

# **INFORMATION HANDOUT**

**For Contract No. 04-4S1904**

**Identified by  
Project ID 0400001215**

## **AGREEMENTS**

- California Department of Fish and Wildlife Service (CDFW)  
Streambed Alteration Agreement  
Notification No. 1600-2015-0084-R3  
Pocket Canyon Creek

## **MATERIALS INFORMATION**

- Foundation Report (FR) for the proposed tangent soldier pile retaining wall dated October 16, 2014
- Final Seismic Design Recommendations dated February 28, 2014
- Revised Final Hydraulics Report dated May 22, 2015
- Water source information - Bay Area Recycled Water Commercial Truck Fill Facilities Location Guide (January 2015)



State of California – The Natural Resources Agency  
DEPARTMENT OF FISH AND WILDLIFE  
Bay Delta Region  
7329 Silverado Trail  
Napa, CA 94558  
(707) 944-5500  
[www.wildlife.ca.gov](http://www.wildlife.ca.gov)

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



May 22, 2015

JoAnn Cullom  
California Department of Transportation  
Office of Biological Sciences and Permits  
111 Grand Ave  
Oakland, Ca 94623

Subject: Final Lake or Streambed Alteration Agreement  
Notification No. 1600-2015-0084-R3  
State Route 116 Mays Canyon Road Retaining Wall  
Pocket Canyon Creek

Dear Ms. Cullom:

Enclosed is the final Streambed Alteration Agreement (“Agreement”) for the State Route 116 Mays Canyon Road Retaining Wall Project (“Project”). Before the Department may issue an Agreement, it must comply with the California Environmental Quality Act (“CEQA”). In this case, the Department, acting as a responsible agency, filed a notice of determination (“NOD”) on May 22, 2015 based on information contained in the Negative Declaration the lead agency prepared for the Project.

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

If you have any questions regarding this matter, please contact Melissa Escaron, Senior Environmental Scientist (Specialist), at (925)786-3045 or [Melissa.escaron@wildlife.ca.gov](mailto:Melissa.escaron@wildlife.ca.gov).

Sincerely,

Craig J. Weightman  
Environmental Program Manager  
Bay Delta Region

cc: Frances Malamud-Roam; [frances.malamud-roam@dot.ca.gov](mailto:frances.malamud-roam@dot.ca.gov)  
Lieutenant Jones  
Warden Stinson

**CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE**

BAY DELTA REGION

7329 SILVERADO TRAIL

NAPA, CALIFORNIA 94558

(707) 944-5500

[WWW.WILDLIFE.CA.GOV](http://WWW.WILDLIFE.CA.GOV)



**STREAMBED ALTERATION AGREEMENT**

NOTIFICATION No. 1600-2015-0084-R3

Pocket Canyon Creek

CALIFORNIA DEPARTMENT OF TRANSPORTATION

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and the California Department of Transportation (Permittee), as represented by Mr. Jo Ann Cullom.

**RECITALS**

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified CDFW on December 9, 2013 that Permittee intends to complete the project described herein.

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

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

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

**PROJECT LOCATION**

This Project is located Sonoma County on State Route 116, Post Mile 15.0, near Guernville, east of Mays Canyon Road.

**PROJECT DESCRIPTION**

This project proposes to replace to construct a tangent-type retaining wall (Project) along the southbound side of State Route 116 in Sonoma County just south of the intersection with Mays Canyon Road at post mile (PM) 15.0. The retaining wall will be 163 feet long and 14 feet high and built on cast-in-drilled hole piles. Construction of the retaining wall will be performed entirely from the roadway. All work will remain above the ordinary high water mark (OHWM) and outside of the creek bed. Staging will occur

on the roadway, in the closed southbound lane. Approximately 15 trees will be removed to accommodate the new wall.

## **PROJECT IMPACTS**

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

- Nesting birds habitat including Northern Spotted Owl
- California red-legged frog (CRLF) habitat
- Central California Coast steelhead habitat
- Central California Coast coho salmon habitat
- California freshwater shrimp habitat
- San Francisco dusky footed woodrat
- Bat roosting habitat
- Sonoma tree vole habitat

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

- Take of sensitive terrestrial and avian species
- Temporary loss of habitat for sensitive species
- Disruption of bird nesting
- Disruption of bat roosting
- Water quality degradation
- Short-term release of contaminants

## **MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES**

### **1. Administrative Measures**

Permittee shall meet each administrative requirement described below.

- 1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to CDFW personnel, or personnel from another state, federal, or local agency upon request.
- 1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on

the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

- 1.3 Notification of Conflicting Provisions. Permittee shall notify CDFW if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, CDFW shall contact Permittee to resolve any conflict.
- 1.4 Project Site Entry. Permittee agrees that CDFW personnel may enter the project site, at any time to verify compliance with the Agreement.

## **2. Avoidance and Minimization Measures**

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below. The below measures pertain to work located within CDFW 1602 jurisdiction only.

- 2.1 All tree removal shall occur between September 15 and January 31. The remainder of the work within riparian zone shall occur between July 10 and October 15.
- 2.2 The redwood tree top imbedded in the unstable slope will be removed in such a way that the tree bole above the root wad will be self-supporting and will remain in place in the opposite creek bank. The removed portion of the tree shall be supported and lifted out of the project footprint using hand tools and a truck-mounted crane operated from Route 116. The cutting and removal will not include access or activities below the OHWM.
- 2.3 At least 30-days prior to commencing Project activities covered by this Agreement, the Permittee shall submit to CDFW, for review and approval, the qualifications for a number of biologists (Qualified Biologist) that shall oversee the implementation of the conditions in this Agreement. At a minimum, the Qualified Biologists shall have experience monitoring for CRLF, northern spotted owl, migratory birds, dusky footed woodrats, western pond turtles, and bats. The Qualified Biologists shall communicate to the Resident Engineer when any activity is not in compliance with this Agreement and the Resident Engineer shall immediately stop the activity that is not in compliance with this Agreement.
- 2.4 Before the onset of construction activities, a Qualified Biologist shall conduct an education program for all construction personnel. At a minimum the training will include a description of CRLF, northern spotted owl, bats, migratory birds, dusky footed woodrats, Sonoma tree voles, western pond turtles, and their

habitats; the occurrence of these species within the Project site; an explanation of their state and federal statuses; avoidance and minimization measures; habitats as they relate to the Project site; and boundaries within which construction may occur. A fact sheet conveying this information will be prepared and distributed to all construction crews and Project personnel entering the Project site. Upon completion of the program, personnel will sign a form stating that they attended the program and understand all the avoidance and minimization measures.

- 2.5 Prior to the start of construction Environmentally Sensitive Areas (ESAs) shall be clearly delineated using high-visibility orange fencing to protect sensitive habitats. The ESA fencing will remain in place throughout the duration of the Project. The final Project plans will depict all locations where ESA fencing will be installed and how it will be installed. The bid solicitation package special provisions will clearly describe acceptable fencing material and prohibited construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within ESAs. ESA fencing shall be erected as directed by a Qualified Biologist.
- 2.6 A Qualified Biologist shall conduct clearance surveys and be on-site during all activities that may result in the take of CRLF. All mammal burrows shall be scoped or excavated and the entrances shall be collapsed following investigation in areas to be disturbed. The Qualified Biologist shall stop work through the Resident Engineer if activities are identified that may result in the take of CRLF.
- 2.7 CRLF exclusionary fencing shall be placed along the construction footprint boundary between Pocket canyon Creek and Route 116 to restrict CRLF access into the work area. The exclusion fencing shall be buried 6 inches below grade and be monitored and maintained daily. Exclusion fencing specification shall be described in the project bid documents.
- 2.8 A preconstruction survey for wood rat nests shall be conducted at least two weeks prior to any ground disturbance or tree removal. High visibility fencing shall be used to establish a 10 foot buffer around woodrat nests during construction.
- 2.9 Preconstruction surveys for the western pond turtle in potential habitat shall be conducted 48 hours prior to construction by a Qualified Biologist. If western pond turtles are found in the project area during preconstruction surveys, CDFW shall be notified. If preconstruction surveys identify active western pond turtle nests, a Qualified Biologist shall establish a no-disturbance buffer zone around the nest using temporary orange construction fencing. The radius of the buffer zone and the duration of the exclusion shall be determined in consultation with CDFW. The buffer zone and fencing shall remain in place until the young have left the nest, as determined by a Qualified Biologist. The

Qualified Biologist shall also remain present during construction in the area to inspect the work area, including construction equipment left on-site, for western pond turtles to ensure that individuals have not moved into the work area.

- 2.10 If Project activities will occur between February 15 and September 1, a Qualified Biologist shall conduct pre-construction surveys for nesting birds no more than one week prior to construction. Surveys shall consist of multiple days of observations. If nests are found the Qualified Biologist shall establish an appropriate buffer to be in compliance with Migratory Bird Treaty Act (MBTA) and Fish and Game Code 3503. The Qualified Biologist shall perform at least two hours of pre-construction monitoring of the nest to characterize "typical" bird behavior. The Qualified Biologist shall monitor the nesting birds and shall increase the buffer if the Qualified Biologist determines the birds are showing signs of unusual or distressed behavior by Project activities. Atypical nesting behaviors which may cause reproductive harm include, but are not limited to, defensive flights/vocalizations directed towards Project personnel, standing up from a brooding position, and flying away from the nest. The Qualified Biologist shall have authority, through the Resident Engineer, to order the cessation of all Project activities if the nesting birds exhibit atypical behavior which may cause reproductive failure (nest abandonment and loss of eggs and/or young) until an appropriate buffer is established. To prevent encroachment, the established buffer(s) shall be clearly marked by high visibility material. The established buffer(s) shall remain in effect until the young have fledged or the nest has been abandoned as confirmed by the Qualified Biologist. Any sign of nest abandonment shall be reported to CDFW within 48 hours.
- 2.11 At the Qualified Biologist's discretion, trees shall be trimmed and removed in a two-phase system over two consecutive days. Limbs and branches shall be removed using chainsaws only during the afternoon of the first day. Limbs with cavities, crevices, or deep bark fissures will be avoided on the first day. On the second day, the remaining branches can be removed, or the entire tree as needed.
- 2.12 To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 2-feet deep will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks at an angle no greater than 30 degrees. Before such holes or trenches are filled they must be thoroughly inspected for trapped animals. All replacement pipes, culverts, or similar structures stored in the action area overnight will be inspected before they are subsequently moved, capped and/or buried.
- 2.13 Permittee shall conduct work defined in the above Project Description, and within the Project area, during periods of dry weather. The Project area is defined as the bed, bank, channel, and associated wetland habitat. The

Permittee shall monitor forecasted precipitation. When  $\frac{1}{4}$  inch or more of precipitation is forecasted to occur, the Permittee shall stop work before precipitation commences. No Project activities may be started if its associated erosion control measures cannot be completed prior to the onset of precipitation. After any storm event, the Permittee shall inspect all sites currently under construction and all sites scheduled to begin construction within the next 72 hours for erosion and sediment problems and take corrective action as needed. Seventy-two hour weather forecasts from National Weather Service shall be consulted and work shall not start back up until runoff ceases and there is less than a 30% forecast for precipitation for the following 24-hour period.

- 2.14 Permittee shall utilize erosion control measures throughout all phases of operation where sediment runoff from exposed slopes threatens to enter waterways. At no time shall silt laden runoff be allowed to enter the stream or directed to where it may enter the stream. Erosion control installations shall be monitored for effectiveness and shall be repaired or replaced as recommended by a Qualified Biologist or Water Quality Monitor to the Resident Engineer. As needed to prevent sediment transport, Permittee shall deploy soil stabilizer such as hydroseeding, netting, erosion control mats, mulch, fiber rolls, silt fences, check dams, and flow velocity dissipation devices. Permittee shall stabilize and equip construction site entrances and exits with tire washing capability. Materials containing monofilament or plastic shall not be used. Erosion and sediment control measures shall be installed prior to unseasonable rain storms.
- 2.15 The Permittee shall ensure that retaining wall design does not transfer the erosion force of the stream to the opposite bank, or to another area downstream.
- 2.16 All disturbed areas shall be re-graded and hydroseeded. Hydroseed shall not contain invasive exotic plant species. Prohibited exotic plant species include those identified in the California Exotic Pest Plant Council's database, which is accessible at: <http://www.calipc.org/ip/inventory/weedlist.php>.
- 2.17 Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be located outside of the creek channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the creek shall be positioned over drip pans. Any equipment or vehicles driven and/or operated within or adjacent to the stream must be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.
- 2.18 All concrete used shall be excluded from the wetted channel or areas where it may come into contact with water for a period of 30 days after it is poured/sprayed. During that time the concrete shall be kept moist and runoff from the concrete shall not be allowed to enter the stream. Commercial

sealants may be applied to the poured concrete surface where difficulty in excluding flow for a long period may occur. If sealant is used, water shall be excluded from the site until the sealant is cured.

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

2.20 Permittee shall comply with all applicable state and federal laws, including the California and Federal Endangered Species Act. This Agreement does not authorize the take of any state or federally endangered listed species. Liability for any take or incidental take of such species remains the responsibility of the Permittee for the duration of the Project. Any unauthorized take of listed species may result in prosecution and nullification of the Agreement. This Agreement does not authorize the capture or relocation of Fully Protected Species.

### **3. Mitigation and Reporting Measures**

3.1 Survey results of specific species identified above shall be submitted to CDFW prior to the start of work.

3.2 Prior to ground disturbance, Permittee shall submit, for review and written approval, a detailed Offsite Habitat Mitigation Plan(HMP) for plant and tree mitigation that cannot be accommodated onsite. The Habitat Mitigation Plan shall mitigate the anticipated 2887 square feet of permanent riparian habitat impacts at a minimum of a 3:1 acreage ratio. Mitigation shall be based on all trees regardless of diameter at breast height. The HMP shall include proposed mitigation locations, a plant palette of native species to be used, success criteria, a monitoring and reporting schedule, and corrective actions to be taken if mitigation measures do not meet the approved success criteria. The Permittee shall monitor the survival and vigor of offsite plantings for a period of 5 years to ensure attainment of 80% survivorship. Offsite mitigation may include a combination of habitat restoration, creation, enhancement, and/or preservation of habitat that will support a similar riparian plant community found at the project site, including but not limited to the following species: California bay laurel, big leaf maple, and Douglas fir. All plantings shall be derived from locally available genotypes if available at the time of plant installation.

