FOR CONTRACT NO.: 01-310104

INFORMATIONAL HANDOUT

MATERIALS INFORMATION

(NOT A PART OF THE CONTRACT)

REVISED FINAL FOUNDATION REPORT FOR GREENWOOD CREEK BRIDGE (REPLACE)(BR NO 10-0156) DATED AUGUST 24, 2009

ADDENDUM TO FINAL FOUNDATION REPORT FOR GREENWOOD CREEK BRIDGE (REPLACE)(BR NO 10-0156) DATED NOVEMBER 30, 2009.

FOUNDATION REPORT FOR RETAINING WALL #10E0021 DATED AUGUST 24, 2009

UNDERGROUND CLASSIFICATION NOS. C056-045-10T & C057-045-10T

PERMITS AND AGREEMENTS

CALIFORNIA DEPARTMENT OF FISH AND GAME LAKE OR STREAMBED ALTERATION AGREEMENT

REGIONAL WATER QUALITY CONTROL BOARD 401 CERTIFICATION

UNITED STATES ARMY CORPS OF ENGINEERS
NATIONWIDE PERMIT 14

CALIFORNIA COASTAL COMMISSION COASTAL DEVELOPMENT PERMIT

UNITED STATES FISH AND WILDLIFE SERVICE (Biological Opinion)
INFORMAL CONSULTATION

PURPLE MARTIN MITIGATION PLAN FOR THE GREENWOOD CREEK BRIDGE REPLACEMENT PROJECT, MENDOCINO COUNTY, CA EA 01-310100 JULY 2010

ROUTE: 01-MEN-1-33.4/33.9

State of California
Department of Transportation

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: MR. JEFF SIMS Rec'd 9/1/09 CB
Branch Chief
Bridge Design Branch 1
Office of Bridge Design North

Attention: Mr. Kyoung Lee

Date: August 24, 2009

File: 01-MEN-1-PM32.9
EA: 01-310101
Greenwood Creek Bridge
(Replace)
Bridge No. 10-0156

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

Subject: Revised Final Foundation Report

Introduction

Per your request, the Office of Geotechnical Design North (OGDN) has prepared this revised final Foundation Report (FR) for the proposed Greenwood Creek Bridge (Replace), Bridge Number 10-0156 located on State Route 1 in Mendocino County, approximately 0.5 mile south of Elk. This final FR has been prepared to provide recommendations for the updated foundation designs. This final FR shall supersede the FR and its associated addendum prepared by OGDN on January 14, 2009 and March 6, 2009.

The existing Greenwood Creek Bridge, Bridge Number 10-0123 is a 5-span reinforced concrete (RC) box girder bridge and was built in 1955 and 1956. Recent bridge inspections have rated the existing bridge as scour critical, having a sub-standard shoulder width, and requiring a barrier upgrade and bridge deck rehabilitation. In reaction, the proposed project will replace the existing bridge.

The new bridge will be a 520-foot-long, three-span, cast-in-place pre-stressed (CIP/PS) concrete box girder bridge supported by RC columns/bents. The centerline of the proposed bridge will be at approximately 5 feet east of the centerline of the existing bridge.

Both spread footings and CIDH piles have been considered for foundation supports of the new bridge. Considerations have also been given to single large diameter CIDH piles and multiple intermediate and/or small diameter CIDH piles at each support location. Based

on structural demands and subsurface conditions at the site, spread footings have been selected to support Abutment 1, 60-inch diameter CIDH piles have been selected to support Bents 2 and 3, and 24-inch diameter CIDH piles have been selected to support Abutment 4.

A forward retaining wall will be constructed at Abutment 1 Right to retain a permanent access road. The heights of the retaining walls will vary between 8 to 19 feet. Standard Type 1 retaining wall has been pre-selected.

Previously, the following reports were issued by OGDN for this site.

