963, CDFG has operated a stocking program for out-of-basin resident *O. mykiss* (rainbow trout) in the Nacimiento River (Salinas River Watershed), within anadromous S-CCC steelhead habitat (Titus *et al.* 2006). Many other watersheds in the DPS have also had inter-basin transfers but little genetic information is available to assess the effects of these past practices.

Additional factors contributing to the decline of these populations include: natural stochastic events, marine mammal predation (Hanson 1993, NMFS 1999), reduced marine-derived nutrient transport (Bilby *et al.* 1996, Bilby *et al.* 1998, Gresh *et al.* 2000), and recent poor ocean conditions (Lindley *et al.* 2009).

## C. Global Climate Change

The acceptance of global climate change as a scientifically valid and anthropogenically driven phenomenon has been well established by the United Nations Framework Convention on Climate Change (UNFCCC), the Intergovernmental Panel on Climate Change, and others (Davies *et al.* 2001, Oreskes 2004, UNFCCC 2006). The most relevant trend in climate change is the warming of the atmosphere from increased greenhouse gas emissions. This warming is inseparably linked to the oceans, the biosphere, and the world's water cycle. Changes in the distribution and abundance of a wide array of biota confirm a warming trend is in progress, and that it has great potential to affect species' survival (Davies *et al.* 2001). In general, as the magnitude of climate fluctuations increases, the population extinction rate also increases (Good *et al.* 2005). Global warming is likely to manifest itself differently in different regions.

Modeling of climate change impacts in California suggests average summer air temperatures are expected to increase (Lindley *et al.* 2007). Heat waves are expected to occur more often, and heat wave temperatures are likely to be higher (Hayhoe *et al.* 2004). Total precipitation in California may decline; critically dry years may increase (Lindley *et al.* 2007, Schneider 2007). The Sierra Nevada snow pack is likely to decrease by as much as 70 to 90 percent by the end of this century under the highest emission scenarios modeled (Luers *et al.* 2006). Wildfires are expected to increase in frequency and magnitude, by as much as 55 percent under the medium emissions scenarios modeled (Luers *et al.* 2006). Vegetative cover may also change, with decreases in evergreen conifer forest and increases in grasslands and mixed evergreen forests. The likely change in amount of rainfall in Northern and Central Coastal streams under various warming scenarios is less certain, although as noted above, total rainfall across the state is expected to decline. For the California North Coast, some models show large increases (75 to 200 percent) while other models show decreases of 15 to 30 percent (Hayhoe *et al.* 2004). Many of these changes are likely to further degrade salmonid habitat by, for example, reducing stream flows during the summer and raising summer water temperatures. Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia *et al.* 2002). The projections described above are for the mid to late 21$^{st}$ Century. In shorter time frames natural climate conditions are more likely to predominate (Cox and Stephenson 2007, Smith *et al.* 2007).

# V. ENVIRONMENTAL BASELINE

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

consultation, and the impacts of State or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

The proposed project will occur in the mainstem of the Salinas River near the town of Spreckels, which is located in northern Monterey County, California. The Salinas River flows into the Pacific Ocean approximately 10 miles northwest of the project site. Surrounding land use along the lower Salinas River is predominantly row crop agriculture. The channel bottom consists of broad sand bars with variable amounts of riparian/wetland vegetation on the channel bottom. Wetland and riparian habitat in the action area consists primarily of young sand bar willow (*Salix interior*) and arroyo willow (*Salix lasiolepis*), cattail (*Typha latifolia*), and bent grass (*Agrostis spp.*). Mature riparian vegetation is scarce and limited to narrow corridors immediately adjacent to the river channel which are typically above ordinary high water (OHW). Because of the river's large width in the project area, the trees provide little shade over the channel, but are a source of large and small wood and provide bank stabilization.

The majority of the direct and indirect effects of the proposed project are expected to occur within the length of the in-channel portion of the project area, which is approximately 340 feet long. Both temporary and permanent impacts to wetlands and waters will occur and are discussed in the *Effects of the Action* section below.

The project impact area (PIA) consists of approximately 9.5 acres, of which an estimated 0.66 acres are considered wetlands, 2.27 acres as Other Waters of the United States (waters), and 1.43 acres of riparian habitat (Caltrans 2010). The remainder of the PIA not occupied by waters or wetlands consists of upland staging areas and access roads atop of levees.

However, the initial estimates provided by Caltrans (2010) were made in 2008, prior to the implementation of the SVWP, which has since resulted in greater stream flow volumes and more extensive wetland and riparian areas in the river channel near the PIA during the dry season (Paul Holmes, Caltrans, personal communication, January 18, 2011). The primary goal of the SVWP is to stop salt water intrusion into the local aquifers. To achieve this, stream flow releases from upstream reservoirs during the dry-season have been increased to provide sufficient surface water for irrigation in the Castroville area (NMFS 2007).

In March 2011 (following heavy winter stream flows), the Corps re-delineated wetlands and waters in the PIA area and concluded waters occupied 2.86 acres and wetlands occupied 0.09 acres (Paul Holmes, Caltrans, personal communication, April 8, 2011).

**A. Status of Critical Habitat in the Action Area**

The portion of the Salinas River within the action area is used exclusively as a migration corridor between the ocean and spawning/rearing habitat found in upstream tributaries (70 FR 52488). A long history of water resource management, levee construction, road crossings, channel clearing

and grading, riparian vegetation removal, and a reduction in channel complexity have reduced the availability and quality of migration habitat for steelhead (NMFS 2007), and therefore NMFS considers the PCEs for migration in the lower Salinas River to be degraded.

Prior to the implementation of the SVWP, the lower Salinas River was a sandy, intermittent channel, and therefore both spawning and summer rearing habitat did not exist in the action area. Currently, habitat is not suitable for spawning and therefore an assessment of PCEs for spawning is not applicable to the action area. The implementation of the SVWP has resulted in sustained stream flows in the lower Salinas River mainstem during the dry season, which will improve smolt out-migration conditions in spring and could potentially provide seasonal rearing habitat for down-migrating juvenile steelhead. However, elevated water temperatures and a sand-dominated substrate will likely prevent over-summer rearing habitat in the lower portions of the river.

**B. Status of S-CCC steelhead in the Action Area**

In the Salinas River Watershed, a long history of anthropogenic impacts to riparian and estuarine habitats has resulted in a progressive decline in steelhead abundance. The specifics of the steelhead decline have not been well documented, but a few point estimates exist. These estimates, found in Dettman (1988), are as follows: 1) a U.S. Fish and Wildlife Service catch estimate of 3,600 adults in 1946, 2) a U.S. Fish and Wildlife Service average run size estimate of 900 adults in 1951, and 3) a Kelley and Dettman estimate of less than 500 adults as of 1983 (Dettman and Kelley 1986).

More recently, NMFS has concluded the run of adult steelhead in the Salinas River has declined to an average abundance of less than 50 fish (EDAW 2001). CDFG staff concurs with NMFS' determination that the anadromous population has been failing to replace itself (J. Nelsen, CDFG, personal communication, 2006 as cited in NMFS 2007). Recent smolt trapping at three locations in the Salinas River Watershed (Arroyo Seco, Salinas River upstream of Nacimiento River confluence, and on the Nacimiento River) resulted in 151 steelhead (mostly smolts) between March and May 2010 (Cuthbert *et al.* 2010). All but two of the steelhead were captured in the Arroyo Seco and the other two were captured on the upper mainstem of the Salinas. These data, along with observations of adults in recent years, confirms that steelhead reproduction continues in the watershed and that the Arroyo Seco remains the most productive steelhead stream in the basin.

NMFS has divided the Salinas River steelhead population into three sub-populations (Upper Salinas, Nacimiento/San Antonio, and Arroyo Seco sub-populations) based on geographic distribution. Although steelhead do not spawn in the action area, all adults and smolts migrating between the ocean and upstream rearing habitat from each of these sub-populations would have to pass through the action area, and with improved summer flows from the SVWP, a small number of juvenile steelhead may migrate through the action area to rear in the lagoon during

summer. A more in-depth discussion on the status of each sub-population can be found in NMFS (2007).

### C. Factors Affecting Species Environment within the Action Area

Adult and smolt steelhead passage through this reach of the river is dependent on sufficient flows during their migration seasons. Water resource management, including extensive groundwater extraction and the construction of the three major dams, has severely compromised the migration windows for steelhead, which has contributed to the decline and near extirpation of steelhead in the basin (NMFS 2007).

As discussed above, SVWP was first implemented in 2010 and is designed to stop saltwater intrusion into the coastal aquifers in the northern Salinas Valley, while also providing improvement to flow conditions for steelhead in the mainstem. Specific components of the SVWP have included the construction of a seasonal, inflatable dam approximately 7 miles downstream of the Highway 68 Bridge which is intended to capture and store increased dam releases during the irrigation season (*i.e.,* spring through fall). Surface waters impounded at the inflatable dam is diverted and used for irrigation near the coast (*i.e.,* between Salinas and Castroville) instead of groundwater pumping. In time, freshwater will replenish the coastal aquifers which will reduce saltwater intrusion. The increased dam releases are likely going to improve steelhead smolt out-migration conditions in the lower river, which used to dry, or became reduced to levels unsuitable for migration, earlier in summer.

In previous years, the Monterey County Water Resources Agency (MCWRA) has received a regional general permit (RGP), pursuant to section 404 of the Clean Water Act, from the United States Army Corps of Engineers (Corps) for the Salinas River Channel Maintenance Program (SRCMP). The SRCMP allows landowners to annually clear accumulated sediment and vegetation from the channel bottom in order to reduce flood risks. In 2003, NMFS issued a five-year programmatic biological opinion to the Corps for the issuance of the RGP for the SRCMP. The BO excluded the removal of vegetation from within a 10-foot buffer along both banks of the low-flow channel. The permit and BO expired in 2008, and MCWRA is currently applying for the re-authorization of the SRCMP (Devin Best, NMFS, personal communication, December 2010). These activities, if approved, will require separate environmental review including a section 7 consultation under the ESA. The channel clearing activities, along with a long history of channelization and riparian habitat encroachment along the river (Newman *et al.* 2003, Casagrande *et al.* 2003, NMFS 2007), have resulted in substantial habitat degradation to the lower Salinas River, including the action area.

During the dry season, the Salinas River receives surface waters from upstream reservoirs as well as extensive amounts of agricultural return flows. These agricultural return flows (many of which are upstream of the action area) have been found to contribute high loads of various pollutants including suspended sediment, multiple pesticides and herbicides, nutrients, and

pathogens to the mainstem (Watson *et al.* 2003, Anderson *et al.* 2003a, Anderson *et al.* 2003b, Anderson *et al.* 2006). Recent studies have found the concentrations of various pesticides in agricultural return flows entering the Salinas River to be acutely toxic to benthic macroinvertebrates (Anderson *et al.* 2003, Anderson *et al.* 2006). Meanwhile, other studies have documented the adverse effects to salmonids associated with high suspended sediment concentrations and sedimentation of river substrates (Sigler *et al.* 1984, Waters 1995, Newcombe and Jensen 1996).

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

In addition to the SVWP and the SRCMP discussed above, NMFS has not conducted any additional section 7 consultations in the action area.

NMFS has issued the following section 10(a)(1)(A) research and enhancement permits: Permit 1044 Modification (M) 4 to Dr. Steve Lindley (NMFS Southwest Fisheries Research Center), and Permit 1105 M1 to Jeffrey Hagar (Hagar Environmental Science). Both permits authorize scientific research on S-CCC steelhead throughout the Salinas River Watershed. As of May 2011, limited sampling of *O. mykiss* in the Arroyo Seco River watershed has occurred under Permit 1044 M4 and no research has been conducted related to Permit 1105 M1. No sampling of steelhead has occurred in the action area. Separate section 7 consultations were conducted as part of the permit authorization process. Both permits contain measures to minimize and avoid the death and injury of steelhead, including annual limits on the number steelhead that collected and unintentionally killed, and therefore NMFS expects impacts on the overall steelhead population related to these research activities in the Salinas River Watershed will be minimal.

## VI. EFFECTS OF THE ACTION

The purpose of this section is to identify the direct and indirect effects of the proposed action, and any interrelated or interdependent activities, on threatened S-CCC steelhead and their designated critical habitat. Data to quantitatively determine the precise effects of the proposed action on S-CCC steelhead and their critical habitat are limited or not available; the assessment of effects therefore focuses mostly on qualitative identification. This approach was based on knowledge and review of the ecological literature concerning the effects of loss and alteration of habitat elements important to salmonids, including the primary constituent elements of critical habitat. This information was used to gauge the likely effects of the proposed project via an exposure and response framework that focuses on what stressors (physical, chemical, or biotic), directly or indirectly caused by the proposed action, that S-CCC steelhead and their critical habitat are likely to be exposed to. Next, we evaluate the likely response of S-CCC steelhead and their critical habitat to these stressors in terms of changes to S-CCC steelhead survival, growth and reproduction, and changes to the ability of PCEs to support the value of critical habitat.

## A. Fish Relocation

Prior to and during dewatering of the construction site, the applicant will capture and relocate fish away from the work area to avoid direct mortality and minimize the possible stranding of steelhead and other aquatic species in the river channel that become isolated during the dewatering process. Fish in the project site will be captured by seine, dip net, and/or backpack electrofisher, and then transported and released into suitable habitat downstream of the project area. Once the diversion facilities are in place, steelhead and other species will be able to pass through the work area inside the diversion pipe only.

As described above in the Environmental Baseline, habitat conditions in the action area (*e.g.*, predominantly sand substrate and elevated water temperatures) are generally not suitable for juvenile steelhead to rear through summer. The increased flow releases from the implementation of the SVWP will likely improve smolt out-migration conditions in the mainstem of the Salinas River, particularly during spring. Smolt out-migration data from 2010 on the Arroyo Seco showed smolts were migrating as late as the end of May (Cuthbert *et al.* 2010). If the project is implemented during a wet year, it is conceivable that the migration window for smolts would extend into June. Therefore, impacts to a small number of smolts (and/or juveniles migrating to the lagoon) near the end of the migration season may occur.

Fish relocation activities pose a risk of injury or mortality to rearing juvenile steelhead. Any fish collecting gear, whether passive (Hubert 1996) or active (Hayes *et al.* 1996) has some associated risk to fish, including stress, disease transmission, injury, or death. The amount of unintentional injury and mortality attributable to fish capture varies widely depending on the method used, the ambient conditions, and the expertise and experience of the field crew. Since fish relocation activities will be conducted by qualified fisheries biologists following both the CDFG and NMFS guidelines, direct effects to and mortality of juvenile or smolt steelhead during capture will be minimized. Based on similar relocation efforts NMFS is familiar with, approximately two percent (or 1 individual) of the fish may be injured or killed during relocation activities. Those fish that avoid capture may be exposed to risks described in the following section on dewatering.

Based on the overall low abundance of steelhead in the Salinas River Watershed and the timing of the project (June 15-October 15), NMFS expects only a small amount, if any, steelhead juveniles or smolts (less than 35 individuals annually) to be present in the action area and effected by collection and relocation and channel dewatering activities. NMFS anticipates that no more than one steelhead mortality per year will result from fish capture and relocation activities for the project.

Ideally sites selected for relocating fish should have ample habitat. In some instances relocated fish may endure short-term stress from crowding at the relocation sites. Relocated fish may also have to compete with other fish causing increased competition for available resources such as food and habitat (Keeley 2003). Some of the fish released at the relocation sites may choose not

to remain in these areas and may move either upstream or downstream to areas that have more habitat and/or a lower density of fish. As each fish moves, competition remains either localized to a small area or quickly diminishes as fish disperse. NMFS cannot estimate the number of fish affected by competition, but does not believe this impact will be large enough to affect the survival chances of individual fish. For example, the use of multiple release sites will help facilitate fish dispersion, limiting competition. During spring and summer, flows in the river are required to be high enough for steelhead juveniles and smolts) to migrate downstream to the estuary (NMFS 2007). Based on these anticipated flow levels in the river, steelhead relocated downstream of the project area should have ample habitat available downstream of the project area and competition with other steelhead is unlikely to be an issue.

**B. Dewatering the Project Area**

NMFS does not anticipate changes in stream flow within and downstream of the project area during dewatering activities. Stream flows in the river will be maintained through this reach during summer and into fall, and are expected to be within 10 and 60 cfs during this period, as described above in the Environmental Baseline. A dike (or cofferdam) will be constructed upstream of the bridge using either native sediments or a combination of geotextile fabric and imported washed gravel. Impounded water behind the dike will be diverted through the construction area in one or more large steel pipes and discharged back into the river channel below the dewatered area. Steelhead that avoid capture in the project area prior to dewatering will likely die during or immediately following channel dewatering. The biologist on site will make every effort to detect, collect, and relocate any steelhead that avoided capture prior to the beginning of the dewatering process. Because of the small number of steelhead likely present, and the relative ease of locating them in the channel (sandy substrate and lack of cover) NMFS expects the number of juvenile or smolt steelhead killed as a result of stranding during dewatering activities will be zero.

Steelhead juveniles and smolts may also be harmed or killed during dewatering activities if they are entrained into the pumps or discharge line. To eliminate this risk, the applicant will screen all pumps according to NMFS criteria, to ensure juvenile steelhead will not be harmed by the pumps during dewatering events.

Any steelhead rearing downstream of the action area may be inadvertently affected by the loss of benthic (*i.e.*, bottom dwelling) aquatic macroinvertebrate production from the dewatered area and from the loss of riparian vegetation (Cushman 1985). However, effects to aquatic macroinvertebrates resulting from these activities will be temporary because construction activities will be relatively short-lived, drift from upstream will continue through the pipe(s), and rapid re-colonization of disturbed areas by macroinvertebrates is expected following construction (Cushman 1985, Thomas 1985). The loss of aquatic macroinvertebrates as a result of these activities is not expected to adversely affect juvenile or smolt steelhead present in reaches downstream of the project area. In the Salinas River, willows and emergent vegetation quickly

re-colonize the river channel following significant disturbance (*i.e.,* following winter floods, channel clearing activities, *etc.*). Re-vegetation of other upland areas and replacement of non-native species with native species is expected to restore the food source directly in the disturbed area, while restoring the natural biota.

**C. Increased Mobilization of Sediment**

In-stream and near-stream construction activities may cause temporary increases in turbidity (reviewed in Furniss *et al.* 1991, Reeves *et al.* 1991, and Spence *et al.* 1996). Sediment may affect salmonid feeding behavior and efficiency, resulting in reduced growth rates (Sigler *et al.* 1984, Newcomb and Jensen 1996). High turbidity concentrations can reduce dissolved oxygen in the water column, which can affect fish respiratory function. Also, because of turbidity, salmonids disperse from established territories, which can temporarily displace fish into less suitable habitats and which can lead to reduced growth rates (Sigler *et al.* 1984).

NMFS anticipates only short-term increases in turbidity will occur during proposed dewatering activities, construction and removal of dikes, channel leveling activities, and potentially during some of the bank vegetation removal. The turbidity may extend downstream to approximately 1,000 feet, after which it will either settle or become diluted to insignificant levels.

Impacts associated with increases in turbidity from this proposed project will likely be limited to behavioral effects, such as temporarily vacating preferred habitat or temporarily reduced feeding efficiency. These temporary changes in behavior, may reduce growth rates, but are not likely to reduce the survival chances of individual juvenile steelhead. Caltrans has included BMPs and other minimization measures to reduce the likelihood of sediments from entering the streams. NMFS's familiarity with the results of similar BMPs indicates these actions are likely to be effective at reducing sedimentation rates. Any increases in turbidity due to the construction of cofferdams, the initial wetting of the bypass channel (if this method is used), and during the initial re-wetting of the river low-flow channel following project completion, will likely be minimal and temporary due to the incorporation of BMPs and due to the dominant substrate composition in the action area (*i.e,* sand). Therefore, any short-term impact associated with turbidity during implementation of this project is expected to be insignificant and are not expected to result in the loss of any steelhead that may occur in the action area.

**D. Pile Installation**

Caltrans proposes to install approximately 128 permanent 24-inch steel cased piles and up to 320, 18-inch temporary piles concurrently with an impact hammer. Because the project site will be dewatered, no pile installation will occur in-water. Sheet piles will be installed with a vibratory hammer at the bridge pier footings in order to construct cofferdams. Caltrans estimates the installation of the permanent piles will require 18 work days to complete, assuming one day per side at nine locations, and between 16 and 50 days to install a maximum of 320 18-inch piles.

The pile installation work will occur between July 1 and October 15, when S-CCC steelhead are least likely to be present in the action area.

Available information indicates fish may be injured or killed when exposed to elevated underwater sound pressure waves generated from driving steel piles with impact hammers. Pathologies associated with very high sound levels are collectively known as barotraumas. These include hemorrhage and rupture of internal organs, including the swim bladder and kidneys in fish. Death can be instantaneous, occur within minutes after exposure, or occur several days later. High sound pressure levels can also result in hearing damage to fish (Hastings *et al.* 1995, 1996). Additional detrimental effects on fish from loud sounds include stress, increasing risk of mortality by reducing predator avoidance capability, and interfering with communication necessary for navigation and reproduction. Pile driving may result in "agitation" of salmonids indicated by a change in swimming behavior detected by Shin (1995) with salmonids. Steelhead may exhibit a startle response to the first few strikes of a pile.

Based on the time of year that pile driving would be conducted (July 1-October 15), it is unlikely any S-CCC steelhead would be present in the action area. Impacts to any S-CCC steelhead would only occur if they happened to move through the diversion pipe or diversion channel during pile installation. Sound energy originating from the ground as a result of pile driving activities will be dominated by low frequencies, which do not propagate efficiently through water, and therefore would have less of an effect on fish that would be in the diversion pipe, in the earthen diversion channel, or immediately upstream or downstream of the diversions (approximately 100 feet from the pile installation locations). Also, if used, the walls of the diversion pipe will provide additional sound attenuation from pile driving if a fish is moving through the pipe during pile installation.

NMFS expects the effects to listed S-CCC steelhead and their designated critical habitat in the action area during pile installation to be minimal, if any, because: (1) pile installation will only be conducted between July 1 and October 15 when S-CCC steelhead are least likely to be present; (2) no pile driving will occur in flowing waters; (3) the channel in the action area will be dewatered, and therefore the hydro-acoustic effects on any fish in the project area would be attenuated by the ground and, if used, the steel diversion pipe; and (4) after pile driving is complete, sound pressure wave levels in the action area will return to pre-pile driving conditions.

**E. Habitat Loss**

Original estimates for the amount of waters (2.66 acres) and wetlands (0.66 acres) impacted during the proposed project activities provided by Caltrans (2010) were based on conditions present in the lower river prior to the implementation of the Salinas Valley Water Project (*i.e.*, when the extent of water and wetlands during summer were considerably less) and following annual channel clearing activities as part of the SRCMP. Therefore, as discussed above in the Environmental Baseline, it is likely these estimates underestimated the conditions likely to be

present at the time of construction in summer when surface waters will be more abundant. A revised delineation was made in March 2011 by the Corps, which revealed a substantial reduction in the amount of the PIA occupied by wetlands (0.09 acres), yet a notable increase in the area occupied by waters (2.86 acres). The re-delineation was conducted in March 2011 following high winter stream flows which had likely scoured much of the wetland vegetation from the project site and therefore, this would explain the substantial increase in areas occupied by waters and the large decrease in the area occupied by wetlands.

Because it is difficult to accurately predict the amount of habitat that will occur within the action area in two or three years (due to annual differences in river flow, and scour rates), NMFS will assume, as a worst-case scenario, that the amount of wetland habitat impacted in the river will be twice the amount originally proposed by Caltrans[5]. The project will be implemented in summer and therefore estimates on the extent of waters and wetlands should be based on likely summer conditions. NMFS anticipates the amount of wetlands (*i.e.*, all vegetation growing within the river channel bottom) temporarily affected by the proposed activities will be 1.32 acres. Wetland, as defined here, are an important component of the critical habitat within the action area because they help maintain the low flow channel, provide a source of invertebrates for drift feeding steelhead, filter pollutants from the water column, provide escape cover for young steelhead, and provide the only source of shade over the low flow channel. In addition, the project may temporarily impact approximately 1.43 acres of riparian habitat (including upland riparian) present within the action area. Permanent impacts to wetlands and waters are due to the widening of bridge piers within the channel. NMFS will also assume the permanent loss of wetlands will be approximately 0.002 acres, or twice the value originally proposed by Caltrans (2010).

Currently, mature riparian vegetation in the action area is limited and restricted to the upper banks and terraces. However, Caltrans anticipates approximately 100-150 young arroyo willows with a diameter at breast height (DBH) ranging between 2 and 6 inches will need to be removed (Paul Holmes, Caltrans, personal communication February 8, 2011). The limited riparian canopy does not provide much shade over the wide river channel and therefore the proposed temporary loss of vegetation will have minor impacts on shade, or water temperature. Also, the young willows would not constitute a current source of in-stream large woody material in the river channel. Willows and other fast-growing emergent vegetation are expected to quickly colonize the river bottom following the completion of the project.

To minimize the impacts related to the temporary loss of wetlands and waters, Caltrans will conduct 1:1 on-sight restoration, including the implementation of a site re-vegetation plan developed with CDFG. For permanent impacts to wetlands and waters, Caltrans proposes to conduct 3:1 enhancement of existing, but degraded, habitats (*i.e.*, the removal of non-native species).

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[5] Based on recent observations by Caltrans staff following the implementation of the SVWP.

Based on the relatively small area of impact, the rapid re-colonization rates of riparian and wetland vegetation in river channel, and the proposed re-vegetation and site enhancement efforts by Caltrans, NMFS expects the temporary loss of wetland and riparian habitat will not result in significant impacts to habitat in the Salinas River.