### **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  
JoAnn Cullom  
111 Grand Ave  
Oakland, Ca  
Joann.cullom@dot.ca.gov

To CDFW:

California Department of Fish and Wildlife  
Bay Delta Region  
7329 Silverado Trail  
Napa, California 94558  
Attn: Lake and Streambed Alteration Program – Melissa Escaron  
Notification #1600-2015-0084-R3  
Fax (707) 944-5553  
Melissa.escaron@wildlife.ca.gov

**LIABILITY**

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

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

**SUSPENSION AND REVOCATION**

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

Before CDFW suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before CDFW suspends or revokes the

Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused CDFW to issue the notice.

## **ENFORCEMENT**

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

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

## **OTHER LEGAL OBLIGATIONS**

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

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

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

## **AMENDMENT**

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

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

## **TRANSFER AND ASSIGNMENT**

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

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

### **EXTENSIONS**

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

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

### **EFFECTIVE DATE**

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

### **TERM**

This Agreement shall expire on December 31, 2019 unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

### **AUTHORITY**

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

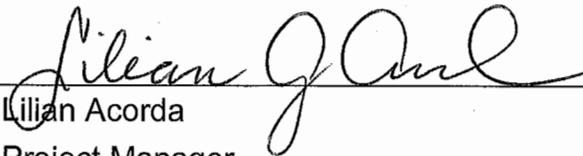
### AUTHORIZATION

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

### CONCURRENCE

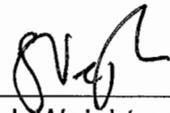
The undersigned accepts and agrees to comply with all provisions contained herein.

### FOR CALIFORNIA DEPARTMENT OF TRANSPORTATION

  
\_\_\_\_\_  
Lilian Acorda  
Project Manager

5/18/15  
\_\_\_\_\_  
Date

### FOR DEPARTMENT OF FISH AND WILDLIFE

  
\_\_\_\_\_  
Craig J. Weightman  
Environmental Program Manager

May 22, 2015  
\_\_\_\_\_  
Date

Prepared by: Melissa Escaron  
Staff Environmental Scientist

Date Sent: May 11, 2015  
Revision Sent: May 18, 2015

## FOR DEPARTMENT USE ONLY

Date Received	Amount Received	Amount Due	Date Complete	Notification No.
3/18/2015	\$ 0	\$		1600-2015-0084-3



STATE OF CALIFORNIA  
DEPARTMENT OF FISH AND WILDLIFE  
**NOTIFICATION OF LAKE OR STREAMBED ALTERATION**

ESCARON  
LT. JONES J  
Wd. Stinson



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

**1. APPLICANT PROPOSING PROJECT**

Name	Jo Ann Cullom, Office Chief			
Business/Agency	Office of Biological Sciences and Permits, California Department of Transportation, District 4			
Street Address	111 Grand Avenue			
City, State, Zip	Oakland, CA 94623			<b>Fish &amp; Wildlife</b>
Telephone	(510) 286-6046	Fax	(510) 286-6374	
Email	jo.ann.cullom@dot.ca.gov			MAR 18 2015

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

Napa

Name	Frances Malamud-Roam			
Street Address	111 Grand Avenue			
City, State, Zip	Oakland, CA 94623			
Telephone	(510) 286-5376	Fax	(510) 286-5376	
Email	frances.malamud-roam@dot.ca.gov			

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

Name	See Supplemental Information			
Street Address				
City, State, Zip				
Telephone		Fax		
Email				

**4. PROJECT NAME AND AGREEMENT TERM**

A. Project Name		State Route 116 Mays Canyon Road Retaining Wall		
B. Agreement Term Requested		<input checked="" type="checkbox"/> Regular (5 years or less) <input type="checkbox"/> Long-term (greater than 5 years)		
C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (year)	Ending (year)	Start Date (month/day)	End Date (month/day)	
2016	2016	July 10	October 15	
				70

## NOTIFICATION OF LAKE OR STREAMBED ALTERATION

### 5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.

A.	<input checked="" type="checkbox"/> Standard (Most construction projects, excluding the categories listed below)
B.	<input type="checkbox"/> Gravel/Sand/Rock Extraction (Attachment A) <span style="float: right;">Mine I.D. Number: _____</span>
C.	<input type="checkbox"/> Timber Harvesting (Attachment B) <span style="float: right;">THP Number: _____</span>
D.	<input type="checkbox"/> Water Diversion/Extraction/Impoundment (Attachment C) <span style="float: right;">SWRCB Number: _____</span>
E.	<input type="checkbox"/> Routine Maintenance (Attachment D)
F.	<input type="checkbox"/> CDFW Fisheries Restoration Grant Program (FRGP) <span style="float: right;">FRGP Contract Number _____</span>
G.	<input type="checkbox"/> Master
H.	<input type="checkbox"/> Master Timber Harvesting

### 6. FEES

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

	A. Project	B. Project Cost	C. Project Fee
1	State Route 116 Mays Canyon Road Retaining Wall Project	\$1,338,000	\$4,912.25
2			
3			
4			
5			
		D. Base Fee (if applicable)	N/A
		<b>E. TOTAL FEE ENCLOSED</b>	<b>\$4,912.25</b>

### 7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?

Yes (Provide the information below)       No

Applicant: *[Signature]* Notification Number: 1600-2014-0389 R3 Date: 11/20/14

B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?

No       Yes (Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.)

Continued on additional page(s)

## NOTIFICATION OF LAKE OR STREAMBED ALTERATION

### 8. PROJECT LOCATION

A. Address or description of project location.

*(Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway)*

The proposed Project is located approximately 3 miles southeast of the community of Guerneville on SR 116 at Post Mile 15.0, south of the intersection of Mays Canyon Road in unincorporated Sonoma County. Figure 1, Project Location (see Supplemental Information, Appendix A) illustrates the Project vicinity and location. The proposed Project is located within the Camp Meeker United States Geological Survey (USGS) 7.5 minute quadrangle, Township 7N, Range 10W, Section 3.

Driving directions are included in the Supplemental Information document.

Continued on additional page(s)

B. River, stream, or lake affected by the project. Pocket Canyon Creek

C. What water body is the river, stream, or lake tributary to? Russian River

D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts?  Yes  No  Unknown

E. County Sonoma

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Camp Meeker	7N	10W	3	

Continued on additional page(s)

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

L. Assessor's Parcel Number(s)

085-150-009; 085-150-016; 085-150-017

Continued on additional page(s)

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

	Latitude: 38° 29' 08.25" N	Longitude: 122° 57' 43.76" W
Latitude/Longitude	<input checked="" type="checkbox"/> Degrees/Minutes/Seconds	<input type="checkbox"/> Decimal Degrees <span style="margin-left: 50px;"><input type="checkbox"/> Decimal Minutes</span>
UTM	Easting:	Northing: <span style="float: right;"><input type="checkbox"/> Zone 10 <input type="checkbox"/> Zone 11</span>
Datum used for Latitude/Longitude or UTM	<input type="checkbox"/> NAD 27	<input checked="" type="checkbox"/> NAD 83 or WGS 84

## NOTIFICATION OF LAKE OR STREAMBED ALTERATION

### 9. PROJECT CATEGORY AND WORK TYPE *(Check each box that applies)*

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bank stabilization – rip-rap/retaining wall/gabion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boat dock/pier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boat ramp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bridge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Channel clearing/vegetation management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Culvert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Debris basin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diversion structure – weir or pump intake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Filling of wetland, river, stream, or lake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Geotechnical survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat enhancement – revegetation/mitigation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Levee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low water crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Road/trail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sediment removal – pond, stream, or marina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Storm drain outfall structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temporary stream crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utility crossing : Horizontal Directional Drilling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jack/bore	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open trench	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Other</b> <i>(specify):</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## NOTIFICATION OF LAKE OR STREAMBED ALTERATION

### 10. PROJECT DESCRIPTION

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

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

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

See attached Supplemental Information, Form Field 10.A: Project Description section; Appendix B, Photographs; and Appendix C, Project Design Plans.

The retaining wall footprint is entirely within CDFW jurisdiction, along the banks of Pocket Canyon Creek. Construction staging areas and temporary utility relocation are located on and adjacent to the east side of the SR 116 roadway, outside of CDFW jurisdiction.

Continued on additional page(s)

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

See attached Supplemental Information, Form Field 10.B: Project Construction Equipment section, and Appendix D, Table D-1, Project Equipment and Summary of Exposure to Potential Adverse Effects.

Continued on additional page(s)

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).

Yes     No (Skip to box 11)

D. Will the proposed project require work in the wetted portion of the channel?

Yes (Enclose a plan to divert water around work site)  
 No

# NOTIFICATION OF LAKE OR STREAMBED ALTERATION

## 11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

See attached Supplemental Information, Form Field 11: Project Impacts section, and Table 2, Summary of Potential Temporary and Permanent Impacts to 1600 Jurisdictional Areas. All Project impacts will occur outside the Ordinary High Water Mark of Pocket Canyon Creek.

Continued on additional page(s)

B. Will the project affect any vegetation?

Yes (Complete the tables below)    No

Vegetation Type	Temporary Impact	Permanent Impact
Mixed Broadleaf (coniferous) forest/woodland	Linear feet: <u>521 lf</u> Total area: <u>0.10 ac</u>	Linear feet: <u>485 lf</u> Total area: <u>0.08 ac</u>
	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____

Tree Species	Number of Trees to be Removed	Trunk Diameter (range)
See Supplemental Information, Table 3.		

Continued on additional page(s)

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

Yes (List each species and/or describe the habitat below)    No    Unknown

See Supplemental Information, Form Field 11.C: Special-Status Species Impacts section.

Continued on additional page(s)

D. Identify the source(s) of information that supports a "yes" or "no" answer above in Box 11.C.

USFWS BO for the Proposed SR 116 Mays Canyon Road Soldier Pile Wall Project (see Apdx. F)

Continued on additional page(s)

E. Has a biological study been completed for the project site?

Yes (Enclose the biological study)    No

*Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.*

F. Has a hydrological study been completed for the project or project site?

Yes (Enclose the hydrological study)    No

*Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.*

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

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

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

See Supplemental Information, Form Fields 12.A and 12.B: Measures to Protect Fish, Wildlife, and Plant Resources (Avoidance and Minimization Measures) section, particularly the Caltrans General AMMs and Water Quality AMMs subsections.

Continued on additional page(s)

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

See Supplemental Information, Form Fields 12.A and 12.B: Measures to Protect Fish, Wildlife, and Plant Resources (Avoidance and Minimization Measures) section, including the Caltrans General AMMs, Special-Status Plant AMMs, and Special-Status Wildlife Species AMMs subsections.

Continued on additional page(s)

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

See Supplemental Information, Form Field 12.C: Mitigation Measures to Protect Fish, Wildlife, and Plant Resources section.

Continued on additional page(s)

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

A. No additional permits/approvals required  Applied  Issued

B. \_\_\_\_\_  Applied  Issued

C. \_\_\_\_\_  Applied  Issued

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

Continued on additional page(s)

## NOTIFICATION OF LAKE OR STREAMBED ALTERATION

### 14. ENVIRONMENTAL REVIEW

A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)?			
<input checked="" type="checkbox"/> Yes (Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each)			
<input type="checkbox"/> No (Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared)			
<input type="checkbox"/> Notice of Exemption	<input type="checkbox"/> Mitigated Negative Declaration	<input checked="" type="checkbox"/> NEPA document (type): <u>Categorical Exclusion</u>	
<input type="checkbox"/> Initial Study	<input type="checkbox"/> Environmental Impact Report	<input checked="" type="checkbox"/> CESA document (type): <u>Initial Study</u>	
<input type="checkbox"/> Negative Declaration	<input type="checkbox"/> Notice of Determination (Enclose)	<input checked="" type="checkbox"/> ESA document (type): <u>Biological Opinion</u>	
<input type="checkbox"/> THP/ NTMP	<input type="checkbox"/> Mitigation, Monitoring, Reporting Plan		
B. State Clearinghouse Number (if applicable)		N/A	
C. Has a CEQA lead agency been determined?		<input checked="" type="checkbox"/> Yes (Complete boxes D, E, and F) <input type="checkbox"/> No (Skip to box 14.G)	
D. CEQA Lead Agency	Caltrans		
E. Contact Person	Frances Malamud-Roam	F. Telephone Number	(510) 286-5376
G. If the project described in this notification is part of a larger project or plan, briefly describe that larger project or plan.			
The Project is not a part of a larger project or plan.			
<input type="checkbox"/> Continued on additional page(s)			
H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid?			
<input checked="" type="checkbox"/> Yes (Enclose proof of payment) <input type="checkbox"/> No (Briefly explain below the reason a filing fee has not been paid)			
A check for the filing fee is included as a part of this submittal.			
Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.			

### 15. SITE INSPECTION

Check one box only.
<input type="checkbox"/> In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry.
<input checked="" type="checkbox"/> I request the Department to first contact (insert name) <u>Frances Malamud-Roam</u> at (insert telephone number) <u>(510) 286-5376</u> to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?
<input checked="" type="checkbox"/> Yes (Please enclose the information via digital media with the completed notification form)
<input type="checkbox"/> No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

Jo Ann Cullom  
Signature of Applicant or Applicant's Authorized Representative

March 13, 2015  
Date

Jo Ann Cullom  
Print Name

**Notice of Determination**

**To:**  
Office of Planning and Research  
For U.S. Mail:  
P.O. Box 3044  
Sacramento, CA 95812-3044

*Street Address:*  
1400 Tenth Street  
Sacramento, CA 95814

**From:**  
Department of Fish and Wildlife  
Bay Delta Region  
7329 Silverado Trail, Yountville, Ca  
Contact: Melissa Escaron  
Phone: (925)786-3045



Lead Agency (if different from above)  
California Department of Transportation  
111 Grand Ave., Oakland, Ca  
Contact: JoAnn Cullom  
Phone: (510)286-5376

**SUBJECT: Filing of Notice of Determination pursuant to Public Resources Code section 21108**

**State Clearinghouse Number:** 2015032081

**Project Title:** State Route 116 Retaining Wall Project (Lake or Streambed Alteration Agreement No. 1600-2015-0084-R3)

**Project Location (include county):** This Project is located Sonoma County on State Route 116, Post Mile 15.0, near Guerneville, east of Mays Canyon Road.