- A report titled "Final Seismic Design Recommendations, 01-MEN-01-K.P. 54.1, 01-310100, Greenwood Creek Bridge (Replace), Bridge No. 10-0156" dated October 10, 2002,
- A report titled "Final Foundation Report, 01-MEN-01-K.P. 54.1, 01-310100, Greenwood Creek Bridge (Replace), Bridge No. 10-0156" dated March 3, 2003,
- A report titled "Final Soil Resistance: p-y Curves for 2.4m Diameter CIDH Piles, 01-MEN-01-K.P. 54.1, 01-310100, Greenwood Creek Bridge (Replace), Bridge No. 10-0156" dated May 8, 2003,
- A report titled "Soil Resistance: p-y Curves for 2.4m Diameter CIDH Piles in Channel Degradation Case, 01-MEN-01-K.P. 54.1, 01-310100, Greenwood Creek Bridge (Replace), Bridge No. 10-0156" dated June 6, 2003,
- A report titled "Foundation Report, 01-MEN-1-PM 32.9, EA 01-310101, Greenwood Creek Bridge (Replace), Bridge No. 10-0156" dated January 14, 2009, and
- A report titled "Foundation Report Addendum, 01-MEN-1-PM 32.9, EA 01-310101, Greenwood Creek Bridge (Replace), Bridge No. 10-0156" dated March 6, 2009.

Geology

According to the Geologic Map of California, Ukiah sheet, California Division of Mines and Geology (CDMG), Jennings, C.W. and Strand, R.G., 1960, a majority of the site lies within one of the major geologic units in the State of California. The geologic unit is identified as Undivided Cretaceous Marine Sedimentary Rocks (K) of the California Coast Ranges Geomorphic Province. The characteristics of stratigraphy and lithology of the unit identified are the Unnamed Cretaceous or Upper Jurassic sandstone, shale, and conglomerate. The north portion of the site may lie within the Pleistocene Marine

Terrace Deposits and Marine Terrace Deposits (Qm) that overlie the Undivided Cretaceous Marine Sedimentary Rocks.

According to A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos, Compiled by Ronald K. Churchill and Robert L. Hill, August 2000, CDMG, the site is not in an area of naturally occurring asbestos. In addition, during the foundation investigations previously performed at the proposed bridge site, the presence of ultramafic material was not observed.

Seismicity

The aforementioned previous report titled "Final Seismic Design Recommendations, 01-MEN-01-K.P. 54.1, 01-310100, Greenwood Creek Bridge (Replace), Bridge No. 10-0156" dated October 10, 2002 has been reviewed. The discussions and recommendations contained in this report are judged valid and applicable to the site of the proposed new bridge. A photocopy of this previous report is provided in the Appendix.

Subsurface Conditions

The site was previously explored with four diamond core borings (02-1 to 02-4) and four mud rotary test borings (02-5 to 02-8) in 2002.

Based on the results of the borings, the soils encountered at the site contained primarily of loose to very dense sands and gravels with varying contents of clays, silts and cobbles. The thicknesses of the soils vary significantly at the site, from less than 5 feet to over 40 feet below the ground surface or mud line (creek bottom). The Standard Penetration Test (SPT) values recorded in the soils ranged from 7 to over 100 blows per foot (bpf).

Below the soils, bedrock was encountered. The bedrock encountered was predominantly sandstone, graywacke, and shale. These rocks appeared to be fresh to intensely weathered, soft to extremely hard, and slightly to very intensely fractured. The rock quality designation (RQD) indexes recorded in the rocks ranged from 0 to 90 percent.

Additionally, an As-Built Log of Test Borings (LOTB) titled "Log of Test Borings, Bridge Across, Greenwood Creek, Bridge No. 10-123" prepared initially for the existing bridge on March 14, 1955 was used to aid the interpretation of subsurface conditions at the new bridge site. The LOTB contains a total of 17 logs of borings, namely B-1 to B-17. The subsurface conditions indicated in the As-Built LOTB and the subsurface

conditions encountered in the aforementioned 2002 testing borings are generally consistent.

Ground Water

In the borings performed at the abutment locations, (borings 02-2 for Abutment 4 and 02-3 for Abutment 1), groundwater was encountered at elevations of approximately 50 feet (approximately 21 to 27 feet below the existing ground surface). The bent locations are in the creek and are inundated.

