

# INFORMATIONAL HANDOUT

## WATER QUALITY

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL COAST  
Certification 32708WQ05 December 3, 2008

## PERMITS

COASTAL DEVELOPMENT WAIVER

## AGREEMENTS

CALIFORNIA DEPARTMENT OF FISH AND GAME  
AGREEMENT NO 2008-0228-R4

UNITED STATES ARMY CORPS OF ENGINEERS  
NATIONWIDE PERMIT March 19, 2007 AND REGIONAL CONIDITONS August 24,2007

## MATERIALS INFORMATION

FOUNDATION REPORT  
Dated April 17,2008



# California Regional Water Quality Control Board

## Central Coast Region



Linda Adams  
Secretary for  
Environmental  
Protection

Internet Address: <http://www.waterboards.ca.gov/centralcoast/>  
895 Aerovista Place, Suite 101, San Luis Obispo, California 93401  
Phone (805) 549-3147 • FAX (805) 543-0397

Arnold  
Schwarzenegger  
Governor

December 3, 2008

Karen Bewley  
Department of Transportation  
50 Higuera Street  
San Luis Obispo, CA 93401

Dear Ms. Bewley:

### **WATER QUALITY CERTIFICATION NUMBER 32708WQ05 FOR THE WILLOW SPRINGS CIPP LINER PROJECT, MONTEREY COUNTY**

Thank you for the opportunity to review your September 8, 2008 water quality certification application for the Willow Springs CIPP Liner Project. The application was completed on November 13, 2008. The project proposes to maintain State Route 1 within the project limits through stabilization of a failed slope and will discharge to an unnamed drainage. We have determined the project, including proposed mitigation measures, will comply with water quality standards and other appropriate requirements, as defined by Title 23, Section 3831(v) of the California Code of Regulations. Your application demonstrates: (a) you will take all practicable measures to avoid impacts, (b) where unavoidable temporary impacts take place, you will restore waters and vegetation to pre-project conditions as quickly as practicable, and (c) where unavoidable permanent impacts take place, the project will result in no net loss of wetland, riparian area, or headwater functions, including onsite habitat, habitat connectivity, floodwater retention, and pollutant removal.

The Executive Officer hereby grants water quality certification, subject to the following conditions:

#### **SPECIAL CONDITIONS:**

1. The project shall be carried out as described in the application, including all proposed time schedules.
2. The project area discharge shall not exceed 0.0036 acres.
3. All proposed mitigation, monitoring, and Best Management Practices shall be implemented in the manner and at the time(s) described in the application package.

*California Environmental Protection Agency*



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4. Prior to implementation of any modifications to the project or mitigation measures, the Water Board and other interested agencies shall be notified in writing.
5. The discharge shall not do any of the following: (a) directly or indirectly destabilize a bed of a receiving water, (b) contribute to significant cumulative effects, (c) cause pollution, contamination, or nuisance (as defined by Water Code section 13050), (d) adversely affect candidate, threatened, or endangered species, (e) degrade water quality or beneficial uses, (f) be toxic, (g) include hazardous substances (as defined by Water Code section 13050) or designated waste (as defined by Water Code section 13173).

**STANDARD CONDITIONS:**

1. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to section 13330 of the California Water Code and section 3867 of Title 23 of the California Code of Regulations (23 CCR).
2. This certification action is not intended to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed per to 23 CCR subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license was being sought.
3. The validity of any non-denial certification action shall be conditioned upon total payment of the fee required under 23 CCR section 3833, unless otherwise stated in writing by the certifying agency.
4. In the event of a violation or threatened violation of this certification, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under state law. For purposes of Section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification.
5. In response to a suspected violation of any condition of this certification, the Water Board may require the holder of any permit or license subject to this certification to furnish, under penalty of perjury, any technical or monitoring reports the Water Board deems appropriate, provided that the burden, including costs, of the reports shall have a reasonable relationship to the need for the reports and the benefits obtained from the reports.

Per California Code of Regulations Section 3857, we anticipate no further action on your application. Should new information come to our attention that indicates a water quality problem, we may reassess the conditions of this certification or issue Waste Discharge Requirements.

If you have questions please contact **Tamara Presser at (805) 549-3334** or via email at **[Tpresser@waterboards.ca.gov](mailto:Tpresser@waterboards.ca.gov)**, or Matt Thompson at (805) 549-3159 or via e-mail at **[MThompson@waterboards.ca.gov](mailto:MThompson@waterboards.ca.gov)**. Please mention the above certification number in all future correspondence pertaining to this project.

Sincerely,



 Roger W. Briggs  
Executive Officer

S:\Section 401 Certification\Certifications\Monterey\Willow Springs CIPP Liner.doc

cc:

Mathew W. Vandersande  
U.S. Army Corps of Engineers  
Ventura Office  
Regulatory Section  
2151 Allesandro Drive, Suite 110  
Ventura, CA 93001

U.S. Army Corps of Engineers  
San Francisco District  
Regulatory Section  
1455 Market Street, Floor 17  
San Francisco, CA 94103-1368

California Department of Fish and Game  
Lake and Streambed Alteration  
1234 East Shaw Street  
Fresno, CA 93710

401 Program Manager  
State Water Resources Control Board  
Division of Water Quality  
Water Quality Certification Unit  
1001 "I" Street  
Sacramento, CA 95812-0100

Robert Leidy  
[Leidy.Robert@epamail.epa.gov](mailto:Leidy.Robert@epamail.epa.gov)

**CALIFORNIA COASTAL COMMISSION**

CENTRAL COAST DISTRICT OFFICE  
725 FRONT STREET, SUITE 300  
SANTA CRUZ, CA 95060  
PHONE: (831) 427-4863  
FAX: (831) 427-4877  
WEB: WWW.COASTAL.CA.GOV

**NOTICE OF PERMIT WAIVER EFFECTIVENESS**

**Date:** November 4, 2009  
**To:** Caltrans, District 5, attention: Julie McGuigan  
**From:** Dan Carl, Central Coast District Manager *DC*  
Katie Morange, Coastal Planner  
**Subject:** Coastal Development Permit (CDP) Waiver 3-09-050-W

Please note that CDP Waiver 3-09-050-W was reported to the California Coastal Commission on November 4, 2009 and became effective as of that date. CDP Waiver 3-09-050-W allows for:

Construct a 42-foot long crib wall and replace and reconfigure the deteriorating drainage system along Highway 1 at post mile 12.1 (Willow Creek) in the Big Sur area of unincorporated Monterey County, all as more specifically described in the application files in the Commission's Central Coast District Office.

Please be advised that CDP Waiver 3-09-050-W only authorizes the development as proposed and described in the Commission's files; any changes to the proposed and described project may require a CDP to account for the changes or a CDP for the entire project. If you have any questions, please contact Katie Morange in the Central Coast District Office at the address and phone number above.



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# AGREEMENT

**California Fish and Game Code Section 1602  
Stream Alteration Agreement No. 2008-0228-R4  
California Department of Transportation  
Tributary to the Pacific Ocean – Monterey County  
05-MON-1 PM 12.1 EA 05-0P320**

**Parties:**

**California Department of Fish and Game**  
Central Region  
1234 East Shaw Avenue  
Fresno, California 93710

**California Department of Transportation**  
Karen Bewley  
50 Higuera Street  
San Luis Obispo, California 93401

1 **WHEREAS:**

- 2
- 3 1. Ms. Karen Bewley, representing the California Department of Transportation  
4 (referred to as "Caltrans") on December 3, 2008, notified ("Notification" No. 2008-0228-  
5 R4) the Department of Fish and Game (Department) of their intent to divert or obstruct  
6 the natural flow of, or change the bed or banks of, or use materials from a tributary to  
7 the Pacific Ocean – Monterey County, waters over which the Department asserts  
8 jurisdiction pursuant to Division 2, Chapter 6 of the California Fish and Game Code.  
9
- 10 2. Caltrans may not commence any activity that is subject to Fish and Game Code  
11 Sections 1600 et seq. until the Department has found that such Project shall not  
12 substantially adversely affect an existing fish or wildlife resource or until the  
13 Department's proposals, or the decisions of a panel of arbitrators, have been  
14 incorporated into such projects.  
15
- 16 3. Fish and Game Code Sections 1600 et seq. make provisions for the negotiation of  
17 agreements regarding the delineation and definition of appropriate activities, Project  
18 modifications and/or specific measures necessary to protect fish and wildlife resources.  
19
- 20 4. The Department has determined that without the protective features identified in  
21 this Agreement, the activities proposed in the Notification could substantially adversely  
22 affect fish and wildlife.

Agreement No. 2008-0228-R4  
Department of Transportation  
Tributary to the Pacific Ocean –  
Monterey County

1 **NOW THEREFORE, IT IS AGREED THAT:**

2  
3 1. The receipt of this document ("Agreement"), by Caltrans, satisfies the  
4 Department's requirement to notify Caltrans of the existence of an existing fish and  
5 wildlife resource that may be substantially adversely affected by the Project that is  
6 described in the Notification.

7  
8 2. The contents of this Agreement constitute the Department's proposals as to  
9 measures necessary to protect fish and wildlife resources, and satisfy the Department's  
10 requirement to submit these proposals to Caltrans.

11  
12 3. The signature of Caltrans' representative on this Agreement constitutes Caltrans'  
13 commitment to incorporate the Department's proposals into the Project that is described  
14 in the Notification.

15  
16 4. This Agreement does not exempt Caltrans from complying with all other applicable  
17 local, State and Federal law, or other legal obligations.

18  
19 5. This Agreement, alone, does not constitute or imply the approval or endorsement  
20 of a Project, or of specific Project features, by the Department of Fish and Game,  
21 beyond the Department's limited scope of responsibility, established by Code Sections  
22 1600 et seq. This Agreement does not therefore assure concurrence, by the  
23 Department, with the issuance of permits from this or any other agency. Independent  
24 review and recommendations shall be provided by the Department as appropriate on  
25 those projects where local, State or Federal permits or environmental reports are  
26 required.

27  
28 6. This Agreement does not authorize the "take" (defined in Fish and Game Code  
29 Section 86 as hunt, pursue, catch, capture, kill; or attempt to hunt, pursue, catch,  
30 capture, or kill) of State-listed threatened or endangered species. If the Operator, in the  
31 performance of the agreed work, discovers the presence of a listed species in the  
32 Project work area, work shall stop immediately. Caltrans shall not resume activities  
33 authorized by this Agreement until such time as valid "take" permits are obtained from  
34 the Department pursuant to Fish and Game Code Sections 2081(a) and 2081(b) as  
35 appropriate.

36  
37 7. To the extent that the Provisions of this Agreement provide for the diversion of  
38 water, they are agreed to with the understanding that Caltrans possesses the legal right  
39 to so divert such water.

40  
41 8. To the extent that the Provisions of this Agreement provide for activities that  
42 require Caltrans to trespass on another owner's property, they are agreed to with the  
43 understanding that Caltrans possesses the legal right to so trespass.