**Project Description:** The California Department of Fish and Wildlife (CDFW) has executed Lake and Streambed Alteration Agreement number 1600-2015-0084-R3, pursuant to section 1602 of the Fish and Game Code to the project Applicant, JoAnn Cullom, California Department of Transportation.

This project proposes to replace to construct a tangent-type retaining wall (Project) along the southbound side of State Route 116 in Sonoma County just south of the intersection with Mays Canyon Road at post mile (PM) 15.0. The retaining wall will be 163 feet long and 14 feet high and built on cast-in-drilled hole piles. Construction of the retaining wall will be performed entirely from the roadway.

This is to advise that CDFW, acting as a Responsible Agency approved the above described project on May 22, 2015 and has made the following determinations regarding the project pursuant to California Code of Regulations section 15096, subdivision (i):

1. The project will not have a significant effect on the environment. This determination is limited to effects within CDFW's permitting jurisdiction as a Responsible Agency.
2. CDFW considered the  mitigated negative declaration /  negative declaration prepared by the Lead Agency for this project pursuant to California Code of Regulations section 15096, subdivision (f).
3. Mitigation measures  were /  were not made a condition of CDFW's approval of the project.
4. A mitigation reporting or monitoring plan  was /  was not adopted by CDFW for this project.
5. A Statement of Overriding Considerations was not adopted by CDFW for this project.
6. Findings were not made by CDFW pursuant to Public Resources Code section 21081, subdivision (a).

The  mitigated negative declaration /  negative declaration prepared for the project is available to the general public at the office location listed above for the Lead Agency. CDFW's record related to the Lake or Streambed Alteration Agreement is available to the public for review at CDFW's regional office.

*Signature*

*Date: May 22, 2015*

Craig Weightman, Environmental Program Manager

Date Received for filing at OPR: \_\_\_\_\_

## Memorandum

*Serious drought.  
Help Save Water!*

To: MS. KELLY HOLDEN  
Supervising Bridge Engineer  
Bridge Design West  
Structures Design

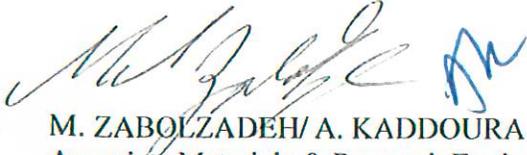
Date: October 16, 2014

File: 04-Son-116-PM 15.0  
04 – 4S1901

Efis: 04 0000 1215  
Bridge No: 20-E0083

Storm Damage

Attention: M. El-Mously

From:  M. ZABOLZADEH/ A. KADDOURA  
Associate Materials & Research Engineers  
Office of Geotechnical Design – West  
Geotechnical Services  
Division of Engineering Services

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

Subject: **FOUNDATION REPORT (FR) FOR THE PROPOSED TANGENT SOLDIER PILE  
RETAINING WALL**

This memorandum presents our geotechnical recommendations for the above referenced project and supersedes our Addendum for FR dated May 29, 2014 and FR dated March 10, 2014. The reason for this new FR is that we have drilled an additional boring to confirm our earlier subsurface investigation and provide a new Log of Test Boring Sheet (LOTB). The recommendations contained in this report are based on the results from subsurface explorations at the site.

### **I. BACKGROUND**

During January/February 2007 rainstorms, a slipout occurred below eastbound Route 116, PM 15, just east of Mays Canyon Rd, approximately 3 miles east of the Town of Guerneville in Sonoma County.

The slipout is approximately 16 feet long along the shoulder and about 20 feet high from the roadway level to the existing creek bed at the toe of the slipout. There is an approximately 4 ft vertical drop that has undermined portions of the existing MBGR. It appears that the slipout has occurred due to undermining of the existing creek below the roadway.

### **II. SCOPE OF WORK**

As the basis for our evaluation, we have completed the following services:

- Field mapping.

MS. KELLY HOLDEN

Attn: M. El-Mously

October 16, 2014

Page 2 of 5

- Review of published geologic maps to evaluate the prevailing geologic conditions at the site and in the site vicinity.
- Field geotechnical exploration, including drilling two borings (one drilled in January 2009 and another drilled in May 2014).
- Reviewed previously prepared memorandums by this office.
- Laboratory testing on selected samples.
- Prepare this letter presenting a summary of our investigation, a description of the engineering geologic conditions at the site, our conclusions relating to the impact of the engineering geologic conditions on the roadway, and recommendations for mitigating the slipout.

### **III. REGIONAL GEOLOGIC SETTINGS**

The project site is located on Highway 116, PM 15 (Exhibit A). The project area is located in Pocket Canyon adjacent to Green Valley Creek, which flows into the Russian River. The elevation at the site is approximately 124 feet.

The soils at the site are Yolo loam over-wash. The Yolo loam over-wash lies in valleys and is relatively flat. The soil is well drained with slow to medium runoff that is subject to flooding and the erosion is slight to moderate (USDA 1977). The corrosivity potential is low. The USDA Soil Survey Map is presented in Exhibit B.

The Quaternary alluvial fan and fluvial deposits underlie the project location (See Geology Map-Exhibit C). These quaternary deposits overlay a late Eocene to late Cretaceous sandstone. This sandstone makes up a portion of the coastal and central belts of the Franciscan Complex of the California Coastal Ranges.

### **IV. FAULT DATA AND SEISMICITY**

Hossain Salimi (Office of Geotechnical Design-West) has provided the Seismic Design Recommendations (February 28, 2014 & September 19, 2013), addressing the seismicity and seismic related hazards and issues. He can be contacted at (916) 227-7147 for additional information. Regional Fault Map is shown on Exhibit D. See attached Seismic Design Recommendation Report.

### **V. LIQUEFACTION SUSCEPTIBILITY**

Hossain Salimi of our office has provided the Seismic Design Recommendations, (see above). The report indicates that liquefaction potential during a seismic event is considered minimal. See attached Seismic Design Recommendation Report.

MS. KELLY HOLDEN

Attn: M. El-Mously

October 16, 2014

Page 3 of 5

## **VI. SUBSURFACE SOIL CONDITIONS**

Two Borings (R-09-001 and R-14-002) were drilled utilizing the 6-inch hollow stem auger and rotary wash drilling method with Standard Penetration Test (SPT) sampling in January 2009 and May 2014, respectively, on the roadway within the project limits to the depths of 55 ft and 47.5 ft. R-09-001 describes the foundation soils as approximately 13 ft of medium dense to very dense clayey sand. The remainder of the boring describes the foundation soils/rocks as a mixed matrix of intensely to moderately weathered, soft to hard shale and sandstone. The SPT blow counts range from 23 to more than 50 blows (refusal) per foot.

R-14-002 (was drilled just outside wall limits due to existing overhead utility lines) describes the foundation soils as about 46 ft loose to very dense sands and gravel with about 4 ft thick (between the depths of 34-38 feet) lens of very dense sandy silt. This overlies hard sandstone. The SPT blow counts range from seven to more than 50 blows (refusal) per foot. Log of Test Boring (LOTB) sheet is attached and should be included with the Contract Plans.

Groundwater was encountered in boring R-09-001 at approximately 20 ft below roadway surface at the time of drilling (January 2009). However, groundwater elevations fluctuate seasonally and may be encountered at higher elevations.

## **VII. RECOMMENDATIONS**

In order to protect and maintain the roadway, we considered the use of soldier pile wall, tie back wall and tangent wall. Based on the wall type selection meeting that was held on January 28, 2013, the use of tangent soldier pile wall is considered to be the most appropriate repair strategy. We recommend constructing a 166 feet long tangent soldier pile wall to mitigate the slipout at this location. Tangent pile walls are constructed with no overlap and ideally one pile touches the other.

The wall should be constructed along the existing outside shoulder between Stations 790+20± and 791+80±.

We recommend the proposed wall be designed for the following:

- The proposed wall should be designed as a 20-foot high (max.). This is based on the Final Hydraulics Report by Ms. Ginger Lu dated October 16, 2014 critical scour elevation is 105.9 ft at CL2 Line Station 791+11.73.
- Based on Design Section, the wall will be located about 18 ft right of the existing centerline of Route 116. See attached typical section - Exhibit E.

MS. KELLY HOLDEN  
Attn: M. El-Mously  
October 16, 2014  
Page 4 of 5

- The proposed soldier piles should be minimum 24 inches in diameter (H beam) and 40 ft (min, total length) long.

### Earth Pressures

The wall should be designed for the following:

For active pressure against the wall, use the following:

- Internal friction angle  $\phi = 33^\circ$ ,  $C = 0$  psf & soil moist unit weight ( $\gamma$ ) = 125 lb/ft<sup>3</sup>.
- For earth pressure distribution, use a triangular pressure distribution.
- A rectangular pressure diagram from top of the wall to a depth of 10 ft for traffic surcharge equivalent to about 2 ft of fill.
- The wall shall be capable of resisting seismic earth pressure using the following design parameters:
- Horizontal seismic acceleration coefficient,  $k_h=0.17$  and vertical seismic acceleration coefficient,  $k_v=0.0$

For passive pressure against the wall, use the following input:

From the dredge line to the depth of 55 ft below the roadway:

- Internal friction angle  $\phi = 36^\circ$ ,  $C = 1000$  psf & soil moist unit weight ( $\gamma$ ) = 125 lb/ft<sup>3</sup>.
- Isolation Factor = 2.5

The above recommendations are based on parameters established by our field exploration and engineering judgment.

### VIII. CORROSION

Corrosion studies are conducted in accordance with the requirements of California Test Method No. 643.

The Department considers the site to be corrosive to foundation elements if one or more of the following conditions exist for the representative soil and/or water samples taken at the site:

MS. KELLY HOLDEN  
 Attn: M. El-Mously  
 October 16, 2014  
 Page 5 of 5

The following table provides our corrosion test summary:

<i>Boring</i>	<i>SIC Number</i>	<i>Sample Depth</i>	<i>Resistivity (Ohm-Cm)</i>	<i>pH</i>	<i>Chloride Content (ppm)</i>	<i>Sulfate Content (ppm)</i>
R-09-001(P-1)	c634936	15'-17'	4917	7.3	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.

Based on the corrosion studies that were conducted for this location, the site is considered non-corrosive.

**IX. CONSTRUCTION CONSIDERATIONS**

Because of the existence of groundwater, the contractor should be prepared for dewatering during drilling holes for CIDH piles. Casing may also be needed due to the sandy nature of the soils.

If you have any questions or need additional information, please call us at (510) 286-4676/4831 or Hooshmand Nikoui, Branch Chief at (510) 286-4811.

**Attachments**

- c: TPokrywka, HNikoui, MZabolzadeh, AKaddoura - (GS west)
- HSeto (Project Liason Engineer)
- SGalvez (District Environmental Planning)
- GSetberg (Acting Manager-Structures Office Engineer)
- Structure Construction (RE\_pending\_File)
- Rubin Woo (District ME)
- JLee (District 04 Senior Engineer)
- RGustuvo (District 04 PE)



Kaddoura/Zabolzadeh/mm/ SON-116-PM 15 FR Tangent Wall-October 2014- 4S1901



**SCALE**



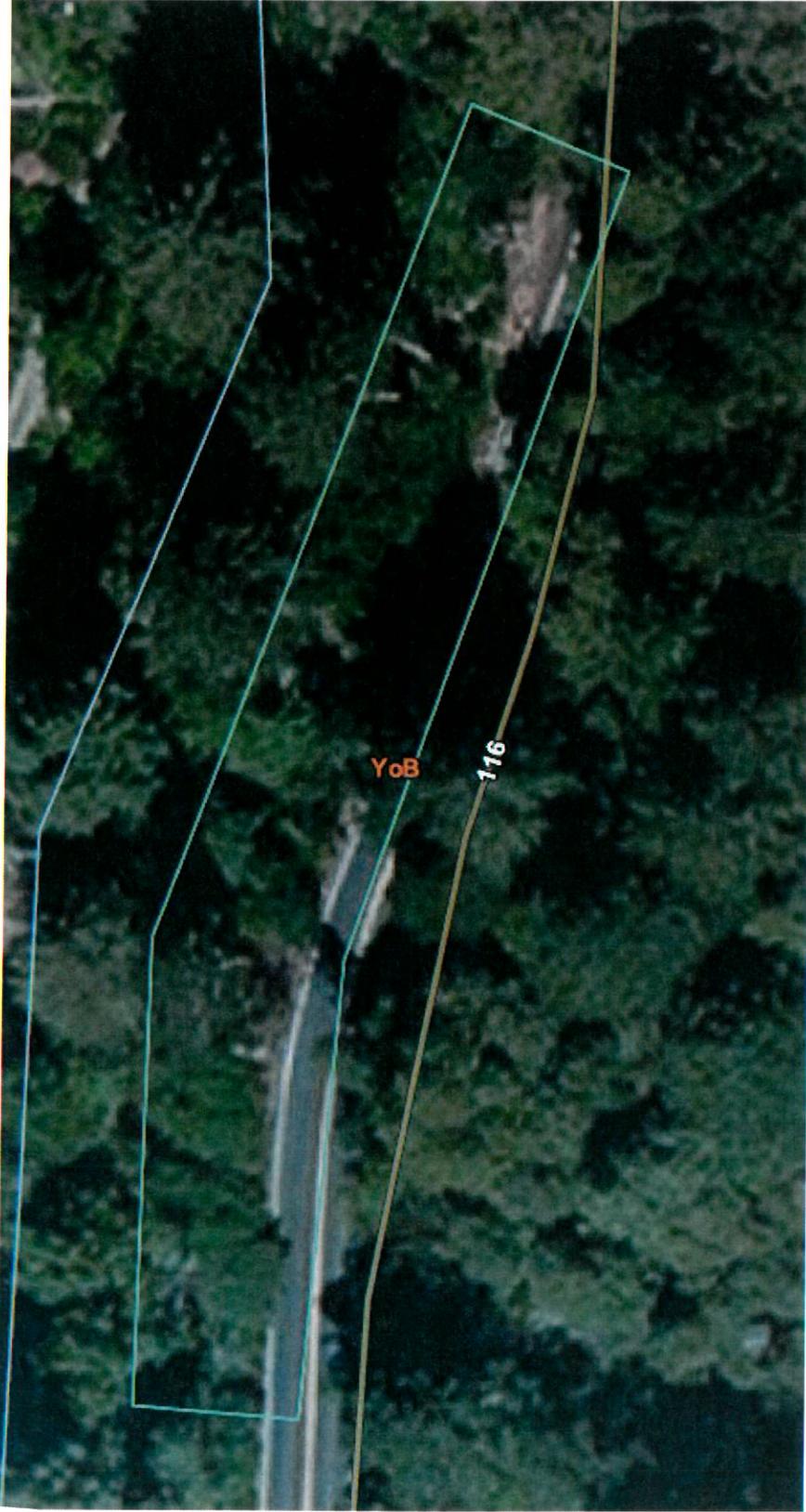
**DIVISION OF  
ENGINEERING SERVICES  
GEOTECHNICAL SERVICES  
GEOTECHNICAL DESIGN - WEST - BRANCH B**