Groundwater level is expected to fluctuate due to seasonal and local conditions. Generally, groundwater level should be expected to be higher during the spring and the winter. Groundwater level at the proposed bridge site should be affected by the water level in the Greenwood Creek and may be estimated accordingly at the time of construction.

Scour

A report titled "Final Hydraulic Report, Greenwood Creek Bridge, Bridge No. 10-0156, EA 01-310101, 01-MEN-001-PM32.9" prepared by Structure Hydraulics & Scour Mitigation on November 14, 2008 has been provided to OGDN for the purposes of this report. Scour data contained in the report was used to determine the foundation design recommendations for the bridge.

The scour data is summarized in Table 1 below.

Table 1. Scour Data[1]

Support No.	Degradation Scour (ft)	Base Flood Scour (ft)		Total Scour (ft)
		Contraction	Local	
Abutment 1	n/a	n/a	n/a	n/a
Pier 2	7.6	0	0	7.6
Pier 3	7.6	0	13.3	20.9
Abutment 4	n/a	n/a	n/a	n/a

Note:
1. Data are taken from the Final Hydraulic Report as depth, not elevation.

Corrosivity

Based on the aforementioned previous report titled "Final Foundation Report, 01-MEN-01-K.P. 54.1, 01-310100, Greenwood Creek Bridge (Replace), Bridge No. 10-0156" dated March 3, 2003, representative soil samples were collected at the site and tested for corrosion. Based on the results, the soils in the vicinity of the proposed bridge site were found to be non-corrosive.

Based on Caltrans Corrosion Guidelines, Version 1.0 (September 2003), if a project site is located within 1000 feet of marine or brackish water, but have soil that is characterized as non-corrosive, corrosion mitigation is needed for the structure exposed to corrosive atmosphere. The bridge site is located less than 1000 feet from the Pacific Ocean. Therefore, corrosive atmosphere should be considered at the site.

Recommendations

Spread Footing Foundations for Abutment 1

Spread footing foundation is recommended to support the proposed bridge Abutment. Spread footing data recommendations are presented in the following tables.

Table 2. Foundation Recommendations for Abutment 1

Support Location	Footing Size (ft)		Bottom of Footing Elevation[3] (ft)	Minimum footing Embedment Depth (ft)	Total Permissible Support Settlement (in)	WSD (Service I Limit State Load Combination)		LRFD		
	B	L						Service	Strength $\Phi = 0.45$	Extreme Event $\Phi = 1.0$
						Permissible Gross Contact Stress[2] (ksf)	Allowable Gross Bearing Capacity (ksf)	Permissible Net Contact Stress (ksf)	Factored Gross Nominal Bearing Resistance (ksf)	Factored Gross Nominal Bearing Resistance (ksf)
Abut 1L	10	25.2	55.0	2.0	1.0	10	10	n/a	n/a	n/a
Abut 1R	10	27.8	58.5	2.0	1.0	10	10	n/a	n/a	n/a

Notes:

1. Recommendations are based on the foundation geometry and the load data provided by Structure Design (SD).
2. The footings are anticipated to bear on rock. Elastic settlement of 0.5 inch is generally assumed for footings on rock, which is less than the Total Permissible Support Settlement of 1.0 inch. Therefore, Permissible Gross Contact Stress is taken to be no greater than the Allowable Gross Bearing Capacity of 10 ksf.

3. The Bottom of Footing Elevation is determined based on the rock elevations indicated in the LOTBs. Rock elevation varies in the vicinity of the Abutment 1. The Bottom of Footing Elevation may be adjusted during construction when rock is encountered. For estimation, rock is present at an elevation of approximately 58.5 feet in the area near borings B-12 and B-13 and at an elevation of approximately 55 feet in the area near borings B-15 and B-16.