Agreement No. 2008-0228-R4  
Department of Transportation  
Tributary to the Pacific Ocean –  
Monterey County

- 1 9. To the extent that the Provisions of this Agreement provide for activities that are  
2 subject to the authority of other public agencies, said activities are agreed to with the  
3 understanding that all appropriate permits and authorizations shall be obtained prior to  
4 commencing agreed activities.  
5
- 6 10. All Provisions of this Agreement remain in force throughout the term of the  
7 Agreement. Any Provision of the Agreement may be amended at any time, provided  
8 such amendment is agreed to in writing by both parties. Mutually approved  
9 amendments become part of the original Agreement and are subject to all previously  
10 negotiated Provisions. The Agreement may be terminated by either party, subject to  
11 30 days written notification.  
12
- 13 11. Caltrans shall provide a copy of the Agreement to the Project supervisors and all  
14 contractors and subcontractors. Copies of the Agreement shall be available at work  
15 sites during all periods of active work and shall be presented to Department personnel  
16 upon demand.  
17
- 18 12. Caltrans agrees to provide the Department access to the Project site at any time to  
19 ensure compliance with the terms, conditions, and Provisions of this Agreement.  
20
- 21 13. Caltrans and any contractor or subcontractor, working on activities covered by this  
22 Agreement, are jointly and separately liable for compliance with the Provisions of this  
23 Agreement. Any violation of the Provisions of this Agreement is cause to stop all work  
24 immediately until the problem is reconciled. Failure to comply with the Provisions and  
25 requirements of this Agreement may result in prosecution.  
26
- 27 14. Caltrans assumes responsibility for the restoration of any fish and wildlife habitat  
28 which may be impaired or damaged either directly or, incidental to the Project, as a  
29 result of failure to properly implement or complete the mitigation features of this  
30 Agreement, or from activities which were not included in the Caltrans' Notification.  
31
- 32 15. It is understood that the Department enters into this Agreement for purposes of  
33 establishing protective features for fish and wildlife, in the event that a Project is  
34 implemented. The decision to proceed with the Project is the sole responsibility of  
35 Caltrans, and is not required by this Agreement. It is agreed that all liability and/or  
36 incurred costs, related to or arising out of Caltrans' Project and the fish and wildlife  
37 protective conditions of this Agreement, remain the sole responsibility of Caltrans.  
38 Caltrans agrees to hold harmless and defend the Department of Fish and Game  
39 against any related claim made by any party or parties for personal injury or other  
40 damage.  
41
- 42 16. The terms, conditions, and Provisions contained herein constitute the limit of  
43 activities agreed to and resolved by this Agreement. The signing of this Agreement  
44 does not imply that Caltrans is precluded from doing other activities at the site.

1 However, activities not specifically agreed to and resolved by this Agreement are  
2 subject to separate notification pursuant to Fish and Game Code Sections 1600 et seq.

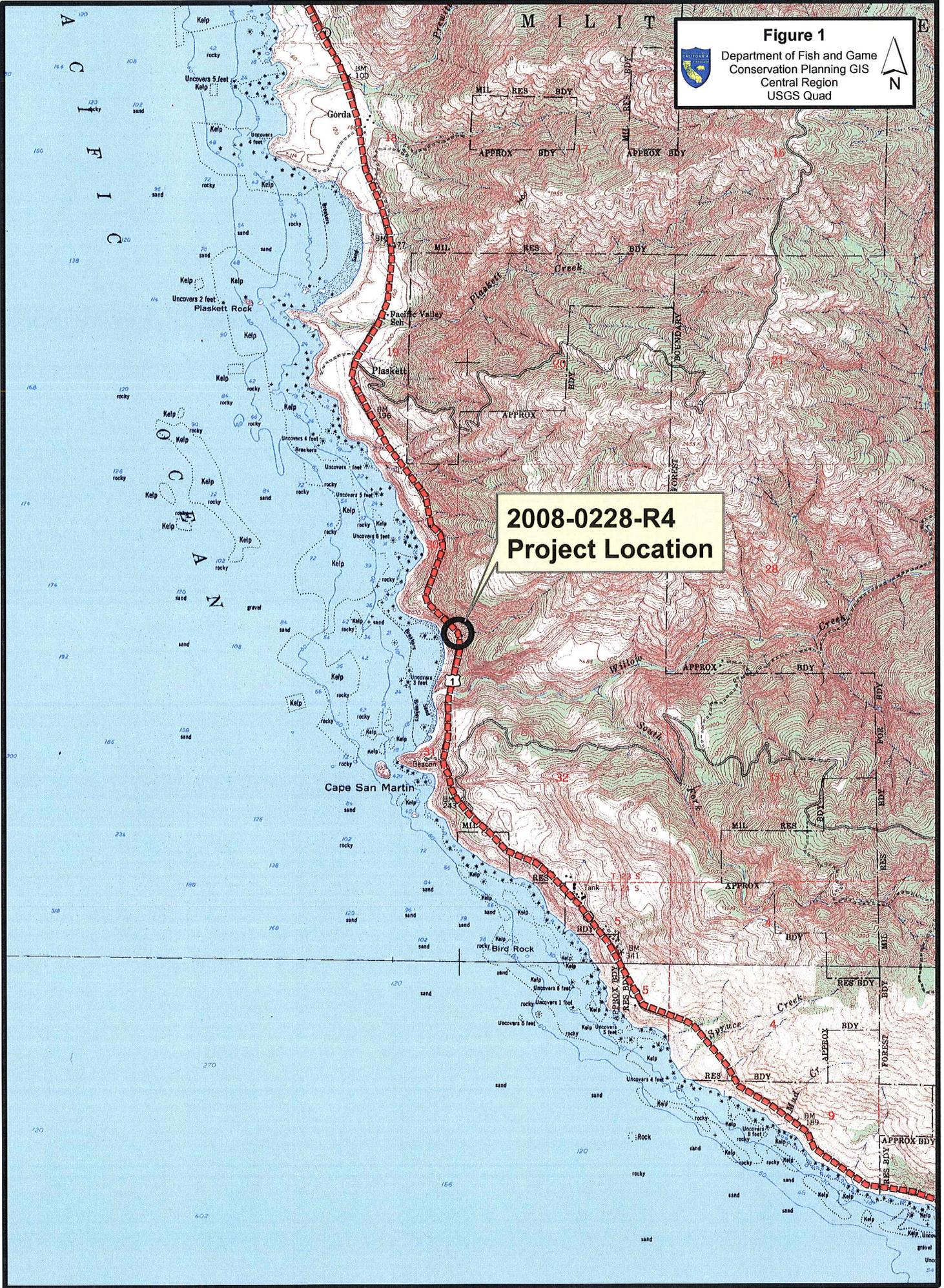
3  
4 **California Environmental Quality Act (CEQA) Compliance:** In approving this  
5 Agreement, the Department is independently required to assess the applicability of  
6 CEQA. The features of this Agreement shall be considered as part of the overall  
7 Project description. Caltrans' concurrence signature on this Agreement serves as  
8 confirmation to the Department that the activities that shall be conducted under the  
9 terms of this Agreement are consistent with the Project described in Notification  
10 No. 2008-0228-R4. Caltrans submitted a Categorical exemption to the State  
11 Clearinghouse on January 11, 2008.

12  
13 **Project Location:** The work authorized by this Agreement will occur adjacent to State  
14 Route (SR) 1, where it crosses the unnamed tributary to the Pacific Ocean,  
15 approximately .3 miles north of Willow Creek and approximately 12 miles north of the  
16 Monterey/San Luis Obispo County line, (**Figure 1**). The Project is located in Section 29  
17 of Township 23 south, Range 5 east.

18  
19 **Project Description:** Caltrans' Notification includes Fish and Game Notification Form  
20 FG2023 and supporting documents. The Notification comprises Caltrans' Project  
21 description, and it is used as the basis for establishing the protective Provisions that are  
22 included in this Agreement. Any changes or additions to the Project as described in the  
23 Notification shall require additional consultation and protective Provisions. The  
24 Department's concurrence with Caltrans' CEQA Determination is based upon Caltrans'  
25 commitment to full implementation of the Provisions of this Agreement. Caltrans has  
26 proposed the following scope of work. The bulleted items comprise the activities  
27 authorized by this Agreement.

- 28
- 29 • The 189 foot long culvert will be lined with a cured in place pipe (CIPP). Once the  
30 CIPP liner is in place it will be treated with steam or hot water to cure it.
  - 31
  - 32 • No heavy equipment will be allowed within the bed or bank of the channel. The  
33 water truck will remain on the road way/road shoulder.
  - 34
  - 35 • There will be no changes to the existing headwalls, the inlet known as either the  
36 Seven Stairs Fountain or Willow Springs Fountain is circa 1937 and has historic  
37 significance. Its masonry (headwall, stone walls, and stairs) will be protected from  
38 construction impacts.
  - 39
  - 40 • This particular location always has water present, so a diversion will be required.

**Figure 1**  
 Department of Fish and Game  
 Conservation Planning GIS  
 Central Region  
 USGS Quad



**2008-0228-R4  
 Project Location**

1 **Plant and Animal Species of Concern:** This Agreement is intended to minimize and  
2 mitigate adverse impacts to the wildlife resources that may occupy this area of the  
3 Tributary to Elkhorn Slough and the immediate adjacent habitat. The following  
4 sensitive plant and wildlife species were revealed to be within the vicinity of the Project  
5 site by a California Natural Diversity Database (CNDDDB) query: Smith's blue butterfly  
6 (*Euphilotes enoptes smithi*), listed as Federally Endangered [Sea cliff buckwheat  
7 (*Eriogonum parvifolium*) is the host plant of the butterfly] and San Luis Obispo sedge  
8 (*Carex obispoensis*) is on the California Native Plant Society (CNPS) list as 1B.2.

9  
10 These species as well as birds, mammals, fish, amphibians, reptiles, invertebrates and  
11 plants that comprise the local ecosystem could be subject to potential Project-related  
12 impacts if the following provisions are not followed.

13  
14 **PROVISIONS:**

15  
16 General

17  
18 1. The Notification, together with all supporting documents, is hereby incorporated  
19 into this Agreement to describe the location and features of the proposed Project.  
20 Caltrans agrees that all work shall be done as described in the Notification and  
21 supporting documents, incorporating all wildlife resource protection features, mitigation  
22 measures, and provisions as described in this Agreement. Caltrans further agrees to  
23 notify the Department of any modifications that need to be made to the Project plans  
24 submitted to the Department. At the discretion of the Department, modifications may  
25 be deemed minor, requiring an amendment to this Agreement, or substantial requiring  
26 the submission of a new notification application. If the later is the case, this Agreement  
27 becomes null and void. Failure to notify the Department of changes to the original  
28 plans or subsequent amendments to this Agreement may result in the Department  
29 suspending or canceling this Agreement.

30  
31 2. Before the start of construction/work activities covered under this Agreement, all  
32 workers shall have received training from Caltrans' staff, or approved alternate trainer,  
33 on the content of this Agreement, the resources at stake, and the legal consequences  
34 of non-compliance.