**LOCATION MAP**

**04-SON-116      0400001215**

**PM. 15.0      SEPTEMBER 2013**

**EXHIBIT A**



<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

**SCALE**



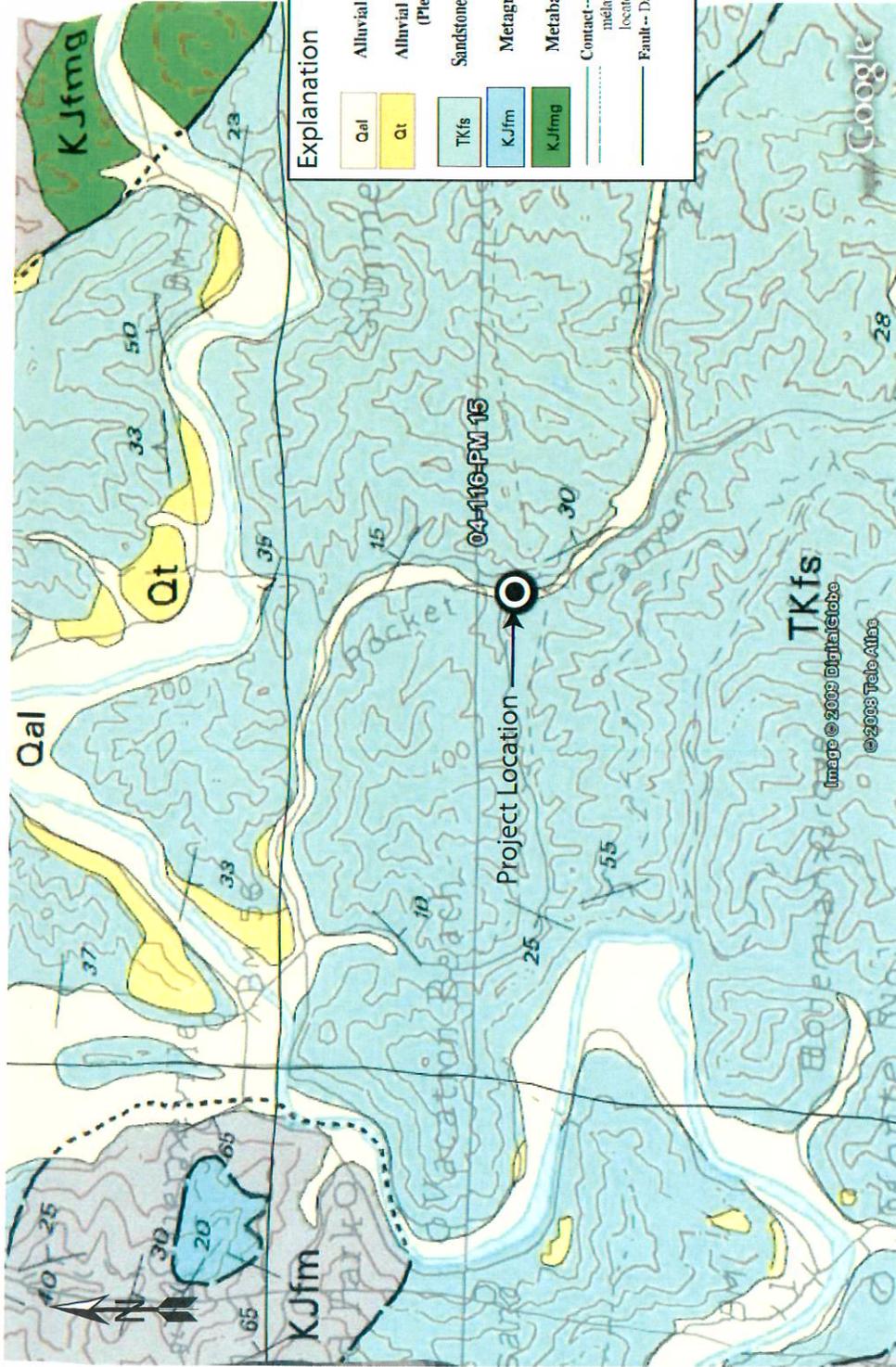
**DIVISION OF  
ENGINEERING SERVICES  
GEOTECHNICAL SERVICES  
GEOTECHNICAL DESIGN - WEST - BRANCH B**

**SOIL SURVEY MAP**

**04-SON-116      040001215**

**PM. 15.0      SEPTEMBER 2013**

**EXHIBIT B**



MAP TAKEN FROM: LIQIFACTION SUSCEPTIBILITY  
 MAP FOR NAPA, CALIFORNIA 1:100,000 QUADRANGLE  
 BY JANET M. SOWERS, JAY S. NOLLER AND WILLIAM LETTISAND ASSOCIATES, INC., 1998

**SCALE**



**DIVISION OF  
 ENGINEERING SERVICES  
 GEOTECHNICAL SERVICES  
 GEOTECHNICAL DESIGN - WEST - BRANCH B**

**GEOLOGY MAP**

**04-SON-116      0400001215**

**PM. 15.0      SEPTEMBER 2013**

**EXHIBIT C**



Reference: [http://dap3.dot.ca.gov/ARS\\_Online/index.php](http://dap3.dot.ca.gov/ARS_Online/index.php)

<p><b>SCALE</b></p> <p>0 20 miles</p>		<p><b>DIVISION OF ENGINEERING SERVICES</b>  <b>GEOTECHNICAL SERVICES</b>  <b>GEOTECHNICAL DESIGN - WEST - BRANCH B</b></p>	<p><b>REGIONAL FAULT MAP</b></p>
<p>04-SON-116      0400001215</p>		<p>PM. 15.0      SEPTEMBER 2013</p>	<p>EXHIBIT D</p>

# Memorandum

*Flex your power!  
Be energy efficient!*

**To:** MR. HOOSHMAND NIKOUI  
Chief, Branch A  
Division of Engineering Services  
Office of Geotechnical Design-West

**Date:** February 28, 2014

**File:** 04-SON-116 PM 15.0  
04-4S1901  
Mays Canyon Road  
Soldier Pile Wall

Attention: Mr. A. Kaddoura

**From:** HOSSAIN SALIMI  
Senior Materials and Research Engineer  
Division of Engineering Services  
Geotechnical Services – MS-5  
Office of Geotechnical Design-West

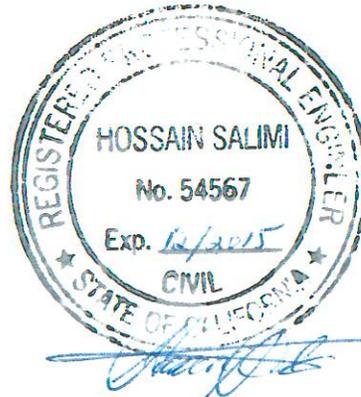
**Subject:** Final Seismic Design Recommendations

This memorandum is in response to your latest request dated February 20th to provide the Revised and Final Seismic Design Recommendations for the proposed Soldier Pile Wall project located close to the intersection of Route 116 and Mays Canyon Road, approximately 3 kilometers southeast of the town of Guerneville in Sonoma County.

The preliminary seismic design recommendations were submitted to you in a memorandum dated September 19, 2013. There are no changes to the seismic related findings and the aforementioned report can be considered as final.

If there are any questions, please contact Hossain Salimi at (916) 227-7147.

c: TPokrywka (OGD-W)  
MMacaranes (OGD-W)



## Memorandum

*Flex your power!  
Be energy efficient!*

**To:** MR. HOOSHMAND NIKOUI  
Chief, Branch A  
Division of Engineering Services  
Office of Geotechnical Design-West

**Date:** September 19, 2013

**File:** 04-SON-116 PM 15.0  
04-4S1901  
Mays Canyon Road  
Soldier Pile Wall

Attention: Mr. A. Kaddoura

**From:** HOSSAIN SALIMI  
Senior Materials and Research Engineer  
Division of Engineering Services  
Geotechnical Services – MS-5  
Office of Geotechnical Design-West

**Subject:** Seismic Design Recommendations

This memorandum is in response to your request dated September 17, 2013 to provide the Seismic Design Recommendations for the proposed Soldier Pile Wall project located close to the intersection of Route 116 and Mays Canyon Road, approximately 3 kilometers southeast of the town of Guerneville in Sonoma County.

According to the latest California Seismic Hazard Map (Version 2.2.06), which is based on the United States Geological Survey (USGS) and California Geological Survey (CGS) maps, the nearest faults are San Andreas (North Coast) 2011 CFM Fault (Strike-Slip) with Maximum Moment  $M_{max}=8$ , located just over 16 kilometers southwest of the site, Rodgers Creek Fault (Strike-Slip) with Maximum Moment  $M_{max}=7.3$ , located over 17 kilometers east, and Maacama Fault Zone (Strike-Slip) with Maximum Moment  $M_{max}=7.4$ , located just under 24 kilometers east of the site. Please note that the distance provided are horizontal distance to the fault trace or surface projection of the top of rupture plane.

A single rotary boring (P-1) drilled in 2009 to a depth of 55 feet below ground was used for the analysis. According to the Log-of-Test-Boring provided, the site contains about 5 to 7 feet of medium dense clayey sand overlaying sedimentary rock consisting of intensely weathered Shale/Sandstone transitioning to moderately weathered at lower depths. Based on these findings, a shear wave velocity of 560 meters per second is assigned to the site. Ground water table was measured at the elevation of 82.5 feet corresponding to 20 feet below ground. The following table shows the seismic data based on nearby faults, distances, and Maximum Moment.

Mr. Hooshmand Nikoui

September 19, 2013

Page 2

Fault Name	Fault Type	Distance to Site (km)	Maximum Moment (Mmax)	Peak Ground Acceleration (PGA)
San Andreas (North Coast)	Strike Slip	16.1	8	0.27
Rodgers Creek	Strike Slip	17.2	7.3	0.20
Maacama (South Section)	Strike Slip	23.6	7.4	0.16
Probabilistic Seismic Hazard Analysis (975 yr)	-	-	-	0.5

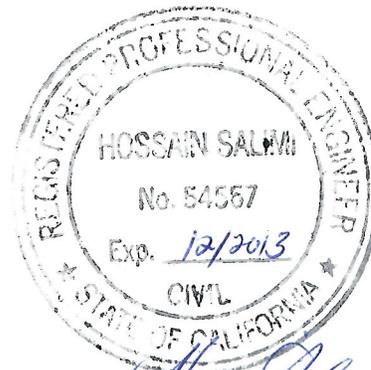
The Acceleration Response Spectrum (ARS) curves based on the Caltrans On-Line Deterministic Seismic Hazard Analysis (DSHA) and Probabilistic Seismic Hazard Analysis (PSHA) version 2.2.06 using a 975-year return period (5% probability of exceedance in 50 years) were generated for the site, incorporating the latest Attenuation Relationship models. Due to the high seismicity of the site, the PSHA response spectrum was higher than the deterministic spectra (please see Figure 1) and chosen as the recommended ARS for the site (please see Figure 2).

Please note that the ARS curve has been modified to account for the proximity of the site to faults. The modifications are such that there is no increase in spectral acceleration in periods less than 0.5 seconds and a maximum of 17.7% increase for periods greater than one second. A linear interpolation was used between 0.5 and one second. Due to the nature of materials encountered, the potential for soil liquefaction during a seismic event is considered minimal.

If there are any questions, please contact Hossain Salimi at (916) 227-7147.

#### Attachments

- c: TPokrywka (OGD-W)  
MMacaranes (OGD-W)