## VII. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

NMFS is not aware of any additional actions that would cause cumulative effects beyond those that are ongoing and have been analyzed in the environmental baseline of this biological opinion. During the time frame of construction for the proposed project, three years, natural environmental fluctuations are likely to obscure any impacts from climate change (Cox and Stephenson 2007, Smith *et al.* 2007). Therefore, NMFS does not expect cumulative impacts from climate change in the action area will be observable during construction of the proposed project. Climate change may impact rainfall amounts and stream temperatures in the action area by mid to late century.

## VIII. INTEGRATION AND SYNTHESIS

After reviewing the information available, including the status of S-CCC steelhead and its designated critical habitat in the action area, NMFS anticipates only a small number of juvenile and/or smolt S-CCC steelhead (no more than 35 individuals per year) may be affected by the project, and no more than one individual will perish each year for a total of two steelhead for the two years of the project construction. This is due to the low expected abundance of fish in the action area during that time of year, the relocation efforts prior to dewatering, and the low injury and mortality rates expected from fish collection and relocation methods. NMFS anticipates few steelhead smolts are likely to be encountered because the project will start at the end of the smolt out-migration period, and therefore a majority of the smolts would have already migrated downstream of the action area unharmed, and of those potentially captured, most if not all will also be relocated downstream unharmed. Steelhead reproductive strategy results in thousands of fertilized eggs and the relatively large number of juveniles produced by each spawning pair in other areas of the watershed in future years is expected by NMFS to replace the few, if any, juveniles lost to the effects of the project. Therefore, NMFS believes the loss of no more than two smolt or juvenile steelhead during the two years of in-water work would not impact future adult returns/abundance in the Salinas River Watershed or jeopardize the continued existence of the DPS.

NMFS anticipates short-term increases in turbidity will occur during proposed dewatering activities, construction and removal of the cofferdams. These impacts will be temporary, and NMFS anticipates proposed BMPs will control sediment and other pollutants sufficiently to avoid adverse effects to listed salmonids. Also, during the proposed action, NMFS does not anticipate any noticeable change in flow conditions above and below the diversion dam that would affect fish movement in these areas. No permanent adverse changes in stream flow are anticipated.

Caltrans will implement a re-vegetation plan to minimize impacts for trees and other wetland plants that are removed as a result of the bridge retrofit and seismic update project. Also, Caltrans will remove non-native plants from impacted riparian areas outside of the project action area to help minimize permanent habitat loss associated with this project. NMFS also expects young willows and other emergent wetland species to quickly recolonize the action area the following spring. Therefore, the effects to critical habitat designated for S-CCC steelhead are expected to be minor and temporary and will only impact seasonal migratory habitat.

## IX. CONCLUSION

After reviewing the best available scientific and commercial information, the current status of the species and critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion the Salinas River Bridge widening project at Highway 68, in Monterey County, California is not likely to jeopardize the continued existence of S-CCC steelhead, nor is it likely to destroy or adversely modify designated critical habitat designated for S-CCC steelhead.

After reviewing the best available scientific and commercial information, the current status of the critical habitat, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is NMFS' biological opinion the Salinas River Bridge widening project at Highway 68, is not likely to destroy or adversely modify designated critical habitat for threatened S-CCC steelhead.

## X. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by NMFS as an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral

patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement. Caltrans will adhere to the Term and Conditions detailed in this section of the biological opinion and other BMPs discussed in the biological assessment for the entirety of the project.

The measures described below are nondiscretionary, and must be undertaken by Caltrans, as appropriate, 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 assume and implement the terms and conditions or (2) fails to require their designee(s) to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Caltrans must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement (50 CFR §402.14(i)(3)).

**A. Amount or Extent of Take**

The amount or extent of take described below is based on the analysis of effects of the action done in the preceding biological opinion. If the action is implemented in a manner inconsistent with the project description provided to NMFS, and as a result take of listed species occurs, such take would not be exempt from section 9 of the ESA.

The number of threatened S-CCC steelhead that may be incidentally taken by capture and relocation during the project activities is expected to be small (no more than 35 individuals each year for a total of 70 during the project) relative to the total number of S-CCC steelhead present throughout the Salinas River Watershed. The majority, if not all, of the fish captured will be released unharmed. Qualified biologists will relocate all fish, including salmonids from the dewatered river channel (approximately 340 feet), back into the Salinas River downstream of the project area in habitats with sufficient depth, cover, and connected stream flow. NMFS anticipates no more than one steelhead each year (a total of two individuals for the entire project) will be killed during relocation and dewatering efforts.

The anticipated take will have been exceeded if more than 35 fish are relocated during one year or more than one relocated fish is killed during one year. If anticipated take is exceeded, Caltrans must contact NMFS immediately at the phone number and email provided below.

**B. Effect of the Take**

In the accompanying biological opinion, NMFS determined this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

**C. Reasonable and Prudent Measures**

The following reasonable and prudent measures are necessary and appropriate to minimize the impacts of the incidental take S-CCC steelhead:

1. Undertake measures to ensure fish relocation efforts and riparian/wetland vegetation planting are carried out in a manner that minimizes effects to federally listed steelhead
2. Measures shall be taken to minimize impacts to water quality in order to avoid and mimize harm to steelhead.

3. Measures shall be taken to effectively monitor and report the results of the fish relocation activities, the success of riparian/wetland planting.

**D. Terms and Conditions**

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

<u>The following terms and conditions implement Reasonable and Prudent Measure 1: Undertake measures to ensure fish relocation efforts and riparian/wetland vegetation planting is carried out in a manner that minimizes effects to federally listed steelhead and their critical habitat.</u>

1. Caltrans shall provide a final list of all BMP's and the Terms and Conditions of this biological opinion that are specific to the Highway 68 Bridge Replacement project to their contractors and ensure they are followed for the duration of the project.

2. Caltrans shall provide NMFS with a Fish Relocation Plan for review 30 days prior to the start of dewatering and fish relocation activities and shall outline all confirmed fish relocation methods, including the location and a description of the habitat where steelhead are to be relocated. The plan shall be submitted to NMFS North Central Coast Office (see address below).

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

4. Steelhead shall be handled with extreme care and kept in water to the maximum extent possible during relocation activities. All captured fish shall be kept in cool, shaded, and aerated water that is protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and fish shall not be removed from this water except when released. If necessary, the biologist shall have at least two containers and segregate young-of-year steelhead from older steelhead and other potential aquatic predators in order to avoid predation affects. Captured steelhead shall be relocated as soon as possible and will be given highest priority over other non-listed fish species. Steelhead will be released downstream of the project area.

5. Prior to construction, Caltrans will provide to NMFS (see address below) an updated/current assessment of the amount (acres) of wetland and riparian habitats that are to be removed during construction. In order to reflect on conditions likely to be present during construction in summer, this assessment will be made no more than 45 days prior to the start of vegetation removal.

6. Caltrans will submit to NMFS a finalized riparian vegetation/wetland recovery plan as soon as it is finalized and prior to implementation. This will include a three year plant establishment monitoring period with specific success criteria.

<u>The following terms and conditions implement Reasonable and Prudent Measure 2: Measures shall be taken to minimize impacts to water quality.</u>

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

8. Caltrans, or its contractors, shall provide NMFS with a copy of the project's site specific Storm Water Pollution Prevention Plan (SWPPP) or applicable plan(s), which specifies BMPs to control mobilization of sediment from the project. If BMPs must be modified, or when additional BMPs are implemented, the SWPPP will be updated to reflect needed

changes. Documents shall be submitted to NMFS North Central Coast Office (see address below).

The following terms and conditions implement Reasonable and Prudent Measure 3: Measures shall be taken to effectively monitor and report the results of the fish relocation activities, turbidity monitoring associated with the construction and removal of the water diversion facilities, and the success of riparian/wetland planting.

9. Caltrans, or its contractors, will provide NMFS with a final plan for diverting the river no later than 30 days prior to construction of the diversion. Caltrans, or its contractors, will also notify NMFS biologist no less than 30 days prior to the beginning of the diversion construction in order to provide NMFS staff with an opportunity to be present during these activities.

10. Caltrans shall provide NMFS with a summary report within 30 days of the fish relocation activity. The report shall include the methods used during the fish relocation efforts, number and species captured, number of mortalities by species, and other pertinent information (*i.e.,* water quality conditions) related to the fish relocation activities.

11. Caltrans shall provide NMFS with a final report (address below) by January 15 following each year the diversion facilities are constructed and removed. The report will detail the results of the turbidity monitoring associated with the construction and removal of the river diversion facilities and shall include the method used to measure turbidity, the times and dates turbidity measurements were taken, and the turbidity levels measured.

12. Caltrans shall provide NMFS with a final report (address below) detailing the riparian/wetland vegetation recovery implementation and monitoring. The report shall document the success of the revegetation efforts and include photo documentation of the project progress. The report shall be submitted within 60 days of the end of the three plant establishment period.

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

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

## XI. CONSERVATION RECOMMENDATIONS

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

1. NMFS recommends Caltrans consult with NMFS to develop a long range planning approach that seeks to minimize and avoid the impacts of road-related projects on listed salmonids and green sturgeon.

2. Caltrans should identify and prioritize any maintenance and construction projects which, if implemented, can improve ESA-listed salmonid migration or in-stream environmental conditions.

## XII. REINITIATION NOTICE

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

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# M e m o r a n d u m

***Serious Drought.***
***Help Save Water!***

**To:** MR. GARY BLAKESLEY
Branch Chief
Division of Engineering Services
Office of Bridge Design-North

Attention: Seiji Morimoto

**Date:** April 17, 2015

**File:** 05-MON-68
PM R17.7
EA 05-0F7001
ID 0500000049
Salinas River Bridge (Widen)
Br. No. 44-0040R/L

**From:** **DEPARTMENT OF TRANSPORTATION**
**DIVISION OF ENGINEERING SERVICES**
**GEOTECHNICAL SERVICES – MS 5**

**Subject:** Revised Foundation Report (FR) for Salinas River Bridge

## INTRODUCTION

Per your request, the Office of Geotechnical Design-North (OGD-N) has prepared this revised FR for Salinas River Bridge (Bridge Number 44-0040R/L). This revised FR supersedes the previous FR dated August 1, 2014.

## SCOPE OF WORK

This report is based on a review of the As-Built Plans, As-Built Log-of-Test-Borings (LOTBs), and evaluation of the geotechnical findings gathered from a subsurface investigation conducted in the fall of 2011. The information provided in this report includes a summary of the geotechnical findings from the subsurface investigation, seismicity, evaluation of geotechnical seismic hazards, and foundation recommendations.

The vertical datum used in this report is NAVD88 with the exception of the As-Built information which uses NGVD 29.

## PROJECT DESCRIPTION

The bridge site is located on State Route 68 crossing the Salinas River, west of the City of Salinas, in Monterey County. The existing parallel Salinas River Bridges (left and right) are eight-span, continuous reinforced concrete four-cell box girder bridges with open seat

type abutments and solid reinforced concrete wall piers. The bridges are approximately 877 feet long and approximately 31 feet wide. The existing bridges were built in 1966.

This project proposes to widen and seismically retrofit the existing bridges (both left and right structures) and upgrade the railings. The widening (left and right) is proposed to be 6'-9" to the outside and 1'-9" to the inside. The abutments widening will each be supported on three 4 ft diameter CISS piles (two on the widening side, one on the other side). All pier footings will be retrofitted with two new footings (one footing at the outside edge and inside edge).

## FIELD INVESTIGATION AND TESTING PROGRAMS

The Office of Geotechnical Design-North conducted a subsurface investigation in the fall of 2011 for the proposed project.

The 2011 subsurface investigation consisted of nine mud rotary borings and five Cone Penetrometer Test (CPT) soundings. The mud rotary borings were advanced using a self-casing wireline drilling method.

During the 2011 subsurface investigation, the maximum depth of the mud rotary borings was approximately 220 feet (approximate elevation of -180.1 feet) and the maximum depth of the CPT soundings was approximately 100 feet (approximate elevation of -64.3 feet).

Selected soil samples from the borings were tested in the Caltrans soils laboratory. A summary of the borings drilled during the subsurface investigation is included in **Table 1**.

## LABORATORY TESTING

Laboratory testing was performed on selected samples of the subsurface materials obtained from the 2011 subsurface investigation. Tests were performed to determine the corrosion and engineering properties of the subsurface materials. Refer to the Corrosion Evaluation section of this report for information concerning corrosion test results. In addition to the corrosion tests, the following tests were performed on selected samples; particle analysis (sieve and hydrometer) and Atterberg limits (liquid limit, plastic limit and plasticity index). All tests were performed in general accordance with American Society for Testing and Materials (ASTM) standards or California Test Methods (CTM).

## SITE GEOLOGY AND SUBSURFACE CONDITIONS

The project site is located within the Coast Ranges geomorphic province. The Geologic Map of California, Santa Cruz Sheet, 1:25000, compilation by Charles W. Jennings and Rudolph G. Strand, 1958, fifth printing 1992, indicates that the project site is covered by Recent (Holocene) alluvium deposits of sand and gravel (Qal). The Geologic Map also indicates that Quaternary Pleistocene nonmarine sedimentary deposits (Qc), and Pliocene – Pleistocene nonmarine sedimentary deposits (QP) are exposed on the southwest side of the site.

## SUBSURFACE CONDITIONS

The soil encountered during the 2011 subsurface investigation for the Salinas River Bridge, in general, may be divided into three units. These units are referenced in this report as Unit 1, Unit 2, and Unit 3. The soil description used in the following sections is based on field visual observation and Standard Penetration Test (SPT) and pocket penetrometer.

Unit 1 generally consists of poorly graded, loose and medium dense, fine and medium grained sand. Unit 1 extends to a depth of approximately 40 feet from the current ground surface within the river channel.

Unit 2 was encountered immediately below Unit 1 in all borings from the 2011 investigation. Unit 2 generally extends to a depth of approximately 110 feet from the current ground surface within the river channel. This unit consists of predominately cohesive soils with lenses of cohesionless soils, such as sand and silt. The shear strength of the cohesive soils varied from 0.25 to 2.5 tons per square foot (tsf) and the apparent density of the cohesionless soils was medium dense and dense.

Unit 3 was encountered in all borings roughly below the depth of 110 feet from the current ground surface within the river channel. The soils encountered in Unit 3 predominately consisted of sand, gravel, silt, and cobbles. The apparent density of the cohesionless soil was very dense and dense. Stiff and very stiff cohesive soils were also encountered in Unit 3.

The As-Built LOTBs indicated that similar soils, equivalent to Unit 1 and Unit 2, were encountered in the 1963 investigation.

For detailed subsurface data and boring locations, please refer to the Log-of-Test-Boring sheets.

## GROUNDWATER

During the 2011 subsurface investigation, groundwater levels were not measured in all borings as most of the borings were located in the river channel and on an unpaved farmer's access road. As these borings had to be immediately backfilled upon the completion of drilling, there was no time for groundwater to stabilize and get an accurate measurement.

After completion of Boring RC-11-003, located in the median behind Abutment 1, a temporary piezometer was installed in the boring. Groundwater was measured in the temporary piezometer at an elevation of 26.8 feet on April 30, 2012.

On April 30, 2012 and May 1, 2012, additional hand auger borings were drilled next or in close proximity (within approximately 30 feet) to the mud rotary borings drilled in 2011 to obtain groundwater data. at the site. **Table 1** lists the elevations of the observed water levels from the hand auger borings.

**Table 1. Groundwater (GW) Measurement Data at the Salinas River Bridges**

| Boring Location | Approximate Top of Boring Elevation (ft) | Date of Measurement | Depth of GW Table (ft) | Elev. of GW Table (ft) |
|---|---|---|---|---|
| RC-11-001[2] | 33.01 | 5-1-2012 | 5.5 | 27.5 |
| RC-11-002[2] | 35.33 | 5-1-2012 | 6.8 | 28.5 |
| RC-11-003[1] | 63.40 | 4-30-2012 | 36.7 | 26.7 |
| | | 4-9-2013 | 38.0 | 25.4 |
| RC-11-004[3] | 46.00 | 4-30-2012 | 17.5 | 28.0 |
| RC-11-005[3] | 42.50 | 4-30-2012 | 15 | 27.5 |
| RC-11-006[2] | 33.76 | 5-1-2012 | 5.9 | 27.9 |
| RC-11-007[2] | 36.82 | 5-1-2012 | 8.9 | 27.9 |
| RC-11-008[2] | 39.91 | 5-1-2012 | 11.9 | 28.0 |
| | | 4-9-2013 | 13.3 | 26.6 |
| RC-11-009[3] | 43.01 | 5-1-2012 | 15 | 28.0 |

Notes: 1) Measured from the temporary piezometer.
2) Measured from hand auger boring next to this boring.
3) Estimated from hand auger boring close to the boring (within approximately 30 feet).

Groundwater elevations are subject to seasonal fluctuations and may vary according to the water level in the river channel. Therefore groundwater may occur at higher or lower elevations than the groundwater level readings during the foundation investigation.

## SCOUR EVALUATION

Table 2 below represents the key design parameters from the "Final Hydraulics Report" for the Salinas River Bridge dated September 11, 2013.

**Table 2. Hydrologic Summary for Salinas River Bridge, Br. No. 44-0040R/L**

| **Long Term Scour Depths** | | |
|---|---|---|
| Support Locations | Degradation Scour Depth | Contraction Scour Depth |
| P2-P8 | 1.6 feet | 6.0 feet |
| **Scour Data (Elevation and Depth)** | | |
| Support Location | Long Term Scour Elevation* | Short Term (Local) Scour Depth |
| Pier 2 | 28.1 ft | 4.0 ft |
| Pier 3 | 26.5 ft | 4.0 ft |
| Pier 4 | 22.4 ft | 4.0 ft |
| Pier 5 | 18.7 ft | 4.0 ft |
| Pier 6 | 18.7 ft | 4.0 ft |
| Pier 7 | 17.7 ft | 4.0 ft |
| Pier 8 | 17.7ft | 4.0 ft |

*Elevations based on the NAVD 1988 datum.

## CORROSION EVALUATION

Representative soil samples taken during the recent foundation investigation were tested for corrosion potential by the Office of Testing and Technology Services, Corrosive Technology Branch. The Corrosive Technology Branch states that "this site is not corrosive to foundation elements" ("Test Summary Report-Soil/Water" dated March 26, 2012). Table 3 presents a summary of the results.

**Table 3. Soil Corrosion Test Summary**

| Location | SIC Number | Sample Depth (ft) | Minimum Resistivity (ohm-cm) | pH | Sulfate Content (ppm) | Chloride Content (ppm) |
|---|---|---|---|---|---|---|
| RC-11-001 | C538081 | 40-45 | 2093 | 7.51 | N/A | N/A |
| RC-11-001 | C538082 | 65-70 | 2536 | 7.07 | N/A | N/A |
| RC-11-003 | C538083 | 112-115 | 1560 | 6.72 | N/A | N/A |
| RC-11-004 | C538083 | 60-65 | 660 | 7.32 | 584 | 48.9 |
| RC-11-009 | C538083 | 97-100 | 1680 | 7.36 | N/A | N/A |

Note: 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.

## SEISMIC RECOMMENDATIONS

Ground Motion

Based on soil properties determined from the borings, a $Vs_{30}$ (the weighted average shear wave velocity for the top 100 feet of foundation material) of 180 m/s (590 ft/s) is considered to be applicable to the foundation material for the proposed bridge widening.

The deterministic spectrum from the Caltrans ARS Online Tool (Version 2.3.06) is based on the nearest active fault which controls ground motion. This fault is the Reliz fault zone (Blanco section) (ID No. 186) with a maximum magnitude (MMax) of 7.0. Based on Caltrans ARS Online Tool (Version 2.3.06), the fault is a strike-slip fault with a dip angle of 70 degrees to the west. However, the Reliz fault zone (Blanco section) is referred as a high angle reverse fault in the "Complete Report for Reliz Fault Zone, Blanco Section (Class A) No. 286a," USGS Earthquake Hazards Program. The fault is located west of the project site and the closest distance from the site to the fault rupture plane is approximately 0.8 miles.

According to the "Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations, November 2012", the governing design Acceleration Response Spectrum (ARS) curve is obtained by any or a combination of the following three methods for the project site:

1. Statewide minimum deterministic spectrum with MMax of 6.5, vertical strike-slip event with a rupture distance of 7.5 miles.
2. Deterministic Seismic Hazard spectrum from the Caltrans ARS Online Tool (version 2.3.06).
3. The USGS interactive deaggregation procedure with a 5% probability of exceedance in 50 years (975 years return period).

For the proposed Salinas River Bridge widening, the recommended ARS curve is an envelope of methods 2 and 3 stated above. The peak ground acceleration is estimated to be 0.5g. The recommended ARS curve is attached.

Fault Rupture

The potential for surface fault rupture at the site is absent as there are no known faults Holocene or younger in age that fall within 1000 feet of the structure and the structure does not fall within an Alquist-Priolo fault zone.

Liquefaction

Soil liquefaction occurs when loose, water-saturated soils lose shear strength in response to shaking from an earthquake, reducing their ability to support embankments and structures. A liquefaction analysis was performed, based on the procedures outlined in Youd et al. (2001), and using seismic data for the project site and soil properties determined from the borings. A summary of the results from the liquefaction analysis are presented in **Table 4**.

**Table 4. Liquefaction Analysis Summary**

| Support | Applicable boring/CPT | Elevation range of liquefiable soil (ft) | Thickness of liquefiable soil (ft) | Settlement at ground surface due to liquefaction (in) |
|---|---|---|---|---|
| Abutment 1 | RC-11-003, CPT-4 | 28 to -6 | 34 | 10 |
| Pier 2 | RC-11-008, RC-11-009, CPT-4 | 28 to -6 | 34 | 10 |
| Pier 3 | RC-11-007, CPT-1, CPT-3 | 28 to 3 | 25 | 8 |
| Pier 4 | RC-11-002, CPT-1, CPT-2 | 28 to 5 | 23 | 8 |
| Pier 5 | RC-11-001, RC-11-006 | 28 to -2 | 30 | 9 |
| Pier 6 | RC-11-001, RC-11-006 | 28 to -2 | 30 | 9 |
| Pier 7 | RC-11-004, RC-11-005 | 28 to -2 | 30 | 9 |
| Pier 8 | RC-11-004, RC-11-005 | 28 to -2 | 30 | 9 |
| Abutment 9 | RC-11-004, RC-11-005, CPT-5 | 28 to 4 | 24 | 8 |

Lateral Spreading

Liquefaction Induced lateral spreading analysis was performed based on the Caltrans "Guidelines on Foundation Loading and Deformation due to Liquefaction Induced Lateral Spreading" October 2013. The analyses indicate that the foundation loading and deformation due to liquefaction induced lateral spreading on the Piers (from Pier 3 to Pier 7) are insignificant. But the significant loading and deformation will affect the foundations of Abutment 1, Abutment 9, Pier 2, and Pier 8 due to abutment slope movement caused by lateral spreading.

Slope stability analyses of Abutment 1 and Abutment 9 were performed to determine the yield coefficient $k_y$. The analyses were performed using the program Slope/W 2007. The analyses result in a $k_y$ of 0.045 for Abutment 1 and a $k_y$ of 0.035 for Abutment 9. The lateral soil movement is estimated to be 31 inches at Abutment 1 and 40 inches at Abutment 9 based on Bray and Travasarou (2007) and a PGA of 0.5g. Please note that the lateral soil movement is based on Newmark block sliding theory where the failure mass is assumed to move as a single unit. This results in a tendency toward very large and deep failure masses. These types of failures are not typically observed in the field following earthquakes. To address this issue an alternative analysis was performed at Abutment 1 and Abutment 9 where the failure mass was limited to a more shallow depth. Using this model the estimated displacement was 5-inches at Abutment 1 and 6-inches at

Abutment 9. These two models represent reasonable upper and lower bounds of lateral displacement.

Vertical settlement has two primary contributions: (1) settlement caused by reconsolidation of the liquefied soil, and (2) settlement resulting from the slumping of the slope during shaking. The settlement caused by reconsolidation is based on an estimate of volumetric strain of 4%, consistent with relative densities estimated in the liquefied strata of 45% to 50% (Idriss & Boulanger 2008). The vertical settlement caused by reconsolidation is approximately 16 inches at Abutment 1 (thickness of liquefied soil is approximately 34 feet) and approximately 12 inches at Abutment 9 (thickness of liquefied soil is approximately 24 feet).

Settlement due to slumping can be roughly estimated as two-thirds of lateral displacement. The lateral displacement was estimated to range from 6 to 40 inches at Abutment 9. Assuming a best estimate of 24 inches, the slumping settlement is estimated to be about 16 inches. Combining the vertical settlement of 12 inches and the slumping settlement of 16 inches, the total settlement is estimated to be about 28 inches at Abutment 9. At Abutment 1, the lateral displacement was estimated to range from 5 to 31 inches. Assuming a best estimate of 21 inches, the slumping settlement is estimated to be about 14 inches. Combining the vertical settlement of 16 inches and the slumping settlement of 14 inches, the total settlement is estimated to be about 30 inches at Abutment 1. For design purpose a total settlement 30 inches is recommended at both abutments and a total settlement 12 inches is recommended at Pier 2 and Pier 8.

The lateral spreading force was estimated to be 47 kips/ft on the top of the pile at the abutments (acting perpendicular to the abutments). At Pier 2 and Pier 8, the top of the liquefied layer elevation (28 feet) is higher than the top of footing elevation (22.88 ft + 4 ft = 26.88 ft, and 21.38 ft + 4 ft = 25.38 ft). If the pier wall is assumed to be sheared off during an earthquake, the passive force applied to the footing will be insignificant. Otherwise this force will be high, on the order of 50 kips/ft).