35  
36 3. When known, prior to beginning work, Caltrans shall provide a construction/work  
37 schedule to the Department (fax to Laura Peterson-Diaz, Environmental Scientist, at  
38 (559) 243-4020). Please reference the Agreement number. Caltrans shall also notify  
39 the Department upon the completion of the activities covered by this Agreement.

40  
41 4. Agreed activities within the bed, bank or channel of the tributary to the Pacific  
42 Ocean may commence any time after the Department has signed this Agreement. This  
43 Agreement shall remain in effect for two (2) years beginning on the date signed by the

Agreement No. 2008-0228-R4  
Department of Transportation  
Tributary to the Pacific Ocean –  
Monterey County

1 Department. If the Project is not completed prior to the expiration date defined above,  
2 Caltrans shall contact the Department to negotiate a new expiration date and any new  
3 requirements.

4  
5 Flagging/Fencing

6  
7 5. Within the riparian corridor, Caltrans shall identify the upstream and downstream  
8 limits of the minimum work area required, access routes, the Project footprint, plus all  
9 Environmentally Sensitive Areas (ESA). These boundaries shall be defined by the  
10 Caltrans' Project engineer and biologist, and flagged/fenced prior to the beginning of  
11 construction. These limits shall not extend beyond Caltrans' right-of-way and/or the  
12 construction easement, and shall be confined to the minimal area needed to  
13 accomplish the proposed work. Flagging/fencing shall be maintained in good repair for  
14 the duration of construction in the area under 1602 jurisdiction.

15  
16 Wildlife

17  
18 6. An approved biologist shall perform general wildlife surveys of the Project area  
19 (including access routes and storage areas) prior to Project construction start with  
20 special attention being paid to the sensitive species noted above and shall report any  
21 possible adverse affect to fish and wildlife resources not originally reported. If the  
22 survey shows presence of any wildlife species which could be impacted, Caltrans shall  
23 contact the Department and mitigation, specific to each incident, shall be developed. If  
24 any State- or Federal-listed Threatened or Endangered species are found within the  
25 proposed work area or could be impacted by the work proposed, a new Agreement may  
26 be necessary and a new CEQA analysis may need to be conducted.

27  
28 7. If work is done between March 1 and September 1, then in order to protect nesting  
29 birds, a USFWS and Department approved biologist shall make a survey for nesting  
30 activity in and adjacent to the defined "work area", before construction begins. If any  
31 nesting activity is observed, which could be disturbed by the proposed scope of work,  
32 Caltrans shall contact the Department and mitigation, specific to each incident, shall be  
33 developed.

34  
35 8. If any wildlife is encountered during the course of construction, said wildlife shall  
36 be allowed to leave the construction area unharmed.

37  
38 Vegetation

39  
40 9. For this Project no trees or shrubs will be removed or impacted as a result of  
41 planned construction activities. Precautions shall be taken to avoid any damage to  
42 vegetation by people or equipment for the duration of the Project.

1 Diversion

2  
3 10. When work in a flowing stream is unavoidable, the entire stream-flow shall be  
4 diverted around the work area. Location of the upstream and downstream diversion  
5 points shall be approved by the Department. Flow at the upstream end shall be  
6 diverted only when construction of the entire diversion including the downstream end is  
7 completed. The culvert shall be removed when the work is completed and the original  
8 low-flow channel shall be restored to pre-existing elevations, gradients, and contours.

9  
10 11. If it is necessary to divert flow around the work site, either by pump or by gravity  
11 flow, the suction end of the intake pipe shall be fitted with fish screens meeting  
12 Department and National Marine Fisheries Service (NMFS) criteria to prevent  
13 entrainment or impingement of small fish. Any turbid water pumped from the work site  
14 itself to maintain it in a dewatered state shall be placed in a settling pool to allow the  
15 sediment to drop out. Once the water is clear, it shall be returned to the stream bed  
16 below the culvert to maintain water flow.

17  
18 Vehicles

19  
20 12. Construction vehicles and equipment will not need access to the channel during  
21 the course of the Project. Work in the bed will only be done when the channel is dry or  
22 after the Department approved diversion is in place. All other areas adjacent to the  
23 work site shall be considered an ESA and shall remain off-limits to construction  
24 equipment.

25  
26 Pollution

27  
28 13. Caltrans and all contractors and subcontractors shall be subject to the pollution  
29 protective and other features of Department of Transportation Standard Specifications  
30 Section 7-1.01G and Fish and Game Code Sections 5650 and 12015. In addition, all  
31 Project-generated debris, building materials, and rubbish shall be removed from the  
32 river and from areas where such materials could be washed into it.

33  
34 14. If hot water is used to cure the culvert liners, the water shall either be transported  
35 off-site once the curing procedure is complete, or provided the water is still free of  
36 chemicals or other pollutants, it shall be allowed to cool before being released into the  
37 environment.

38  
39 15. Staging and storage areas for equipment, materials, fuels, lubricants, and solvents  
40 shall be located outside of the stream channel and banks. Any equipment or vehicles  
41 driven and/or operated within or adjacent to the stream shall be checked and  
42 maintained daily to prevent leaks of materials that, if introduced to water, could be

1 deleterious to aquatic life. If a spill should occur, cleanup shall begin immediately. The  
2 Department shall be notified as soon as possible by Caltrans and shall be consulted  
3 regarding further cleanup procedures.

4  
5 16. Raw cement, concrete or washings thereof, asphalt, paint or other coating  
6 material, oil or other petroleum products, or any other substances which could be  
7 hazardous to fish or wildlife resulting from Project-related activities, shall be prevented  
8 from entering the "Waters of the State" and/or contaminating the soil. Use of sacked  
9 concrete, asphalt pieces or asphalt containing pavement grindings on the  
10 embankments is prohibited.

11  
12 Erosion

13  
14 17. All disturbed soils shall be stabilized to reduce erosion potential, both during and  
15 following construction. Erosion control Best Management Practices (BMP's) shall be  
16 applied to all disturbed areas.

17  
18 Fill/Spoil

19  
20 18. Rock, gravel, and/or other materials shall not be imported into or moved within the  
21 stream, except as otherwise addressed in this Agreement. Only on-site materials and  
22 clean imported fill shall be used to complete the Project.

23  
24 19. Fill shall be limited to the minimal amount necessary to accomplish the agreed  
25 activities. Excess fill material shall be moved off-site at Project completion.

26  
27 Restoration

28  
29 20. Excess material must be removed from the Project site pursuant to Department of  
30 Transportation Standard Specifications Section 7-1.13.

31  
32 21. Caltrans shall make the final contour of the site match the adjacent slope of the  
33 land and provide the appropriate surface water drainage. All areas subject to  
34 temporary ground disturbance, including storage and staging areas, temporary roads,  
35 pipeline corridors, etc., shall be recontoured, if necessary, and revegetated to promote  
36 restoration of the area.

37  
38 22. All areas subject to ground disturbance on the bank shall be stabilized. Planting,  
39 seeding with native species, and mulching is conditionally acceptable. Where suitable  
40 vegetation cannot reasonably be expected to become established, non-erodible  
41 material shall be used for such stabilization. Any installation of non-erodible material,  
42 not included in the original Project description, shall be coordinated with the  
43 Department. Coordination may include the negotiation of additional Agreement  
44 provisions for this activity.

1 **MONITORING AND REPORTING PROGRAM (MRP):**

2  
3 PURPOSE

4  
5 The purpose of the MRP is to ensure that the protective measures required by the  
6 Department are properly implemented, and to monitor the effectiveness of those  
7 measures.

8  
9 OBLIGATIONS OF THE OPERATOR

10  
11 Caltrans shall have primary responsibility for monitoring compliance with all protective  
12 measures included as "Provisions" in this Agreement. Protective measures must be  
13 implemented within the time periods indicated in the Agreement and the program  
14 described below.

15  
16 Caltrans shall submit the following Reports to the Department:

- 17  
18 • Verification of employee training (Provision 2).  
19  
20 • Construction/work schedule (Provision 3).  
21  
22 • Wildlife survey results (Provisions 6 and 7).  
23  
24 • Diversion Plan (if a diversion is required) (Provision 10).  
25  
26 • A Final Project Report submitted within 30 days after the Project is completed.  
27 The final report shall summarize the Project construction, including any problems  
28 relating to the protective measures of this Agreement. "Before and After" photo  
29 documentation of the Project site shall be required.  
30

31 In addition to the above monitoring and reporting requirements, the Department  
32 requires as part of this MRP that Caltrans:

- 33  
34 • Immediately notify the Department in writing if monitoring reveals that any of the  
35 protective measures were not implemented during the period indicated in this  
36 program, or if it anticipates that measures will not be implemented within the time  
37 period specified.  
38  
39 • Immediately notify the Department if any of the protective measures are not  
40 providing the level of protection that is appropriate for the impact that is occurring,  
41 and recommendations, if any, for alternative protective measures.  
42

43 **VERIFICATION OF COMPLIANCE:**

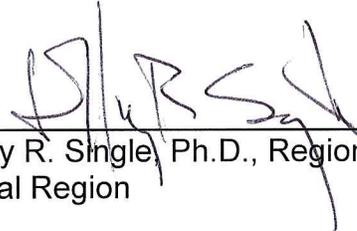
44  
45 The Department shall verify compliance with protective measures to ensure the  
46 accuracy of Caltrans' monitoring and reporting efforts. The Department may, at its sole  
47 discretion, review relevant Project documents maintained by Caltrans, interview  
48 Caltrans' employees and agents, inspect the Project area, and take other actions to  
49 assess compliance with or effectiveness of protective measures for the Project.

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**CONCURRENCE:**

**APPROVED BY THE CALIFORNIA DEPARTMENT OF FISH AND GAME**

on 2-10, 2009.

  
\_\_\_\_\_  
Jeffrey R. Single, Ph.D., Regional Manager  
Central Region

**ACKNOWLEDGMENT**

The undersigned acknowledges receipt of this Agreement and, by signing, accepts and agrees to comply with all terms and conditions contained herein. The undersigned also acknowledges that adequate funding shall be made available to implement the measures required by this Agreement.

By:   
\_\_\_\_\_  
California Department of Transportation

Date: 1/27/2009



U S Army Corps Engineers  
San Francisco District

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## 33 CFR Part 330; Issuance of Nationwide Permits March 19, 2007 and regional conditions August 24, 2007

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### 3. Maintenance.

(a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This NWP authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

(b) This NWP also authorizes the removal of accumulated sediments and debris in the vicinity of and within existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.) and the placement of new or additional riprap to protect the structure. The removal of sediment is limited to the minimum necessary to restore the waterway in the immediate vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend further than 200 feet in any direction from the structure. This 200-foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments from canals associated with outfall and intake structures. All dredged or excavated materials must be deposited and retained in an upland area unless otherwise specifically approved by the district engineer under separate authorization. The placement of riprap must be the minimum necessary

to protect the structure or to ensure the safety of the structure. Any bank stabilization measures not directly associated with the structure will require a separate authorization from the district engineer.