*Hossain Salimi*

### Acceleration Response Spectra comparisons for Mays Canyon Soldier Pile Wall

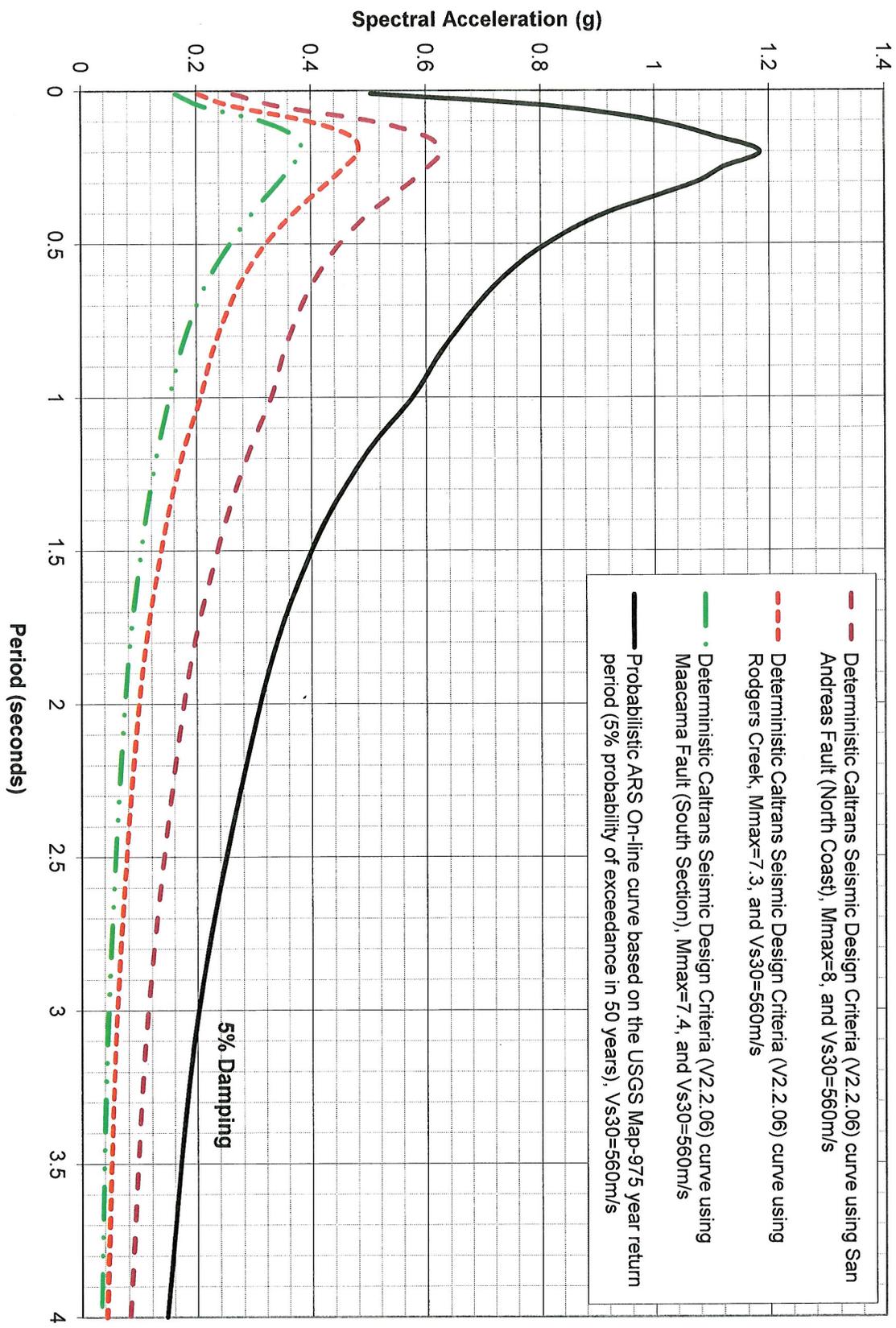


Figure 1

### Recommended Acceleration Response Spectrum for Mays Canyon Road Soldier Pile

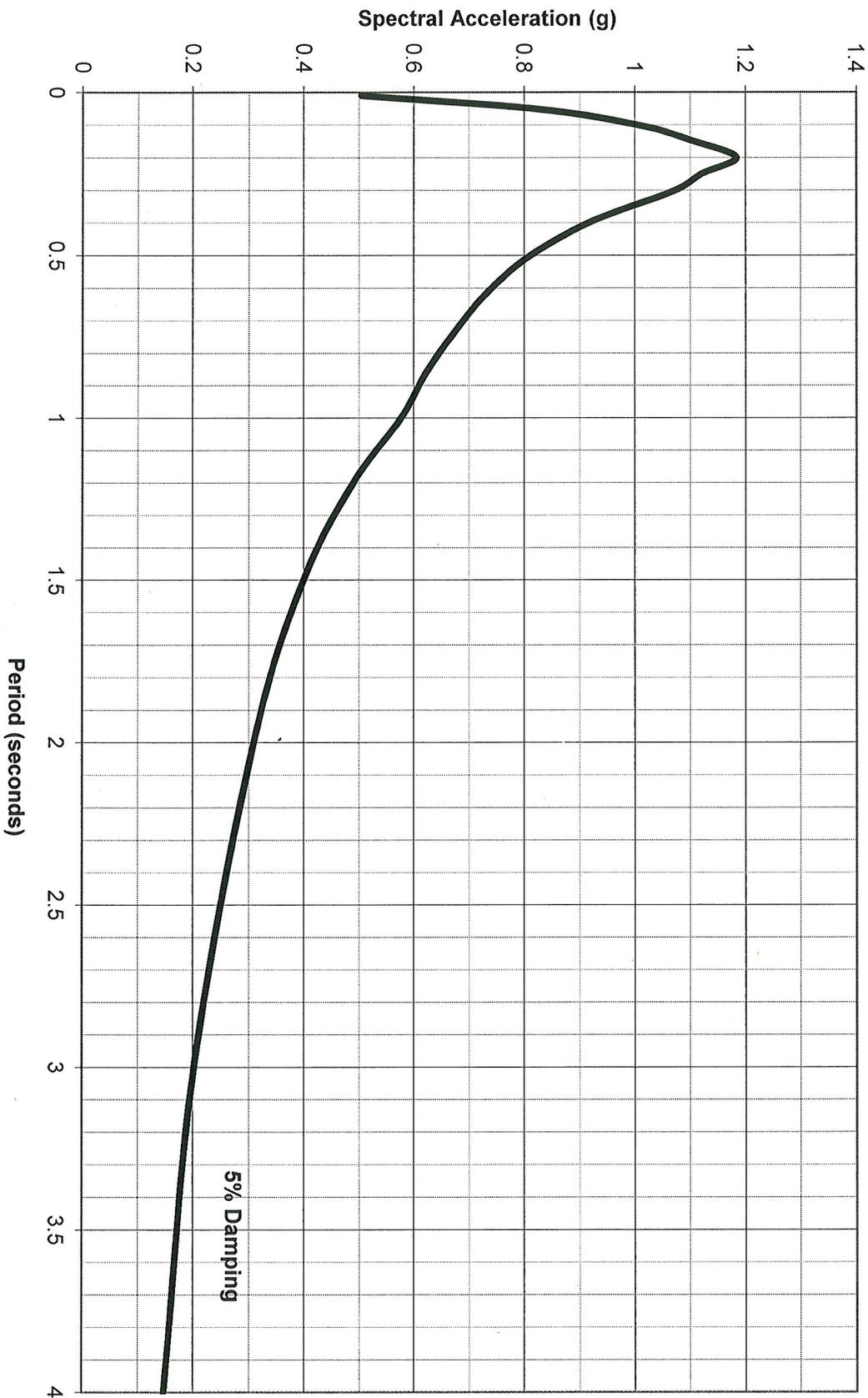
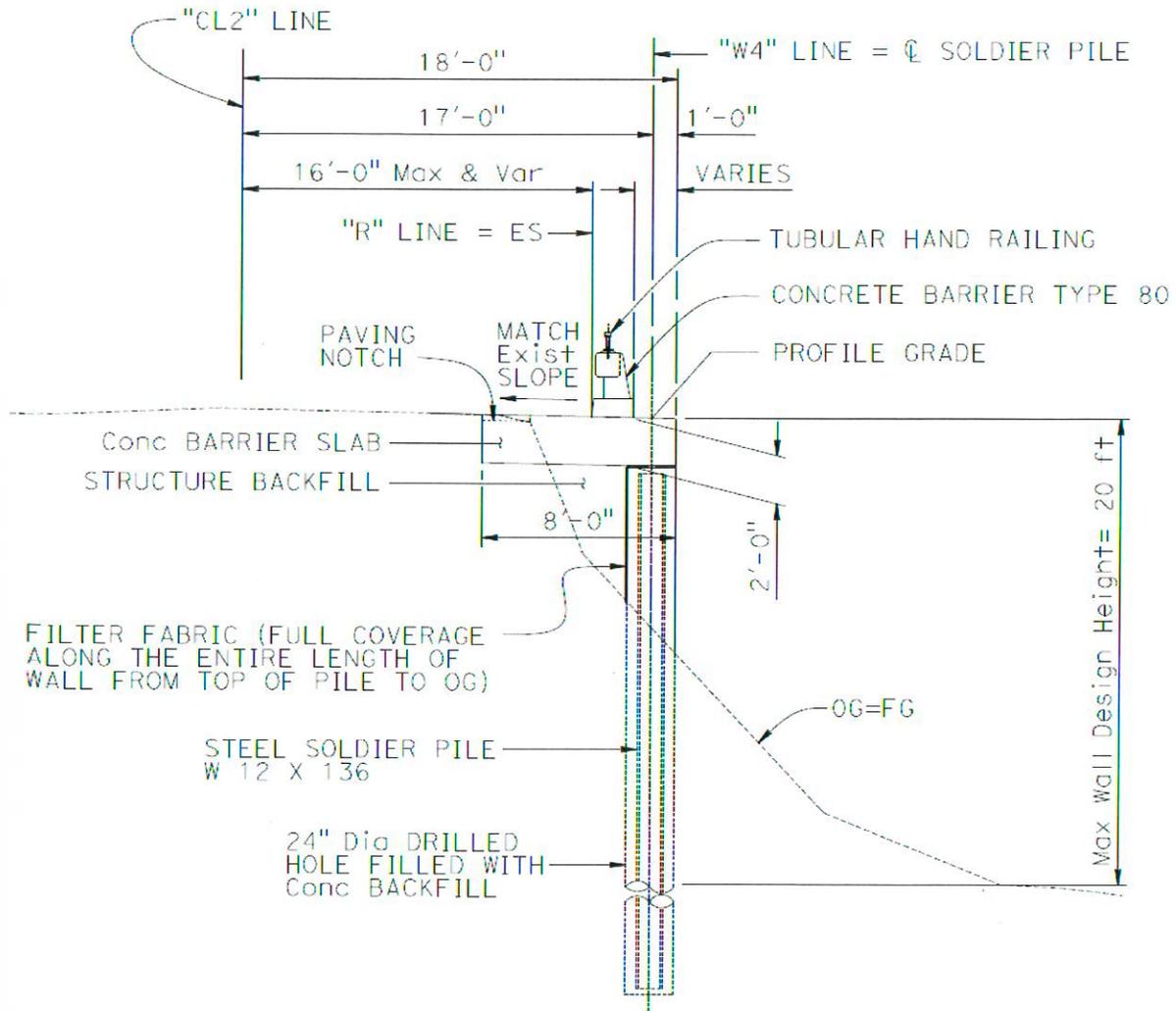


Figure 2



**Tangent Wall Typical Section**  
Refer to Structure Plans for Details

**EXHIBIT E**  
04-SON-116 PM 15.0  
Tangent Ret. Wall  
04-4S1901  
Efis: 04 0000 1215  
October 2014

**BENCH MARK**  
 POINT NAME: 1 1301  
 NORTHING: 4797.008, EASTING: 5000.000  
 ELEV.: 103.457  
 DESCRIPTION: 8" SPIKE

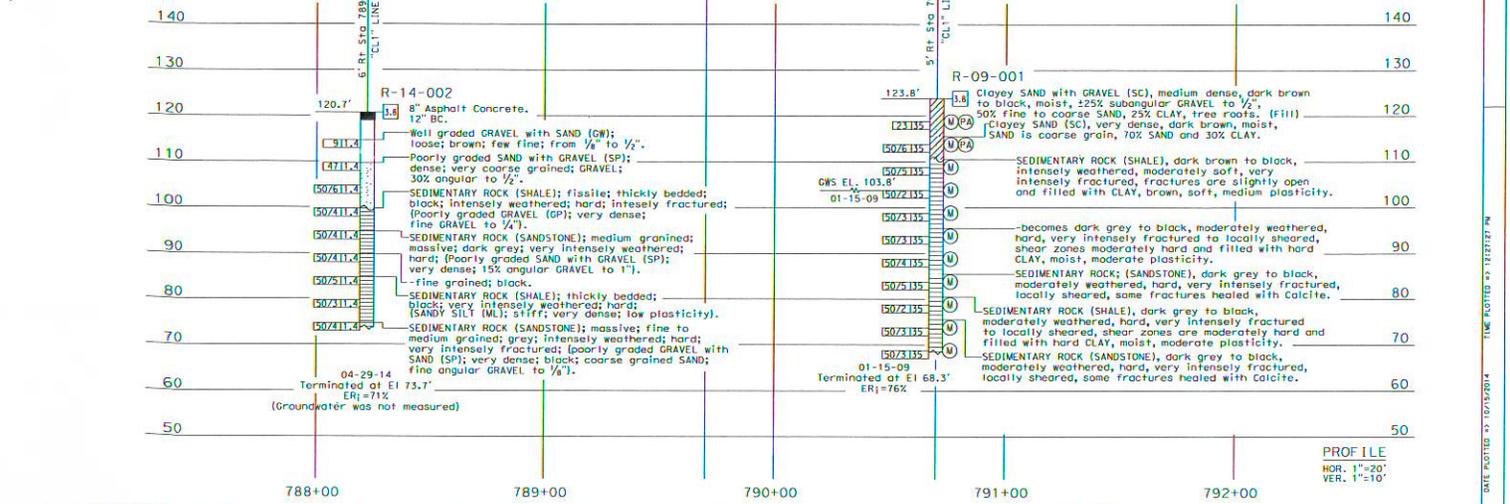
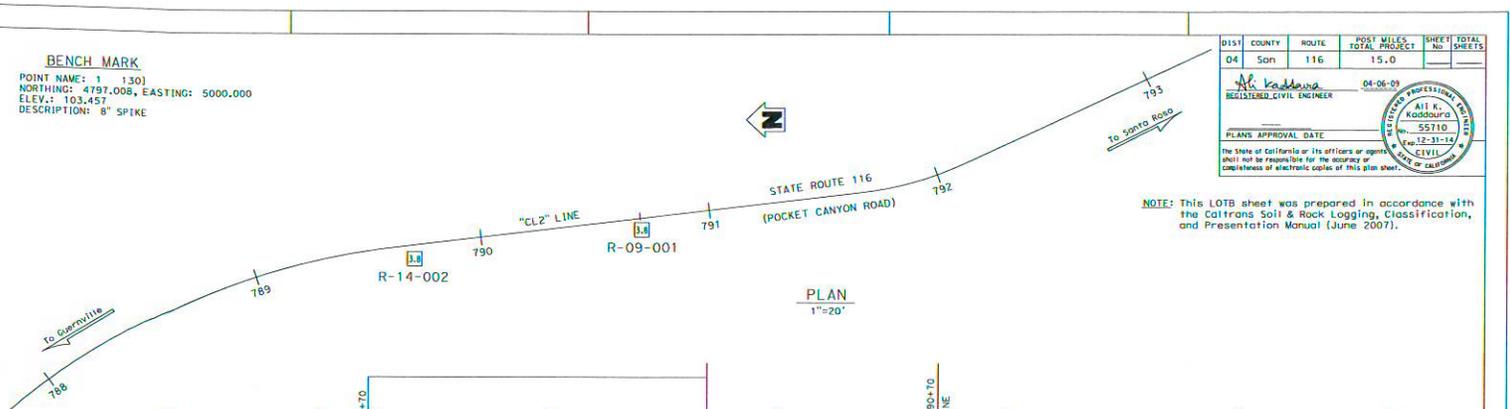
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No. TOTAL SHEETS
04	San	116	15.0	

REGISTERED CIVIL ENGINEER  
 04-06-09  
 55710  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE: 04-06-09