## AS-BUILT FOUNDATION INFORMATION

The existing bridges are supported on Raymond step-tapered steel shells filled with class "A" concrete. The design load for the piles was 90 kips (45 tons) and the nominal load was approximately 180 kips (90 tons). Based on the General Plan (GP) dated August 10, 1964, the specified pile tip elevations are as shown in **Table 5** below. According to the information obtained from the Geotechnical Services (GS) Bridge File, all pile tips were within 5 feet of specified tip elevation and some of the piles needed restrike to verify that the required bearing value had been attained.

**Table 5. Pile Data for the Existing Bridge**

| Support Location | Bottom of footing elevation (ft) | Specified pile tip elevation[1] (ft) | Pile length (ft) |
|---|---|---|---|
| Abutment 1 | 48.0 (left), 48.5 (right) | -40.0 | 88.0, 88.5 |
| Pier 2 | 20.0 | -40.0 | 60.0 |
| Pier 3 | 20.0 | -40.0 | 60.0 |
| Pier 4 | 13.0 | -50.0 | 63.0 |
| Pier 5 | 13.0 | -80.0 | 93.0 |
| Pier 6 | 13.0 | -55 (left ) to -45 (right) | 68.0 to 58.0 |
| Pier 7 | 20.0 | -55 (left ) to -45 (right) | 75.0 to 65.0 |
| Pier 8 | 20.0 | -45.0 | 65.0 |
| Abutment 9 | 51.5 (left), 52.0 (right) | -37.0 | 88.5, 89.0 |

Note: (1) All elevations used in this table are based on the As-Built Plans. The vertical datum used for As-Built Plans was NGVD29.

## FOUNDATION RECOMMENDATIONS

For Abutment 1 and Abutment 9, 48-inch diameter driven Cast-In-Steel-Shell (CISS) piles with a wall thickness 0.75 inches are recommended for the foundations.

For all bent locations, 36-inch diameter driven CISS piles with a wall thickness 0.75 inches are recommended for the foundations.

The following foundation recommendations are based on the GP dated March 19, 2014, Foundation Plans (FP) dated February 16, 2014, Pile Layout Plans, and Foundation Design Data Sheets dated July 26, 2013.

The method used to estimate the geotechnical capacity of the CISS piles is from American Petroleum Institute (API) “Geotechnical and Foundation Design Considerations”, April 2011.

## Table 6. Abutment Foundation Design Recommendations for Salinas River Bridge , Bridge Number 44-0040L

| Support | Pile | Cut-off Elev. (ft) | LRFD Service-I Limit State Load (kips) per Support | | LRFD Service-I Limit StateTotal Load (kips) per Pile | Nominal Resistance (kips) | Design Tip Elev. (ft) | Specified Tip Elev. (ft) | Nominal Driving Resistance Required (kips) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | Permanent | Compression | | | | |
| Abut 1 | CISS 48”x 0.75” | 50.55 | 500 | 400 | 250 | 750 | -65.0 (a) | -65.0 | 1270 |
| Abut 9 | CISS 48”x 0.75 | 54.05 | 500 | 400 | 250 | 750 | -49.0 (a) | -49.0 | 1250 |

Notes:

1. Design tip elevations are controlled by: (a) Compression.
2. The nominal driven resistance required is equal to the nominal resistance needed to support factored load plus driving resistance from the liquefiable soils and soil crust above the liquefiable layers, which do not contribute to the design resistance. The liquefiable soil layer extends to elevation of -6.0 feet at Abutment 1.

## Table 7. Abutment Foundation Design Recommendations for Salinas River Bridge , Bridge Number 44-0040R

| Support | Pile | Cut-off Elev. (ft) | LRFD Service-I Limit State Load (kips) per Support | | LRFD Service-I Limit StateTotal Load (kips) per Pile | Nominal Resistance (kips) | Design Tip Elev. (ft) | Specified Tip Elev. (ft) | Nominal Driving Resistance Required (kips) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | Permanent | Compression | | | | |
| Abut 1 | CISS 48”x 0.75” | 51.05 | 500 | 400 | 250 | 750 | -65.0 (a) | -65.0 | 1270 |
| Abut 9 | CISS 48”x 0.75 | 54.55 | 500 | 400 | 250 | 750 | -49.0 (a) | -49.0 | 1250 |

Notes:

1. Design tip elevations are controlled by: (a) Compression.
2. The nominal driven resistance required is equal to the nominal resistance needed to support factored load plus driving resistance from the liquefiable soils and soil crust above the liquefiable layers, which do not contribute to the design resistance. The liquefiable soil layer extend to elevation of 4.0 feet at Abutment 9.

## Table 8. Pier Foundation Design Recommendations for Salinas River Bridge, Bridge Number 44-0040L

| Support Location | Pile Type | Cut-off Elev. (ft) | Service-I Limit State Load (kips) per Support | Total Permissible Support Settlement (inches) | Required Factored Nominal Resistance (kips) per pile | | | | Design Tip Elev. (ft) | Specified Tip Elev. (ft) | Nominal Driving Resistance Required (kips |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Strength Limit | | Extreme Event | | | | |
| | | | | | Comp (φ=0.6) | Tension (φ=0.6) | Comp. (φ=1) | Tension (φ=1) | | | |
| Pier 2 Left | CISS 36" x 0.75" | 21.80 | 950 | 1 | 450 | 0 | 500 | 0 | -83.29 (a-I)<br>-70.0 (a-II)<br>-58.3 (c) | -83.29 | 1035 |
| Pier 2 Right | CISS 36" x 0.75" | 23.30 | 950 | 1 | 450 | 0 | 500 | 0 | -83.79 (a-I)<br>-70.0 (a-II)<br>-56.8 (c) | -83.79 | 1035 |
| Pier 3 Left | CISS 36" x 0.75" | 21.80 | 950 | 1 | 450 | 0 | 500 | 0 | -83.29 (a-I)<br>-66.0 (a-II)<br>-58.3 (c) | -83.29 | 1140 |
| Pier 3 Right | CISS 36" x 0.75" | 23.30 | 950 | 1 | 450 | 0 | 500 | 0 | -83.79 (a-I)<br>-66.0 (a-II)<br>-56.8 (c) | -83.79 | 1140 |
| Pier 4 Left | CISS 36" x 0.75" | 14.80 | 950 | 1 | 450 | 0 | 500 | 0 | -86.29 (a-I)<br>-73.0 (a-II)<br>-65.3 (c) | -86.29 | 1000 |
| Pier 4 Right | CISS 36" x 0.75" | 16.30 | 950 | 1 | 450 | 0 | 500 | 0 | -86.79 (a-I)<br>-73.0 (a-II)<br>-63.8 (c) | -86.79 | 1000 |
| Pier 5 Left | CISS 36" x 0.75" | 14.80 | 950 | 1 | 450 | 0 | 500 | 0 | -86.29 (a-I)<br>-74.0 (a-II)<br>-65.3 (c) | -86.29 | 950 |
| Pier 5 Right | CISS 36" x 0.75" | 16.30 | 950 | 1 | 450 | 0 | 500 | 0 | -86.79 (a-I)<br>-74.0 (a-II)<br>-63.8 (c) | -86.79 | 950 |
| Pier 6 Left | CISS 36" x 0.75" | 14.80 | 950 | 1 | 450 | 0 | 500 | 0 | -86.29 (a-I)<br>-74.0 (a-II)<br>-65.3 (c) | -86.29 | 950 |
| Pier 6 Right | CISS 36" x 0.75" | 16.30 | 950 | 1 | 450 | 0 | 500 | 0 | -86.79 (a-I)<br>-74.0 (a-II)<br>-63.8 (c) | -86.79 | 950 |
| Pier 7 Left | CISS 36" x 0.75" | 21.80 | 950 | 1 | 450 | 0 | 500 | 0 | -83.29 (a-I)<br>-68.0 (a-II)<br>-58.3 (c) | -83.29 | 1120 |
| Pier 7 Right | CISS 36" x 0.75" | 23.30 | 950 | 1 | 450 | 0 | 500 | 0 | -83.79 (a-I)<br>-68.0 (a-II)<br>-56.8 (c) | -83.79 | 1120 |
| Pier 8 Left | CISS 36" x 0.75" | 21.80 | 950 | 1 | 450 | 0 | 500 | 0 | -83.29 (a-I)<br>-65.0 (a-II)<br>-58.3 (c) | -83.29 | 1240 |
| Pier 8 Right | CISS 36" x 0.75" | 23.30 | 950 | 1 | 450 | 0 | 500 | 0 | -83.79 (a-I)<br>-65.0 (a-II)<br>-56.8 (c) | -83.79 | 1240 |

Notes: 1. Design tip elevations are controlled by: (a-I) Compression (Strength Limit), (a-II) Compression (Extreme Event), and (c) Lateral Load, respectively.
2. The nominal driven resistance required is equal to the nominal resistance needed to support factored load plus driving resistance from the scourable and liquefiable soils, which do not contribute to the design resistance. The scourable soil layers elevation are listed in Table 2 and liquefiable soil layer elevations are listed in Table 4 in this report.
3. Design tip elevation for Lateral Load is provided by Structure Design.

## Table 9. Pier Foundation Design Recommendations for Salinas River Bridge, Bridge Number 44-0040R

| Support Location | Pile Type | Cut-off Elev. (ft) | Service-I Limit State Load (kips) per Support | Total Permissible Support Settlement (inches) | Required Factored Nominal Resistance (kips) per pile | | | | Design Tip Elev. (ft) | Specified Tip Elev. (ft) | Nominal Driving Resistance Required (kips) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Strength Limit | | Extreme Event | | | | |
| | | | | | Comp (φ=0.6) | Tension (φ=0.6) | Comp. (φ=1) | Tension (φ=1) | | | |
| Pier 2 Left | CISS 36" x 0.75" | 23.30 | 950 | 1 | 450 | 0 | 500 | 0 | -83.79 (a-I)<br>-70.0 (a-II)<br>-56.8 (c) | -83.79 | 1035 |
| Pier 2 Right | CISS 36" x 0.75" | 21.80 | 950 | 1 | 450 | 0 | 500 | 0 | -83.29 (a-I)<br>-66.0 (a-II)<br>-58.3 (c) | -83.29 | 1035 |
| Pier 3 Left | CISS 36" x 0.75" | 23.30 | 950 | 1 | 450 | 0 | 500 | 0 | -83.79 (a-I)<br>-66.0 (a-II)<br>-56.8 (c) | -83.79 | 1140 |
| Pier 3 Right | CISS 36" x 0.75" | 21.80 | 950 | 1 | 450 | 0 | 500 | 0 | -86.79 (a-I)<br>-73.0 (a-II)<br>-65.3 (c) | -86.79 | 1140 |
| Pier 4 Left | CISS 36" x 0.75" | 16.30 | 950 | 1 | 450 | 0 | 500 | 0 | -86.29 (a-I)<br>-73.0 (a-II)<br>-63.8 (c) | -86.29 | 1015 |
| Pier 4 Right | CISS 36" x 0.75" | 14.80 | 950 | 1 | 450 | 0 | 500 | 0 | -86.79 (a-I)<br>-74.0 (a-II)<br>-65.3 (c) | -86.79 | 1015 |
| Pier 5 Left | CISS 36" x 0.75" | 16.30 | 950 | 1 | 450 | 0 | 500 | 0 | -86.29 (a-I)<br>-74.0 (a-II)<br>-63.8 (c) | -86.29 | 980 |
| Pier 5 Right | CISS 36" x 0.75" | 14.80 | 950 | 1 | 450 | 0 | 500 | 0 | -86.79 (a-I)<br>-74.0 (a-II)<br>-65.3 (c) | -86.79 | 980 |
| Pier 6 Left | CISS 36" x 0.75" | 16.30 | 950 | 1 | 450 | 0 | 500 | 0 | -86.29 (a-I)<br>-74.0 (a-II)<br>-63.8 (c) | -86.29 | 980 |
| Pier 6 Right | CISS 36" x 0.75" | 14.80 | 950 | 1 | 450 | 0 | 500 | 0 | -83.29 (a-I)<br>-68.0 (a-II)<br>-58.3 (c) | -83.29 | 980 |
| Pier 7 Left | CISS 36" x 0.75" | 23.30 | 950 | 1 | 450 | 0 | 500 | 0 | -83.79 (a-I)<br>-68.0 (a-II)<br>-56.8 (c) | -83.79 | 1120 |

## Table 9. Pier Foundation Design Recommendations for Salinas River Bridge, Bridge Number 44-0040R (continued)

| Support Location | Pile Type | Cut-off Elev. (ft) | Service-I Limit State Load (kips) per Support | Total Permissible Support Settlement (inches) | Required Factored Nominal Resistance (kips) per pile | | | | Design Tip Elev. (ft) | Specified Tip Elev. (ft) | Nominal Driving Resistance Required (kips) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Strength Limit | | Extreme Event | | | | |
| | | | | | Comp (φ=0.6) | Tension (φ=0.6) | Comp. (φ=1) | Tension (φ=1) | | | |
| Pier 7 Right | CISS 36” x 0.75” | 21.80 | 950 | 1 | 450 | 0 | 500 | 0 | -83.29 (a-I)<br>-65.0 (a-II)<br>-58.3 (c) | -83.29 | 1200 |
| Pier 8 Left | CISS 36” x 0.75” | 23.30 | 950 | 1 | 450 | 0 | 500 | 0 | -83.79 (a-I)<br>-65.0 (a-II)<br>-56.8 (c) | -83.79 | 1210 |
| Pier 8 Right | CISS 36” x 0.75” | 21.80 | 950 | 1 | 450 | 0 | 500 | 0 | -83.29 (a-I)<br>-65.0 (a-II)<br>-56.8 (c) | -83.29 | 1240 |

Notes:
1. Design tip elevations are controlled by: (a-I) Compression (Strength Limit), (a-II) Compression (Extreme Event), and (c) Lateral Load, respectively.
2. The nominal driven resistance required is equal to the nominal resistance needed to support factored load plus driving resistance from the scourable and liquefiable soils, which do not contribute to the design resistance. The scourable soil layers elevation are listed in Table 2 and liquefiable soil layer elevations are listed in Table 4 in this report.
3. Design tip elevation for Lateral Load is provided by Structure Design.

## Table 10. Pile Data Table for Salinas River Bridge, Bridge Number 44-0040L

| Support Location | Pile Type | Cut-Off Elevation (ft) | Nominal Resistance (kips) | | Design Tip Elevation (ft) | Specified Tip Elevation (ft) | Nominal Driving Resistance (kips) |
|---|---|---|---|---|---|---|---|
| | | | Compression | Tension | | | |
| Abut 1 | CISS 48”x0.75” | 50.55 | 750 | 0 | -65.0 (a) | -65.0 | 1270 |
| Pier 2 Left | CISS 36” x 0.75” | 21.80 | 750 | 0 | -83.29 (a) -58.3 (c) | -83.29 | 1035 |
| Pier 2 Right | CISS 36” x 0.75” | 23.30 | 750 | 0 | -83.79 (a) -56.8 (c) | -83.79 | 1035 |
| Pier 3 Left | CISS 36” x 0.75”” | 21.80 | 750 | 0 | -83.29 (a) -58.3 (c) | -83.29 | 1140 |
| Pier 3 Right | CISS 36” x 0.75” | 23.30 | 750 | 0 | -83.79 (a) -56.8 (c) | -83.79 | 1140 |
| Pier 4 Left | CISS 36” x 0.75” | 14.80 | 750 | 0 | -86.29 (a) -65.3 (c) | -86.29 | 1000 |
| Pier 4 Right | CISS 36” x 0.75” | 16.30 | 750 | 0 | -86.79 (a) -63.8 (c) | -86.79 | 1000 |
| Pier 5 Left | CISS 36” x 0.75”” | 14.80 | 750 | 0 | -86.29 (a) -65.3 (c) | -86.29 | 950 |
| Pier 5 Right | CISS 36” x 0.75” | 16.30 | 750 | 0 | -86.79 (a) -63.8 (c) | -86.79 | 950 |
| Pier 6 Left | CISS 36” x 0.75” | 14.80 | 750 | 0 | -86.29 (a) -65.3 (c) | -86.29 | 950 |
| Pier 6 Right | CISS 36” x 0.75”” | 16.30 | 750 | 0 | -86.79 (a) -63.8 (c) | -86.79 | 950 |
| Pier 7 Left | CISS 36” x 0.75” | 21.80 | 750 | 0 | -83.29 (a) -58.3 (c) | -83.29 | 1120 |
| Pier 7 Right | CISS 36” x 0.75” | 23.30 | 750 | 0 | -83.79 (a) -56.8 (c) | -83.79 | 1120 |
| Pier 8 Left | CISS 36” x 0.75” | 21.80 | 750 | 0 | -83.29 (a) -58.3 (c) | -83.29 | 1240 |
| Pier 8 Right | CISS 36” x 0.75” | 23.30 | 750 | 0 | -83.79 (a) -56.8 (c) | -83.79 | 1240 |
| Abut 9 | CISS 48”x0.75 | 54.05 | 750 | 0 | -49.0 (a) | -49.0 | 1250 |

Notes:

1. Design tip elevations for all support locations are controlled by (a) Compression and (c) Lateral Load.
2. The nominal driving resistance required is equal to the nominal resistance needed to support factored load plus driving resistance from the scourable and liquefiable soils, which do not contribute to the design resistance. The scourable soil layers elevation are listed in Table 2 and liquefiable soil layer elevations are listed in Table 4 in this report.
3. Design tip elevation for Lateral Load is provided by Structure Design.
4. The specified tip elevation shall not be raised above the design tip elevations for Lateral Load.

## Table 11. Pile Data Table for Salinas River Bridge, Bridge Number 44-0040R

| Support Location | Pile Type | Cut-Off Elevation (ft) | Nominal Resistance (kips) | | Design Tip Elevation (ft) | Specified Tip Elevation (ft) | Nominal Driving Resistance (kips) |
|---|---|---|---|---|---|---|---|
| | | | Compression | Tension | | | |
| Abut 1 | CISS 48”x0.75” | 51.05 | 750 | 0 | -65.0 (a) | -65.0 | 1270 |
| Pier 2 Left | CISS 36” x 0.75” | 23.30 | 750 | 0 | -83.79 (a)<br>-56.8 (c) | -83.79 | 1035 |
| Pier 2 Right | CISS 36” x 0.75” | 21.80 | 750 | 0 | -83.29 (a)<br>-58.3 (c) | -83.29 | 1035 |
| Pier 3 Left | CISS 36” x 0.75”” | 23.30 | 750 | 0 | -83.79 (a)<br>-56.8 (c) | -83.79 | 1140 |
| Pier 3 Right | CISS 36” x 0.75” | 21.80 | 750 | 0 | -86.79 (a)<br>-65.3 (c) | -86.79 | 1140 |
| Pier 4 Left | CISS 36” x 0.75” | 16.30 | 750 | 0 | -86.29 (a)<br>-63.8 (c) | -86.29 | 1015 |
| Pier 4 Right | CISS 36” x 0.75” | 14.80 | 750 | 0 | -86.79 (a)<br>-65.3 (c) | -86.79 | 1015 |
| Pier 5 Left | CISS 36” x 0.75”” | 16.30 | 750 | 0 | -86.29 (a)<br>-63.8 (c) | -86.29 | 980 |
| Pier 5 Right | CISS 36” x 0.75” | 14.80 | 750 | 0 | -86.79 (a)<br>-65.3 (c) | -86.79 | 980 |
| Pier 6 Left | CISS 36” x 0.75” | 16.30 | 750 | 0 | -86.29 (a)<br>-63.8 (c) | -86.29 | 980 |
| Pier 6 Right | CISS 36” x 0.75”” | 14.80 | 750 | 0 | -83.29 (a)<br>-58.3 (c) | -83.29 | 980 |
| Pier 7 Left | CISS 36” x 0.75” | 23.30 | 750 | 0 | -83.79 (a)<br>-56.8 (c) | -83.79 | 1120 |
| Pier 7 Right | CISS 36” x 0.75” | 21.80 | 750 | 0 | -83.29 (a)<br>-58.3 (c) | -83.29 | 1200 |
| Pier 8 Left | CISS 36” x 0.75” | 23.30 | 750 | 0 | -83.79 (a)<br>-56.8 (c) | -83.79 | 1210 |
| Pier 8 Right | CISS 36” x 0.75” | 21.80 | 750 | 0 | -83.29 (a)<br>-56.8 (c) | -83.29 | 1240 |
| Abut 9 | CISS 48”x0.75 | 54.55 | 750 | 0 | -49.0 (a) | -49.0 | 1250 |

Notes:

1. Design tip elevations for all support locations are controlled by (a) Compression and (c) Lateral Load.
2. The nominal driving resistance required is equal to the nominal resistance needed to support factored load plus driving resistance from the scourable and liquefiable soils, which do not contribute to the design resistance. The scourable soil layers elevation are listed in Table 2 and liquefiable soil layer elevations are listed in Table 4 in this report.
3. Design tip elevation for Lateral Load is provided by Structure Design.
4. The specified tip elevation shall not be raised above the design tip elevations for Lateral Load.

## Lateral Spreading Mitigation

Ground Improvement

Ground improvement options such as installation of stone columns or densification using vibofloation are not practical at this site due to limited vertical clearances beneath the bridge. Furthermore, the battered front row piles would impede access under the abutment and the treatment processes would likely damage the Raymond piles. Grouting is viable from an access standpoint but the highly variable and thick zone of liquefaction would make effective treatment very challenging and expensive.

Structural Options

Lateral displacement demands on each abutment are estimated to range from 6 to 40 inches, with a best estimate of 24 inches. To reduce this displacement demand, large diameter shafts or CISS piles could be constructed on the sides of each abutment, along with a cross beam to connect to the abutment. Simply calculations, however, show that such a configuration would be ineffective at reducing lateral displacements even if very large diameter foundations were utilized (on the order of 12 to 15 feet diameter.) Each shaft would have to resist a lateral force from the abutment of about 1600 kips (47 kips/ft of abutment wall). In addition, each shaft would have to resist the lateral displacement of 25 feet of soil crust and 33 feet of liquefied sand. The shaft would essentially have to cantilever about 60 feet while resisting these loads.

While mitigating lateral demands is not viable, mitigating vertical settlement, estimated to be about 24 inches, is. A simple catcher type frame with a cross beam can be utilized to support the bridge near the abutment.

## Notes to Special Provisions

1. Prior to installing driven piling at Abutment 1, Piers 2 through 8 and Abutment 9, the Contractor shall provide a driving system submittal. A submittal shall be made for three control locations. The first control location shall consist of Abutment 1. The second control location shall consist of Piers 2 through 8. The third control location shall consist of Abutment 9. All proposed driving systems (i.e. hammer that may be brought onto the site) shall be included in the submittal.

2. The Contractor shall select a pile from Abutment 1 to be dynamically monitored in the first control location, one pile from Pier 3 to be dynamically monitored in the second control location, and a pile from Abutment 9 to be dynamically monitored in the third control location. These piles shall be the first piles driven. No other piles shall be driven until wave equation acceptance criteria has been provided by the Engineer.

| Bridge | Control Locations | Test Pile Support Locations |
|---|---|---|
| Bridge No. 44-0040 R/L | Abutment 1 | Abutment 1 |
| Bridge No. 44-0040 R/L | Piers 2-8 | Pier 3 |
| Bridge No. 44-0040 R/L | Abutment 9 | Abutment 9 |

3. The 48-inch diameter driven test piles at Abutments 1 and 9 to be dynamically monitored shall be of sufficient length so that 9.0 feet of pile remains above the pile cutoff elevation at the completion of installation.

4. The 36-inch diameter driven test piles at Piers 2 through 8 to be dynamically monitored shall be of sufficient length so that 7.0 feet of pile remains above the pile cutoff elevation at the completion of installation.

5. The control locations shall be excavated to the bottom of footing elevation prior to driving test piles.

6. Pile acceptance criteria will be developed using a wave equation analysis in conjunction with dynamic monitoring. Bearing acceptance criteria curves will be provided by the Foundation Testing Branch of the Office of Geotechnical Support.

7. After the pile has been dynamically monitored, including all restrikes, the Engineer shall be allowed 21 days to revise the specified pile tip elevation and to provide bearing acceptance curves for a given control location.

8. Pile restrikes by PDA monitoring shall be required 1 day and 8 days after installation at all control locations. Driving operations shall be suspended a minimum of 2.0 feet above specified tip elevation prior to the 1 day restrike and approximately 1.0 foot above the specified tip elevation prior to the 8 day restrike, as directed by the Engineer. The total pile set period shall be considered 8 days.

9. The Contractor shall provide high-energy hammer blows from the beginning of restrike of piles. For diesel hammers, the Contractor shall provide a hammer that has been warmed up at another location prior to performing the restrike.

## GENERAL NOTES TO DESIGNERS

1. Type "D" excavation is to be shown on the plans at all Pier locations.

## CONSTRUCTION CONSIDERATIONS

1. Groundwater was encountered during drilling of the test borings and surface water was present in the river at the time of drilling. Groundwater levels are subject to seasonal fluctuations and may occur at higher or lower elevations.

2. It is anticipated that groundwater will be encountered during the excavation for the pile caps at all Pier locations.

3. At Abutment l and 9, the 48” diameter CISS piles will be driven through the existing embankment and those piles shall be installed in predrilled holes through the embankment. The predrilled holes shall not be drilled below an elevation of 35 feet.

4. During soil clean out of the CISS piles, water/slurry pressure head must be maintained in the shells above the potentiometric level of the groundwater to prevent quick soil conditions from occurring.

5. All piles should be driven to completion without interruption in order to minimize an increase in driving resistance due to setup.

6. All CISS pile sections driven should have a cut-off allowance to compensate for material damaged at the top of the pile by the impact of the hammer during pile driving. An allowance of 2.0 to 5.0 ft. per section is usually recommended by API (API 1993 Section 6.11).