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

(d) This NWP does not authorize maintenance dredging for the primary purpose of navigation or beach restoration. This NWP does not authorize new stream channelization or stream relocation projects.

**Notification:** For activities authorized by paragraph (b) of this NWP, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 27). Where maintenance dredging is proposed, the pre-construction notification must include information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals. (Sections 10 and 404)

*Note:* This NWP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act Section 404(f) exemption for maintenance.

#### 1. Navigation.

(a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the

permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

**2. Aquatic Life Movements.** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

**3. Spawning Areas.** Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

**4. Migratory Bird Breeding Areas.** Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

**5. Shellfish Beds.** No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4 and 48.

**6. Suitable Material.** No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

**7. Water Supply Intakes.** No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

**8. Adverse Effects From Impoundments.** If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

**9. Management of Water Flows.** To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management

activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

**10. Fills Within 100-Year Floodplains.** The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

**11. Equipment.** Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

**12. Soil Erosion and Sediment Controls.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

**13. Removal of Temporary Fills.** Temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The affected areas must be revegetated, as appropriate.

**14. Proper Maintenance.** Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety.

**15. Wild and Scenic Rivers.** No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

**16. Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

**17. Endangered Species.**

(a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely

modify the critical habitat of such species. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees shall notify the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the preconstruction notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete preconstruction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have “no effect” on listed species or critical habitat, or until Section 7 consultation has been completed.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the U.S. FWS or the NMFS, both lethal and nonlethal “takes” of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or

their world wide Web pages at <http://www.fws.gov/> and <http://www.noaa.gov/fisheries.html> respectively.

## **18. Historic Properties.**

(a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees must submit a preconstruction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the preconstruction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt

of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, explaining the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

**19. Designated Critical Resource Waters.** Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the district engineer after notice and opportunity for public comment. The district engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NHPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, and 50 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NHPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition

27, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NHPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

**20. Mitigation.** The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10 acre and require pre-construction notification, unless the district engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project specific waiver of this requirement. For wetland losses of 1/10 acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream restoration, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NHPs. For example, if an NHP has an acreage limit of 1/2 acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2 acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters.

However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage

limits also satisfies the minimal impact requirement associated with the NWP.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

**21. Water Quality. Where** States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

**22. Coastal Zone Management.** In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may

require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

**23. Regional and Case-By-Case Conditions.** The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

**24. Use of Multiple Nationwide Permits.** The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

**25. Transfer of Nationwide Permit Verifications.** If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

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(Transferee)  
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(Date)

**26. Compliance Certification.** Each permittee who received a NWP verification from the Corps must submit a signed certification regarding the completed work and any required mitigation. The certification form must be forwarded by the Corps with the NWP verification letter and will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general or specific conditions;

(b) A statement that any required mitigation was completed in accordance with the permit conditions; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

## **27. Pre-Construction Notification.**

(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, as a general rule, will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) Forty-five calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 17 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 18 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) is completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee cannot begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within

45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided result in a quicker decision.);

(4) The PCN must include a delineation of special aquatic sites and other waters of the United States on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters of the United States, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, where appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10 acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the

name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWP and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP 48 activities requiring preconstruction notification and for other NWP activities requiring pre-construction notification to the district engineer that result in the loss of greater than 1/2-acre of waters of the United States, the district engineer will immediately provide (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy of the PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic

Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the district engineer

will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each preconstruction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps multiple copies of pre-construction notifications to expedite agency coordination.

(5) For NWP 48 activities that require reporting, the district engineer will provide a copy of each report within 10 calendar days of receipt to the appropriate regional office of the NMFS.

(e) In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If the proposed activity requires a PCN and will result in a loss of greater than 1/10 acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. The compensatory mitigation proposal may be either conceptual or

detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any conditions the district engineer deems necessary. The district engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP. If the district engineer determines that the adverse effects of the proposed work are more than

minimal, then the district engineer will notify the applicant either: (1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (3) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan.

**28. Single and Complete Project.** The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

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

*Flex your power!  
Be energy efficient!*

To: JOHN FOUCHE  
Design Office II  
Central Region – Project Development Division

Date: April 17, 2008

Attn: Mark Leichtfuss

File: 05-Mon-001-12.1  
05-0P3200  
Repair Embankment

From: **DEPARTMENT OF TRANSPORTATION  
DIVISION OF ENGINEERING SERVICES  
GEOTECHNICAL SERVICES**

Subject: Foundation Report

**Introduction**

This report presents the results of the geotechnical and geologic investigation for the repair of the embankment on the south end of Abutment 1 at the Willow Sidehill Viaduct (Br. No. 44-245) at the above referenced location. This report is based upon a field review of the site, As-built plans of the Willow Creek Viaduct, as well as a review of published reports and maps.

The purpose of this project is to mitigate the erosion of the embankment which has undermined the guardrail and left a steep erosional scar. Rock slope protection was placed in the area to mitigate the site but slope geometry and soil conditions did not enable the design to perform as planned. As a result a battered reinforced concrete crib wall is recommended for this location. A wall approximately 42 feet long along the wall layout line from station 18+33 to 17+75 is proposed. The maximum design height is approximately 20 feet. A crib wall will mitigate the erosion and re-establish the southbound shoulder.

### **Pertinent Reports and Investigations**

The following publications were reviewed to assist in the assessment of site conditions:

1. *California Seismic Hazard Map 1995*, Caltrans, Lalliana Mualchin, 1995.
2. *District Preliminary Geotechnical Report*, 05-Mon-001-12.1, Michael S. Finegan, EA 05-0P3200, December 7, 2007.

### **Physical Setting**

The project area is located adjacent to the coastline within the Santa Lucia Mountain Range in the Coast Ranges Geomorphic Province of central California. The area is characterized by its rugged, steep terrain with steeply incised drainages. The main drainage in the area, Willow Creek, flows year round from the crest of the Coast Range ridge.

The climate is mild with summer temperatures in the 60's and winter temperatures in the 50's. The area typically receives heavy rains in the winter months with 40 to 60 inches annually.

### **Geology**

The formation units in the area are the Franciscan Series (KJfv & KJf) and colluvium. The Franciscan Series rock encountered in the geotechnical borings primarily consists of fractured schist and meta-sandstone similar rock is exposed in the cut slope above the site indicating a relatively broad extent of the formation type. The bedrock is overlain unconformably by colluvium which is comprised of true colluvial soils, disposal material, and imported fill.

### **Seismicity and Liquefaction**

The fault having the greatest potential to affect the project area is the Sur-Arroyo Laguna-San Simeon Fault, a strike-slip fault located offshore, approximately 2.7 kilometers (1.7 Miles) west of the project site. The maximum credible Moment Magnitude for an earthquake on the Sur-Arroyo Laguna-San Simeon Fault, as determined by Caltrans, is 7.50. According to the Caltrans-adopted Mualchin peak acceleration curves, at a distance of 2.7 kilometers from the fault, the maximum credible bedrock acceleration in the vicinity of the project due to an earthquake along the Sur-Arroyo Laguna-San Simeon Fault is 0.7g (gravity).

Liquefaction potential under existing soil and ground water conditions is low.

### Geotechnical Investigation

An investigation including field mapping, inspection of aerial oblique photography, and subsurface sampling was performed for this project. Two rotary borings were performed in the southbound lanes to define subsurface soil and rock conditions and strength parameters. Standard penetration tests and diamond coring techniques were used in all of the borings.

The contact between the colluvium/fill/disposal material and underlying bedrock was mapped below Highway 1 and is shown on Table 1. The mapped rock exposures were primarily meta-sediments with bedding features and varying degrees of schist and phyllitic textures. Occasional inclusions of meta-sandstone (greywacke) are found within the medi-sedimentary unit.

The subsurface borings encountered, from 12 inches to 13 feet, of medium dense clayey sand with gravel, clayey sand with gravel (colluvium) overlying Franciscan formation bedrock. The Franciscan formation bedrock consisted of intensely to moderately fractured, meta-sediments that ranged from extremely hard to very soft, and fresh to decomposed.

Table 1: Depth to Bedrock

Station	Depth to Bedrock (Feet)
18+33	11.5
18+40	10.0
18+45	9.0
18+50	8.0
18+55	7.0
18+60	6.0
18+65	5.0
18+70	4.0
18+75	3.0

Difficult drilling conditions were encountered in all borings. The very intensely fractured to moderately fractured rock blocked off quite often in the core barrel, resulting in short core runs. Frequent drilling fluid circulation losses into the rock fractures were also encountered during the drilling. This indicates that the fractures are continuously connecting with others in the vicinity.

## FOUNDATION REPORT

April 17, 2008

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Ground water was not measured during this investigation and is considered not occurring in the foundation materials. However, several seasonal springs were evident in the slopes both above and below the roadway.

### Corrosion

Similar Franciscan formation soil samples from the Hermitage Tieback Wall project at PM 22.0 were submitted to the District 5 Materials Laboratory for pH and resistivity testing. These samples are considered representative of the formation soils at this project location. The samples had a minimum resistivity greater than 1000 ohm-centimeters and a pH greater than 5.5. Based on the results of the corrosion analyses, the site is considered non-corrosive for foundation elements.

The proposed crib wall is located within 300 meters of the Pacific Ocean. The Department considers a structure located within this distance to be exposed to marine atmosphere. Corrosion mitigation for portions of the structure exposed to the marine atmosphere is needed.

### Geotechnical Conditions

Rock and soil strength parameters and ground water conditions to be used in the analysis of the crib wall are based upon Standard Penetration Test (SPT) and rock mass rating criteria correlations and observed spring locations. The SPT and rock mass rating correlations are used to determine the friction angle of cohesionless soil and bedrock based on driving resistance and material type.

The following are the strength parameters were used for the design of the battered crib wall:

Colluvium: Friction Angle = 33°, Cohesion = 0.2 ksi, Unit Weight = 119 pcf

Franciscan Bedrock: Friction Angle = 38°, Cohesion = 0.5 ksi, Unit Weight = 126 pcf

The Franciscan Formation bedrock has heterogeneous mechanical properties and is generally soft with numerous zones that are moderately hard. Unconfined compressive strengths are estimated to be approximately 500 psi.

**Geotechnical Analysis and Design**

Based on the field mapping of the slopes above and below the highway and the boring data, it is concluded that the contact between the overlying colluvial materials and the meta-sedimentary bedrock dips south along the highway alignment. The meta-sedimentary rocks are present on the slopes above the highway and were encountered in the geotechnical borings. There is no evidence of global instability. The erosional feature is considered local and confined to the colluvial material. XSTABL, a limit equilibrium slope stability simulation computer model was used to evaluate slope stability for the existing condition and for the site configuration with a battered crib wall. The results from this study indicate that the slope will be stable with the crib wall and a 0.2 bedrock acceleration from the design earthquake (Figure 1).