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

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



<b>ENGINEERING SERVICES</b>		<b>GEOTECHNICAL SERVICES</b>		<b>STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION</b>		<b>GEOTECHNICAL SERVICES OFFICE OF GEOTECHNICAL DESIGN BRANCH</b>		<b>POCKET CANYON Ck. TANGENT WALL LOG OF TEST BORINGS</b>	
FUNCTIONAL SUPERVISOR	DRAWN BY: M. Reynolds 01/09	CHECKED BY: C. Ritsen/ R. Noaned	FIELD INVESTIGATION BY: A. Kaddoura	BRIDGE NO.	POST MILES	DESIGN BRANCH	CU 04276	E.A. 451901	0400001215
NAME:	DESIGN SCALE IN INCHES FOR REVISIONS: 1/2"		DATE: 01/15/09		TERMINATED AT ELEV. 68.3'		ER: 76%		FILE: Master P&Q-9-24.dgn

DATE PLOTTED: 01/15/2009 11:22:37 AM

# REVISED FINAL HYDRAULIC REPORT

## Route 116 Road Repair Retaining Wall At PM 15 Next to Pocket Canyon Creek

Located on State Route 116 in Sonoma County

---

JOB:

Retaining Wall Project ID: 0400001215

---

LOCATION:

04-SON-116-PM 15

---

PREPARED BY (Signature)



Ginger Lu, PE# 71324

Structure Hydraulics & Scour Mitigation

May 22, 2015



---

*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.*

## Hydrology/Hydraulics Report

### General:

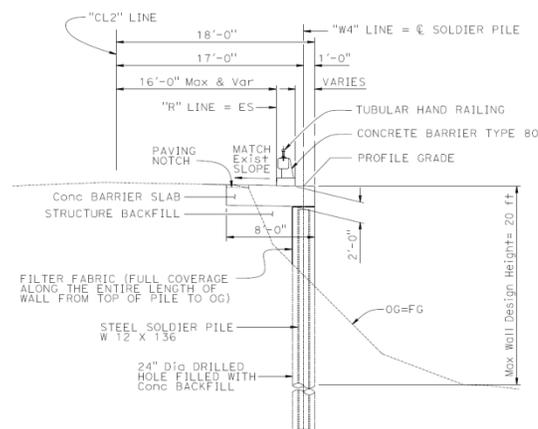
This report dated 5/22/2015 supersedes all hydraulic reports for this project. Due to the fabric type and slight changes in the proposed design and an additional drilled info, the final hydraulic report is revised.

Structure Design proposes a 166' long tangent wall for a section of storm damaged roadway along Pocket Canyon Creek near Post Mile (PM) 15 on State Route (SR) 116, south of Mays Canyon Road, approximately 3 miles east of Guerneville in Sonoma County (Figure 1).



**Figure 1: Terrain Map of Rte 116 PM 15.**

The proposed tangent wall (Figure 2) will consist of 2' on center drilled holes with steel H piles and concrete backfill. A minimum 8'-wide reinforced concrete barrier slab on the top of the tangent piles is designed to be the shoulder extension of the roadway pavement. Due to complex environmental issues, the side-slope embankment outside of the proposed wall is not determined and is hence assumed to be left alone without any rock armoring in this report.



*Figure 2: Typical Section*

The shoulder of eastbound SR116 near PM 15 was undermined by a 16'-long and 4'-deep slip-out and it was speculated that the section was weakened between 2006 and 2007 winter storms and collapsed around February 2007. No other reports about the current condition were received.

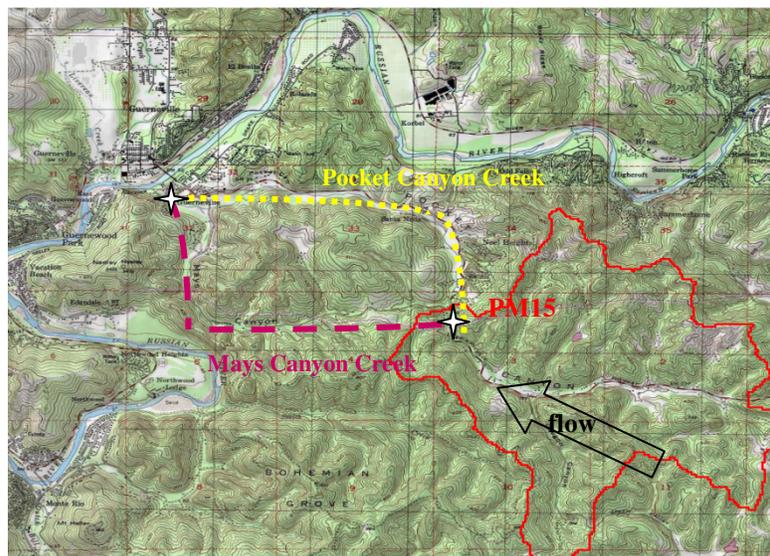
This evaluation is based on vertical datum NAVD 88 and horizontal datum NAD 83.

This report makes reference to:

- 2014 Detailed Survey (3/11/2014) by District 4 Surveys (NAD 83, NAVD 88).
- Align FR CAICE4 714.dgn & Topo FR CAICE.dgn (4/7/2014) by District Project Engineer (NAD 83, NAVD 88).
- General Plan (10/14/2014) & Type Selection Meeting Summary (2/07/2014) by Structure Design.
- 1/3 Arc Sec (equivalent of 10-meter DEM) from Nation Elevation Dataset (NED, USGS).
- Foundation Report (10/16/2014), Preliminary Foundation Report (10/16/2013) and Seismic Design Recommendations (09/19/2013) by Geotech-West based on 2008 Detailed Survey.
- 2008 Roadway Survey by District 4 Surveys (on assumed horizontal & vertical datums).
- *Flood Insurance Study by Federal Emergency Management Agency for Sonoma County (FIS-FEMA, 10/06/2012)*
- *HEC-23, Bridge Scour and Stream Instability Countermeasures: Experience, Selection, and Design Guidance (3rd Edition, 9/2009) by Federal Highway Administration, US Department of Transportation.*

**Basin:**

Pocket Canyon Creek receives inflow from Oregon Canyon Creek and Mays Canyon Creek among other tributaries, before flowing northwesterly and emptying into the Russian River near Guerneville. The Pocket Canyon Creek watershed is a part of the Lower Russian River Valley in the Mendocino Range within west-central Sonoma County. The area is mostly woodlands with scattered vineyards and minor residential communities. Pocket Canyon Creek intercepts Mays Canyon Creek twice.



*Figure 3: Pocket Canyon Creek Basin*

Pocket Canyon Creek (dotted line) crosses Mays Canyon Creek (broken line) at the project site in Figure 3, where the drainage basin ends, and it meets Mays Canyon Creek again near Guerneville. Using the Watershed Modeling System software (WMS 9.1) with 1/3 Arc Sec data from NED, the drainage area of Pocket Canyon Creek near the project site was mapped to be 3.33 square miles (mi<sup>2</sup>) with an annual average precipitation of 52 in. The channel bed slope near the project site was estimated to be 0.0072 ft/ft.

**Discharge:**

Two locations on Pocket Canyon Creek are listed with regulatory water surface elevations (WSE) in the 2012 FIS-FEMA for Sonoma County, but only one location contains the drainage area. At the downstream confluence of Mays Canyon Creek, about 3 miles downstream from the project site, Pocket Canyon Creek has a drainage area of 5.06 mi<sup>2</sup> (Q<sub>100</sub> = 2360cfs & Q<sub>50</sub> = 2050cfs) and a regulatory WSE of 51.0' for the 100-year event. This location has 52% larger basin size than the project site and is considered to be inappropriate for the project site. Hence, the FEMA's Q<sub>100</sub> and Q<sub>50</sub> data and the regulatory WSE for this location is not applicable. Upstream Mays Canyon Creek crosses Pocket Canyon Creek right at the beginning of the project site (near CL2 line Station 789+50), with a regulatory WSE of 114.3' (NAVD 88) for the 100-year event.

No in-stream mining or logging activity is found on the record for Pocket Canyon Creek. Because it is an unengaged natural stream in a rural setting without any storage basins upstream, National Stream Statistics (NSS module in WMS, similar to the Regional Regression Method) was chosen to approximate the 50-year and 100-year flood events, and the discharges tabulated in Table 1 was used for the hydraulic analyses in the report.

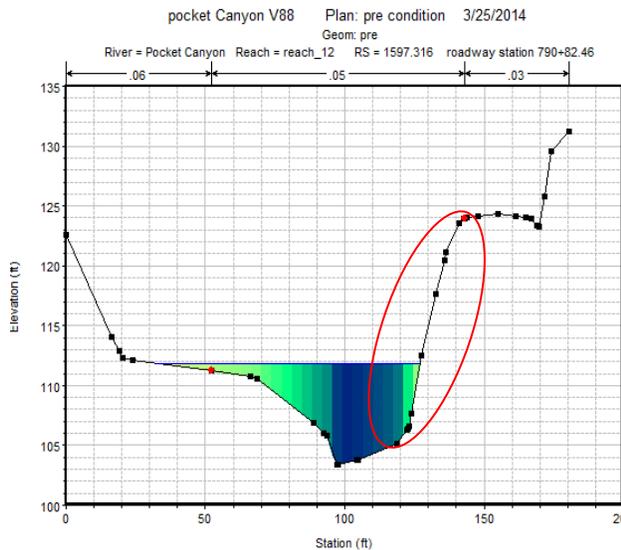
<b>Table 1: Pocket Canyon Creek</b>		
Drainage Area = 3.33 mi <sup>2</sup> , Channel slope = 0.0072 ft/ft		
<b>Flood Frequency</b>	<b>100-year</b>	<b>50-year</b>
<b>Flow Rate, cfs</b>	1213	1083

**Stage/Velocity:**

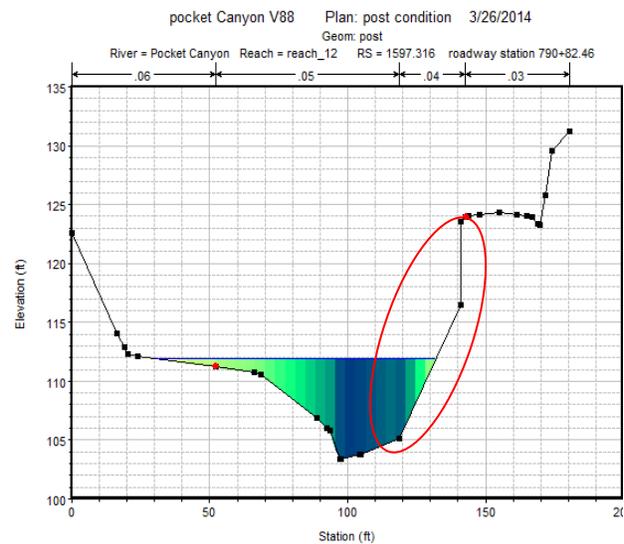


**Figure 4: Channel Cross-Sections**

- US Army Corps of Engineers' hydraulic analysis software - HEC-RAS 4.1 was used to create the one dimensional model for this project.
- Topographic composite (NAVD 88) of the 2014 detailed survey and NED was generated in WMS for the channel cross-sections (Figure 4) needed in the detailed study. The channel cross-sections were exported into HEC-RAS to model the existing and proposed conditions with various roughness coefficients under two flood events ( $Q_{100}= 1213$  &  $Q_{50}= 1083$ ).
- The proposed General Plan, As-built plans of Mays Canyon Road Structure, and aerial photos were referenced for the locations and dimensions of the structures.
- A small section of the cross-sections in the proposed condition from RS 1556.578 to RS 1687.880 was modified from the existing condition. The unsupported embankment slope on the face of the wall in the proposed condition was projected to have a short natural bank with a slope of 2H:1V. Figure 5 and 6 illustrate the differences between the two conditions.
- Under the steady flow module, subcritical flow regime with normal depth (a channel slope of 0.0072 ft/ft) is applied.



**Figure 5: The Existing Condition**



**Figure 6: The Proposed Condition**

Due to the dense vegetation in the channel, Manning's roughness coefficients of 0.03 for the roadway, 0.05 for the main channel, and 0.06 for the south bank were applied, and the hydraulic results are listed in Table 2 for the existing condition.

<b>Table 2: Water Surface Elevation (WSE) &amp; Average Velocity (AV) for the Existing Condition</b>					
Drainage Area = 3.33 mi <sup>2</sup> , Channel slope = 0.0072 ft/ft, NAVD 88					
<b>"CL2" Line Station, ft</b>	<b>River Station (RS), ft</b>	<b>100-year (<math>Q_{100} = 1213</math> cfs)</b>		<b>50-year (<math>Q_{50} = 1083</math> cfs)</b>	
		<b>WSE, ft</b>	<b>AV, ft/s</b>	<b>WSE, ft</b>	<b>AV, ft/s</b>
791+73.92	1687.880	111.3	10.0	111.0	9.6
791+55.54	1667.326	112.1	3.9	111.7	3.8
791+30.51	1647.993	111.9	4.4	111.6	4.3
791+11.73	1620.753	111.9	3.9	111.5	3.7

790+82.46	1597.316	111.9	3.6	111.5	3.5
790+59.56	1574.333	111.8	3.8	111.4	3.7
790+43.4	1556.578	111.5	5.1	111.1	5.1
790+19.04	1537.317	111.4	4.9	111.1	4.9

Manning's roughness coefficients of 0.03 for the roadway and the wall face, 0.04 for the north bank, 0.05 for the main channel, and 0.06 for the south bank were applied, and Table 3 includes the hydraulic results for the proposed condition.