**PROJECT INFORMATION**

"Project Information," discloses to bidders and contractors a list of pertinent information available for their inspection prior to bid opening. The following is information originating from Geotechnical Services.

Data and information attached with the project plans are:

A. None.

Data and information included in the Information Handout provided to the bidders and contractors are:

A. Revised Foundation Report for Salinas River Bridge, dated 4/17/2015.

Data and information available for inspection at the District Office:

A. None.

Data and information available for inspection at the Transportation Laboratory are:

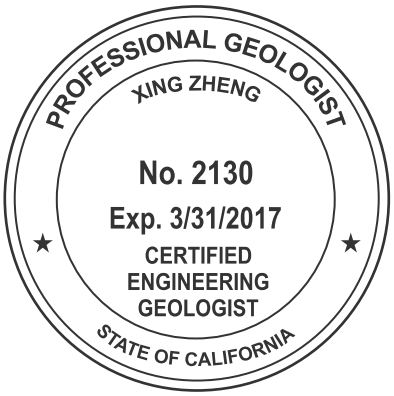
A. None

**Disclaimer and Contact Information**

The recommendations contained in this report are based on specific project information regarding design loads and structure location provided by the OBDN. If any conceptual changes are made during final project design, the Office of Geotechnical Design - North should review those changes to determine if these foundation recommendations are still applicable. Any questions regarding the above foundation recommendations should be directed to Xing Zheng at (916) 227-1036, Ben Barnes at 916-227-1039 or Reid Buell at (916) 227-1012.

Report by:

Xing Zheng, CEG
Engineering Geologist
Geotechnical Design – North




Report by:

Benjamin M. Barnes, P.E.
Transportation Engineer
Geotechnical Design – North

Attachment: ARS Curve

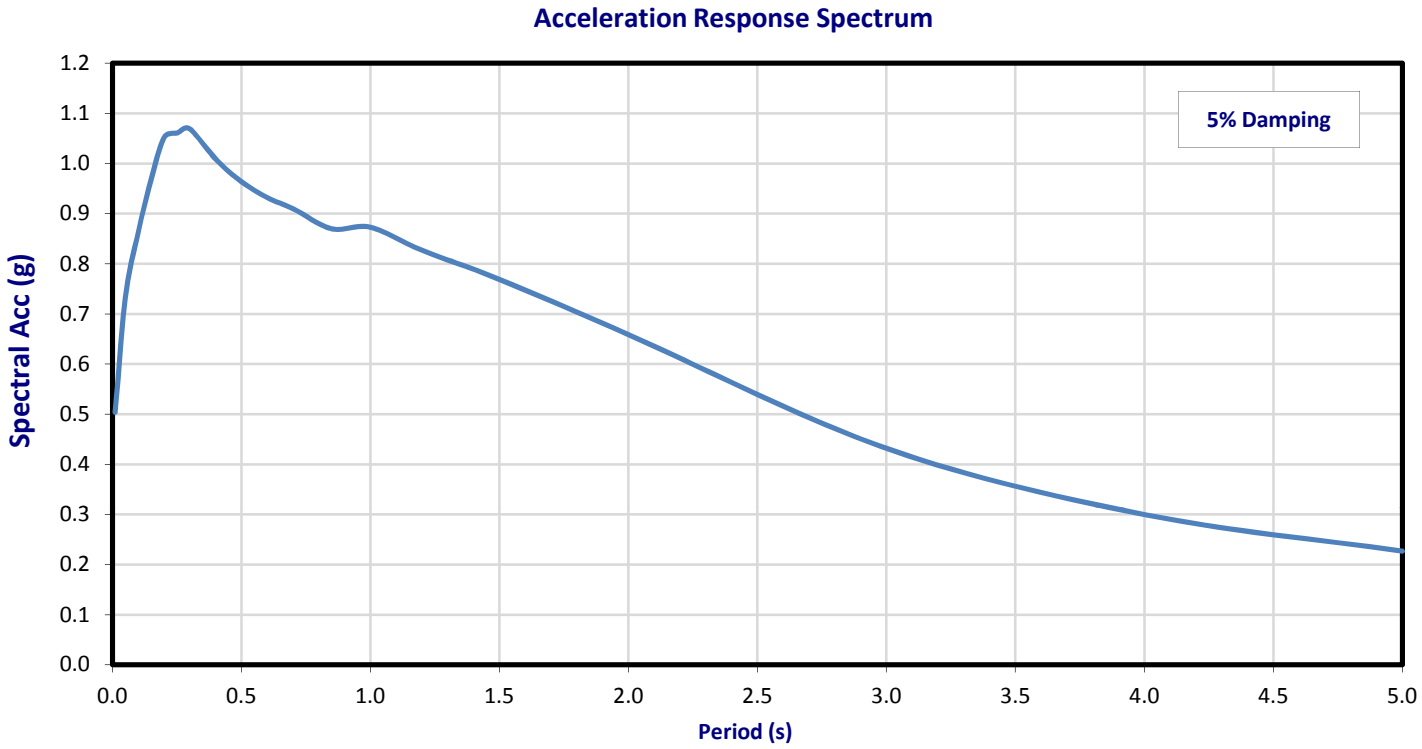
cc: Reid Buell, Branch Chief, Structure Foundations
David Rasmussen, Project Manager
Structure Construction R.E. Pending File
Rebecca Harnagel, DES Office Engineer, Office of PS&E
Doug Lambert, District Materials Engineer
Geotechnical Archive

# Salinas River Bridge

**Bridge No.** 44-0040R/L **Latitude** 36.6298

**Project ID** 0500000049 **Longitude** -121.6738 **Control** Envelope

| Period (s) | Sa(g) |
|---|---|
| 0.01 | 0.50 |
| 0.05 | 0.73 |
| 0.10 | 0.86 |
| 0.15 | 0.97 |
| 0.20 | 1.05 |
| 0.25 | 1.06 |
| 0.30 | 1.07 |
| 0.40 | 1.01 |
| 0.50 | 0.96 |
| 0.60 | 0.93 |
| 0.70 | 0.91 |
| 0.85 | 0.87 |
| 1.00 | 0.87 |
| 1.20 | 0.83 |
| 1.50 | 0.77 |
| 2.00 | 0.66 |
| 3.00 | 0.43 |
| 4.00 | 0.30 |
| 5.00 | 0.23 |




## Deterministic Procedure Data

| | | | | |
|---|---|---|---|---|
| **Fault** | Reliz fault zone (Blanco section) | $R_{rup}$ | 0.8 | miles |
| **Fault ID** | 186 | $R_{jb}$ | 0.8 | miles |
| **Mmax** | 7 | $R_x$ | 0.8 | miles |
| **Style** | SS | $V_{S30}$ | 590 | ft/s |
| **Dip (deg)** | 70 | $Z_{1.0}$ | N/A | ft |
| **Dip Dir** | W | $Z_{2.5}$ | N/A | miles |
| $Z_{TOR}$ | 0 | | | |

Note: The ARS curve above is an envelope of the deterministic from the ARS Online Tool and the USGS 5% probability of exceedance in 50 years (975 years return period).

| | | | | |
|---|---|---|---|---|
| Caltrans | Division of Engineering Services<br>Geotechnical Services<br>Office of Geotechnical Design - North | ID 0500000049<br>EA 05-0F7001 | ARS Curve<br>05-MON-68 PM R17.7 | Plate No. 1 |

# M e m o r a n d u m

***Serious Drought.***
***Help Save Water!***

**To:** MR. GARY BLAKESLEY
Branch Chief
Division of Engineering Services
Office of Bridge Design-North

Attention: Seiji Morimoto

**Date:** April 24, 2015

**File:** 05-MON-68
PM R17.7
EA 05-0F7001
ID 0500000049
Salinas River Bridge (Widen)
Br. No. 44-0040R/L

**From:** **DEPARTMENT OF TRANSPORTATION**
**DIVISION OF ENGINEERING SERVICES**
**GEOTECHNICAL SERVICES – MS 5**

**Subject:** Addendum to Revised Foundation Report (FR) for Salinas River Bridge

## INTRODUCTION

The Office of Geotechnical Design-North (OGD-N) has prepared this addendum to the revised FR dated April 17, 2015 for Salinas River Bridge (Bridge Number 44-0040R/L).

The following paragraph contained in "General Notes to Designers" on page 19 of the revised FR,

"Type "D" excavation is to be shown on the plans at all Pier locations."

is amended to read the following,

"Type "A" excavation is to be shown on the plans at all Pier locations."

All other information and recommendations in the April 17, 2015 revised FR remain applicable.

## PROJECT INFORMATION

"Project Information," discloses to bidders and contractors a list of pertinent information available for their inspection prior to bid opening. The following is information originating from Geotechnical Services.

Data and information attached with the project plans are:

A. None.

Data and information included in the Information Handout provided to the bidders and contractors are:

A. Revised Foundation Report for Salinas River Bridge, dated 4/17/2015.
B. Addendum to Revised Foundation Report for Salinas River Bridge, dated 4/24/2015.

Data and information available for inspection at the District Office:

A. None.

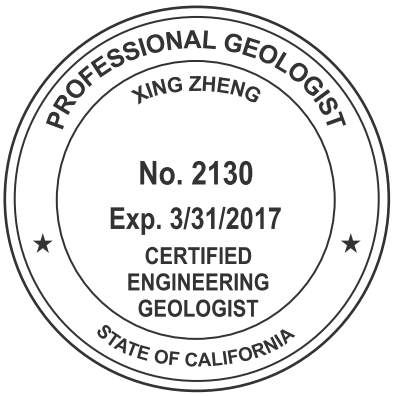
Data and information available for inspection at the Transportation Laboratory are:

A. None

Any questions regarding this addendum should be directed to Xing Zheng at (916) 227-1036, Ben Barnes at 916-227-1039 or Reid Buell at (916) 227-1012.

Report by:

Xing Zheng, CEG
Engineering Geologist
Geotechnical Design – North




Report by:

Benjamin M. Barnes, P.E.
Transportation Engineer
Geotechnical Design – North

cc: Reid Buell, Branch Chief, Structure Foundations
David Rasmussen, Project Manager
Structure Construction R.E. Pending File
Rebecca Harnagel, DES Office Engineer, Office of PS&E
Doug Lambert, District Materials Engineer
Geotechnical Archive

State of California – Department of Transportation
Division of Engineering Services
Structure Design Services

# FINAL HYDRAULIC REPORT

## Salinas River

Bridge No. 44-0040R/L
5 - MON - 68 - PM R17.69
Contract No. 05-0F7001
Project No. 05 0000 0049

*Prepared by:*

Anthony Nedwick, PE
Structure Hydraulics and Hydrology
September 11, 2013

**General:**

It is proposed to widen and seismically retrofit the existing Salinas River Bridges (Br. Nos. 44-0040 R/L). The project is located from Post Mile R17.7 to R17.9 on State Route 68 in Monterey County, between the cities of Monterey and Salinas.

The Salinas River Bridges, originally built in 1966, are parallel, continuous, reinforced concrete box girder structures, founded on reinforced concrete open seat abutments and reinforced concrete solid pier walls, all founded on reinforced concrete piles. The structures are both 8-span, 877'-0" long structures with a 45° skew. The width of the right structure is 34'-0" while the left structure varies from 34'-0" to approximately 37'-1".

Both bridges will be widened 6'-9" on the outside and 1'-9" in the median area. The outside widening will consist of a cast-in-place reinforced concrete box girder with a structural depth of 6'-3" and a cross slope that matches the cross slope of the existing structures. The pier walls will match the existing pier wall thickness of 1'-8". The pile cap thickness and bottom of footing will match the existing pile cap dimensions. However, the footings will be 1'-0" wider than the existing abutment footings and 3'-0" wider than the existing pier footings, relative to the existing structure. Piles are 4'-0" and 3'-0" diameter, concrete filled steel pipe piles at the abutments and piers, respectively.

**Datum:**

The vertical datum used for this report is based on the NAVD 1988. Datum transformation information between NGVD 1929 and NAVD 1988 was determined using the VERTCON Orthometric Height Conversion provided by the National Geodetic Survey, National Oceanic and Atmospheric Administration (www.ngs.noaa.gov) website. According to the NGS information, the NAVD 1988 datum is 2.88 feet higher than the NGVD 1929 datum at the project site.

This report is based on the As-Built plans and information provided by Structure Design, as well as various other information including previous Caltrans reports, USGS information and survey data from Preliminary Investigations and the Office of Photogrammetry. As-Built elevations were converted to the NAVD 1988 datum using the conversion factor noted above. **All elevations indicated in this report are based on Vertical Datum NAVD 1988, except as noted.**

**Basin:**

At the bridge site, the Salinas River Basin covers in excess of 4,150 $mi^2$ draining portions of Monterey and northern San Luis Obispo Counties. The Mean Annual Precipitation of the watershed is about 18.2 inches with an Altitude Index of 1.32 and a maximum elevation of 5,872 feet. The watershed contains several reservoirs that have some flood capacity, including Lake Nacimiento and Lake San Antonio. The

lower portion of the Salinas River flows through the Salinas Valley, an important agricultural area, where much of the flow percolates into the ground to recharge aquifers that have been tapped for agricultural irrigation. While the western portion of the watershed has generally lush vegetation along the coastal Santa Lucia Range, the eastern portion is very arid. Forest coverage in the watershed is about 9%, with the majority being dry rolling hills and valleys.

**Discharge:**

Discharge for Salinas River Bridge was based on the April 2009 FEMA Flood Insurance Study, with values located at "Speckels". Based on the water shed area noted for both FEMA and USGS, this correlates with the location of USGS Gage #11152500, which is located at the project site. Based on the USGS historical gage records, the highest peak flow recorded at the site was 95,000 cfs on March 12, 1995. The discharge used for the model was 64,000 cfs and 85,000 cfs, for the 50-year Peak Flow and the 100-year Peak Flow, respectively.

**Hydraulic Analysis:**

The channel hydraulics were modeled using the Army Corps of Engineers HEC-RAS modeling program, version 4.1.0, utilizing LiDAR and survey data provided by Caltrans Preliminary Investigations and the Office of Photogrammetry. HEC-RAS was used to determine the water surface elevations and velocities throughout the project reach. Topographical data was a composite of LiDAR data and other survey information. The bridges were modeled as a single structure and are located at River Station RS 3150 in the HEC-RAS model.

There were two different scenarios analyzed; the existing channel configuration and the proposed channel configuration. The proposed configuration increased the footing widths and pile diameter at the piers.

Manning's roughness coefficients for the natural channel vary and were estimated using several sources including the USGS Water-Supply Paper 2339, "Guide for Selecting Manning's Roughness Coefficients for Natural Channels and Flood Plains", V.T.Chow's "Open-Channel Hydraulics" (1959), Federal Highway Administration (FHWA) HDS6 and FHWA HEC 23, as well as data and photos gathered during previous site investigations. The values were also compared to the values contained in the FEMA Flood Insurance Study. Manning's coefficients used were 0.030 in the main channel and 0.045 in the overbank.

The channel has a flat slope of approximately 0.06% in the reach studied. Based on the model for a 100-year event, the average velocities range from 5.2 fps to 6.2 fps in the vicinity of the bridge. The 100-year Water Surface Elevation (WSEL) at the upstream side of the right bridge was calculated to be 51.3 feet with a depth of flow of approximately 26 feet, while the 50-year WSEL was estimated at 50.5 feet.

**Streambed:**

Based on the Log of Test Borings for the existing structure, the natural channel bed material consists mostly of medium to coarse sand with some underlying lenses of fine sand, gravel, sandy silt and clay. This material is considered to be scourable.

**Scour Analysis:**

A review of historical cross-section data, bridge plans and recent survey data indicate the thalweg has been migrating toward Abutment 9, while the channel has degraded slightly. Based on a comparison of historical stream bed elevations, the long term channel degradation is estimated at 1.56 feet over the next 27 years, assuming a 75-year life expectancy for the structures. There is a probability that the channel may continue to migrate, potentially undermining the pile caps at the Pier 7 and Pier 8.

Based on the survey data used for this analysis, the channel thalweg is located around Span 6 and Span 7, in the vicinity of Pier 7. At this location, the thalweg is slightly below the top of the Pier 7 footing. Based on the HEC-RAS model pier scour analysis, local scour is projected to reach a depth of 4.0 feet at all piers. Due to the reduced opening in the floodway, this structure is likely to experience contraction and abutment scour. Based on the model, 5.97 feet of contraction scour is estimated to occur at the site.

**Summary & Recommendations:**

Below is a summary of key design parameters based on the hydrology and hydraulic analysis performed for this structure.

**All elevations given are referenced to the data provided by Preliminary Investigations-North, using the NAVD 88 vertical datum.**

| **Hydrologic Summary for** Salinas River Bridges, 44-0040 R/L | | |
|---|---|---|
| Drainage Area: 4,156 $mi^2$ | | |
| **Frequency** | **Design Flood** | **Base Flood** |
| | 50-year | 100-year |
| **Discharge** | 64,000 cfs | 85,000 cfs |
| **Water Surface Elevation at Bridge*** | 50.50 ft | 51.27 ft |
| Flood plain data are based upon information available when the plans were prepared and are shown to meet federal requirements. The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation. | | |

| LongTerm Scour Depths, Salinas River, Br. No. 44-0040 R/L | | |
|---|---|---|
| Support | Degradation Scour Depth | Contraction Scour Depth |
| P2-P8 | 1.6 feet | 6.0 feet |

| Scour Data (Elevation and Depth) Salinas River, Br. No. 44-0040 R/L | | | |
|---|---|---|---|
| Support | Long Term Scour Elevation* | Short Term (Local) Scour Depth | Short Term (Local) Scour Elev with Migration |
| P2 | 28.1 ft | 4.0 ft | 31.3 ft |
| P3 | 26.5 ft | 4.0 ft | 30.1 ft |
| P4 | 22.4 ft | 4.0 ft | 26.0 ft |
| P5 | 18.7 ft | 4.0 ft | 22.3 ft |
| P6 | 18.7 ft | 4.0 ft | 22.3 ft |
| P7 | 17.7 ft | 4.0 ft | 21.3 ft |
| P8 | 17.7 ft | 4.0 ft | 21.3 ft |

*Elevations based on the NAVD 1988 datum.

This report has been prepared under my direction as the professional engineer in responsible charge of the work, in accordance with the provisions of the Professional Engineers Act of the State of California.

**M e m o r a n d u m**

***Flex your power!***
***Be energy efficient!***

**To:** MICHAEL JACOB
District 5 Environmental

**Date:** January 25, 2010

**File:** 05-0F7000
05-MON-68-PM R17.7/R17.8
Salinas River Bridge Widening

**From:** KRISTEN INKROTT
District 5 Hydraulics

**Subject:** Location Hydraulic Study

The Salinas River Bridge Widening project proposes to widen both the left and right span of Bridge No. 44-0040 to provide standard-width shoulders. The Salinas River Bridge will be widened 6 feet 6 inches on the outside and 1 foot 6 inches on the inside of both the East and West bound lanes. The project will also widen the approach and departure slabs, and upgrade the bridge railing and the approach and departure guardrails.

The Bridge is located within a Federal Emergency Management Agency (FEMA) designated floodplain and floodway. A floodway and any adjacent floodplain area must be kept free of encroachments so that the base (100-year) floodplain can be conveyed without substantial increase in flood height. A floodplain analysis was performed in compliance with Title 23 CFR, Part 650, Subpart A to identify potential encroachments created by this project on the base floodplain and floodway.

Floodplain Description

The Salinas River extends 155 miles from upland areas in San Luis Obispo County north through Monterey County. The Salinas River drains the Salinas Valley formed by the eastern slopes of the Santa Lucia Range and the western slopes of the Gabilan and Diablo Ranges. The Salinas River discharges to the Pacific Ocean north of the City of Marina. The total drainage area equals 4,156 square miles at the Salinas River Bridge.

The base floodplain is approximately 4600 feet wide immediately upstream of the bridge and extends from Spreckels Boulevard on the north bank to Reservation/River Road on

the south bank. The base floodplain is approximately 5800 feet wide immediately downstream of the bridge and extends from Foster Road on the north bank to Reservation/River Road on the south bank. The floodway is approximately 1000 feet wide immediately upstream and downstream of the bridge. The floodplain and floodway at the Salinas River Bridge extend the width of the channel perpendicular to the flow from abutment to abutment, which is approximately 800 feet. Figure 1 shows the Flood Insurance Rate Map, Community 060195, Panel 0218G.

## Flood History

USGS Gage No. 11152500 has been located at the Salinas River Bridge since 1930. The gage indicates the greatest storms of record occurred in 1969, 1983 and 1995. The existing bridge withstood all the major flood flows with no overtopping since its construction in 1966. In 1969 the storm flows washed out approximately 100 feet of rock slope protection. A large quantity of drift accumulated on the upstream end of the piers during the 1969 storm and the debris and drift accumulation has been an ongoing problem since 1969. Table 1 summarizes the gage data for the major storms.

Table 1: Major Storm Stream Gage Data at the Salinas River Bridge

| WATER YEAR | DATE | GAGE HEIGHT* (FEET) | WATER ELEV* (FEET) | STREAMFLOW (CFS) |
|---|---|---|---|---|
| 1969 | Feb. 26, 1969 | 29.4 | 50.0 | 83,100 |
| 1983 | Mar. 03, 1983 | 26.3 | 46.9 | 63,000 |
| 1995 | Mar. 12, 1995 | 33.2 | 53.7 | 95,000 |

* Gage datum is 20.56 feet above sea level NGVD29. Gage height and water surface elevations converted from NGVD29 to NAVD88 by adding 2.88 feet based on NOAA's National Geodetic Survey conversion site.

## Floodplain Hydrology

The Salinas River watershed includes several reservoirs which regulate flows in the river including the Salinas, Nacimiento and San Antonio Dams. The effect of the Salinas River Reservoir operation on the discharge hydrograph at Spreckels is negligible. Both the San Antonio and Nacimiento Dams have a significant impact on the 100-year flood flows.

The FEMA peak discharges for the Salinas River were based on hydrologic modeling of the basin and a USGS gage stream gage data, USGS Gage No. 11152500. A HEC-1 model was calibrated to fit the frequency-discharge curve for the river prior to the construction of the San Antonio and Nacimiento Dams. This frequency curve was a log-Pearson Type III analysis of the stream gage data. The flood control storage-discharge relationships of the dams were added to the model to account for the regulated discharge for each recurrence interval. The FEMA peak discharges are located in Table 2.

Table 2: FEMA Peak Discharges on Salinas River at Spreckels*

| STORM FREQUENCY | PEAK DISCHARGE (CFS) |
|---|---|
| 10-year | 35,000 |
| 50-year | 64,000 |
| 100-year | 85,000 |
| 500-year | 121,000 |

* Data taken from the *Flood Insurance Study, Monterey County*, April 2, 2009

Floodplain Analysis

The Salinas River Bridge was modeled using the U.S. Army Corps of Engineers' HEC-RAS (version 4.0) computer program. The model was constructed to determine if the proposed project will impact the floodplain and floodway. An existing condition model was developed using the CalTrans survey data, March 2009. A proposed condition model was developed using the CalTrans survey data and modifying the model to account for the proposed changes described below. The water surface elevations between the two model scenarios were compared to determine the impact, if any, to the base flood elevation.

The Salinas River Bridge, Bridge No. 44-0040 R/L is 877 feet long and consists of two 34 feet wide bridges that are 36 feet apart. The bridges are connected by continuous pier walls. The bridge is an eight-span, reinforced concrete box girder bridge with two abutments and seven piers. The pier walls are skewed 45 degrees from the bridge superstructure and are approximately aligned with the flowline. The distance between the piers along the roadway centerline is 116 feet, but due to the bridge skew to the river flowline, the clear opening between piers is approximately 80 feet. Cross sections were assumed to be parallel to the bridge. To account for the reduced cross sectional area due to the 45 degree skew, the piers were widened in the model to limit the opening between the piers to 80 feet.

A few minor changes were made in the HEC-RAS model to account for the proposed bridge widening. The widening will extend the piers by 6.5 feet to the outside, so the bridge width was increased by 13 feet in the model. The bridge deck will be extended to accommodate shoulders with a 2-percent cross slope. The cross slope lowers the bridge soffit elevation slightly. As shown in Table 3, the proposed bridge widening did not impact on the 100-year water surface elevation. In addition, the bridge will continue to operate with over 6 feet of freeboard during a base flood event.

Table 3: Salinas River HEC-RAS Results

| DESCRIPTION | EXISTING | | PROPOSED | |
|---|---|---|---|---|
| Storm Frequency (years) | 50 | 100 | 50 | 100 |
| Discharge (cfs) | 64,000 | 85,000 | 64,000 | 85,000 |
| U/S of Bridge WSE* (ft) | 49.1 | 51.8 | 49.1 | 51.8 |
| Bridge WSE* (ft) | 46.7 | 49.5 | 46.7 | 49.5 |
| D/S of Bridge WSE* (ft) | 47.0 | 49.9 | 47.0 | 49.9 |
| Lowest Bridge Soffit Elevation (ft) | 56.2 | 56.2 | 56.0 | 56.0 |
| Freeboard at Bridge (ft) | 9.5 | 6.7 | 9.3 | 6.5 |

*Water Surface Elevation. All elevations based on NAVD88.

Floodplain Encroachments

Title CFR 23, Section 650 defines significant encroachments and risks for the base floodplain. An encroachment is any work done within the limits of the floodplain. A significant encroachment is one which could significantly interrupt a route required for emergency operations, pose a significant risk, or significantly impact natural and beneficial floodplain values. Risks are consequences of encroachments that could lead to flooding which would cause property loss or hazard to life.