WILLOW1 4-17-08 9:36

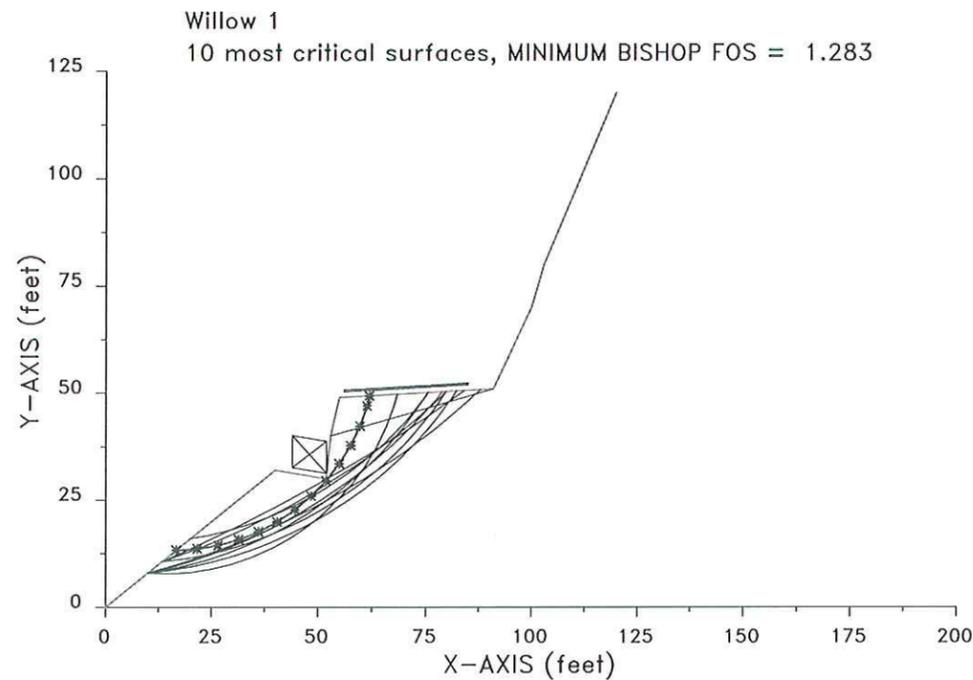


Figure 1: XSTABL slope stability analysis results showing the critical failure surface and the global stability factor of safety.

### **Foundation Recommendations**

A crib wall located on average 15 feet left of centerline is proposed from approximately station 18+38 to 18+75.0. A 2 foot wide bench from the base of the footing to the edge of the slope in front of the wall and a 2:1 bench back slope above the wall is recommended.

An ultimate bearing capacity for the colluvium of 15 ksf with an allowable bearing capacity of 5 ksf and for the bedrock of 18 ksf with an allowable bearing capacity of 6 ksf is recommended for foundation design. Footing elevations are expected to be in colluvium from 18+38 to 18+44 and in bedrock from station 18+44 to 18+75.

### **Construction Considerations**

Moderate drilling conditions were encountered during all of the geotechnical borings. The Franciscan Formation encountered consisted of intensely to moderately fractured, schist, phyllite and metatarsal that ranged from extremely hard to very soft, and fresh to decomposed. Excavation characteristics of the materials are classified as rippable with easy to moderate ripping.

Due to difficultly compacted material inside the crib members Backfill Material Type E is recommended per Standard Specification 19-3.06.

Ground water is not expected. However seasonal springs may develop but are not expected to affect construction excavation.

Standard Special Provision S5-280, "Project Information", discloses to bidders and contractors a list of pertinent information available for their inspection prior to bid opening. The following is an excerpt from SSP S5-280 disclosing information originating from Geotechnical Services. Items listed to be included in the Information Handout will be provided in Acrobat (.pdf) format to the Addressee of this report via electronic mail.

Data and information included in the Information Handout provided to the Bidders and Contractors are:

- A. Foundation Report for the Willow Creek Crib Wall dated April 17, 2008.

Data and information available for inspection at the District Office:

- A. Borehole Core Samples.

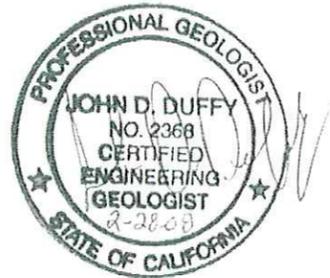
FOUNDATION REPORT

April 17, 2008

Page 7

The District Office is located at 50 Higuera Street, San Luis Obispo, California, 93401.

If you have any questions or comments, please contact John Duffy at 805-550-4670 or Mike Finegan at (805) 549-3194 (CalNet: 629-3194).



JOHN D DUFFY  
Senior Engineering Geologist  
Geotechnical Design – North  
Branch D

c: Roy Bibbens / GDN Records  
GS Records  
Job File / Branch D Records

## LIST OF ATTACHMENTS

Location Map	Attachment A
Layout	Attachment B
Typical Cross Section	Attachment C
Geologic Map	Attachment D
Seismic Hazard Map	Attachment E
Log of Test Borings	Attachment F

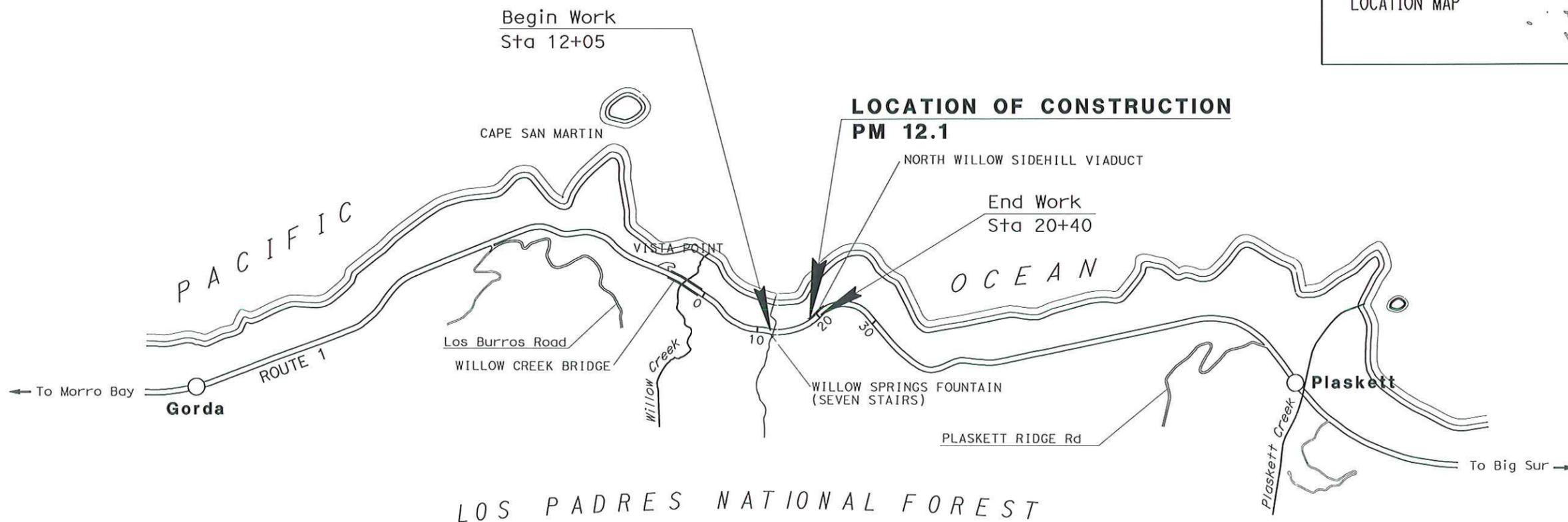
STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**PROJECT PLANS FOR CONSTRUCTION ON  
 STATE HIGHWAY**  
 IN MONTEREY COUNTY  
 NEAR GORDA  
**AT NORTH WILLOW SIDEHILL VIADUCT**

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Mon	1	12.1		

LOCATION MAP



NO SCALE

## ATTACHMENT A

PROJECT MANAGER  
**KEN DOSTALEK**  
 DESIGN ENGINEER  
**MARK S LEICHTFUSS**

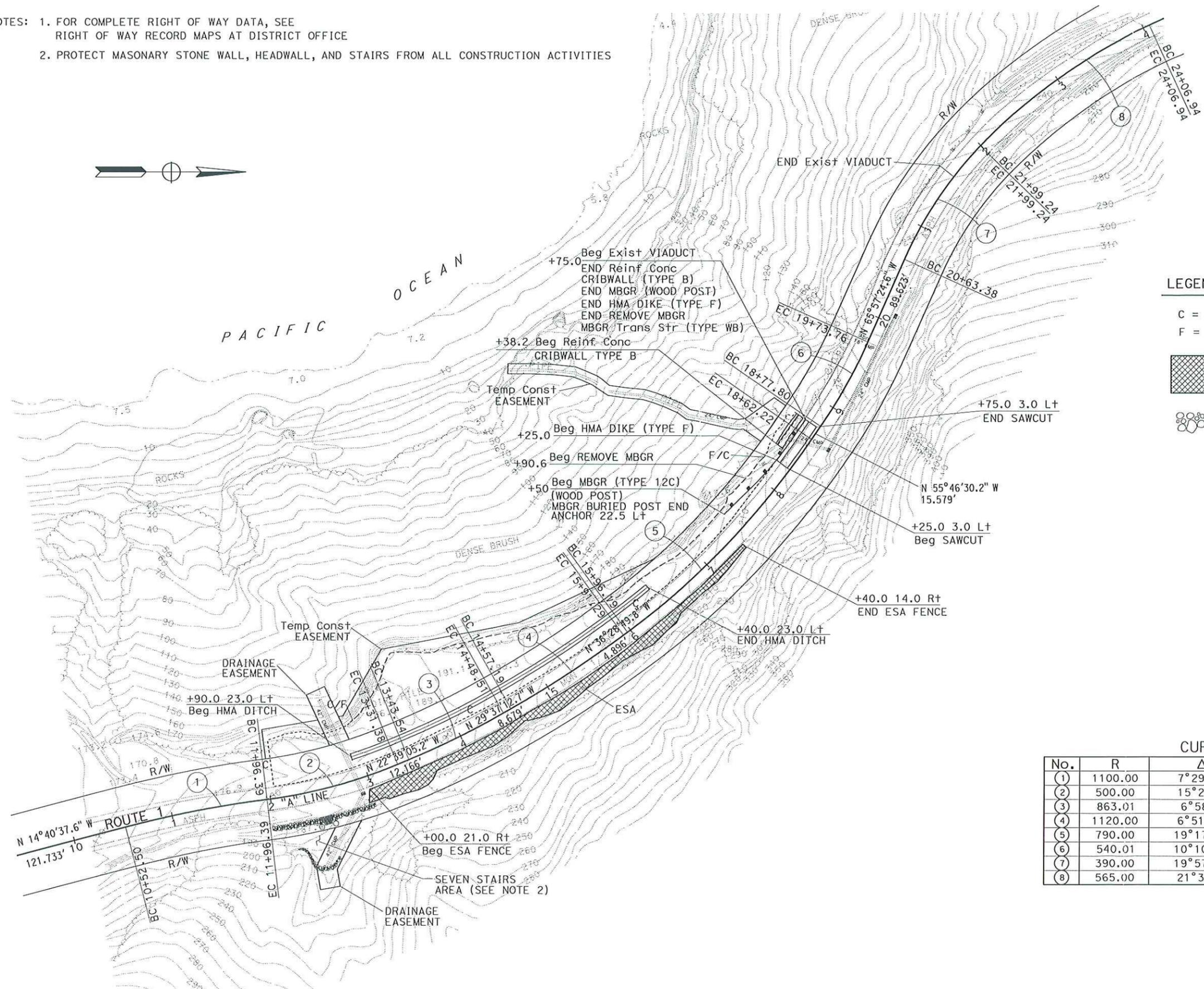
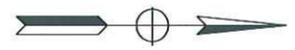
THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO CONTRACTORS."