<b>Table 3: Water Surface Elevation (WSE) &amp; Average Velocity (AV) for the Proposed condition</b>					
Drainage Area = 3.33 mi <sup>2</sup> , Channel slope = 0.072 ft/ft, NAVD 88					
<b>"CL2" Line Station, ft</b>	<b>River Station (RS), ft</b>	<b>100-year (Q<sub>100</sub> = 1213 cfs)</b>		<b>50-year (Q<sub>50</sub> = 1083 cfs)</b>	
		<b>WSE, ft</b>	<b>AV, ft/s</b>	<b>WSE, ft</b>	<b>AV, ft/s</b>
791+73.92	1687.880	111.3	9.5	111.01	9.3
791+55.54	1667.326	112.1	3.8	111.69	3.7
791+30.51	1647.993	112.0	3.9	111.64	3.8
791+11.73	1620.753	112.0	3.6	111.60	3.5
790+82.46	1597.316	111.9	3.5	111.56	3.4
790+59.56	1574.333	111.8	4.1	111.42	4.0
790+43.4	1556.578	111.5	5.6	111.09	5.6
790+19.04	1537.317	111.4	4.9	111.06	4.9

**Streambed/Drift:**

Two borings were drilled for this project by Geotech West, a 55'-deep boring at Station 792+02 and a 47.5'-deep boring at Station 789+70 of CL-2 line. The subsurface soil varies from a 13' layer of medium dense to very dense clayey sand to a 46' layer of loose to very dense sand and gravel, underlain with moderately to intensely weathered, soft to hard shale and sandstone. All the listed soil materials are considered to be erodible.

Though there is no historic cross section available or as-built plans for the affected area, the roadway survey suggests that the roadway damage could have been caused by lateral channel migration. The creek is surrounded by dense vegetation and appears to have a high drift potential.

**Summary & Recommendation:**

- With the RC barrier slab on the top of the wall connected to the roadway, the proposed retaining wall will be watertight, which will prevent soil material from eroding downward.
- The roadway section along the proposed wall shall have proper drainage design for the road surface runoff for both sides. Some kinds of filter fabric behind the wall is recommended so that fines in the backfill cannot be washed away. The depth of filter fabric placement on the finished grade will be determined by the Construction Engineer on site during construction.

- The scour elevation is assumed at an elevation where the calculated scour hole will occur below channel thalweg grade (the deepest part of the channel) and hence the scour elevation is the designated elevation which structure foundation must reach if not deeper. This is to avoid a wall section being overturned when scour potential washes away lateral soil support of the retaining wall. Because the average channel capacity of the creek can only carry roughly 90% of the 100-year flood event, the excessive flow would mostly overtop the south bank of the channel. Therefore, a less conservative method is used to estimate the scour elevation where the scour hole is projected from the top of the natural-forming embankment slope.
  - a. Combining with relatively shallow channel slope, dense vegetation coverage, and irregular channel, the risk of thalweg lateral migration towards the wall is definitely present. Using a stream gage station near Guerneville on the Russian River, the 2006 winter storm event was determined to be larger than the 2007 winter storm event and between 100-year event and 50-year event, which was used to approximate a minimum of 10' of lateral thalweg migration for Pocket Canyon Creek.
  - b. The scour elevations listed in Table 3 are the calculated elevations in NAVD 88. The third column in Table 4 is the projected bank elevations after 10' of lateral thalweg migration occurs.

<b><i>Table 4: Recommended Hydraulic Summary for the Proposed Retaining Wall, in NAVD 88</i></b>			
"CL2" Line Station	<i>Scour Depth (ft)</i>	<i>Natural 2H:1V Bank Elev. (ft)</i>	<i>Scour Elev. (ft)</i>
790+19.04	6.0	118.9	112.9
790+43.40	5.4	119.9	114.5
790+59.56	5.4	117.4	112.0
790+82.46	5.4	112.4	107.0
791+11.73	5.9	111.8	105.9
791+30.51	5.9	112.0	106.1
791+55.54	6.9	114.2	107.3
791+73.92	4.3	117.2	112.9

# Bay Area Recycled Water Commercial Truck Fill Facilities Location Guide January 2015



## **Background**

This Guide was prepared by Whitley Burchett & Associates under contract with Bay Area Clean Water Agencies and under the direction of the BACWA Recycled Water Committee.

The Guide was prepared in response to inquiries of commercial recycled water truck fill facilities in the Bay Area. It is the Recycled Water Committee's intention to update this Guide annually. If you see any information that should be updated, have a facility to add to this Guide, or have any questions please email [Info@bacwa.org](mailto:Info@bacwa.org).

## **Disclaimer**

The intent of this Guide is to provide prospective water haulers with general information regarding the location of Bay Area Recycled Water Commercial Truck Fill Facilities, permit requirements, and associated fees for recycled water. Information in this Guide represents data collected in the fall of 2014. Please contact agencies directly for current information.

## **Cover Photos**

Top row from left to right: San Francisco Public Utilities Commission,  
Dublin San Ramon Services District

Bottom row: East Bay Municipal Utility District

## **Acknowledgements**

This Guide was prepared in conjunction with the BACWA agencies. The time spent by agencies providing program information and review of this document is greatly appreciated.

## **Electronic Version**

The BACWA Truck Fill Guide is available on the BACWA website at <http://bacwa.org>.

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# Bay Area Commercial Recycled Water Truck Fill Facilities Location Map



\* Indicates the general location of a truck fill facility.

**List of Agencies with Recycled Water Commercial Truck Fill Facilities  
Sorted by County/City**

<b>COUNTY/CITY</b>	<b>AGENCY</b>	<b>PAGE NO.</b>
<b>ALAMEDA COUNTY</b>		
Dublin	Dublin San Ramon Services District	3
Livermore	City of Livermore	5
Oakland	East Bay Municipal Utility District	4
San Lorenzo	Oro Loma/East Bay Dischargers Authority	10
<b>CONTRA COSTA COUNTY</b>		
Concord	Central Contra Costa Sanitary District	2
Martinez	Central Contra Costa Sanitary District	2
Richmond	East Bay Municipal Utility District	4
<b>MARIN COUNTY</b>		
Novato	North Marin Water District	9
San Rafael	Marin Municipal Water District	6
<b>NAPA COUNTY</b>		
Calistoga	City of Calistoga	1
Napa	Napa Sanitation District	8
Yountville	Town of Yountville	20
<b>SAN FRANCISCO</b>		
San Francisco	San Francisco Public Utilities Commission	15
<b>SAN MATEO COUNTY</b>		
San Francisco	San Francisco International Airport	14
Redwood City	City of Redwood City	13
<b>SANTA CLARA COUNTY</b>		
Milpitas	City of Milpitas	7
Palo Alto	City of Palo Alto	11
San Jose	South Bay Water Recycling and City of San Jose	18
Sunnyvale	City of Sunnyvale	19
<b>SONOMA COUNTY</b>		
Petaluma	City of Petaluma	12
Santa Rosa	City of Santa Rosa	16
Sonoma	Sonoma County Water Agency	17

***SECTION 1***

---

**Recycled Water Commercial Truck Fill Facilities Information**





**DUBLIN SAN RAMON SERVICES DISTRICT**

925.875.2334

[www.dsrdsd.com](http://www.dsrdsd.com)**Recycled Water Fill Facilities:**

Treatment Plant Yes

Distribution System Yes

Can water be used outside of this agency's service area? Yes

**Hydrant Fill Facilities**

Location: Dublin, CA - see website for locations

Number of Fill Facilities: 10+

Connection Device: Construction Meter

Quality: Disinfected Tertiary

Truck Size Limits: None

Quantity Limitations per Trip: No Minimum

Truck Weight Limits: None

Maximum up to truck limit

Other Restrictions: Permit plus \$1,000 refundable deposit for meter required.

Additional Access Information: Obtain permit and meter at 7051 Dublin Blvd, Dublin.

**Fill Facilities at Treatment Plant**

Location: DSRSD Wastewater Treatment Plant

7399 Johnson Drive, Pleasanton

Quality: Disinfected Tertiary

Type of Connection: Overhead and Large Hose Bib

Quantity Limitations per Trip: No Minimum

Hours: 24 hrs/day, 7 days/wk\*

Maximum up to truck limit

Appointment Required: No

Quantity Limitations per Day: No Minimum

Truck Size Limits: None

No Maximum

Truck Weight Limits: None

Additional Access Information: \*After business hours truck drivers must use special gate access code to enter the plant. The access code is valid only during hours specified in the permit.

**Training**

Required: Yes

Duration: 15 min

Who: Truck Owner and Driver

Frequency: Once

Schedule: By Appointment

Location: Recycled Water Plant

Length of time to become authorized truck hauler: 1 business day

**Signage**

Area Use Signage Required: No

Vehicle Signage Required: Yes

Signs Provided by Water Agency: N/A

Signs Provided by Water Agency: Yes

**Vehicle Inspection**

Required: No

Inspection Location:

Duration:

Re-inspection Required:

How to schedule:

**Fees**Water: Hydrant- check with DSRSD  
for current fee;  
Plant- \$10/truck load

Training: No Charge

Permit: Hydrant- No permit fee;  
Treatment Plant- \$73/yearConnection Device: Hydrant access- \$1,000  
deposit for construction  
meter; Treatment Plant-

Use Area Signage: N/A

No connection device charge

Vehicle Signage: No Charge

Other:

**EAST BAY MUNICIPAL UTILITY DISTRICT**

**510.287.1346**

[www.ebmud.com](http://www.ebmud.com)

**Recycled Water Fill Facilities:**

Treatment Plant Yes

Distribution System No

Can water be used outside of this agency's service area? Check with EBMUD

**Hydrant Fill Facilities**

Location: None

Number of Fill Facilities:

Connection Device:

Quality:

Truck Size Limits:

Quantity Limitations per Trip:

Truck Weight Limits:

Other Restrictions:

Additional Access Information: [www.ebmud.com](http://www.ebmud.com), search "Recycled Water Truck Program"

**Fill Facilities at Treatment Plant**

Locations: 1) EBMUD Wastewater Treatment Plant, Oakland

2) North Richmond Water Recycling Plant, Richmond

Quality: Disinfected Tertiary

Type of Connection: Hydrant

Quantity Limitations per Trip: No Minimum

Hours: 24 hrs/day, 7 days/wk

Maximum up to truck limit

Appointment Required: Only for first visit

Quantity Limitations per Day: No Minimum

Truck Size Limits: None

No Maximum

Truck Weight Limits: None

Additional Access Information: 1) EBMUD Wastewater Treatment Plant - enter through the main security gate at the plant to obtain access to the fill hydrant. 2) North Richmond Plant - hydrant is located outside of the plant gate and is accessible with a hydrant key.

**Training**

Required: Yes

Duration: 15 minutes

Who: Truck Driver

Frequency: Once

Schedule: By Appointment

Location: Recycled Water Plant

Length of time to become authorized truck hauler: 5 business days

**Signage**

Area Use Signage Required: No

Vehicle Signage Required: Yes

Signs Provided by Water Agency: N/A

Signs Provided by Water Agency: Yes

**Vehicle Inspection**

Required: Yes

Inspection Location: Recycled Water Plant

Duration: Less than 1 hour

Re-inspection Required: No

How to schedule: To be conducted at time of training

**Fees**

Water: No Charge

Training: No Charge

Connection Device: No Charge

Permit: No Charge

Vehicle Signage: No Charge

Use Area Signage: N/A

Other:







<b>NAPA SANITATION DISTRICT</b>	
<b>707.258.6029</b> <a href="http://www.napasan.com">www.napasan.com</a>	
Recycled Water Fill Facilities: Treatment Plant Yes <span style="float: right;">Distribution System No</span> Can water be used outside of this agency's service area? Yes	
<b>Hydrant Fill Facilities</b>	
Location: None Number of Fill Facilities: <span style="float: right;">Connection Device:</span> Quality: <span style="float: right;">Truck Size Limits:</span> Quantity Limitations per Trip: <span style="float: right;">Truck Weight Limits:</span> Other Restrictions: Additional Access Information:	
<b>Fill Facilities at Treatment Plant</b>	
Location: Soscol Water Recycling Facility (call for address) Quality: Disinfected Tertiary <span style="float: right;">Type of Connection: Side</span> Quantity Limitations per Trip: No Minimum <span style="float: right;">Hours: 7:30 a.m. - 4:30 p.m. Daily</span> Maximum up to truck limit <span style="float: right;">Appointment Required: No</span> Quantity Limitations per Day: No Minimum <span style="float: right;">Truck Size Limits: None</span> No Maximum <span style="float: right;">Truck Weight Limits: None</span> Additional Access Information:	
<b>Training</b>	
Required: Yes <span style="float: right;">Duration: 2 hours or less</span> Who: Truck Owner, Truck <span style="float: right;">Frequency: Once, plus Annual Refresher</span> Driver, and Customer <span style="float: right;">Location: Recycled Water Plant</span> Schedule: By Appointment <span style="float: right;">Length of time to become authorized truck hauler: 2 business days</span>	
<b>Signage</b>	
Area Use Signage Required: Yes <span style="float: right;">Vehicle Signage Required: Yes</span> Signs Provided by Water Agency: Yes <span style="float: right;">Signs Provided by Water Agency: Yes</span>	
<b>Vehicle Inspection</b>	
Required: Yes <span style="float: right;">Inspection Location: Recycled Water Plant</span> Duration: 15 min <span style="float: right;">Re-inspection Required:</span> How to schedule: By Appointment	
<b>Fees</b>	
Water: \$0.98 per 1,000 gal <span style="float: right;">Training: No Charge</span> Connection Device: No Charge <span style="float: right;">Permit: \$50</span> Vehicle Signage: \$6 per sticker and <span style="float: right;">Use Area Signage: \$6 per sticker and</span> \$10.50 per plastic sign <span style="float: right;">\$10.50 per plastic sign</span> Other:	

<b>NORTH MARIN WATER DISTRICT</b>	
415.761.8912	
<a href="http://www.nmwd.com">www.nmwd.com</a>	
Recycled Water Fill Facilities:	
Treatment Plant	No
Distribution System	Yes
Can water be used outside of this agency's service area?	
No	
<b>Hydrant Fill Facilities</b>	
Location:	Call for address
Number of Fill Facilities:	10+
Quality:	Disinfected Tertiary
Quantity Limitations per Trip:	No Minimum
	Maximum up to truck limit
Other Restrictions:	
Additional Access Information:	
<b>Fill Facilities at Treatment Plant</b>	
Location:	None
Quality:	
Quantity Limitations per Trip:	
Quantity Limitations per Day:	
Additional Access Information:	
Type of Connection:	
Hours:	
Appointment Required:	
Truck Size Limits:	
Truck Weight Limits:	
<b>Training</b>	
Required:	No
Who:	
Schedule:	
Duration:	
Frequency:	
Location:	
Length of time to become authorized truck hauler: 1 business day	
<b>Signage</b>	
Area Use Signage Required:	No
Vehicle Signage Required:	Yes
Signs Provided by Water Agency:	N/A
Signs Provided by Water Agency:	Yes
<b>Vehicle Inspection</b>	
Required:	No
Duration:	
How to schedule:	
Inspection Location:	
Re-inspection Required:	
<b>Fees</b>	
Water:	\$5.00 per load; no max.
Connection Device:	No Charge
Vehicle Signage:	No Charge
Other:	
Training:	N/A
Permit:	No Charge
Use Area Signage:	N/A