The floodway is defined as the portion of the channel overbank reserved for conveyance of the base flood without a defined increase in the existing flood conditions. Encroachment within the floodplain is allowed outside of the floodway. Encroachment

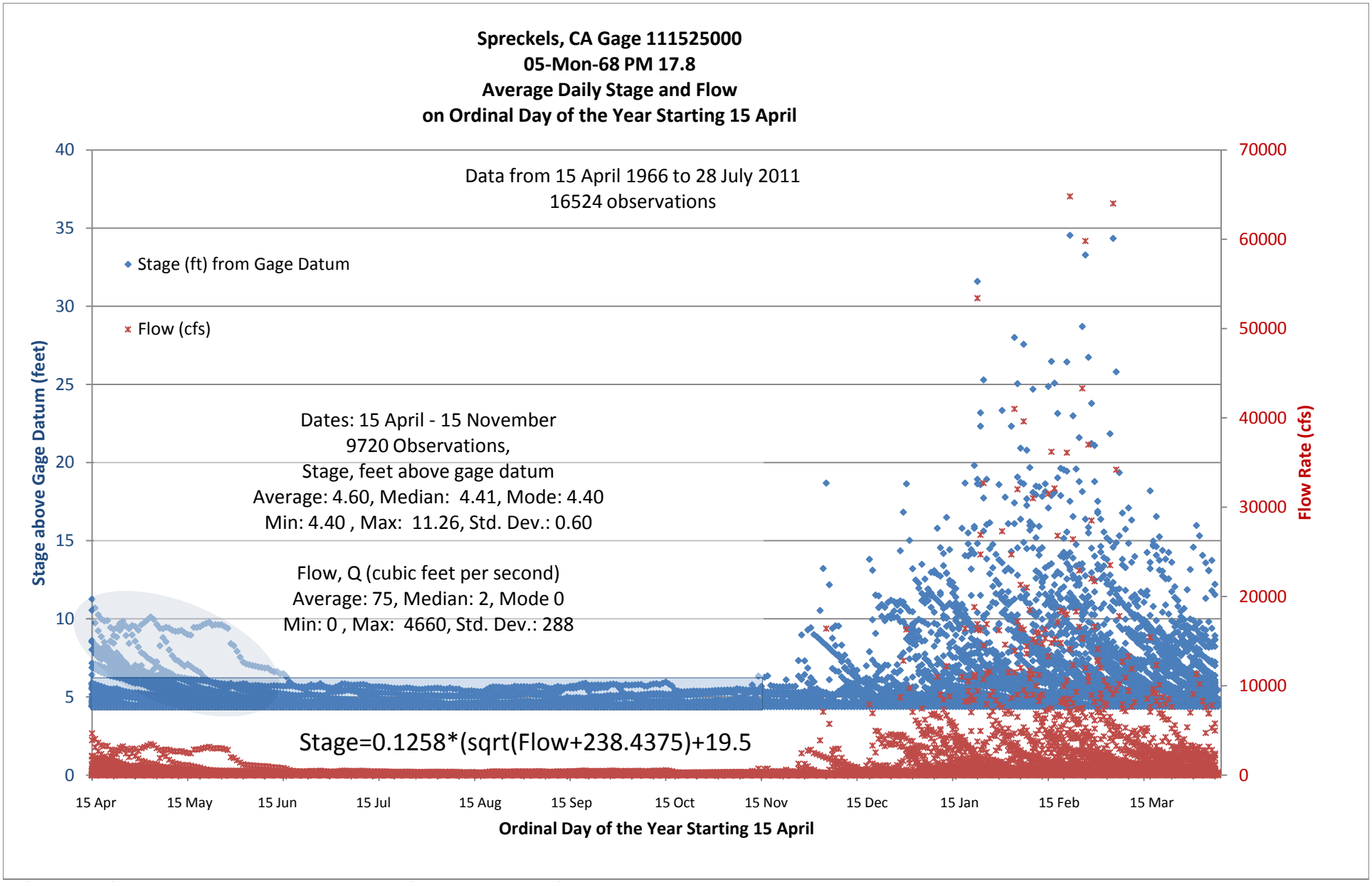
within the floodway is not allowed if the proposed project would cause any increase in the existing 100-year base flood elevation.

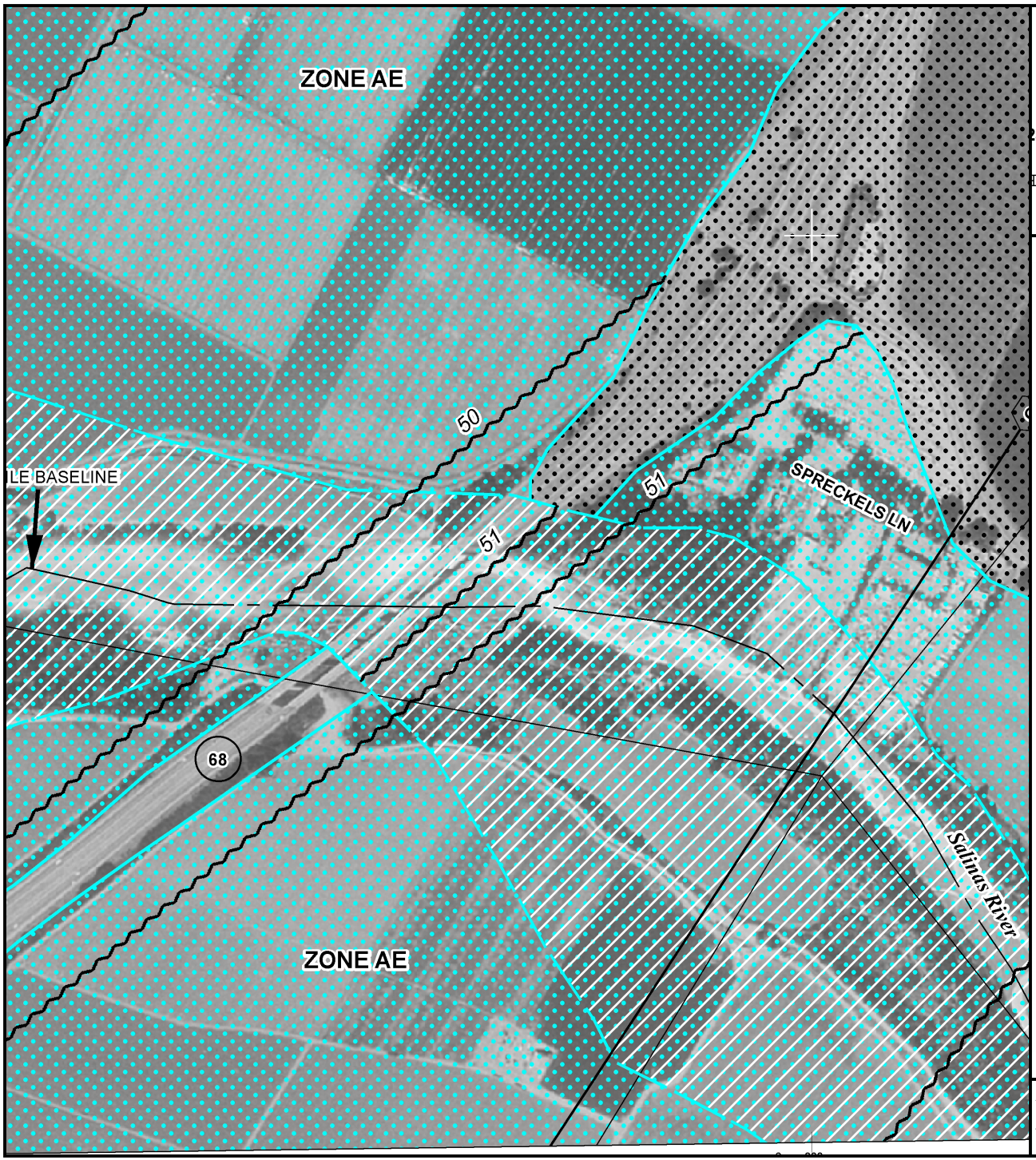
Conclusion

The work proposed by this project will not cause an increase in the existing 100-year base flood elevation at the Salinas River Bridge. The proposed project is not a significant encroachment.

Appendix A includes the *Technical Information for Location Hydraulic Study* form shown in HDM, Figure 804.7A.

c: James Orr\D6 Design
Tony Nedwick\Structures Hydraulics
cc: Doug Heumann\Project Management


Spreckels, CA Gage 111525000
05-Mon-68 PM 17.8
Average Daily Stage and Flow
on Ordinal Day of the Year Starting 15 April
Data from 15 April 1966 to 28 July 2011
16524 observations
Stage (ft) from Gage Datum
Flow (cfs)
Dates: 15 April - 15 November
9720 Observations,
Stage, feet above gage datum
Average: 4.60, Median: 4.41, Mode: 4.40
Min: 4.40 , Max: 11.26, Std. Dev.: 0.60
Flow, Q (cubic feet per second)
Average: 75, Median: 2, Mode 0
Min: 0 , Max: 4660, Std. Dev.: 288
Stage=0.1258*(sqrt(Flow+238.4375)+19.5
Stage above Gage Datum (feet)
Flow Rate (cfs)
0
5
10
15
20
25
30
35
40
0
10000
20000
30000
40000
50000
60000
70000
15 Apr
15 May
15 Jun
15 Jul
15 Aug
15 Sep
15 Oct
15 Nov
15 Dec
15 Jan
15 Feb
15 Mar
Ordinal Day of the Year Starting 15 April




MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0218G

# FIRM

## FLOOD INSURANCE RATE MAP

## MONTEREY COUNTY, CALIFORNIA

AND INCORPORATED AREAS

**PANEL 218 OF 2050**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|---|---|---|---|
| MONTEREY COUNTY | 060195 | 0218 | G |
| SALINAS, CITY OF | 060202 | 0218 | G |

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**
**06053C0218G**

**EFFECTIVE DATE**
**APRIL 2, 2009**

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

The Salinas River drains the eastern flank of the Santa Lucia Range and the western flank of the Diablo Range (4156 sq. miles). The drainage extends as far south as the town of Pozo and varies in elevation from 30 ft at the USGS Gage 11152500 Salinas River near Spreckles, located adjacent to Highway 68 at the proposed construction site, to 5,862 ft at Junipero Serra Peak in the Santa Lucia Range. Flows in the Salinas River are regulated by Santa Margarita Lake, Lake Nacimiento, and Lake San Antonio. Although flows in the channel are considered regulated due to the upstream reservoirs, unregulated flow from the Arroyo Seco River enters the channel during the rainy season, typically from October through April. Historically the Salinas River sees flows year round, but due to the drought the channel has seen an extended period where the channel is completely dry. There are a total of three USGS streamgages that monitor flow in Arroyo Seco River, as well as five on the Salinas River (see attached map). Special attention should be placed on 11150500 Salinas River near Bradley, as this site displays flows from all three listed reservoirs. 11152000 Arroyo Seco near Greenfield, which is a flood warning site, should also be monitored. 11152300 Salinas River near Chualar, located approximately 19 miles downstream of the Arroyo Seco/Salinas River confluence and is located approximately 8.5 miles upstream of the HW 68 Bridge is also a gage of importance.

Data is available on the web at the following sites:

Arroyo Seco River:

11151870 Arroyo Seco River near Greenfield CA http://waterdata.usgs.gov/nwis/uv?11151870

11152000 Arroyo Seco River near Soledad CA http://waterdata.usgs.gov/nwis/uv?11152000

11152050 Arroyo Seco below Reliz Creek CA http://waterdata.usgs.gov/nwis/uv?11152050

Salinas River

11147500 Salinas River at Paso Robles CA http://waterdata.usgs.gov/nwis/uv?11147500

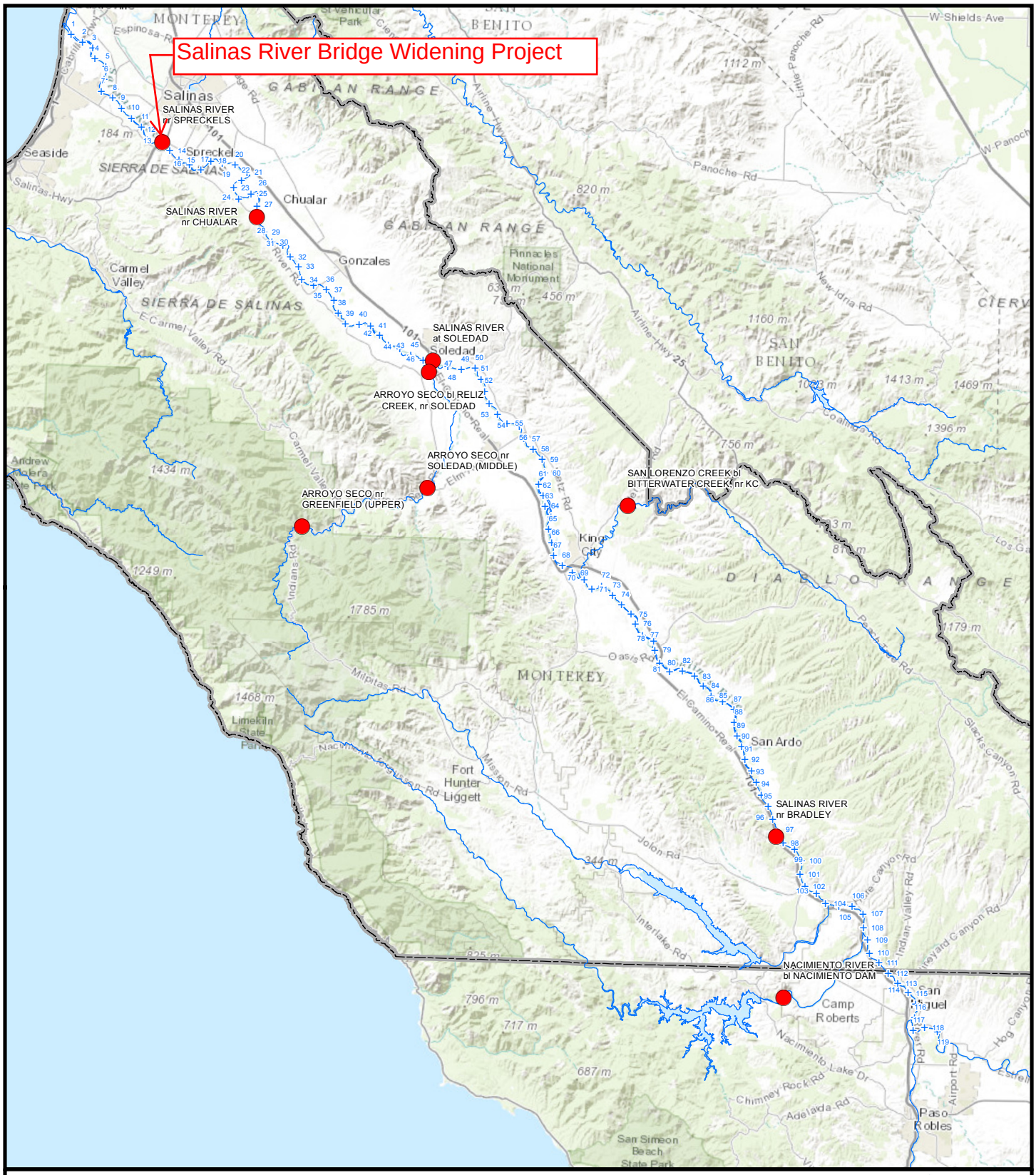
11150500 Salinas River near Bradley CA http://waterdata.usgs.gov/nwis/uv?11150500

11151700 Salinas River at Soledad CA http://waterdata.usgs.gov/nwis/uv/?11151700

11152300 Salinas River near Chualar CA http://waterdata.usgs.gov/nwis/uv?11152300

11152500 Salinas River near Spreckles CA http://waterdata.usgs.gov/nwis/uv?11152500

All requests for information should be sent to the Santa Cruz Field Office at (831) 460-7494 or can be sent to the Field Office Chief, Anthony Guerriero at aguerrie@usgs.gov .


Salinas River Bridge Widening Project
SALINAS RIVER nr SPRECKELS
SALINAS RIVER nr CHUALAR
SALINAS RIVER at SOLEDAD
ARROYO SECO bl RELIZ CREEK, nr SOLEDAD
ARROYO SECO nr SOLEDAD (MIDDLE)
ARROYO SECO nr GREENFIELD (UPPER)
SAN LORENZO CREEK bl BITTERWATER CREEK, nr KC
SALINAS RIVER nr BRADLEY
NACIMIENTO RIVER bl NACIMIENTO DAM
Salinas
Seaside
Spreckels
Chualar
Gonzales
Carmel Valley
SIERRA DE SALINAS
GABILAN RANGE
Pinnacles National Monument
SAN BENITO
MONTEREY
King City
San Ardo
Fort Hunter Liggett
Camp Roberts
Paso Robles
Limekiln State Park
San Simeon Beach State Park
Andrew Molera State Park
Selected USGS gages and Salinas River Miles
Legend
USGS Streamflow Gages
Rivers
River Miles
N
W
E
S
1 in = 10 miles
0 5 10 15 20
Miles
The scale and configuration of all project boundaries and information shown herein are not intended as a guide for design or survey work.
Image Source: ESRI (2015)
Map Date: 4/24/2015

Project No. S9200-06-92
August 19, 2010

Mr. Ken Doran, Task Order Manager
Caltrans District 6
2015 E. Shields Avenue, Suite 100
Fresno, California 93726

Subject: SALINAS RIVER BRIDGE WIDENING PROJECT
MONTEREY COUNTY, CALIFORNIA
CONTRACT NO. 06A1141
TASK ORDER NO. 92, EA NO. 05-0F7000
E-FIS PROJECT NO. 05-0000-0049
ASBESTOS AND LEAD-CONTAINING PAINT SURVEY REPORT

Dear Mr. Doran:

In accordance with California Department of Transportation Contract No. 06A1141 and Task Order No. 92, we have performed an asbestos and lead-containing paint (LCP) survey of the project location in Monterey County, California. The scope of services included surveying the Salinas River Bridge for suspect asbestos-containing materials and LCP, collecting bulk samples, collecting background air samples, and submitting the samples to laboratories for analyses.

The accompanying report summarizes the services performed and laboratory analysis.

*The contents of this report reflect the views of Geocon Consultants, Inc., who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.*

Please contact us if you have questions concerning the contents of this report or if we may be of further service.

Sincerely,

**GEOCON CONSULTANTS, INC.**

Chris Giuntoli, CAC
Senior Project Scientist

John E. Juhrend, PE, CEG
Project Manager

CGG:JEJ:krh

(6 + 2 CD) Addressee

TABLE OF CONTENTS

ASBESTOS AND LEAD-CONTAINING PAINT SURVEY REPORT Page


1.0 INTRODUCTION ..... 1
1.1 Project Description ..... 1
1.2 General Objectives ..... 1

2.0 BACKGROUND ..... 1
2.1 Asbestos ..... 1
2.2 Lead Paint ..... 2
2.3 Architectural Drawings and Previous Survey Activities ..... 3

3.0 SCOPE OF SERVICES ..... 4
3.1 Asbestos ..... 4
3.2 Lead Paint ..... 4
3.3 Background Air Sampling ..... 5

4.0 INVESTIGATIVE RESULTS ..... 5
4.1 Asbestos Analytical Results ..... 5
4.2 Paint Analytical Results ..... 6
4.3 Background Air Sampling Results ..... 6

5.0 RECOMMENDATIONS ..... 7
5.1 Asbestos ..... 7
5.2 Lead Paint ..... 7
5.3 Air Samples ..... 8

6.0 REPORT LIMITATIONS ..... 9

FIGURES
1. Vicinity Map
2. Site Plan

TABLES
1. Summary of Asbestos Analytical Results
2. Summary of Paint Analytical Results – Total Lead
3. Summary of Background Air Sample Analytical Results

PHOTOGRAPHS (1 through 20)

APPENDICES
A. Analytical Laboratory Reports and Chain-of-custody Documentation

# ASBESTOS AND LEAD-CONTAINING PAINT SURVEY REPORT

## 1.0 INTRODUCTION

This asbestos and lead-containing paint (LCP) survey report was prepared by Geocon Consultants, Inc. under Caltrans Contract No. 06A1141, Task Order No. 92 (TO-92).

### 1.1 Project Description

The Salinas River Bridge Widening Project (EA 05-0F7000, E-FIS Project No. 05-0000-0049) is located at Post Mile R17.84 on State Route 68 in Monterey County, California. We performed asbestos and LCP survey, and background air sampling activities on the Salinas River Bridge (No. 44-0040L/R) at the project location. The project location is depicted on the Vicinity Map, Figure 1, and the Site Plan, Figure 2.

### 1.2 General Objectives

The primary purposes of the scope of services outlined in TO-92 were to: 1) determine the presence and quantity of asbestos construction materials and deteriorated LCP at the project location, and 2) conducting background air sampling to evaluate pre-disturbance airborne asbestos levels prior to bridge widening activities. The information obtained from this investigation will be used by Caltrans for waste profiling, determining California Occupational Safety and Health Administration (Cal/OSHA) applicability, and coordinating asbestos and LCP disturbance activities.

> *It was <u>not</u> Geocon's intent during this inspection to conduct an evaluation of lead-based paint hazards in accordance with U.S. Department of Housing and Urban Development (HUD) guidelines.*

## 2.0 BACKGROUND

### 2.1 Asbestos

The *Code of Federal Regulations (CFR),* 40 CFR 61, Subpart M, National Emissions Standards for Hazardous Air Pollutants (NESHAP) and Federal Occupational Safety and Health Administration (FED OSHA) classify asbestos-containing material (ACM) as any material or product that contains *greater than* 1% asbestos. Nonfriable ACM is classified by NESHAP as either Category I or Category II material defined as follows:

- **Category I** – asbestos-containing packings, gaskets, resilient floor coverings, and asphalt roofing products.
- **Category II** – all remaining types of nonfriable asbestos-containing material not included in Category I that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Regulated asbestos-containing material (RACM), a hazardous waste when friable, is classified as any manufactured material that contains *greater than* 1% asbestos by dry weight *and* is:

- Friable (can be crumbled, pulverized, or reduced to powder by hand pressure); or
- Category I material that has become friable; or
- Category I material that has been subjected to sanding grinding, cutting or abrading; or
- Category II nonfriable material that has a high probability of becoming crumbled, pulverized, or reduced to a powder during demolition or renovation activities.

Activities that disturb materials containing *any* amount of asbestos are subject to certain requirements of the Cal/OSHA asbestos standard contained in Title 8, CCR Section 1529. Typically, removal or disturbance of more than 100 square feet of material containing more than 0.1% asbestos must be performed by a registered asbestos abatement contractor, but associated waste labeling is not required if the material contains 1% or less asbestos. When the asbestos content of a material exceeds 1%, virtually all requirements of the standard become effective.

Materials containing greater than 1% asbestos are also subject to NESHAP regulations (40 CFR Part 61, Subpart M). RACM (friable ACM and nonfriable ACM that will become friable during demolition operations) must be removed from structures prior to demolition. Certain nonfriable ACM and materials containing 1% or less asbestos may remain in structures during demolition; however, there are waste handling/disposal issues and Cal/OSHA work requirements that must be addressed. Contractors are responsible for segregating and characterizing waste streams prior to disposal.

With respect to potential worker exposure, notification, and registration requirements, Cal/OSHA defines asbestos-containing construction material (ACCM) as construction material that contains greater than 0.1% asbestos (Title 8, CCR 341.6).

## 2.2 Lead Paint

Construction activities (including demolition) that disturb materials or paints containing *any* amount of lead are subject to certain requirements of the Cal/OSHA lead standard contained in Title 8, CCR, Section 1532.1. Deteriorated paint is defined by Title 17, CCR, Division 1, Chapter 8, §35022 as a surface coating that is cracking, chalking, flaking, chipping, peeling, non-intact, failed, or otherwise separated from a component. Demolition of a deteriorated LCP component would require waste characterization and appropriate disposal. Intact LCP on a component is currently accepted by most landfill facilities; however, contractors are responsible for segregating and characterizing waste streams prior to disposal.

For a solid waste containing lead, the waste is classified as California hazardous when: 1) the total lead content equals or exceeds the respective Total Threshold Limit Concentration (TTLC) of 1,000 milligrams per kilogram (mg/kg); or 2) the soluble lead content equals or exceeds the respective Soluble Threshold Limit Concentration (STLC) of 5 milligrams per liter (mg/l) based on the standard Waste Extraction Test (WET). A waste has the potential for exceeding the lead STLC when the waste's total lead content is greater than or equal to ten times the respective STLC value since the WET uses a 1:10 dilution ratio. Hence, when total lead is detected at a concentration greater than or equal to 50 mg/kg, and assuming that 100 percent of the total lead is soluble, soluble lead analysis is required. Lead-containing waste is classified as "Resource, Conservation, and Recovery Act" (RCRA) hazardous, or Federal hazardous, when the soluble lead content equals or exceeds the Federal regulatory level of 5 mg/l based on the Toxicity Characteristic Leaching Procedure (TCLP).

The above regulatory criteria are based on chemical concentrations. Wastes may also be classified as hazardous based on other criteria such as ignitability; however, for the purposes of this investigation, toxicity (i.e., lead concentrations) is the primary factor considered for waste classification since waste generated during the construction activities would not likely warrant testing for ignitability or other criteria. Waste that is classified as either California hazardous or RCRA hazardous requires management as a hazardous waste.

Potential hazards exist to workers who remove or cut through LCP coatings during demolition. Dust containing hazardous concentrations of lead may be generated during scraping or cutting materials coated with lead-containing paint. Torching of these materials may produce lead oxide fumes. Therefore, air monitoring and/or respiratory protection may be required during the demolition of materials coated with LCP. Guidelines regarding regulatory provisions for construction work where workers may be exposed to lead are presented in the Title 8, CCR, Section 1532.1.