CONTRACT No. **05-0P3204**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Mon	1	12.1		
REGISTERED CIVIL ENGINEER DATE					
PLANS APPROVAL DATE					
<small>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.</small>					



NOTES: 1. FOR COMPLETE RIGHT OF WAY DATA, SEE RIGHT OF WAY RECORD MAPS AT DISTRICT OFFICE  
 2. PROTECT MASONARY STONE WALL, HEADWALL, AND STAIRS FROM ALL CONSTRUCTION ACTIVITIES



**LEGEND**

C = CUT  
 F = FILL

ENVIRONMENTAL SENSITIVE AREA (ESA)

EXIST MASONARY STONE

**CURVE DATA**

No.	R	Δ	T	L
①	1100.00	7°29'40"	72.04	143.88
②	500.00	15°28'7"	67.91	134.99
③	863.01	6°58'7"	52.55	104.96
④	1120.00	6°51'37"	67.13	134.10
⑤	790.00	19°17'40"	134.29	266.04
⑥	540.01	10°10'54"	48.11	95.96
⑦	390.00	19°57'32"	68.62	135.86
⑧	565.00	21°3'44"	105.03	207.70

**ATTACHMENT B  
 LAYOUT**  
 SCALE 1" = 50'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN

REVISIONS: (Grid with 'x' marks for revision tracking)

REVISOR: MARK LEICHTFUSS  
 DATE: AMUED HATTINI

DESIGNER: RON KRAEMER

CHECKED BY: [Blank]

DESIGNED BY: [Blank]

DATE: [Blank]

REVISION: [Blank]

DATE: [Blank]

LAST REVISION: DATE PLOTTED => 01-OCT-2008  
 08-12-08 TIME PLOTTED => 14:53





Plate 1  
 Map 3 of 14  
 Highway Corridor Geologic Map  
 USGS Quads: Villa Creek & Cape San Martin

 <p>CALTRANS          Division of Engineering Services          Geotechnical Services          Office of Geotechnical Design          North</p>	EA: 05-0P3200	<p><b>Geologic Map</b>  <b>Willow Creek Crib Wall</b></p>	
	Date: April 2008		
	<p><b>05-MON-01-PM12.1</b>  <b>GEOTECHNICAL DESIGN REPORT</b></p>		Attachment D

# PLATE 1 EXPLANATION

## Geology of the Highway 1 corridor between Point Lobos and San Carpoforo Creek, Monterey and San Luis Obispo Counties, California

prepared for the  
COAST HIGHWAY MANAGEMENT PLAN

by  
C.J. Wills, M.W. Manson, K.D. Brown, C.W. Davenport, and C.J. Domrose  
California Department of Conservation  
Division of Mines and Geology



### Location Information

The geologic map is divided into 14 map pages as shown at left, arranged from south to north. Postmiles are shown along Highway One as at right, each mile is labeled and tenths shown by unlabeled circles.



Geologic Units	Geologic Units		
	Symbol	Description	
Quaternary	af	Artificial fill	
	Qal	Alluvium	
	Qb	Beach deposits	
	Qc	Colluvium	
	Qdf	Youngest (active) debris fans	
	Qd	Dune deposits	
	Qls	Landslide deposits	
	Qudf	Young debris fans	
	Qodf	Older debris fans	
	Qoa	Older alluvium	
Pleistocene	Qod	Older dune deposits	
	Qom	Marine terrace deposit, undifferentiated	
	Qom2	Youngest marine terrace deposit	
	Qom1	Older marine terrace deposit	
	Qfb	Fault breccia	
	Qvoa	Very old alluvium	
	Tertiary	Tmpe	Pismo Formation, Edna member
		Tmpm	Pismo Formation, Miguelito member
		Tmr	Rincon Formation
		Tm	Monterey Formation
Tss, Tus		unnamed Miocene marine sandstone of Clark and others	
Tv, Tvb		unnamed Miocene volcanic rocks of Clark and others	
Tmv		Vaqueros Formation	
Mesozoic		Tc	Carmelo Formation
		Ks, Ku	sandstone & shale
		Kush	shale
	Kuss	sandstone	
	Kucg	conglomerate	
	Kuf	Franciscan Complex (undifferentiated)	
	KJgw	Franciscan graywacke	
	KJfmv	Franciscan meta-volcanic rocks	
	KJfc	Franciscan chert	
	KJgp	Franciscan greenschist	
Paleozoic?	KJmg	Franciscan altered gabbro	
	KJsh	Franciscan shale	
	KJsg	Franciscan Complex conglomerate	
	KJsc	Franciscan Complex silica carbonate rocks	
	KJbs	Franciscan blueschist	
	s	Serpentinite	
	Kpgd	Porphyritic granodiorite	
	KMgdc	Granodiorite of Cachagua	
	KMdsp	Hornblende-biotite quartz diorite	
	KMct	Charnockitic tonalite	
KMt	Charnockitic tonalite equivalent?		
Ps	Sur complex undifferentiated		
Pm	Sur complex marble		
Pq	Sur complex quartz dike		

### Geologic structure symbols

	Fault approximate
	Fault certain
	Fault concealed
	Fault offshore
	Fault queried
	Thrust fault certain
	Thrust fault approximate
	Thrust fault concealed
	Anticline approximate
	Anticline concealed
	Syncline approximate
	Syncline concealed
	Overturned anticline approximate
	Overturned syncline approximate
	inclined beds
	inclined beds, approximate
	vertical beds
	overturned beds
	irregular bedding
	inclined foliation
	vertical foliation
	deformed foliation
	inclined foliation/beds
	fault contact
	fault contact vertical
	inclined joint



**CALTRANS**  
Division of Engineering Services  
Geotechnical Services  
Office of Geotechnical Design  
North

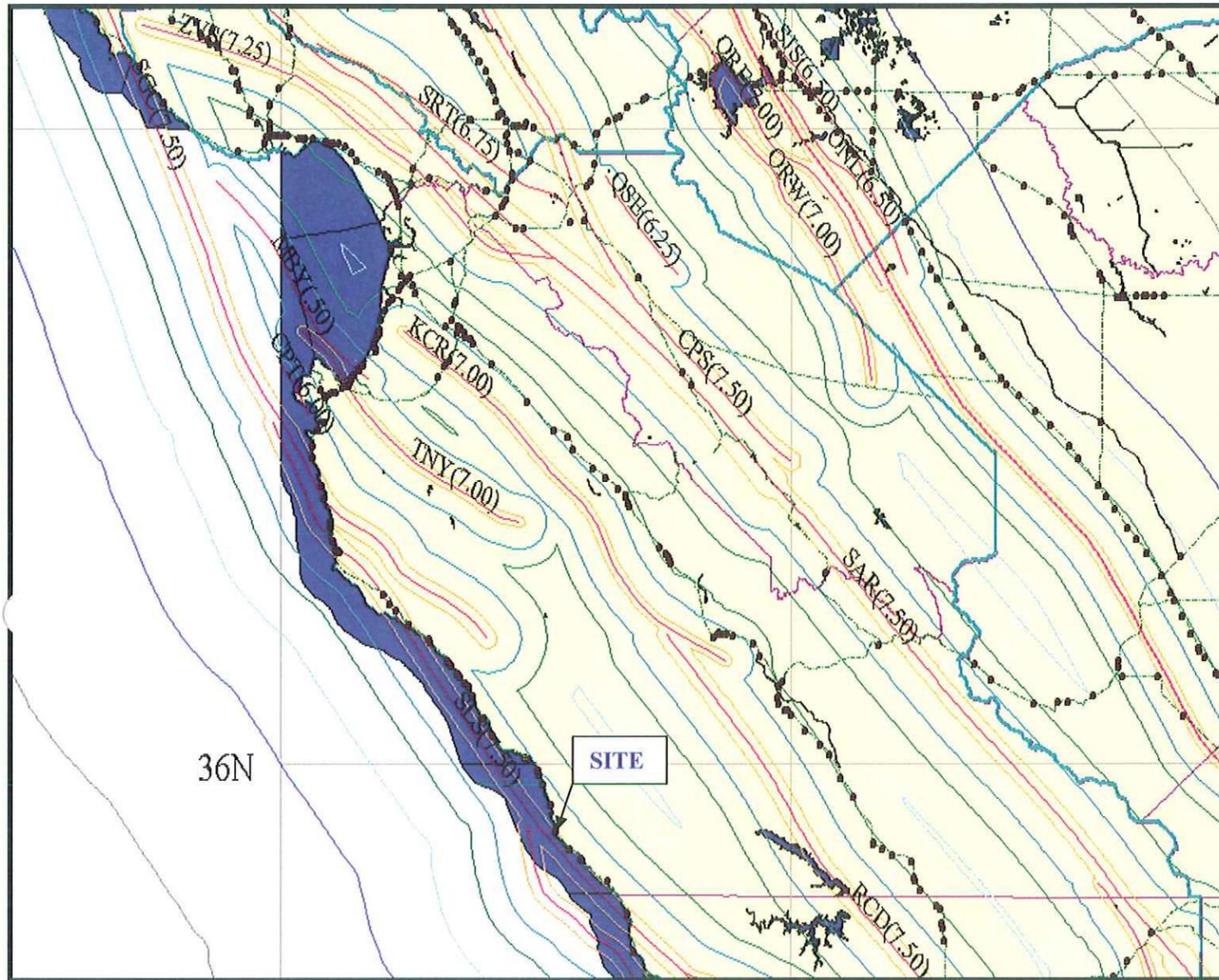
EA: 05-0P3200

Date: April 2008

### Geologic Map Legend Willow Creek Crib Wall

**05-MON-01-PM12.1**  
GEOTECHNICAL DESIGN REPORT

Attachment  
D



CALTRANS  
 Division of Engineering Services  
 Geotechnical Services  
 Office of Geotechnical Design  
 North