<b>ORO LOMA</b>	
<b>510.276.4700</b>	
Recycled Water Fill Facilities:	
Treatment Plant Yes	Distribution System No
Can water be used outside of this agency's service area? Yes	
<b>Hydrant Fill Facilities</b>	
Location: None	
Number of Fill Facilities:	Connection Device:
Quality:	Truck Size Limits:
Quantity Limitations per Trip:	Truck Weight Limits:
Other Restrictions:	
Additional Access Information:	
<b>Fill Facilities at Treatment Plant</b>	
Location: Oro Loma Treatment Facility (call for address)	
Quality: Disinfected Secondary-2.2	Type of Connection: Overhead
Quantity Limitations per Trip: No Minimum	Hours: M-F: 6 a.m. - 5 p.m.
Maximum up to truck limit	Appointment Required: No
Quantity Limitations per Day: No Minimum	Truck Size Limits: None
No Maximum	Truck Weight Limits: None
Additional Access Information:	
<b>Training</b>	
Required: Yes	Duration: 15 min
Who: Truck Driver	Frequency: Once
Schedule: By Appointment	Location: Recycled Water Plant
Length of time to become authorized truck hauler: 1 business day	
<b>Signage</b>	
Area Use Signage Required: No	Vehicle Signage Required: No
Signs Provided by Water Agency: N/A	Signs Provided by Water Agency: N/A
<b>Vehicle Inspection</b>	
Required: No	Inspection Location:
Duration:	Re-inspection Required:
How to schedule:	
<b>Fees</b>	
Water: No Charge	Training: No Charge
Connection Device: No Charge	Permit: No Charge
Vehicle Signage: N/A	Use Area Signage: N/A
Other:	













<b>SONOMA COUNTY WATER AGENCY</b>	
707.521.1865 <a href="http://www.scwa.ca.gov">www.scwa.ca.gov</a>	
Recycled Water Fill Facilities:	
Treatment Plant	Yes
Distribution System	No
Can water be used outside of this agency's service area? Yes	
<b>Hydrant Fill Facilities</b>	
Location: None	
Number of Fill Facilities:	Connection Device:
Quality:	Truck Size Limits:
Quantity Limitations per Trip:	Truck Weight Limits:
Other Restrictions:	
Additional Access Information:	
<b>Fill Facilities at Treatment Plant</b>	
Locations: Sonoma Valley County Sanitation District (call for address)	
Quality: Disinfected Tertiary	Type of Connection: Side
Quantity Limitations per Trip: No Minimum	Hours: Mon-Fri 8 a.m. - 4 p.m.; with
Maximum up to truck limit	permission could be 24/7
Quantity Limitations per Day: No Minimum	Appointment Required: No
No Maximum	Truck Size Limits: None
Truck Weight Limits: None	
Additional Access Information: Contact treatment plant for site access outside of business hours	
<b>Training</b>	
Required: Yes	Duration: 2 hours or less
Who: Truck Driver	Frequency: With each new application
Schedule: By Appointment	Location: Recycled Water Plant
Length of time to become authorized truck hauler: 5 business days	
<b>Signage</b>	
Area Use Signage Required: No	Vehicle Signage Required: Yes
Signs Provided by Water Agency: N/A	Signs Provided by Water Agency: Yes
<b>Vehicle Inspection</b>	
Required: Yes	Inspection Location: Recycled Water Plant
Duration: 1 hour or less	Re-inspection Required: With each new application
How to schedule: Appointment	
<b>Fees</b>	
Water: \$5.00 per 1,000 gal	Training: No Charge
Connection Device: \$100 deposit	Permit: \$300
Vehicle Signage: First set free	Use Area Signage: N/A
Other:	



<b>CITY OF SUNNYVALE</b>	
<b>408.760.7560</b>	
Recycled Water Fill Facilities: Treatment Plant Yes <span style="float: right;">Distribution System No</span> Can water be used outside of this agency's service area? Yes	
<b>Hydrant Fill Facilities</b>	
Location: None Number of Fill Facilities: <span style="float: right;">Connection Device:</span> Quality: <span style="float: right;">Truck Size Limits:</span> Quantity Limitations per Trip: <span style="float: right;">Truck Weight Limits:</span> Other Restrictions: Additional Access Information:	
<b>Fill Facilities at Treatment Plant</b>	
Location: Sunnyvale Water Pollution Control Plant (call for address) Quality: Disinfected Tertiary <span style="float: right;">Type of Connection: Hydrant</span> Quantity Limitations per Trip: No Minimum <span style="float: right;">Hours: Mon-Fri 7 a.m. - 4 p.m.</span> Maximum up to truck limit <span style="float: right;">Appointment Required: No</span> Quantity Limitations per Day: No Minimum <span style="float: right;">Truck Size Limits: None</span> No Maximum <span style="float: right;">Truck Weight Limits: None</span> Additional Access Information:	
<b>Training</b>	
Required: Yes <span style="float: right;">Duration: 2 hours or less</span> Who: Truck Owner, Truck <span style="float: right;">Frequency: Annually</span> Driver, and Customer <span style="float: right;">Location: Agency Corp Yard</span> using water <span style="float: right;">Length of time to become authorized truck hauler: 8+ business days</span> Schedule: By Appointment	
<b>Signage</b>	
Area Use Signage Required: Yes <span style="float: right;">Vehicle Signage Required: Yes</span> Signs Provided by Water Agency: No <span style="float: right;">Signs Provided by Water Agency: No</span>	
<b>Vehicle Inspection</b>	
Required: Yes <span style="float: right;">Inspection Location: Corp Yard</span> Duration: 1 hour or less <span style="float: right;">Re-inspection Required: Annually</span> How to schedule: Appointment	
<b>Fees</b>	
Water: No Charge <span style="float: right;">Training: No Charge</span> Connection Device: No Charge <span style="float: right;">Permit: No Charge</span> Vehicle Signage: User provides <span style="float: right;">Use Area Signage: User provides</span> Other:	



***SECTION 2***

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**Additional Commercial Truck Fill Facilities in 2015**

## Commercial Fill Facilities Planned to be Operational in 2015

COUNTY/CITY	AGENCY
<b>SAN MATEO COUNTY</b>	
Pacifica	North Coast County Water District (contact for availability) Contact: <a href="http://www.nccwd.com">www.nccwd.com</a>
<b>SONOMA COUNTY</b>	
Windsor	Town of Windsor (operational Spring 2015) Contact: (707) 838-5343

***SECTION 3***

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**Potential Future Commercial Truck Fill Facilities**

## Agencies That May Consider Commerical Fill Facilities in the Future

At the time this Guide was prepared, the agencies below indicated they may consider development of commercial fill facilities, in particular if the drought continues.

COUNTY/CITY	AGENCY
<b>ALAMEDA COUNTY</b>	
Piedmont Union City	City of Piedmont Union Sanitary District
<b>CONTRA COSTA COUNTY</b>	
Antioch Brentwood Richmond	Delta Diablo Sanitation District City of Brentwood West County Wastewater District
<b>MARIN COUNTY</b>	
San Rafael	Ross Valley Sanitary District
<b>SAN FRANCISCO</b>	
South San Francisco	South San Francisco
<b>SAN MATEO COUNTY</b>	
Menlo Park San Mateo	West Bay Sanitary District City of San Mateo
<b>SOLANO COUNTY</b>	
Benicia	City of Benicia
<b>SONOMA COUNTY</b>	
Guerneville Petaluma Santa Rosa Santa Rosa Sonoma	Sonoma County Water Agency City of Petaluma City of Santa Rosa Sonoma County Water Agency Sonoma County Water Agency

***SECTION 4***

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**Recycled Water Uses Allowed in California**

# Recycled Water Uses Allowed<sup>1</sup> in California

Use of Recycled Water	Treatment Level			
	Disinfected Tertiary Recycled Water	Disinfected Secondary – 2.2 Recycled Water	Disinfected Secondary – 23 Recycled Water	Undisinfected Secondary Recycled Water
<b><i>Irrigation of:</i></b>				
Food crops where recycled water contacts the edible portion of the crop, including all root crops	Allowed	Not Allowed	Not Allowed	Not Allowed
Parks and playgrounds	Allowed	Not Allowed	Not Allowed	Not Allowed
School yards	Allowed	Not Allowed	Not Allowed	Not Allowed
Residential landscaping	Allowed	Not Allowed	Not Allowed	Not Allowed
Unrestricted-access golf courses	Allowed	Not Allowed	Not Allowed	Not Allowed
Any other irrigation uses not prohibited by other provisions of the California Code of Regulations	Allowed	Not Allowed	Not Allowed	Not Allowed
Food crops, surface-irrigated, above-ground edible portion, and not contacted by recycled water	Allowed	Allowed	Not Allowed	Not Allowed
Cemeteries	Allowed	Allowed	Allowed	Not Allowed
Freeway landscaping	Allowed	Allowed	Allowed	Not Allowed
Restricted-access golf courses	Allowed	Allowed	Allowed	Not Allowed
Ornamental nursery stock and sod farms with unrestricted public access	Allowed	Allowed	Allowed	Not Allowed
Pasture for milk animals for human consumption	Allowed	Allowed	Allowed	Not Allowed
Non-edible vegetation with access control to prevent use as a park, playground or school yard	Allowed	Allowed	Allowed	Not Allowed
Orchards with no contact between edible portion and recycled water	Allowed	Allowed	Not Allowed <sup>2</sup>	Not Allowed <sup>2</sup>
Vineyards with no contact between edible portion and recycled water	Allowed	Allowed	Not Allowed <sup>2</sup>	Not Allowed <sup>2</sup>
Non food-bearing trees, including Christmas trees not irrigated less than 14 days before harvest	Allowed	Allowed	Allowed	Allowed
Fodder and fiber crops and pasture for animals not producing milk for human consumption	Allowed	Allowed	Allowed	Allowed
Seed crops not eaten by humans	Allowed	Allowed	Allowed	Allowed
Food crops undergoing commercial pathogen-destroying processing before consumption by humans	Allowed	Allowed	Allowed	Allowed
Ornamental nursery stock, sod farms not irrigated less than 14 day before harvest	Allowed	Allowed	Allowed	Allowed
<b><i>Supply for impoundment:</i></b>				
Non-restricted recreational impoundments, with supplemental monitoring for pathogenic organisms	Allowed <sup>3</sup>	Not Allowed	Not Allowed	Not Allowed
Restricted recreational impoundments and publicly-accessible fish hatcheries	Allowed	Allowed	Not Allowed	Not Allowed
Landscape impoundments without decorative fountains	Allowed	Allowed	Allowed	Not Allowed
<b><i>Supply for cooling or air conditioning:</i></b>				
Industrial or commercial cooling or air conditioning involving cooling tower, evaporative condenser, or spraying that creates a mist	Allowed <sup>4</sup>	Not Allowed	Not Allowed	Not Allowed
Industrial or commercial cooling or air conditioning not involving cooling tower, evaporative condenser, or spraying that creates a mist	Allowed	Allowed	Allowed	Not Allowed

# Recycled Water Uses Allowed<sup>1</sup> in California

(continued)

Use of Recycled Water	Treatment Level			
	Disinfected Tertiary Recycled Water	Disinfected Secondary – 2.2 Recycled Water	Disinfected Secondary – 23 Recycled Water	Undisinfected Secondary Recycled Water
<i>Other uses:</i>				
Groundwater recharge	Allowed under special case-by-case permits by RWQCBs <sup>5</sup>			
Flushing toilets and urinals	Allowed	Not Allowed	Not Allowed	Not Allowed
Priming drain traps	Allowed	Not Allowed	Not Allowed	Not Allowed
Industrial process water that may contact workers	Allowed	Not Allowed	Not Allowed	Not Allowed
Structural fire fighting	Allowed	Not Allowed	Not Allowed	Not Allowed
Decorative fountains	Allowed	Not Allowed	Not Allowed	Not Allowed
Commercial laundries	Allowed	Not Allowed	Not Allowed	Not Allowed
Consolidation of backfill material around potable water pipelines	Allowed	Not Allowed	Not Allowed	Not Allowed
Artificial snow making for commercial outdoor uses	Allowed	Not Allowed	Not Allowed	Not Allowed
Commercial car washes, not heating the water, excluding the general public from washing process	Allowed	Not Allowed	Not Allowed	Not Allowed
Industrial process water that will not come into contact with workers	Allowed	Allowed	Allowed	Not Allowed
Industrial boiler feedwater	Allowed	Allowed	Allowed	Not Allowed
Non-structural fire fighting	Allowed	Allowed	Allowed	Not Allowed
Backfill consolidation around non-potable piping	Allowed	Allowed	Allowed	Not Allowed
Soil compaction	Allowed	Allowed	Allowed	Not Allowed
Mixing concrete	Allowed	Allowed	Allowed	Not Allowed
Dust control on roads and streets	Allowed	Allowed	Allowed	Not Allowed
Cleaning roads, sidewalks, and outdoor work areas	Allowed	Allowed	Allowed	Not Allowed
Flushing sanitary sewers	Allowed	Allowed	Allowed	Allowed

This summary is prepared from the December 2, 2000-adopted Title 22 Water Recycling Criteria and supersedes all earlier versions. Prepared by Bahman Sheikh and edited by EBMUD Office of Water Recycling, who acknowledge this is a summary and not the formal version of the regulations referenced above.

<sup>1</sup> Refer to the full text of the December 2, 2000 version of Title 22: California Code of Regulations, Chapter 3 Water Recycling Criteria. This chart is only an informal summary of the uses allowed in this version, with the exception of orchards and vineyards noted as "Not Allowed<sup>2</sup>" on page 1 and explained below.

<sup>2</sup> Per California Department of Public Health letter of January 8, 2003 to California Regional Water Quality Control Boards.

<sup>3</sup> Allowed with "conventional tertiary treatment." Additional monitoring for two years or more is necessary with direct filtration.

<sup>4</sup> Drift eliminators and/or biocides are required if public or employees can be exposed to mist.

<sup>5</sup> Refer to Groundwater Recharge Guidelines, available from the California Department of Public Health.