## 2.3 Architectural Drawings and Previous Survey Activities

Architectural drawings for the Salinas River Bridge (No. 44-0040L/R) dated August 10, 1964, were reviewed for indications of asbestos or lead paint used in bridge construction materials. Asbestos sheet packing was indicated on the construction drawings as used in typical expansion hinges on the bridges. However, sheet packing at the expansion hinges was not observed during our survey of the bridge spans.

Previous asbestos and LCP survey reports for the Salinas River Bridge were not available for our review.

## 3.0 SCOPE OF SERVICES

Mr. Chris Giuntoli, a California-Certified Asbestos Consultant (CAC), certification No. 02-3163 (expiration June 19, 2011), and Certified Lead Paint Inspector/Assessor with the California Department of Public Health (DPH), certification number I-5511 (expiration June 14, 2011), performed the asbestos and LCP survey, and background air sampling activities at the project location on July 15, 2010.

### 3.1 Asbestos

Suspect ACM were grouped into homogeneous areas with representative samples randomly collected from each. In addition, each potential ACM was evaluated for friability. A total of 16 bulk asbestos samples representing 8 material types were collected.

Our procedures for inspection and sampling in accordance with TO-92 are discussed below:

- Collected bulk asbestos samples after first wetting suspect material with a light mist of water. The samples were then cut from the substrate and transferred to a labeled container. Note that when multiple samples were collected, the sampling locations were distributed throughout the homogeneous area (spaces where the material was observed).
- Relinquished bulk asbestos samples under chain-of-custody protocol to EMSL Analytical, Inc., a California-licensed and Caltrans-approved subcontractor, for asbestos analysis in accordance with United States Environmental Protection Agency (EPA) Test Method 600/R-93/116 using polarized light microscopy (PLM). EMSL is a laboratory accredited by the National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program (NIST-NVLAP) for bulk asbestos fiber analysis. The laboratory analysis was requested on a ten-day turn-around-time.

Sample group identification numbers, material descriptions, approximate quantities, friability assessments, and photo references are summarized in Table 1. Approximate sample locations are presented on Figure 2. Materials represented by the samples collected are shown in the attached photographs.

### 3.2 Lead Paint

Three bulk paint samples were collected from suspect LCP observed at the project location. Our sampling procedures in accordance with TO-92 are discussed below:

- Collected bulk samples of suspect LCP using techniques presented in HUD guidelines. In addition, the painted areas were evaluated for evidence of deterioration such as flaking or cracking.
- Relinquished bulk LCP samples under chain-of-custody protocol to Advanced Technology Laboratories, a California-licensed and Caltrans-approved subcontractor, for lead analysis in accordance with EPA Test Method 6010B. Advanced Technology Laboratories is accredited by the DPH for lead analysis. The laboratory analysis was requested on a seven-day turn-around-time.

Paint sample identification numbers, descriptions, peeling and flaking quantities, and photo references are summarized in Table 2. Approximate sample locations are presented on Figure 2. Materials represented by the samples collected are shown in the attached photographs.

### 3.3 Background Air Sampling

Three background air samples were collected at the project location. Our sampling procedures in accordance with TO-92 are discussed below:

- Collected background air samples at three locations using three-piece 25-mm mixed-cellulose ester 0.8-micron filter cassettes. Air sample cassettes were positioned on tripods approximately five feet above ground level. A floating ball rotometer was used to calibrate each sampling pump at the beginning and end of the sample collection period. Photographs of the air sample locations are attached.
- Relinquished air samples under chain-of-custody protocol to EMSL, a California-licensed and Caltrans-approved subcontractor, for asbestos analysis by Phase Contrast Microscopy (PCM) in accordance with National Institute of Occupational Safety and Health (NIOSH) Method 7400. EMSL is a laboratory accredited by NIST-NVLAP for asbestos fiber analysis. The laboratory analysis was requested on a ten-day turn-around-time.

Background air sample identification numbers, locations, and photo references are summarized in Table 3. Approximate air sample locations are presented on Figure 2. Air sampling stations are shown in the attached photographs.

## 4.0 INVESTIGATIVE RESULTS

### 4.1 Asbestos Analytical Results

A summary of the analytical laboratory test results for asbestos is presented in Table 1. Reproductions of the laboratory reports and chain-of-custody documentation are presented in Appendix A.

Chrysotile asbestos at a concentration of 80% was detected in samples representing a total of approximately 25 square feet of nonfriable asbestos sheet packing used as barrier rail shims on each bridge span (total of approximately 50 square feet).

Asbestos sheet packing was indicated on construction drawings as used in typical expansion hinges on both bridge spans; however, we did not observe the indicated sheet packing during our survey.

No asbestos was detected in samples of the remaining suspect materials collected during our survey.

## 4.2 Paint Analytical Results

A summary of the analytical laboratory test results for paint is presented in Table 2. Reproductions of the laboratory reports and chain-of-custody documentation are presented in Appendix A.

Samples representing intact yellow thermoplastic striping on both bridge spans exhibited a total lead concentration of 22 mg/kg.

A sample representing intact multi-layered paint (graffiti) on the bridge supports exhibited a total lead concentration of 8.4 mg/kg.

## 4.3 Background Air Sampling Results

A summary of the analytical laboratory test results for air samples is presented in Table 3. Reproductions of the laboratory reports and chain-of-custody documentation are presented in Appendix A.

Laboratory analytical results for the background air samples ranged from less than the laboratory reporting limit of 0.001 fibers per cubic centimeter (f/cc) to 0.002 f/cc.

# 5.0 RECOMMENDATIONS

Based on our findings, we recommend the following:

## 5.1 Asbestos

NESHAP regulations do not require that asbestos-containing sheet packing (a Category I nonfriable/nonhazardous material) used in the barrier rail systems identified during our survey and indicated in constructions drawings as used in expansion hinges be removed prior to demolition or treated as hazardous waste. However, the disturbance of these materials is still covered by the Cal/OSHA asbestos standard (Title 8, CCR Section 1529). We recommend that a licensed contractor registered with Cal/OSHA for asbestos-related work perform activities that would disturb the asbestos-containing material. Contractors are responsible for informing the landfill of the contractor's intent to dispose of asbestos-containing waste. Some landfills may require additional waste characterization. Contractors are responsible for segregating and characterizing waste streams prior to disposal.

We also recommend written notification to contractors that will be conducting related activities of the presence of asbestos (i.e., provide the contractor[s] with a copy of this report and a list of asbestos removed by a licensed contractor[s] during subsequent abatement activities). Contractors not trained for asbestos work should be instructed not to disturb asbestos.

In accordance with Monterey Bay Unified Air Pollution Control District, Rule 424, written notification is required ten working-days prior to commencement of *any* demolition activity (whether asbestos is present or not).

## 5.2 Lead Paint

Paint identified during our survey would not be classified as California or Federal hazardous waste based on lead content if stripped, blasted, or otherwise separated from the substrate.

Geocon recommends that all paints at the project location (graffiti, graffiti abatement, signage, traffic striping, etc.) be treated as lead-containing for purposes of determining the applicability of the Cal/OSHA lead standard during any future maintenance, renovation, and demolition activities. This recommendation is based on LCP sample results and the fact that lead was a common ingredient of paints manufactured before 1978 and is still an ingredient of some paints. In accordance with Title 8, CCR, Section 1532.1(p), written notification to the nearest Cal/OSHA district office is required at least 24 hours prior to certain lead-related work.

## 5.3 Air Samples

The reported asbestos levels for the background air samples are well below the United States EPA re-occupancy limit (following asbestos abatement) of 0.01 f/cc. Based on these results, we conclude that elevated concentrations of airborne asbestos fibers were not present in air monitored at the perimeter of the project location and that the presence of asbestos-containing shims at the bridge has not likely caused increased exposure to airborne asbestos. Background air sample results should be compared to air sample data obtained during subsequent disturbance of ACM during bridge widening activities at the project location.

## 6.0 REPORT LIMITATIONS

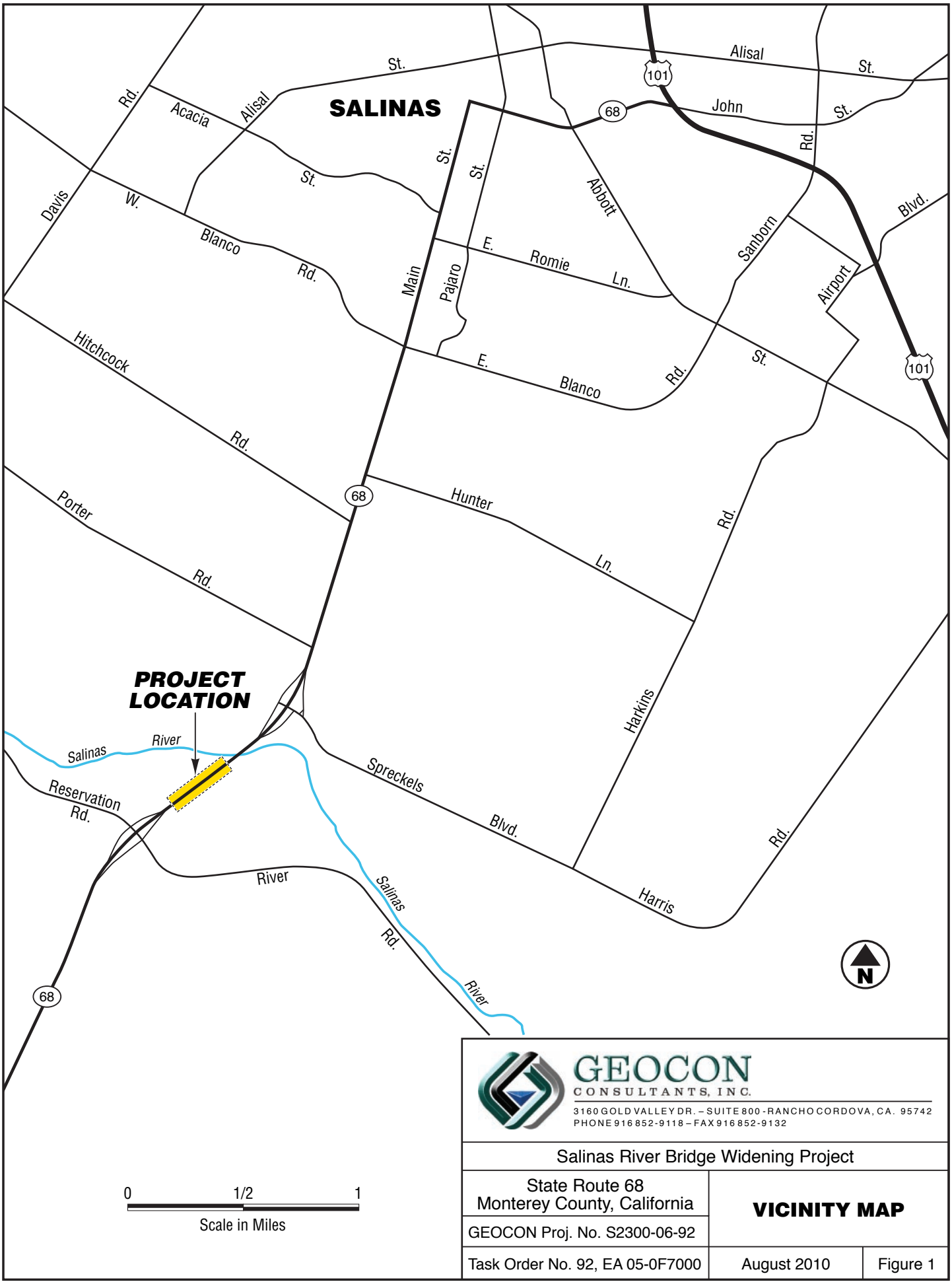
This asbestos and LCP survey was conducted in conformance with generally accepted standards of practice for identifying and evaluating asbestos and LCP in structures. The survey addressed only the structures identified in Section 1.1. Due to the nature of structure surveys, asbestos and LCP use, and laboratory analytical limitations, some ACM or LCP at the project location may not have been identified. Spaces such as cavities, voids, crawlspaces, and pipe chases may have been concealed to our investigator. Previous renovation work may have concealed or covered spaces or materials or may have partially demolished materials and left debris in inaccessible areas. Additionally, renovation activities may have partially replaced ACM with indistinguishable non-ACM. Asbestos and/or LCP may exist in areas of the structures that were not accessible or sampled in conjunction with this TO.

During renovation or demolition operations, suspect materials may be uncovered which are different from those accessible for sampling during this assessment. Personnel in charge of renovation/demolition should be alerted to note materials uncovered during such activities that differ substantially from those included in this or previous assessment reports. If suspect ACM and/or LCP are found, additional sampling and analysis should be performed to determine if the materials contain asbestos or lead.

This report has been prepared exclusively for Caltrans. The information contained herein is only valid as of the date of the report and will require an update to reflect additional information obtained.

This report is not a comprehensive site characterization and should not be construed as such. The findings as presented in this report are predicated on the results of the limited sampling and laboratory testing performed. In addition, the information obtained is not intended to address potential impacts related to sources other than those specified herein. Therefore, the report should be deemed conclusive with respect to only the information obtained. We make no warranty, express or implied, with respect to the content of this report or any subsequent reports, correspondence or consultation. Geocon strived to perform the services summarized herein in accordance with the local standard of care in the geographic region at the time the services were rendered.

The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification or regulation.




GEOCON
CONSULTANTS, INC.
3160 GOLD VALLEY DR. – SUITE 800 - RANCHO CORDOVA, CA. 95742
PHONE 916 852-9118 – FAX 916 852-9132

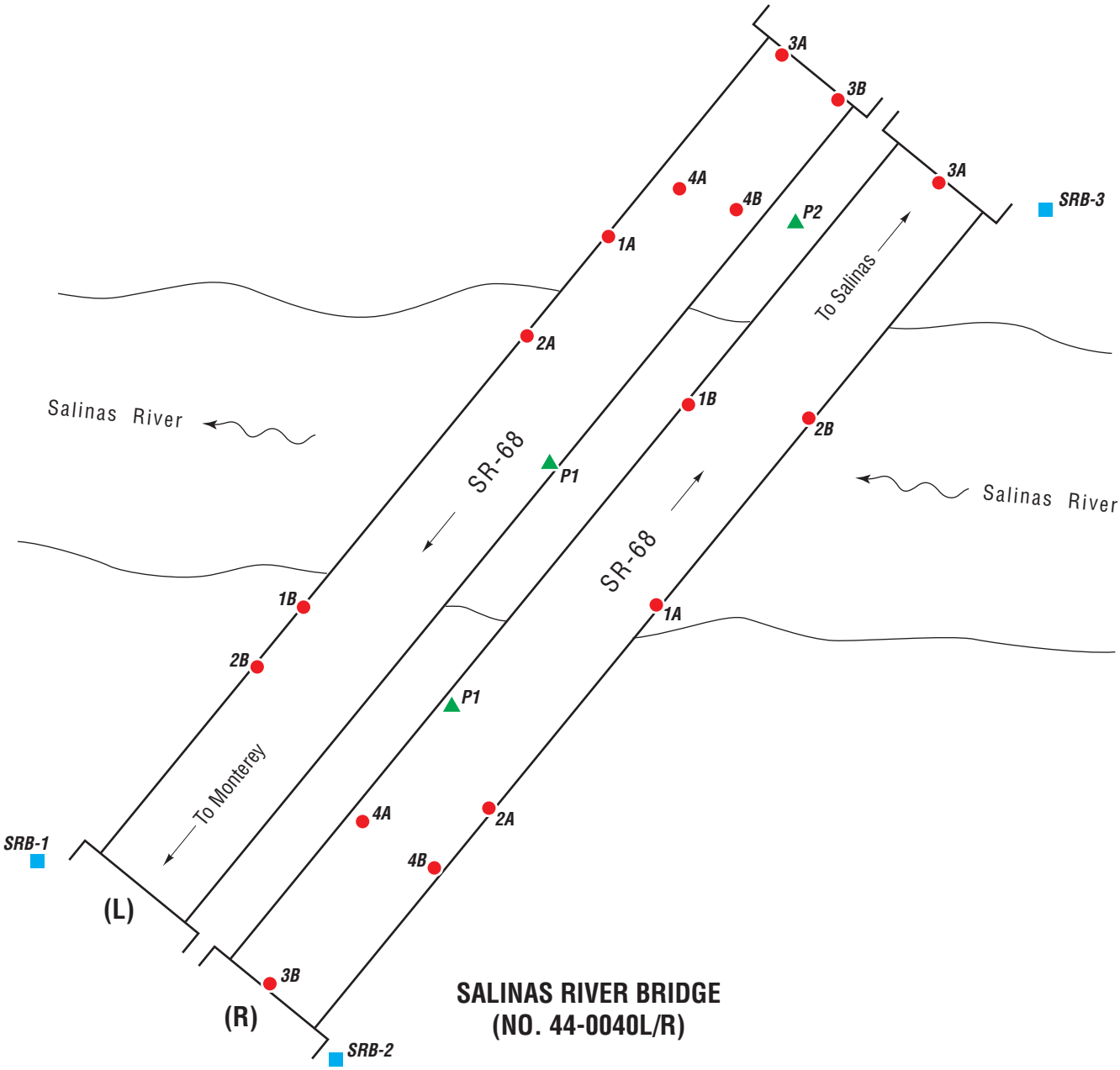
Salinas River Bridge Widening Project

State Route 68
Monterey County, California

**VICINITY MAP**

GEOCON Proj. No. S2300-06-92

Task Order No. 92, EA 05-0F7000 | August 2010 | Figure 1




**SALINAS RIVER BRIDGE**
**(NO. 44-0040L/R)**

N

NOT TO SCALE

LEGEND:

- ● Approximate Asbestos Sample Location
- ▲ Approximate Paint Sample Location
- ■ Approximate Air Sample Location

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| | | |
|---|---|---|
| Salinas River Bridge Widening Project | | |
| State Route 68<br>Monterey County, California | **SITE PLAN** | |
| GEOCON Proj. No. S2300-06-92 | | |
| Task Order No. 92, EA 05-0F7000 | August 2010 | Figure 2 |

TABLE 1
SUMMARY OF ASBESTOS ANALYTICAL RESULTS
SALINAS RIVER BRIDGE WIDENING PROJECT
CALTRANS CONTRACT 06A1141, TASK ORDER NO. 92, EA 06-0F7000
MONTEREY COUNTY, CALIFORNIA

Polarized Light Microscopy (PLM) - EPA Test Method 600/R-93/116

| Bridge No. | Sample Group No. | Description of Material | Approximate Quantity | Friable | Site Photos | Asbestos Content |
|---|---|---|---|---|---|---|
| 44-0040L | **1** | **Guard rail shims** | **25 square feet** | **No** | **2** | **80%** |
| | 2 | Brown fiberboard | NA | NA | 3 | ND |
| | 3 | Black drain pipe | NA | NA | 4 | ND |
| | 4 | Brown fiberboard | NA | NA | 5 | ND |
| 44-0040R | **1** | **Guard rail shims** | **25 square feet** | **No** | **10** | **80%** |
| | 2 | Brown fiberboard | NA | NA | 11 | ND |
| | 3 | Black drain pipe | NA | NA | 12 | ND |
| | 4 | Brown fiberboard | NA | NA | 13 | ND |

Notes:

NA = Not applicable (no asbestos detected)

ND = Not detected

Identified asbestos is of the chrysotile variety unless otherwise indicated

TABLE 2
SUMMARY OF PAINT ANALYTICAL RESULTS – TOTAL LEAD
SALINAS RIVER BRIDGE WIDENING PROJECT
CALTRANS CONTRACT 06A1141, TASK ORDER NO. 92, EA 06-0F7000
MONTEREY COUNTY, CALIFORNIA

| Bridge No. | Paint Sample No. | Paint Description | Approximate Quantity Peeling/Flaking | Site Photos | Total Lead (mg/kg) |
|---|---|---|---|---|---|
| 44-0040L | P1 | Yellow road striping | Intact | 16 | 22 |
| | P2 | Multi-colored (graffiti on supports of both bridges) | Intact | 17 | 8.4 |
| 44-0040R | P1 | Yellow road striping | Intact | 16 | 22 |

Notes:

mg/kg = milligrams per kilogram (EPA Test Method 6010B)

TABLE 3
SUMMARY OF BACKGROUND AIR SAMPLE ANALYTICAL RESULTS
SALINAS RIVER BRIDGE WIDENING PROJECT
CALTRANS CONTRACT 06A1141, TASK ORDER NO. 92, EA 06-0F7000
MONTEREY COUNTY, CALIFORNIA

Phase Contrast Microscopy (PCM) - National Institute for Occupational Safety and Health (NIOSH) Method 7400

| Sample ID | Sample Location | Total Air Volume (liters) | Site Photos | Asbestos (f/cc) by PCM |
|---|---|---|---|---|
| SRB-1 | Southwest perimeter | 2,544 | 18 | 0.001 |
| SRB-2 | Southeast perimeter | 2,544 | 19 | <0.001 |
| SRB-3 | Northeast perimeter | 2,575 | 20 | 0.002 |
| SRB-FB1 | NA | NA | NA | --- |
| SRB-FB2 | NA | NA | NA | --- |

Notes:

f/cc = fibers per cubic centimeter

NA= Not applicable

--- = Not analyzed

Air sample cassettes were positioned approximately five feet above ground level.

**Photo 1 – Salinas River Bridge (44-0044L)**

**Photo 2 – Bridge 44-0040L asbestos-containing guard rail shim**

**Photo 3 – Bridge 44-0040L brown fiberboard (joint fill material)**

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CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

| PHOTOGRAPHS 1, 2, & 3 | | |
|---|---|---|
| Salinas River Bridge Widening Project<br>Monterey County, California | | |
| S9200-06-92 | | August 2010 |

**Photo 4 – Bridge 44-0044L black drain pipe**

**Photo 5 – Bridge 44-0040L brown fiberboard at bridge supports (joint fill material)**

**Photo 6 – Bridge 44-0040L deck joint seal material (non-suspect)**

**Photo 7 – Bridge 44-0044L underside**

**Photo 8 – Bridge 44-0040L bearing (typical of both bridge spans)**

**Photo 9 – Salinas River Bridge (44-0040R)**

**Photo 10 – Bridge 44-0044R asbestos-containing guard rail shim**

**Photo 11 – Bridge 44-0040R brown fiberboard (joint fill material)**

**Photo 12 – Bridge 44-0040R black drain pipe**

**Photo 13 – Bridge 44-0044R brown fiberboard at bridge supports (joint fill material)**

**Photo 14 – Bridge 44-0040R deck joint seal material (non suspect)**

**Photo 15 – Bridge 44-0040R underside**

**Photo 16 – Bridge 44-0044L/R yellow road striping (typical of both bridge spans)**

**Photo 17 – Multi-colored graffiti on bridge supports (typical of both spans)**

**Photo 18 – Air sampling location SRB-1 (southwest perimeter)**

**Photo 19 – Air sampling location SRB-2 (southeast perimeter)**

**Photo 20 – Air sampling location SRB-3 (northeast perimeter)**

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3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

# APPENDIX A

July 22, 2010

Chris Giuntoli
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 112767

RE: SALINAS RIVER BRIDGE, S9200-06-92

Attention: Chris Giuntoli

Enclosed are the results for sample(s) received on July 16, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

for Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.



Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

**CLIENT:** Geocon Consultants, Inc. **Lab Order:** 112767
**Project:** SALINAS RIVER BRIDGE, S9200-06-92

**Lab ID:** 112767-001 **Collection Date:** 7/15/2010
**Client Sample ID:** 40L-P1 **Matrix:** PAINT CHIPS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **ICP METALS** | | | | | | |
| **EPA 3050B** | | | **EPA 6010B** | | | |
| RunID: ICP8_100721B | QC Batch: 65707 | | | PrepDate: 7/20/2010 | Analyst: **SRB** | |
| Lead | 22 | 2.0 | | mg/Kg | 1 | 7/21/2010 01:39 PM |

**Lab ID:** 112767-002 **Collection Date:** 7/15/2010
**Client Sample ID:** 40L-P2 **Matrix:** PAINT CHIPS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **ICP METALS** | | | | | | |
| **EPA 3050B** | | | **EPA 6010B** | | | |
| RunID: ICP8_100721B | QC Batch: 65707 | | | PrepDate: 7/20/2010 | Analyst: **SRB** | |
| Lead | 8.4 | 4.0 | | mg/Kg | 1 | 7/21/2010 01:44 PM |

**Lab ID:** 112767-003 **Collection Date:** 7/15/2010
**Client Sample ID:** 40R-P1 **Matrix:** PAINT CHIPS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **ICP METALS** | | | | | | |
| **EPA 3050B** | | | **EPA 6010B** | | | |
| RunID: ICP8_100721B | QC Batch: 65707 | | | PrepDate: 7/20/2010 | Analyst: **SRB** | |
| Lead | 22 | 2.0 | | mg/Kg | 1 | 7/21/2010 01:49 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | ND | Not Detected at the Reporting Limit |
| S | Spike/Surrogate outside of limits due to matrix interference | | Results are wet unless otherwise specified |
| DO | Surrogate Diluted Out | | |

**CLIENT:** Geocon Consultants, Inc.
**Work Order:** 112767
**Project:** SALINAS RIVER BRIDGE, S9200-06-92

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010_S**

| Sample ID: **MB-65707** | SampType: **MBLK** | TestCode: **6010_S** | Units: **mg/Kg** | Prep Date: **7/20/2010** | RunNo: **123455** |
|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **65707** | TestNo: **EPA 6010B** | **EPA 3050B** | Analysis Date: **7/21/2010** | SeqNo: **1979776** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lead | ND | 1.0 | | | | | | | | | |

| Sample ID: **LCS-65707** | SampType: **LCS** | TestCode: **6010_S** | Units: **mg/Kg** | Prep Date: **7/20/2010** | RunNo: **123455** |
|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **65707** | TestNo: **EPA 6010B** | **EPA 3050B** | Analysis Date: **7/21/2010** | SeqNo: **1979777** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 48.669 | 1.0 | 50.00 | 0 | 97.3 | 80 | 120 | | | | |

| Sample ID: **112818-012A-DUP** | SampType: **DUP** | TestCode: **6010_S** | Units: **mg/Kg** | Prep Date: **7/20/2010** | RunNo: **123455** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **65707** | TestNo: **EPA 6010B** | **EPA 3050B** | Analysis Date: **7/21/2010** | SeqNo: **1979779** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 114.370 | 1.0 | | | | | | 128.4 | 11.5 | 20 | |

| Sample ID: **112818-012A-MS** | SampType: **MS** | TestCode: **6010_S** | Units: **mg/Kg** | Prep Date: **7/20/2010** | RunNo: **123455** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **65707** | TestNo: **EPA 6010B** | **EPA 3050B** | Analysis Date: **7/21/2010** | SeqNo: **1979780** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 213.184 | 1.0 | 125.0 | 128.4 | 67.8 | 34 | 126 | | | | |

| Sample ID: **112818-012A-MSD** | SampType: **MSD** | TestCode: **6010_S** | Units: **mg/Kg** | Prep Date: **7/20/2010** | RunNo: **123455** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **65707** | TestNo: **EPA 6010B** | **EPA 3050B** | Analysis Date: **7/21/2010** | SeqNo: **1979781** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 196.576 | 1.0 | 125.0 | 128.4 | 54.6 | 34 | 126 | 213.2 | 8.11 | 20 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | | Calculations are based on raw values | | |

# CHAIN OF CUSTODY RECORD

Pg 1 of 1


Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040


**FOR LABORATORY USE ONLY:**

P.O.#: _____

Logged By: _____ Date: 7/16/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt: 6.2

1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC.
Attn: CHRIS GIUNTOLI
Address: 6671 Brisa Street
City Livermore State CA Zip Code 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

Project Name: SALINAS RIVER BRIDGE Project #: S9200-06-92 Sampler: (Printed Name) CGIUNTOLI (Signature)

Relinquished by: (Signature and Printed Name) Date: 7/15/10 Time: 12:45 Received by: (Signature and Printed Name) Date: 7/16/10 Time: 9:08

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CGIUNTOLI 7/15/10
Print Name Date
Signature

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
*SOLUBLE LEAD MAY BE REQUESTED BASED ON TOTAL LEAD RESULTS

**Sample/Records - Archival & Disposal**
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

**Storage Fees (applies when storage is requested):**
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

PRESERVATION

Q A / Q C
RTNE ☐
CT ☒
SWRCB ☐
Logcode ____
OTHER ____

| ITEM | LAB USE ONLY: Batch #: / Lab No. | Sample Description: Sample I.D. / Location | Date | Time | 8081A (Pesticides) | 8082 (PCB) | 8260B (Volatiles) | 8270C (BNA) | 6010B (Total Metal) | 8015B (GRO) / BTEX | 8015B (DRO) | 8021 (BTEX) | TITLE 22 / CAM 17 (6010 / 7000) | TOTAL LEAD * | SOIL | WATER | GROUND WATER | WASTEWATER | PAHs/PNAs | TAT | Container(s) # | Container(s) Type | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 112767-001 | 40L-P1 | 7/15/10 | | | | | | | | | | X | | | | | X | | E | 1 | P | B |
| | 2 | 40L-P2 | ↓ | | | | | | | | | | X | | | | | X | | ↓ | ↓ | ↓ | |
| | 3 | 40R-P1 | ↓ | | | | | | | | | | X | | | | | X | | ↓ | ↓ | ↓ | |

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=$HNO_3$ S=$H_2SO_4$ C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone: (510) 895-3675 Fax: (510) 895-3680 Email: milpitaslab@emsl.com

Attn: **Chris Giuntoli**
**Geocon Consultants**
**6671 Brisa Street**
**Livermore, CA 94550**

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: **S9200-06-92**

Customer ID: GECN21
Customer PO: S9200-06-92
Received: 07/16/10 9:00 AM
EMSL Order: 091006220

EMSL Proj: S9200-06-**
Analysis Date: 7/20/2010

## Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method, Revision 3, Issue 2, 8/15/94

| *Sample* | *Location* | *Sample Date* | *Volume (liters)* | *Fibers* | *Fields* | *LOD (fib/cc)* | *Fibers/ mm²* | *Fibers/ cc* | *Notes* |
|---|---|---|---|---|---|---|---|---|---|
| SRB-1 *091006220-0001* | Southwest perimeter | 7/15/2010 | 2544.00 | 6 | 100 | 0.001 | 7.64 | 0.001 | |
| SRB-2 *091006220-0002* | Southeast perimeter | 7/15/2010 | 2544.00 | <5.5 | 100 | 0.001 | <7.01 | <0.001 | |
| SRB-3 *091006220-0003* | Northeast perimeter | 7/15/2010 | 2575.00 | 9.5 | 100 | 0.001 | 12.1 | 0.002 | |
| SRB-FB1 (field blank) [HOLD] *091006220-0004* | Field blank [HOLD] | 7/15/2010 | | | | | | | Field Blank Not Analyzed |
| SRB-FB2 (field blank) [HOLD] *091006220-0005* | Field blank [HOLD] | 7/15/2010 | | | | | | | Field Blank Not Analyzed |

The results reported have been blank corrected as applicable.

Initial report from 07/20/2010 16:14:31

Analyst(s)
*Joseph McInerney (3)*

Baojia Ke, Laboratory Manager
or other approved signatory

Limit of detection is 7 fibers/mm². Interlaboratory Sr values: 5-20 fibers = 0.35, 21-50 fibers = 0.30, 51-100 fibers = 0.20. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. This report relates only to the samples reported above. This report may not be reproduced, except in full, without written approval by EMSL. Results have been blank corrected as applicable. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San Leandro CA MA AA000201



**THIS IS THE LAST PAGE OF THE REPORT.**

091006220

0220001R0

0910006220

# EMSL – San Leandro ◆ 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

EMSL ANALYTICAL, INC.

(888) 455-3675 ◆ Phone (510) 895-3675 ◆ Fax (510) 895-3680 ◆ sanleandrolab@emsl.com

| | | | |
|---|---|---|---|
| **EMSL Rep:** | TERRI LANZING | *Third Party Billing* | **requires written authorization from third party* |
| **Company:** | GEOCON | **EMSL-Bill to:** | |
| **Contact:** | CHRIS GIUNTOLI | **Contact:** | |
| **Address:** | 6671 BRISA ST | **Address:** | |
| **City & State:** | LIVERMORE, CA Zip 94550 | **City & State:** | **Zip** |
| **Phone:** | 925-371-5900 | **Fax:** | |
| ☒ **Email Results** | GIUNTOLI@GEOCONINC.COM | ☐ **Fax results** | |
| **Project Name or Number:** | 59200-06-92 | **Purchase Order Number:** | |

TURNAROUND TIME

| ☐ 3 Hours | ☐ 6 Hours | ☐ 24 Hours | ☐ 48 Hours | ☐ 72 Hours | ☐ 5 Days | ☒ 10 Days |
|---|---|---|---|---|---|---|

SAMPLE MATRIX

| ☒ Air | ☐ Bulk | ☐ Soil | ☐ Wipe | ☐ Micro-Vac | ☐ Drinking Water | ☐ Wastewater | ☐ Chips | ☐ Other |
|---|---|---|---|---|---|---|---|---|

## ASBESTOS ANALYSIS

**PCM - Air**
- ☒ NIOSH 7400 (A) Issue 2: August 1994
- ☐ OSHA w/ Time Weighted Average

**TEM AIR**
- ☐ AHERA 40 CFR, Part 763 Subpart E
- ☐ NIOSH 7402 Issue 2
- ☐ EPA Level II

**PLM - Bulk**
- ☐ EPA 600/R-93/116
- ☐ **+ Add Gravimetric Reduction (EPA NOB)**

PLM CARB 435 Level: ☐ A (0.25%) ☐ B (0.1%)
- ☐ NIOSH 9002
- ☐ EPA Point Count (400 Points)
- ☐ **+ Add Gravimetric Reduction (EPA NOB)**
- ☐ EPA Point Count (1,000 Points)
- ☐ **+ Add Gravimetric Reduction (EPA NOB)**
- ☐ Standard Addition Point Count

**SOILS**

PLM CARB 435 Level: ☐ A (0.25%) ☐ B (0.1%)
TEM CARB 435 Level: ☐ B (0.1%) ☐ C (0.01%) ☐ D (0.001%) ☐ E (0.0005%) ☐ F (0.0001%)
- ☐ EMSL MSD 9000 Method fibers/gram
- ☐ Superfund EPA 540-R097-028 (dust generation)

EPA Protocol ☐ Qualitative ☐ Quantitative

**TEM BULK**
- ☐ TEM EPA NOB, EPA 600/R-93/116 Section 2.5.5.1 (TEM % by VAE )
- ☐ Chatfield SOP-1988-02
- ☐ TEM EPA 600/R-93/116 Section 2.5.5.2 (TEM % by Mass)

**TEM MICROVAC**
- ☐ ASTM D 5755 (Quantitative)

**TEM WIPE**
- ☐ ASTM D-6480 (Quantitative)

**TEM WATER**
- ☐ EPA 100.2 (≥ 10 microns)
- ☐ Modified EPA 100.2 (≥ 0.5 microns)

OTHER: _____

## LEAD ANALYSIS

**Flame Atomic Absorption**
- ☐ Wipe, SW846-7420 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-7420
- ☐ Air, NIOSH 7082
- ☐ Chips, SW846-7420 or AOAC 5.009 (974.02)
- ☐ Wastewater, SW 846-7420

☐ TCLP LEAD SW846-1311/7420

**Graphite Furnace Atomic Absorption**
- ☐ Air, NIOSH 7105
- ☐ Wastewater, SW846-7421
- ☐ Soil, SW846-7421
- ☐ Drinking Water, EPA 239.2

**ICP – Inductively Coupled Plasma**
- ☐ Wipe, SW846-6010 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-6010
- ☐ Air, NIOSH 7300

## MATERIALS ANALYSIS
- ☐ Particle Identification
- ☐ Full Particle Identification
- ☐ Dust Mites and Insect Fragments
- ☐ Particle Size & Distribution
- ☐ Product Comparison
- ☐ Paint Characterization
- ☐ Failure Analysis
- ☐ Corrosion Analysis
- ☐ Glove Box Containment Study
- ☐ Petrographic Examination of Concrete
- ☐ Portland Cement in Workplace Atmospheres (OSHA ID-143)
- ☐ Man Made Vitrous Fibers – MMVF's
- ☐ Synthetic Fiber Identification
- ☐ Other: _____

## MICROBIAL ANALYSIS

**Air Samples**
- ☐ Mold & Fungi by Air O Cell
- ☐ Mold & Fungi by Agar Plate count & id
- ☐ Bacterial Count and Gram Stain
- ☐ Bacterial Count and Identification

**Water Samples**
- ☐ Total Coliforms, Fecal Coliforms
- ☐ Escherichia Coli, Fecal Streptococcus
- ☐ Legionella
- ☐ Salmonella
- ☐ Giardia and Cryptosporidium

**Wipe and Bulk Samples**
- ☐ Mold & Fungi – Direct Examination
- ☐ Mold & Fungi – (Culture follow up to direct examination if necessary)
- ☐ Mold & Fungi – Culture (Count & ID)
- ☐ Mold & Fungi – Culture (Count only)
- ☐ Bacterial Count & Gram Stain
- ☐ Bacterial Count & Identification (3 most prominent types)
- ☐ Other: _____

## IAQ ANALYSIS
- ☐ Nuisance Dust (NIOSH 0500 & 0600)
- ☐ Airborne Dust (PM10, TSP)
- ☐ Silica Analysis by XRD ☐ NIOSH 7500
- ☐ HVAC Efficiency
- ☐ Carbon Black
- ☐ Airborne Oil Mist
- ☐ Other: _____

| | | | | | |
|---|---|---|---|---|---|
| **Relinquished:** | | **Date:** | 7/15/10 | **Time:** | 1715 |
| **Received:** | | **Date:** | 7/16/10 | **Time:** | 9:00 |
| **Relinquished:** | | **Date:** | | **Time:** | |
| **Received:** | | **Date:** | | **Time:** | |

091006220

EMSL ANALYTICAL, INC.

052000120

091006220

# EMSL – San Leandro ◆ 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

| | SAMPLE NUMBER | SAMPLE DESCRIPTION | LOCATION | VOLUME Air (L) Area (Inches sq.) |
|---|---|---|---|---|
| 1 | SRB-1 | SOUTHWEST PERIMETER | | 2,544 L |
| 2 | SRB-2 | SOUTHEAST PERIMETER | | 2544 L |
| 3 | SRB-3 | NORTHEAST PERIMETER | | 2,575L |
| 4 | SRB-FB1 | FIELD BLANK | HOLD | |
| 5 | SRB-FB2 | " | HOLD | |
| 6 | | | | |
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Client Sample # (S) _____ - _____ TOTAL SAMPLE # _____

| | | | | | |
|---|---|---|---|---|---|
| Relinquished: | | Date: | | Time: | |
| Received: | | Date: | 7/16/10 | Time: | 9:00 FX |
| Relinquished: | | Date: | | Time: | |
| Received: | | Date: | | Time: | |

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone: (510) 895-3675 Fax: (510) 895-3680 Email: milpitaslab@emsl.com

Attn: **Chris Giuntoli**
**Geocon Consultants**
**6671 Brisa Street**
**Livermore, CA 94550**

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: **S9200-06-92**

Customer ID: GECN21
Customer PO: S9200-06-92
Received: 07/16/10 9:00 AM
EMSL Order: 091006230

EMSL Proj: S9200-06-**
Analysis Date: 7/27/2010

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

| Sample | Description | Appearance | Non-Asbestos % | Fibrous | Non-Asbestos % | Non-Fibrous | Asbestos % | Type |
|---|---|---|---|---|---|---|---|---|
| 40L-1A-Guard Rail Shim *091006230-0001* | | Black Fibrous Homogeneous | | | 20% | Non-fibrous (other) | **80%** | **Chrysotile** |
| 40L-1B-Guard Rail Shim *091006230-0002* | | Black Fibrous Homogeneous | | | 20% | Non-fibrous (other) | **80%** | **Chrysotile** |
| 40L-2A-Fiber Board *091006230-0003* | | Brown Fibrous Homogeneous | 90% | Cellulose | 10% | Non-fibrous (other) | **None Detected** | |
| 40L-2B-Fiber Board *091006230-0004* | | Brown Fibrous Homogeneous | 90% | Cellulose | 10% | Non-fibrous (other) | **None Detected** | |
| 40L-3A-Drain Pipe *091006230-0005* | | Black Fibrous Heterogeneous | | | 100% | Non-fibrous (other) | **None Detected** | |
| 40L-3B-Drain Pipe *091006230-0006* | | Black Fibrous Heterogeneous | 20% | Cellulose | 80% | Non-fibrous (other) | **None Detected** | |
| 40L-4A-Fiber Board *091006230-0007* | | Brown Fibrous Homogeneous | 80% | Cellulose | 20% | Non-fibrous (other) | **None Detected** | |

Initial report from 07/27/2010 12:27:37

Analyst(s)

*Jorge Leon (16)*

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San Leandro CA NVLAP Lab Code 101048-3, MA AA000201, WA C2007

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone: (510) 895-3675 Fax: (510) 895-3680 Email: milpitaslab@emsl.com

Attn: **Chris Giuntoli**
**Geocon Consultants**
**6671 Brisa Street**
**Livermore, CA 94550**

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: **S9200-06-92**

Customer ID: GECN21
Customer PO: S9200-06-92
Received: 07/16/10 9:00 AM
EMSL Order: 091006230

EMSL Proj: S9200-06-**
Analysis Date: 7/27/2010

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

| | | | Non-Asbestos | | | Asbestos |
|---|---|---|---|---|---|---|
| Sample | Description | Appearance | % Fibrous | | % Non-Fibrous | % Type |
| 40L-4B-Fiber Board<br>*091006230-0008* | | Brown<br>Fibrous<br>Homogeneous | 80% | Cellulose | 20% Non-fibrous (other) | **None Detected** |
| 40R-1A-Guard Rail Shim<br>*091006230-0009* | | Gray<br>Fibrous<br>Homogeneous | | | 20% Non-fibrous (other) | **80% Chrysotile** |
| 40R-1B-Guard Rail Shim<br>*091006230-0010* | | Gray<br>Fibrous<br>Homogeneous | | | 20% Non-fibrous (other) | **80% Chrysotile** |
| 40R-2A-Fiber Board<br>*091006230-0011* | | Brown<br>Fibrous<br>Homogeneous | 80% | Cellulose | 20% Non-fibrous (other) | **None Detected** |
| 40R-2B-Fiber Board<br>*091006230-0012* | | Brown<br>Fibrous<br>Homogeneous | 80% | Cellulose | 20% Non-fibrous (other) | **None Detected** |
| 40R-3A-Drain Pipe<br>*091006230-0013* | | Black<br>Fibrous<br>Homogeneous | 40% | Cellulose | 60% Non-fibrous (other) | **None Detected** |
| 40R-3B-Drain Pipe<br>*091006230-0014* | | Black<br>Fibrous<br>Homogeneous | | | 100% Non-fibrous (other) | **None Detected** |

Initial report from 07/27/2010 12:27:37

Analyst(s)

*Jorge Leon (16)*

Baojia Ke, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San Leandro CA NVLAP Lab Code 101048-3, MA AA000201, WA C2007

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Attn: **Chris Giuntoli**
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**Livermore, CA 94550**

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: **S9200-06-92**

Customer ID: GECN21
Customer PO: S9200-06-92
Received: 07/16/10 9:00 AM
EMSL Order: 091006230

EMSL Proj: S9200-06-**
Analysis Date: 7/27/2010

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

| | | | Non-Asbestos | | | | Asbestos |
|---|---|---|---|---|---|---|---|
| Sample | Description | Appearance | % | Fibrous | % | Non-Fibrous | % Type |
| 40R-4A-Fiber Board<br>*091006230-0015* | | Brown<br>Fibrous<br>Homogeneous | 80% | Cellulose | 20% | Non-fibrous (other) | **None Detected** |
| 40R-4B-Fiber Board<br>*091006230-0016* | | Brown<br>Fibrous<br>Homogeneous | 80% | Cellulose | 20% | Non-fibrous (other) | **None Detected** |

Initial report from 07/27/2010 12:27:37

Analyst(s)

*Jorge Leon (16)*

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San Leandro CA NVLAP Lab Code 101048-3, MA AA000201, WA C2007



THIS IS THE LAST PAGE OF THE REPORT.

091006230

091006230

EMSL ANALYTICAL, INC.

# EMSL – San Leandro ◆ 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

(888) 455-3675 ◆ Phone (510) 895-3675 ◆ Fax (510) 895-3680 ◆ sanleandrolab@emsl.com

| | | | |
|---|---|---|---|
| **EMSL Rep:** | TERRI LANZING | *Third Party Billing* | **requires written authorization from third party* |
| **Company:** | GEOCON | **EMSL-Bill to:** | |
| **Contact:** | CHRIS GIUNTOLI | **Contact:** | |
| **Address:** | 6671 BRISA ST | **Address:** | |
| **City & State:** | LIVERMORE, CA Zip 94550 | **City & State:** | **Zip** |
| **Phone:** | 925-371-5900 | **Fax:** | |
| ☒ **Email Results** | GIUNTOLI@GEOCONINC.COM | ☐ **Fax results** | |
| **Project Name or Number:** | 59200-06-92 | **Purchase Order Number:** | |

TURNAROUND TIME

☐ 3 Hours ☐ 6 Hours ☐ 24 Hours ☐ 48 Hours ☐ 72 Hours ☐ 5 Days ☒ 10 Days

SAMPLE MATRIX

☐ Air ☒ Bulk ☐ Soil ☐ Wipe ☐ Micro-Vac ☐ Drinking Water ☐ Wastewater ☐ Chips ☐ Other

## ASBESTOS ANALYSIS

**PCM - Air**
- ☐ NIOSH 7400 (A) Issue 2: August 1994
- ☐ OSHA w/ Time Weighted Average

**TEM AIR**
- ☐ AHERA 40 CFR, Part 763 Subpart E
- ☐ NIOSH 7402 Issue 2
- ☐ EPA Level II

**PLM - Bulk**
- ☒ EPA 600/R-93/116
- ☐ **+ Add Gravimetric Reduction (EPA NOB)**

PLM CARB 435 Level: ☐ A (0.25%) ☐ B (0.1%)
- ☐ NIOSH 9002
- ☐ EPA Point Count (400 Points)
- ☐ **+ Add Gravimetric Reduction (EPA NOB)**
- ☐ EPA Point Count (1,000 Points)
- ☐ **+ Add Gravimetric Reduction (EPA NOB)**
- ☐ Standard Addition Point Count

**SOILS**

PLM CARB 435 Level: ☐ A (0.25%) ☐ B (0.1%)
TEM CARB 435 Level: ☐ B (0.1%) ☐ C (0.01%) ☐ D (0.001%) ☐ E (0.0005%) ☐ F (0.0001%)
- ☐ EMSL MSD 9000 Method fibers/gram
- ☐ Superfund EPA 540-R097-028 (dust generation)

EPA Protocol ☐ Qualitative ☐ Quantitative

**TEM BULK**
- ☐ TEM EPA NOB, EPA 600/R-93/116 Section 2.5.5.1 (TEM % by VAE )
- ☐ Chatfield SOP-1988-02
- ☐ TEM EPA 600/R-93/116 Section 2.5.5.2 (TEM % by Mass)

**TEM MICROVAC**
- ☐ ASTM D 5755 (Quantitative)

**TEM WIPE**
- ☐ ASTM D-6480 (Quantitative)

**TEM WATER**
- ☐ EPA 100.2 (≥10 microns)
- ☐ Modified EPA 100.2 (≥ 0.5 microns)

OTHER:

## LEAD ANALYSIS

**Flame Atomic Absorption**
- ☐ Wipe, SW846-7420 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-7420
- ☐ Air, NIOSH 7082
- ☐ Chips, SW846-7420 or AOAC 5.009 (974.02)
- ☐ Wastewater, SW 846-7420

☐ TCLP LEAD SW846-1311/7420

**Graphite Furnace Atomic Absorption**
- ☐ Air, NIOSH 7105
- ☐ Wastewater, SW846-7421
- ☐ Soil, SW846-7421
- ☐ Drinking Water, EPA 239.2

**ICP – Inductively Coupled Plasma**
- ☐ Wipe, SW846-6010 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-6010
- ☐ Air, NIOSH 7300

## MATERIALS ANALYSIS
- ☐ Particle Identification
- ☐ Full Particle Identification
- ☐ Dust Mites and Insect Fragments
- ☐ Particle Size & Distribution
- ☐ Product Comparison
- ☐ Paint Characterization
- ☐ Failure Analysis
- ☐ Corrosion Analysis
- ☐ Glove Box Containment Study
- ☐ Petrographic Examination of Concrete
- ☐ Portland Cement in Workplace Atmospheres (OSHA ID-143)
- ☐ Man Made Vitrous Fibers – MMVF's
- ☐ Synthetic Fiber Identification
- ☐ Other:

## MICROBIAL ANALYSIS

**Air Samples**
- ☐ Mold & Fungi by Air O Cell
- ☐ Mold & Fungi by Agar Plate count & id
- ☐ Bacterial Count and Gram Stain
- ☐ Bacterial Count and Identification

**Water Samples**
- ☐ Total Coliforms, Fecal Coliforms
- ☐ Escherichia Coli, Fecal Streptococcus
- ☐ Legionella
- ☐ Salmonella
- ☐ Giardia and Cryptosporidium

**Wipe and Bulk Samples**
- ☐ Mold & Fungi – Direct Examination
- ☐ Mold & Fungi – (Culture follow up to direct examination if necessary)
- ☐ Mold & Fungi – Culture (Count & ID)
- ☐ Mold & Fungi – Culture (Count only)
- ☐ Bacterial Count & Gram Stain
- ☐ Bacterial Count & Identification (3 most prominent types)
- ☐ Other:

## IAQ ANALYSIS
- ☐ Nuisance Dust (NIOSH 0500 & 0600)
- ☐ Airborne Dust (PM10, TSP)
- ☐ Silica Analysis by XRD ☐ NIOSH 7500
- ☐ HVAC Efficiency
- ☐ Carbon Black
- ☐ Airborne Oil Mist
- ☐ Other:

| | | | | | |
|---|---|---|---|---|---|
| **Relinquished:** | | **Date:** | 7/15/10 | **Time:** | 1715 |
| **Received:** | | **Date:** | 7/16/10 | **Time:** | 9:00 FX |
| **Relinquished:** | | **Date:** | | **Time:** | |
| **Received:** | | **Date:** | | **Time:** | |

091006230

EMSL ANALYTICAL, INC.