EA: 05-0P3200

Date: April 2008

**Seismic Hazard Map**  
**Willow Creek Crib Wall**

**05-MON-01-PM12.1**  
**GEOTECHNICAL DESIGN REPORT**

Attachment  
 E

CALTRANS ...ING RECORD MET+ENG FIXED MON-1-12.1 GINT.GPJ CALTRANS LIBRARY 040808.GLB 6/17/08

LOGGED BY <b>Hoon</b>	BEGIN DATE <b>4-2-08</b>	COMPLETION DATE <b>4-2-08</b>	BOREHOLE LOCATION (Lat/Long or North/East and Datum) <b>NAD83</b>	HOLE ID <b>R-08-001</b>
DRILLING CONTRACTOR <b>Caltrans</b>	BOREHOLE LOCATION (Offset, Station, Line) <b>~ 8' Rt Sta ~ 18+25.0</b>		SURFACE ELEVATION <b>~214 ft NAVD 88</b>	
DRILLING METHOD <b>Rotary Wash</b>	DRILL RIG <b>Acker MP-8</b>		BOREHOLE DIAMETER <b>3.7 in</b>	
SAMPLER TYPE(S) AND SIZE(S) (ID) <b>SPT, HQ Rock Core</b>	SPT HAMMER TYPE <b>Automatic</b>		HAMMER EFFICIENCY, ERI <b>74%</b>	
BOREHOLE BACKFILL AND COMPLETION <b>Bentonite Chips and AC</b>	GROUNDWATER DURING DRILLING READINGS <b>Dry</b>	AFTER DRILLING (DATE) <b>Dry</b>	TOTAL DEPTH OF BORING <b>40.0 ft</b>	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
212.00	1		CLAYEY SAND (SC); moist; little fine, angular GRAVEL; mostly coarse to fine SAND; little fines [FILL].		c1										
210.00	4		Well-graded SAND with SILT (SW-SM); medium dense; light yellowish brown; moist; few fine, angular GRAVEL; mostly coarse to fine SAND; few fines [FILL].												
208.00	5				1	9	19								
	6					10									
	9					9									
206.00	7		METAMORPHIC ROCK, Meta Sediment(Franciscan Fm), dark gray, fresh, very hard, moderately fractured, Quartz filling some clay filling and staining [BEDROCK].		c2			88	29						
	8														
	9				c2			100	56						
204.00	10														9.5' Lost Circulation
	11				c3			42	15						
	12														11.0' Dropped Quickly Void 11.0'-13.5'
202.00	13														
200.00	14		METAMORPHIC ROCK, Meta Sediment(Franciscan Fm), dark gray, very intensely weathered, hard, intensely fractured, Grey [BEDROCK].												
	15														
198.00	16				2	11	58								
	17					14									
	18					44									
196.00	17		Fresh, very hard, very intensely to intensely fractured, Decomposed zones, soft.		c5			86	10						
	18														
	19														
194.00	20		Decomposed, Some high quartz content.		c5			80	20						
	21														
192.00	22														
	23														
190.00	24														
	25														

(continued)



Department of Transportation  
Division of Engineering Services  
Geotechnical Services  
Office of Geotechnical Design - North

REPORT TITLE <b>BORING RECORD</b>				HOLE ID <b>R-08-001</b>	
DIST. <b>05</b>	COUNTY <b>Monterey</b>	ROUTE <b>1</b>	POSTMILE <b>T12.1/T12.1</b>	EA <b>05-0P3201</b>	
PROJECT OR BRIDGE NAME <b>Willow Creek Cribwall</b>					
BRIDGE NUMBER	PREPARED BY <b>Dellamas</b>	DATE <b>6-17-08</b>	SHEET <b>1 of 2</b>		

CALTRANS . . .ING RECORD MET+ENG FIXED MON-1-12.1 GINT.GPJ CALTRANS LIBRARY 040808.GLB 6/17/08

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
188.00	25		Very intensely fractured. METAMORPHIC ROCK (continued).		c6			87	0						
186.00	28		Foliated lenses to 6" alternating with ?.		c7			83	0						
184.00	30		METAMORPHIC ROCK, Meta Basalt, dark gray, fresh, very hard, moderately fractured [BEDROCK].		c8				88	22					
180.00	34		METAMORPHIC ROCK (SERPENTINITE), light greenish gray, decomposed, very soft, foliation joint Friable with finger pressure - Highly foliated [BEDROCK].		c9				52	0					
174.00	40		Bottom of borehole at 40.0 ft bgs												
172.00	42														
170.00	44														
168.00	46														
166.00	48														
164.00	50														
162.00	52														
160.00	54														
	55														



Department of Transportation  
 Division of Engineering Services  
 Geotechnical Services  
 Office of Geotechnical Design - North

REPORT TITLE <b>BORING RECORD</b>				HOLE ID <b>R-08-001</b>	
DIST. <b>05</b>	COUNTY <b>Monterey</b>	ROUTE <b>1</b>	POSTMILE <b>T12.1/T12.1</b>	EA <b>05-0P3201</b>	
PROJECT OR BRIDGE NAME <b>Willow Creek Cribwall</b>					
BRIDGE NUMBER	PREPARED BY <b>Dellamas</b>	DATE <b>6-17-08</b>	SHEET <b>2 of 2</b>		

CALTRANS ...ING RECORD MET+ENG FIXED MON-1-12.1 GINT.GPJ CALTRANS LIBRARY 040808.GLB 6/17/08

LOGGED BY <b>Duffy</b>	BEGIN DATE <b>4-3-08</b>	COMPLETION DATE <b>4-3-08</b>	BOREHOLE LOCATION (Lat/Long or North/East and Datum) <b>NAD83</b>	HOLE ID <b>R-08-002</b>
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line) <b>~ 8' Rt Sta ~ 18+55.3</b>	SURFACE ELEVATION <b>~216 ft NAVD 88</b>
DRILLING METHOD <b>Rotary Wash</b>			DRILL RIG <b>Acker MP-8</b>	BOREHOLE DIAMETER <b>3.7 in</b>
SAMPLER TYPE(S) AND SIZE(S) (ID) <b>SPT, HQ Rock Core</b>			SPT HAMMER TYPE <b>Automatic</b>	HAMMER EFFICIENCY, ERI <b>74%</b>
BOREHOLE BACKFILL AND COMPLETION <b>Bentonite Chips and AC</b>			GROUNDWATER DURING DRILLING READINGS <b>Dry</b>	AFTER DRILLING (DATE) <b>Dry</b>
				TOTAL DEPTH OF BORING <b>35.0 ft</b>

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
214.00	1		CLAYEY SAND (SC); medium dense; gray; moist; little angular to subangular GRAVEL; mostly fine to coarse SAND; little fines [FILL].		c1			58	0						2.0' Color Change Brown to Grey
212.00	2														
210.00	6		Fluid loss, apparent void, dropped quickly.		1	9	11								
208.00	7														
206.00	10				c2			29	0						
204.00	11														
202.00	12		METAMORPHIC ROCK, Franciscan Fm, very thinly bedded, dark gray, slightly weathered, very soft to soft, very intensely fractured, shear Slaty/phyllitic texture, slaty cleavage, shiny appearance, fractures open and clean [BEDROCK].		2	5	11								
200.00	13														
198.00	14				c3			0	0						
196.00	15														
194.00	16				3	14	48								
192.00	17														
	18				c4			83	0						
	19														
	20				c5			100	0						
	21														
	22				c6			83	0						
	23														
	24														
	25														

(continued)



Department of Transportation  
Division of Engineering Services  
Geotechnical Services  
Office of Geotechnical Design - North

REPORT TITLE <b>BORING RECORD</b>				HOLE ID <b>R-08-002</b>	
DIST. <b>05</b>	COUNTY <b>Monterey</b>	ROUTE <b>1</b>	POSTMILE <b>T12.1/T12.1</b>	EA <b>05-0P3201</b>	
PROJECT OR BRIDGE NAME <b>Willow Creek Cribwall</b>					
BRIDGE NUMBER			PREPARED BY <b>Dellamas</b>	DATE <b>6-17-08</b>	SHEET <b>1 of 2</b>

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks		
190.00	25		METAMORPHIC ROCK (continued). Foliated (very thinly), meta soapy and chloritic, very smooth, light green with white residue.		c7			89	0								
188.00	28				c8			91	0								
186.00	30					c9			100	0							
184.00	32					c10			91	0							
182.00	34																
	35		Bottom of borehole at 35.0 ft bgs														
180.00	36																
178.00	38																
176.00	40																
174.00	42																
172.00	44																
170.00	46																
168.00	48																
166.00	50																
164.00	52																
162.00	54																
	55																



Department of Transportation  
 Division of Engineering Services  
 Geotechnical Services  
 Office of Geotechnical Design - North

REPORT TITLE <b>BORING RECORD</b>				HOLE ID <b>R-08-002</b>	
DIST. <b>05</b>	COUNTY <b>Monterey</b>	ROUTE <b>1</b>	POSTMILE <b>T12.1/T12.1</b>	EA <b>05-0P3201</b>	
PROJECT OR BRIDGE NAME <b>Willow Creek Cribwall</b>					
BRIDGE NUMBER	PREPARED BY <b>Dellamas</b>	DATE <b>6-17-08</b>	SHEET <b>2 of 2</b>		

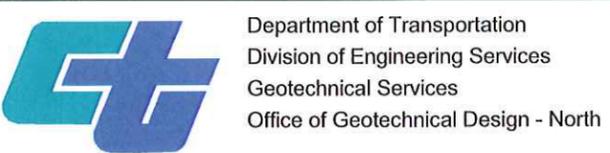
GROUP SYMBOLS AND NAMES			
Graphic / Symbol	Group Names	Graphic / Symbol	Group Names
	Well-graded GRAVEL		Lean CLAY
	Well-graded GRAVEL with SAND		Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY
	Poorly graded GRAVEL		SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
	Poorly graded GRAVEL with SAND		SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
	Well-graded GRAVEL with SILT		SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
	Well-graded GRAVEL with SILT and SAND		ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
	Well-graded GRAVEL with CLAY (or SILTY CLAY)		SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
	Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
	Poorly graded GRAVEL with SILT		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Poorly graded GRAVEL with SILT and SAND		ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
	Poorly graded GRAVEL with CLAY (or SILTY CLAY)		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	SILTY GRAVEL		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	SILTY GRAVEL with SAND		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	CLAYEY GRAVEL		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	CLAYEY GRAVEL with SAND		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	SILTY, CLAYEY GRAVEL		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	SILTY, CLAYEY GRAVEL with SAND		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Well-graded SAND		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Well-graded SAND with GRAVEL		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Poorly graded SAND		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Poorly graded SAND with GRAVEL		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Well-graded SAND with SILT		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Well-graded SAND with SILT and GRAVEL		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Well-graded SAND with CLAY (or SILTY CLAY)		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Poorly graded SAND with SILT		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Poorly graded SAND with SILT and GRAVEL		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Poorly graded SAND with CLAY (or SILTY CLAY)		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	SILTY SAND		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	SILTY SAND with GRAVEL		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	CLAYEY SAND		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	CLAYEY SAND with GRAVEL		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	SILTY, CLAYEY SAND		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	SILTY, CLAYEY SAND with GRAVEL		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	PEAT		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	COBBLES COBBLES and BOULDERS BOULDERS		ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND

FIELD AND LABORATORY TESTS	
C	Consolidation (ASTM D 2435-04)
CL	Collapse Potential (ASTM D 5333-03)
CP	Compaction Curve (CTM 216 - 06)
CR	Corrosion, Sulfates, Chlorides (CTM 643 - 99; CTM 417 - 06; CTM 422 - 06)
CU	Consolidated Undrained Triaxial (ASTM D 4767-02)
DS	Direct Shear (ASTM D 3080-04)
EI	Expansion Index (ASTM D 4829-03)
M	Moisture Content (ASTM D 2216-05)
OC	Organic Content (ASTM D 2974-07)
P	Permeability (CTM 220 - 05)
PA	Particle Size Analysis (ASTM D 422-63 [2002])
PI	Liquid Limit, Plastic Limit, Plasticity Index (AASHTO T 89-02, AASHTO T 90-00)
PL	Point Load Index (ASTM D 5731-05)
PM	Pressure Meter
PP	Pocket Penetrometer
R	R-Value (CTM 301 - 00)
SE	Sand Equivalent (CTM 217 - 99)
SG	Specific Gravity (AASHTO T 100-06)
SL	Shrinkage Limit (ASTM D 427-04)
SW	Swell Potential (ASTM D 4546-03)
TV	Pocket Torvane
UC	Unconfined Compression - Soil (ASTM D 2166-06) Unconfined Compression - Rock (ASTM D 2938-95)
UU	Unconsolidated Undrained Triaxial (ASTM D 2850-03)
UW	Unit Weight (ASTM D 4767-04)
VS	Vane Shear (AASHTO T 223-96 [2004])

SAMPLER GRAPHIC SYMBOLS	
	Standard Penetration Test (SPT)
	Standard California Sampler
	Modified California Sampler
	Shelby Tube
	Piston Sampler
	NX Rock Core
	HQ Rock Core
	Bulk Sample
	Other (see remarks)

DRILLING METHOD SYMBOLS			
	Auger Drilling		Rotary Drilling
	Dynamic Cone or Hand Driven		Diamond Core

WATER LEVEL SYMBOLS	
	First Water Level Reading (during drilling)
	Static Water Level Reading (short-term)
	Static Water Level Reading (long-term)



REPORT TITLE				
<b>BORING RECORD LEGEND</b>				
DIST. <b>05</b>	COUNTY <b>Monterey</b>	ROUTE <b>1</b>	POSTMILE <b>T12.1/T12.1</b>	EA <b>05-0P3201</b>
PROJECT OR BRIDGE NAME <b>Willow Creek Cribwall</b>				
BRIDGE NUMBER	PREPARED BY	DATE	SHEET <b>1 of 3</b>	

CONSISTENCY OF COHESIVE SOILS				
Descriptor	Unconfined Compressive Strength (tsf)	Pocket Penetrometer (tsf)	Torvane (tsf)	Field Approximation
Very Soft	< 0.25	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	0.25 - 0.50	0.25 - 0.50	0.12 - 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 - 1.0	0.50 - 1.0	0.25 - 0.50	Can be penetrated several inches by thumb with moderate effort
Stiff	1.0 - 2.0	1.0 - 2.0	0.50 - 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2.0 - 4.0	2.0 - 4.0	1.0 - 2.0	Readily indented by thumbnail
Hard	> 4.0	> 4.0	> 2.0	Indented by thumbnail with difficulty

APPARENT DENSITY OF COHESIONLESS SOILS	
Descriptor	SPT $N_{60}$ - Value (blows / foot)
Very Loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

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

PERCENT OR PROPORTION OF SOILS	
Descriptor	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

SOIL PARTICLE SIZE		
Descriptor	Size	
Boulder	> 12 inches	
Cobble	3 to 12 inches	
Gravel	Coarse	3/4 inch to 3 inches
	Fine	No. 4 Sieve to 3/4 inch
Sand	Coarse	No. 10 Sieve to No. 4 Sieve
	Medium	No. 40 Sieve to No. 10 Sieve
	Fine	No. 200 Sieve to No. 40 Sieve
Silt and Clay	Passing No. 200 Sieve	

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

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

**NOTE:** This legend sheet provides descriptors and associated criteria for required soil description components only. Refer to Caltrans Soil and Rock Logging, Classification, and Presentation Manual (July 2007), Section 2, for tables of additional soil description components and discussion of soil description and identification.



Department of Transportation  
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Geotechnical Services  
Office of Geotechnical Design - North

REPORT TITLE				
<b>BORING RECORD LEGEND</b>				
DIST. 05	COUNTY Monterey	ROUTE 1	POSTMILE T12.1/T12.1	EA 05-0P3201
PROJECT OR BRIDGE NAME				
Willow Creek Cribwall				
BRIDGE NUMBER	PREPARED BY	DATE	SHEET	
			2 of 3	

ROCK GRAPHIC SYMBOLS	
	IGNEOUS ROCK
	SEDIMENTARY ROCK
	METAMORPHIC ROCK

BEDDING SPACING	
Descriptor	Thickness or Spacing
Massive	> 10 ft
Very thickly bedded	3 to 10 ft
Thickly bedded	1 to 3 ft
Moderately bedded	3-5/8 inches to 1 ft
Thinly bedded	1-1/4 to 3-5/8 inches
Very thinly bedded	3/8 inch to 1-1/4 inches
Laminated	< 3/8 inch

WEATHERING DESCRIPTORS FOR INTACT ROCK						
Descriptor	Diagnostic Features					General Characteristics
	Chemical Weathering-Discoloration-Oxidation		Mechanical Weathering and Grain Boundary Conditions	Texture and Solutioning		
	Body of Rock	Fracture Surfaces		Texture	Solutioning	
Fresh	No discoloration, not oxidized	No discoloration or oxidation	No separation, intact (tight)	No change	No solutioning	Hammer rings when crystalline rocks are struck.
Slightly Weathered	Discoloration or oxidation is limited to surface of, or short distance from, fractures; some feldspar crystals are dull	Minor to complete discoloration or oxidation of most surfaces	No visible separation, intact (tight)	Preserved	Minor leaching of some soluble minerals may be noted	Hammer rings when crystalline rocks are struck. Body of rock not weakened.
Moderately Weathered	Discoloration or oxidation extends from fractures usually throughout; Fe-Mg minerals are "rusty"; feldspar crystals are "cloudy"	All fracture surfaces are discolored or oxidized	Partial separation of boundaries visible	Generally preserved	Soluble minerals may be mostly leached	Hammer does not ring when rock is struck. Body of rock is slightly weakened.
Intensely Weathered	Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent; or chemical alteration produces in situ disaggregation (refer to grain boundary conditions)	All fracture surfaces are discolored or oxidized; surfaces are friable	Partial separation, rock is friable; in semi-arid conditions, granitics are disaggregated	Altered by chemical disintegration such as via hydration or argillation	Leaching of soluble minerals may be complete	Dull sound when struck with hammer; usually can be broken with moderate to heavy manual pressure or by light hammer blow without reference to planes of weakness such as incipient or hairline fractures or veinlets. Rock is significantly weakened.
Decomposed	Discolored or oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspars and Fe-Mg minerals are completely altered to clay		Complete separation of grain boundaries (disaggregated)	Resembles a soil; partial or complete remnant rock structure may be preserved; leaching of soluble minerals usually complete		Can be granulated by hand. Resistant minerals such as quartz may be present as "stringers" or "dikes".

**Note:** Combination descriptors (such as "slightly weathered to fresh") are used where equal distribution of both weathering characteristics is present over significant intervals or where characteristics present are "in between" the diagnostic feature. However, combination descriptors should not be used where significant identifiable zones can be delineated. Only two adjacent descriptors shall be combined. "Very intensely weathered" is the combination descriptor for "decomposed to intensely weathered".

RELATIVE STRENGTH OF INTACT ROCK	
Descriptor	Uniaxial Compressive Strength (psi)
Extremely Strong	> 30,000
Very Strong	14,500 - 30,000
Strong	7,000 - 14,500
Medium Strong	3,500 - 7,000
Weak	700 - 3,500
Very Weak	150 - 700
Extremely Weak	< 150

ROCK HARDNESS	
Descriptor	Criteria
Extremely Hard	Specimen cannot be scratched with pocket knife or sharp pick; can only be chipped with repeated heavy hammer blows
Very hard	Specimen cannot be scratched with pocket knife or sharp pick; breaks with repeated heavy hammer blows
Hard	Specimen can be scratched with pocket knife or sharp pick with heavy pressure; heavy hammer blows required to break specimen
Moderately Hard	Specimen can be scratched with pocket knife or sharp pick with light or moderate pressure; breaks with moderate hammer blows
Moderately Soft	Specimen can be grooved 1/6 in. with pocket knife or sharp pick with moderate or heavy pressure; breaks with light hammer blow or heavy hand pressure
Soft	Specimen can be grooved or gouged with pocket knife or sharp pick with light pressure; breaks with light to moderate hand pressure
Very Soft	Specimen can be readily indented, grooved, or gouged with fingernail, or carved with pocket knife; breaks with light hand pressure

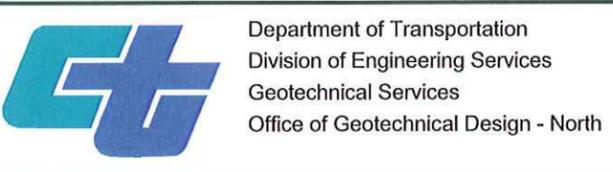
**CORE RECOVERY CALCULATION (%)**

$$\frac{\sum \text{Length of the recovered core pieces (in.)}}{\text{Total length of core run (in.)}} \times 100$$

FRACTURE DENSITY	
Descriptor	Criteria
Unfractured	No fractures
Very Slightly Fractured	Lengths greater 3 ft
Slightly Fractured	Lengths from 1 to 3 ft, few lengths outside that range
Moderately Fractured	Lengths mostly in range of 4 in. to 1 ft, with most lengths about 8 in.
Intensely Fractured	Lengths average from 1 in. to 4 in. with scattered fragmented intervals with lengths less than 4 in.
Very Intensely Fractured	Mostly chips and fragments with few scattered short core lengths

**RQD CALCULATION (%)**

$$\frac{\sum \text{Length of intact core pieces > 4 in.}}{\text{Total length of core run (in.)}} \times 100$$



REPORT TITLE <b>BORING RECORD LEGEND</b>				
DIST. <b>05</b>	COUNTY <b>Monterey</b>	ROUTE <b>1</b>	POSTMILE <b>T12.1/T12.1</b>	EA <b>05-0P3201</b>
PROJECT OR BRIDGE NAME <b>Willow Creek Cribwall</b>				
BRIDGE NUMBER	PREPARED BY	DATE	SHEET <b>3 of 3</b>	