# EMSL – San Leandro ◆ 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

| | SAMPLE NUMBER | SAMPLE DESCRIPTION | LOCATION | VOLUME Air (L) Area (Inches sq.) |
|---|---|---|---|---|
| 1 | 40L-1A | GUARD RAIL SHIM | | |
| 2 | 40L-1B | ↓ | | |
| 3 | 40L-2A | BROWN FIBER BOARD | | |
| 4 | 40L-2B | ↓ | | |
| 5 | 40L-3A | BLACK DRAIN PIPE | | |
| 6 | 40L-3B | ↓ | | |
| 7 | 40L-4A | BROWN FIBERBOARD | | |
| 8 | 40L-4B | ↓ | | |
| 9 | 40R-1A | GUARD RAILSHIM | | |
| 10 | 40R-1B | ↓ | | |
| 11 | 40R-2A | BROWN FIBERBOARD | | |
| 12 | 40R-2B | ↓ | | |
| 13 | 40R-3A | BLACK DRAIN PIPE | | |
| 14 | 40R-3B | ↓ | | |
| 15 | 40R-4A | BROWN FIBERBOARD | | |
| 16 | 40R-4B | ↓ | | |
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Client Sample # (S) _____ - _____ TOTAL SAMPLE # 16

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|---|---|---|---|---|---|
| Relinquished: | | Date: | | Time: | |
| Received: | | Date: | 7/16/10 | Time: | 9:00 EX |
| Relinquished: | | Date: | | Time: | |
| Received: | | Date: | | Time: | |

## 2. Alternative Crash Cushion System (Test Level 3):

A. Crash Cushion (Type CAT)
B. Crash Cushion System (Type BRAKEMASTER 350)
C. Crash Cushion System (Type X-Tension Median Attenuator)

# Alternative Crash Cushion System (Test Level 3)

This section of the information handout shows three alternative crash cushions shown in the Non-Standard Special Provision (NSSP) Alternative Crash Cushion (Test Level 3) for this project EA 05-0M750. For more information refer to the Contract Special Provisions, the manufacturers of each crash cushion and the Engineer.

The three alternative crash cushions and their respective manufacturers are:

(1) CRASH CUSHION (TYPE CAT) - Crash cushion (Type CAT) shall be a CAT-350 Crash Cushion Attenuating Terminal as manufactured by Trinity Industries, Inc., and shall include all the items detailed for crash cushion (Type CAT) shown on the plans. Crash cushion (Type CAT) backup shall consist of items detailed for crash cushion (Type CAT) backup shown on the plans and shall conform to the provisions in Section 83-1.02B, "Metal Beam Guard Railing," of the Standard Specifications. Excluding the crash cushion (Type CAT) backup, arrangements have been made to ensure that any successful bidder can obtain the CAT-350 Crash Cushion Attenuating Terminal from the manufacturer, Trinity Industries, Inc., P.O. Box 99, 950 West 400S, Centerville, UT 84014, Telephone 1-800-772-7976.

(2) CRASH CUSHION SYSTEM (TYPE BRAKEMASTER 350) – Crash cushion system (Type BRAKEMASTER 350) shall include all the items detailed for crash cushion system (Type BRAKEMASTER 350) shown on the plans and on the manufacturer's plans. The successful bidder can obtain from the following distributors the crash cushion system (Type BRAKEMASTER 350) manufactured by Energy Absorption Systems, Inc., 35 East Wacker Drive, Chicago, Illinois 60601, Telephone (312) 467-6750:

A. Southern California: Traffic Control Service, Inc., 1818 East Orangethorpe, Fullerton, California 92831, Telephone 800-222-8274, FAX 714-526-9521.
B. Northern California: Traffic Control Service, Inc., 8585 Thys Court, Sacramento, California 95828, Telephone 800-884-8274, FAX 916-387-9734.

(3) CRASH CUSHION SYSTEM (TYPE X-TENSION MEDIAN ATTENUATOR) - Crash cushion system (Type X-Tension Median Attenuator) as manufactured by Barrier Systems Incorporated, 180 River Road, Rio Vista, California 94571, Telephone (888) 800-3691 and shall include all the items detailed for Crash cushion system (Type X-Tension Median Attenuator) shown on the plans and on the manufacturer's plans. The successful bidder can obtain Crash cushion system (Type X-Tension Median Attenuator) from the distributor, Statewide Safety and Signs, 522 Lindon Lane, Nipomo, California 93444, Telephone (805) 929-5070, FAX (805) 929-5786.

TRINITY HIGHWAY PRODUCTS

ABOUT | PRODUCTS | TECHNICAL INFORMATION | CONTACT

## CAT-350™

**Trinity offers the Crash Cushion Attenuating Terminal (CAT™) which is designed to absorb energy during impact.**

### CAT-350™

The Crash Cushion Attenuating Terminal (CAT™) is an energy-absorbing attenuator available for use where blunt ends of rigid barriers and fixed objects are in the median or on the shoulder.

**Features:**

- CAT™ can be used as a longitudinal barrier end treatment and as a crash cushion either in the median or on the shoulder.
- Various post and post/sleeve options are available.
- NCHRP Report 350 Test Level 3 compliant.

**Installation and Repair Advantages:**

- No torque requirements on bolts.
- Requires no concrete pads (can be installed in soil). Foundations and deadmen anchors are not required.
- Material below ground is typically found undamaged after impact, allowing for simple repair and replacement of damaged parts.

**CAT-350™ USAGE**

- HIGHWAY
- PERMANENT
- UNIDIRECTIONAL TRAFFIC
- BI-DIRECTIONAL TRAFFIC
- BRIDGES/TUNNELS

CHOOSE ANOTHER PRODUCT

- CRASH CUSHIONS
- TRUCK MOUNTED ATTENUATORS
- END TERMINALS
- POSTS
- CABLE BARRIERS
- OFFSET BLOCKS
- GUARDRAIL
- EN 1317 PRODUCTS

TECHNICAL INFORMATION

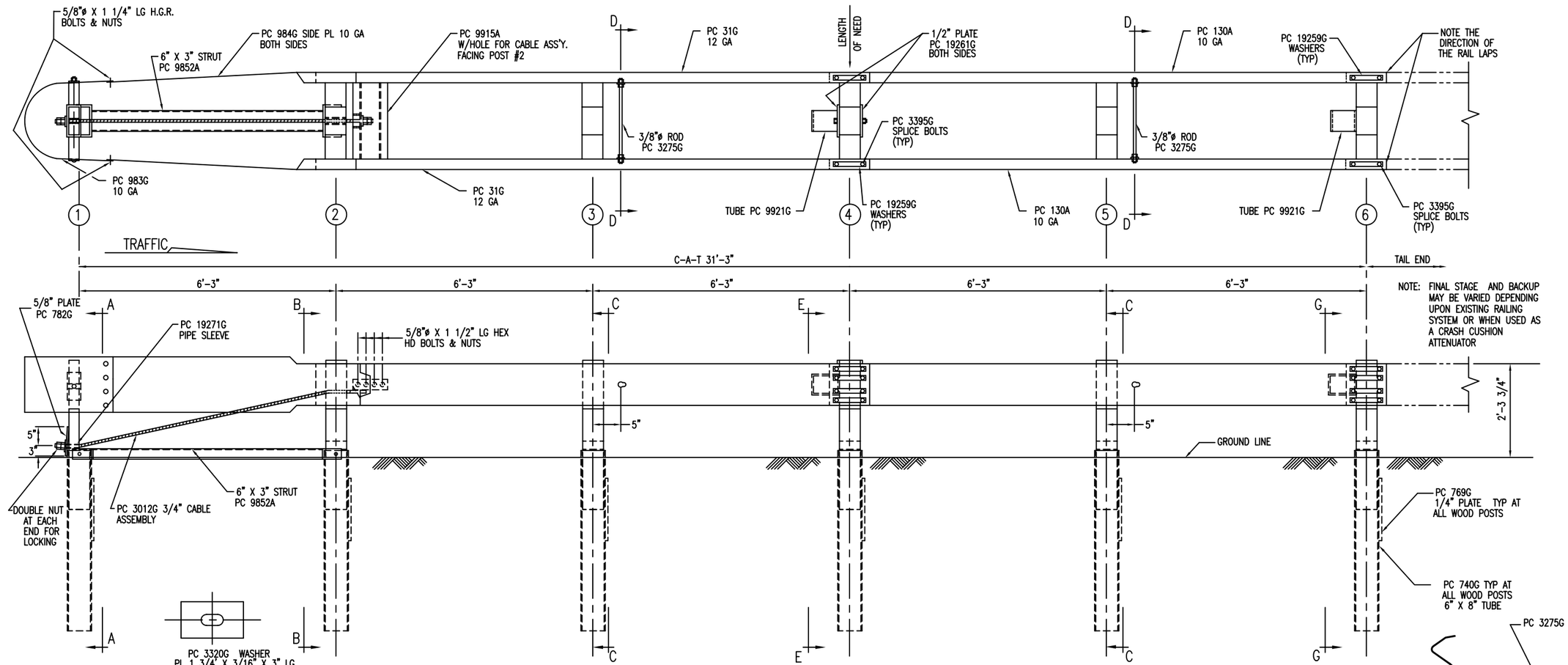
CAT-350™

- Installation Instructions
- Specifications
- Drawing

You will need the free Adobe Reader to view information.

Get Adobe Reader

BUILDING TOMORROW'S HIGHWAY SAFETY SOLUTIONS TODAY




## C-A-T BILL OF MATERIAL

| PRODUCT CODE | QTY | DESCRIPTION |
|---|---|---|
| 31G | 2 | 12/12'6/0 CAT (GUARDRAIL) |
| 130A | 2 | 10/12'6/5'10:6'8/SP CAT (GUARDRAIL) |
| 705G | 1 | 2" x 5 1/2" PIPE |
| 740G | 6 | 4'6 TUBE SLEEVE |
| 769G | 6 | 1/4 x 18 x 24 SOIL PLATE |
| 782G | 1 | 5/8" x 8" x 8" BEARING PLATE |
| 983G | 1 | 10/NOSE PLATE/CAT/ROLLED |
| 984G | 2 | 10/SIDE PLATE CAT |
| 3012G | 1 | CABLE 3/4 x 8'0/DBL SWG |
| 3074B | 5 | WD 3'6 POST #2, 3, 4, 5, 6 CAT |
| 3075B | 1 | WD 3'6 POST #1 CAT |
| 3100B | 2 | WD BLOCK 1'2 #1 CAT |
| 3101B | 10 | WD BLOCK 1'2 #2-6 CAT |
| 3255G | 4 | 3/8" FLAT WASHER |
| 3263G | 4 | 3/8"ø x 2" LAG SCREW |
| 3275G | 2 | 3/8"ø x 24 1/2" RESTRAINT ROD |
| 3300G | 20 | 5/8" FLAT WASHER |
| 3320G | 4 | 3/16" x 1 3/4" x 3" RECT WASHER |
| 3340G | 85 | 5/8" G.R. NUT |
| 3360G | 16 | 5/8"ø x 1 1/4" G.R. BOLT |
| 3380G | 8 | 5/8"ø x 1 1/2" HEX BOLT |
| 3395G | 32 | 5/8"ø x 1 3/4" HEX BOLT CAT |
| 3478G | 13 | 5/8"ø x 7 1/2" HEX BOLT |
| 3497G | 6 | 5/8"ø x 9 1/2" HEX BOLT |
| 3650G | 2 | 5/8"ø x 25" G.R. BOLT |
| 3900G | 2 | 1" FLAT WASHER |
| 3910G | 4 | 1" HEX NUT |
| 4252G | 8 | 3/8" HEX NUT |
| 4258G | 4 | 3/8" LOCK WASHER |
| 4640G | 8 | 5/8"ø x 24" HEX BOLT |
| 9852A | 1 | CHANNEL STRUT x 6'-6" |
| 9915A | 1 | SPACER CHANNEL CAT |
| 9916A | 1 | 10/BENT PLATE SLEEVE |
| 9921G | 2 | 6" SLEEVE 6 x 8 |
| 19259G | 32 | 3/16" x 2" x 10" PLATE WASHER |
| 19261G | 2 | 1/2 x 3 x 7 POST PLATE |
| 19271G | 1 | 1" x 2 1/2" PIPE SLEEVE CAT |

| REV. | CHK'D | BY | DATE | REMARKS |
|---|---|---|---|---|
| 6 | | BT | 8-9-00 | CHANGED SYSTEM HEIGHT, WAS 2'-3" |
| 5 | | LH | 6-22-00 | REPLACED PC 766 WITH PC 769, CHANGED TITLE BLOCK |
| 4 | | BT | 4-10-97 | ROTATED BLOCK PC 9921 90° AT POST 4 & 6 |
| 3 | | BT | 3-10-97 | DELETED PC 3072, 3073, 4470, CHG QTY 3074 & 3478 |
| 2 | | BT | 8-12-96 | SECTIONS A-A & B-B, CORRECTED PIPE SLEEVE PC No |
| 1 | | BT | 5-1-96 | REVISED PC No 31G & 130A |

C-A-T

CRASH-CUSHION ATTENUATING TERMINAL
PLAN, ELEVATION & SECTIONS FOR USE
AS A LONGITUDINAL MEDIAN BARRIER TERMINAL
OR CRASH CUSHION ATTENUATOR

| | |
|---|---|
| DRAWN | BT |
| CHECKED | EN |
| SCALE | N.T.S. |
| DATE | 7-15-94 |
| ENG. FILE # | SS245-01E |
| SHT.No. | E1 OF 1 |
| DRAWING NO. | SS-245 |
| REV. | 6 |

TRINITY INDUSTRIES, INC.
HIGHWAY SAFETY PRODUCTS
2525 STEMMONS FREEWAY, DALLAS, TX 75207

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# BRAKEMASTER® 350 SYSTEM
## THE EASY-TO-INSTALL GUARDRAIL END TREATMENT

## OVERVIEW

The Brakemaster 350 is the quick and easy solution for shielding dangerous guardrail ends at wide median and roadside sites with adequate clear zones. It provides superior bi-directional protection and DOES NOT REQUIRE A CONCRETE ANCHOR OR PAD, making it fast and easy to install. The Brakemaster 350 is available at a VERY COMPETITIVE PRICE. Plus additional cost savings are realized because of reduced installation time.

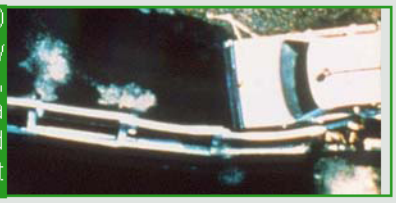
## SATISFIES NCHRP 350, TEST LEVELS 1, 2, & 3

The Brakemaster System successfully meets NCHRP 350, Test Level 3 as a redirective gating end treatment. The system's unique design consists of a framework of w-beam steel guardrail panels which move rearward during head-on impacts. The system also safely redirects vehicles in side impacts. As a gating system, it requires sufficient clear zone behind the system.

## FEATURES AND BENEFITS

- Meets NCHRP 350, Test Level 3 as a redirective, gating guardrail end treatment.
- Easy installation requires only two anchor foundation tubes (compared to six tubes for competitive systems).
- Metal diaphragm posts rest on "slip bases" that set right on the ground — no wood post holes to dig!
- Absolutely no concrete is required.
- All replacement components are above ground for fast replacement after impact — no wood posts to remove!

The Brakemaster 350 System successfully meets NCHRP 350, Test Level 3 as a redirective gating end treatment



ENERGY ABSORPTION SYSTEMS, INC.

WWW.ENERGYABSORPTION.COM

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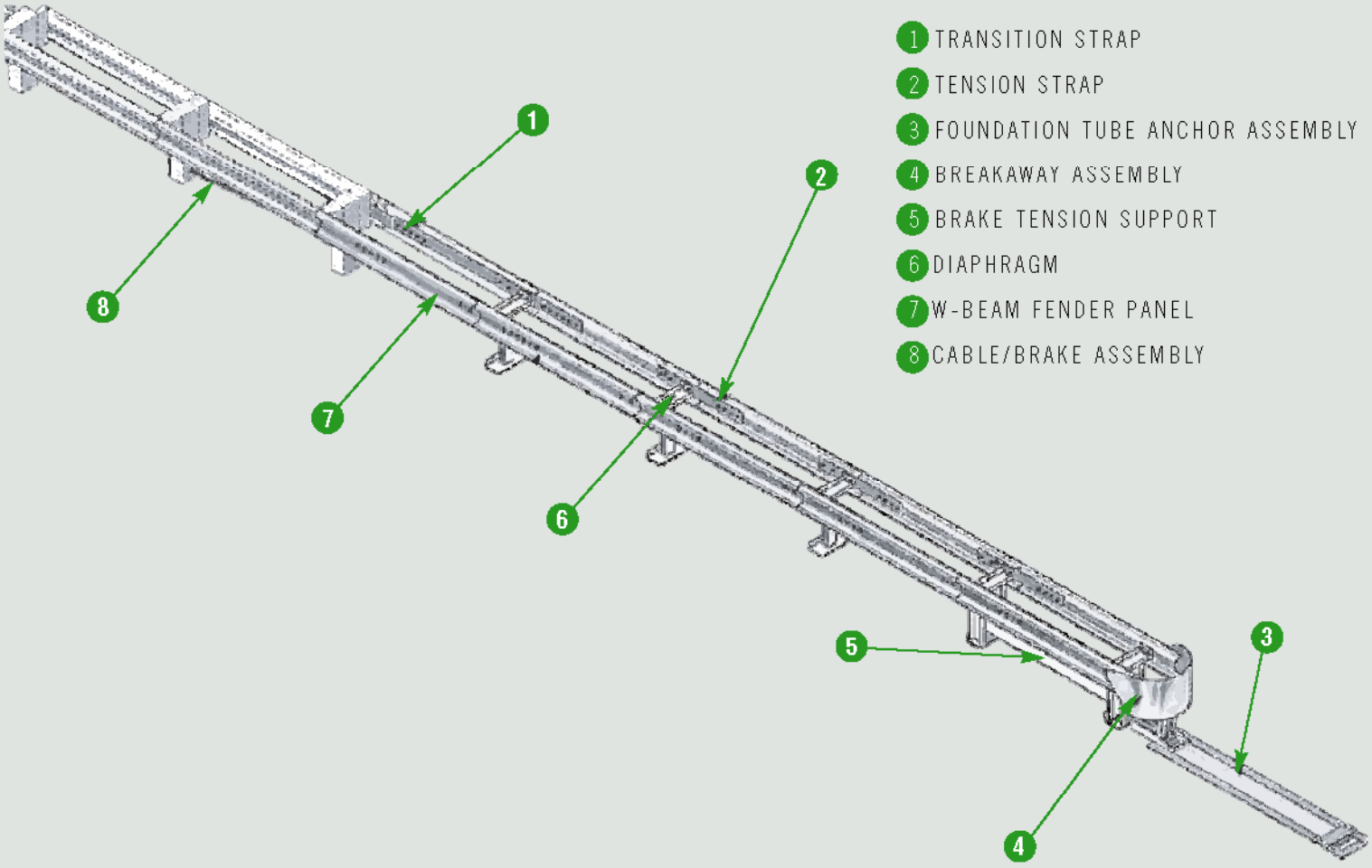
## FHWA GUIDELINES ON GATING

The FHWA recommends that gating end terminals have a minimum clear zone of 22.5 x 6 meters (75 x 20 feet). This area should be clear of trees, poles, drop-offs, oncoming vehicle traffic and other hazards that a vehicle might encounter when it gates behind the terminal after an angle impact at or near the nose of the system, and attempts to recover. It is extremely important to consider clear zone requirements when selecting an end treatment for guardrail applications. Typically an end treatment for median applications requires bi-directional capability utilizing double-faced guardrail. Narrow medians should always be protected with non-gating end treatments.

## SPECIFICATIONS

| | | |
|---|---|---|
| Length | 9601 mm | (31'6") |
| Height | 686 mm | (27") |
| Width | 635 mm | (25") |
| Weight | 920 kg | (2025 lb) |




1. TRANSITION STRAP
2. TENSION STRAP
3. FOUNDATION TUBE ANCHOR ASSEMBLY
4. BREAKAWAY ASSEMBLY
5. BRAKE TENSION SUPPORT
6. DIAPHRAGM
7. W-BEAM FENDER PANEL
8. CABLE/BRAKE ASSEMBLY

Quixote Transportation Safety

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ENERGY ABSORPTION SYSTEMS, INC.

Distributed By:

35 East Wacker Drive • Chicago, IL 60601
Tel: (312) 467-6750 • Fax: (312) 467-9625
www.energyabsorption.com

General specifications for the Brakemaster 350 System are subject to change without notice to reflect improvements and upgrades. Additional information is available in the Product Manual for this system. Contact Energy Absorption Systems for details.

BARRIER SYSTEMS
A LINDSAY TRANSPORTATION SOLUTIONS COMPANY



## X-MAS
## (X-Tension™ Median Attenuator System)

### NCHRP 350 TL-3 Re-Directive, Bi- Directional, Non-Gating Impact Attenuator

The fully redirective, non-gating, NCHRP 350 TL-3 accepted X-MAS features excellent impact performance and easy installation at an affordable price, with no foundation required. By using standard guardrail parts and superior engineering, this low cost median terminal offers the same life saving performance expected of traditional fully redirective crash cushions without the cost.

### Features and Benefits

- Affordable, Non-Gating Performance
- Attaches Directly to Double Faced Guardrail
- Uses Standard Guardrail Components
- Easy To Install
- No Foundation Required
- No Backup Required
- No Custom Transitions Required

### General Specifications

**Hazard Width Range w/o transitions** - 22-28" [560 -710 mm]
**TL-3 Length** - 40 ft. [12 m]
**Height** - 32 in. [813 mm]
**BLON** - 4 ft. [1.2 m]

**Quotation provided by:**

**Byron F. West Jr.**
Western States Regional Manager
Office: 541-899-0888
Fax: 541-899-0999
Mobile: 209-483-3049

**Corporate Office Contact Info**

**Barrier Systems**
3333 Vaca Valley Pkwy
Vacaville, CA 95688
Phone: (707) 374-6800
Fax.: (707) 374-6801
Email: info@barriersystemsinc.com

## Pratt, Sharon Y@DOT

**From:** Orr, James M@DOT
**Sent:** Monday, June 22, 2015 4:09 PM
**To:** Pratt, Sharon Y@DOT
**Subject:** FW: 05-0f700, 05-Mon-68-PM R17_4/R18_0, Salinas River Bridge Widening--> REQUEST: Statement of water availability for construction activities

**Follow Up Flag:** Follow up
**Flag Status:** Flagged

FYI

Jim Orr
Design Branch R, Fresno
Phone 559-243-3528
TTY 711

---

**From:** Andy Clarke [mailto:andy@alcowater.com]
**Sent:** Monday, June 22, 2015 3:40 PM
**To:** Orr, James M@DOT
**Cc:** Shaver, Scott A@DOT
**Subject:** RE: 05-0f700, 05-Mon-68-PM R17_4/R18_0, Salinas River Bridge Widening--> REQUEST: Statement of water availability for construction activities

Hello Mr. Orr,

California Utilities Service Inc. is available to provide non-chlorinated secondary treated waste water to your project from our waste water treatment facility at 16625 Reservation Road, Salinas , CA. The non-chlorinated secondary treated waste water would be billed in 100 Cubic Feet increments (748 gallons) however I have converted the costs below for your reference:

$7.50 per 100 cubic feet
$1.0027 per 100 gallons
$3,267.22 per acre foot

Please note that these rates are currently in effect and may change from time to time. Please also note that the waste water would need to be received from our waste water treatment plant located at 16625 Reservation Road, Salinas, CA.

If you have any additional questions please feel free to contact me at the number below.

Sincerely,

Andrew Clarke
Assistant Controller
California Utilities Services, Inc.
(831) 424-0441 Ext. 7011

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**From:** Orr, James M@DOT [mailto:james.orr@dot.ca.gov]
**Sent:** Friday, June 19, 2015 3:48 PM
**To:** andy@alcowater.com
**Cc:** Shaver, Scott A@DOT
**Subject:** 05-0f700, 05-Mon-68-PM R17_4/R18_0, Salinas River Bridge Widening--> REQUEST: Statement of water availability for construction activities

Andy,

Thank you for taking a few minutes to talk to me this afternoon. I am the Project Engineer for the Salinas River Bridge Widening project. I understand that the project limits are outside your service area. A contractor might be willing to travel to get water, so I am asking for some basic information.

We expect construction activities to start in 2016, probably in April or May. Water is needed for dust control, compaction of embankment, and compaction of paving base materials. The primary water use is dust control, so the actual water used will depend on a variety of environmental conditions.

My estimate for water use, without special additives, for 500 of 540 working days is:

| Project Estimated Total Water Required for 500 Days | Unit of Measure | Usage per day | Usage per second |
|---|---|---|---|
| 27,563,030 | Gallons | 55126 | 1.53 |
| 3,684,641 | CF | 7369 | 0.20 |
| 104,337 | $M^3$ | 208.7 | 0.006 |
| 84.59 | Acre-foot | 0.169 | |

I would like a statement from Alco Water about water availability, costs (if known), and contact information that will be included in the information Caltrans provides to all prospective bidders. I can use a copy of an email, or a more formal document at your discretion. It would be very helpful if I could receive a response by Wednesday next week, July 24.

James M. Orr. Ph.D., P.E.
Project Development -- Office of Design II
Design Branch R
2015 E. Shields Avenue, Suite 100, #1169
Fresno, CA 93726-5428
Phone 559-243-3528
Fax 559-243-3480
TTY 711

A dollar in design is worth $10 in contracts and $100 in court.
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Jim Orr
Design Branch R, Fresno
Phone 559-243-3528
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**Cc:** Shaver, Scott A@DOT
**Subject:** RE: 05-0f700, 05-Mon-68-PM R17_4/R18_0, Salinas River Bridge Widening--> REQUEST: Statement of water availability for construction activities

Hello Mr. Orr,

Alisal Water Corporation dba Alco Water Service can provide water for construction purpose at this time. The water used would be billed in 100 Cubic Feet increments however I have converted the costs below for your reference. In addition to the water charge there is a meter charge for the 3-inch hydrant meter that is billed month at a rate of $319.65. The water usage charges are as follows:

$2.4906 per 100 cubic feet
$0.3330 per 100 gallon
$1,084.97 per acre foot

Please note that these rates are the rates currently in effect and may change from time to time. Please also note that the proposed project site in not in our certificated service area and that all water would need to be received from our existing facilities within our certificated service area.

If you have any additional questions please feel free to contact me at the number below.

Sincerely,

Andrew Clarke
Assistant Controller
Alisal Water Corporation
(831) 424-0441 ext. 7011

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