Table 3. Abutment 1 Spread Footing Data Table

Support Location	Working Stress Design (WSD)		Load and Resistance Factor Design (LRFD)		
	Permissible Gross Contact Stress[2] (ksf)	Allowable Gross Bearing Capacity (ksf)	**Service** Permissible Net Contact Stress (ksf)	**Strength** Factored Gross Nominal Bearing Resistance (ksf)	**Extreme Event** Factored Gross Nominal Bearing Resistance (ksf)
Abut 1	10	10	n/a	n/a	n/a

Notes:

1. The footings are anticipated to bear on rock. Elastic settlement of 0.5 inch is generally assumed for footings on rock, which is less than the Total Permissible Support Settlement of 1.0 inch. Therefore, Permissible Gross Contact Stress is taken to be no greater than the Allowable Gross Bearing Capacity of 10 ksf.

Cast-in-Drilled-Hole (CIDH) Piles for Bent 2, Bent 3, and Abutment 4

Cast-in-Drilled-Hole (CIDH) piles were selected to support the proposed bridge Bent 2, Bent 3, and Abutment 4. Pile data recommendations are presented in the following tables.

Table 4. Foundation Recommendations For Bent 2 and Bent 3

Support Location	Pile Type	Cut-off Elevation (ft)	Service Limit State Load Per Support (kips)		Factored Nominal Resistance (kips)				Design Tip Elevations[8] (ft)	Specified Tip Elevation[8] (ft)
					Strength Limit		Extreme Limit			
			Total	Permanent	Comp. Φ=0.7	Tens. Φ=0.7	Comp. Φ=1.0	Tens. Φ=1.0		
Bent/Pier 2	60" CIDH	3.25	8533	6587	2300	0	3430	800	a-I (-50) a-II (-54) b-II (-15)	-54
Bent/Pier 3	60" CIDH	-4.25	9824	7875	2300	0	3430	800	a-I (-50) a-II (-54) b-II (-15)	-54

Notes:

1. Recommendations are based on Load Resistance Factor Design (LRFD) for bent and the load data provided by SD.
2. A resistance factor of 0.7 is used to calculate the available geotechnical resistance in Strength Limit State. A resistance factor of 1.0 is used to calculate the available geotechnical resistance in Extreme Limit State.
3. The Design Tip Elevations recommended herein are controlled by: (a-I) Compression (Strength Limit), (a-II) Compression (Extreme Limit), and (b-II) Tension (Extreme Limit).
4. The Design Tip Elevation controlled by settlement is not applicable.
5. The Design Tip Elevation controlled by lateral load is typically provided by SD.
6. The Specified Tip Elevation recommended herein shall not be raised if controlled by lateral load.
7. Unsuitable soil layers (scourable) that do not contribute to the design nominal resistance exist at Bents 2 and 3 extending to elevation of –10 feet.

Table 5. Foundation Recommendations for Abutment 4

Support Location	Pile Type	Cut-off Elevation (ft)	LRFD Service-I Limit State Load (kips) per Support		LRFD Service-I Limit State Total Load (kips) per Pile (Compression)	Nominal Resistance (kips)	Design Tip Elevations (ft)	Specified Tip Elevation (ft)
			Total	Permanent				
Abut 4	24" CIDH	53.75	2635	2039	200	400	15 (a)	15

Notes:

1. Recommendations are based on Load Resistance Factor Design (LRFD) and Working Stress Design (WSD) for abutment and the load data provided by SD.
2. The Design Tip Elevations recommended herein are controlled by: (a) Compression.
3. The Design Tip Elevation controlled by settlement is not applicable.
4. The Design Tip Elevation controlled by lateral load is typically provided by SD.
5. The Specified Tip Elevation shall not be raised above the Design Tip Elevations for tension, lateral, and tolerable settlement.
6. The Specified Tip Elevation recommended herein shall not be raised if controlled by lateral load.

Table 6. Bent 2, Bent 3, Abutment 4 CIDH Pile Data Table

Support Location	Pile Type	Nominal Resistance (kips)		Design Tip Elevations (ft)[5]	Specified Tip Elevation (ft)[5]
		Compression	Tension		
Bent/Pier 2	60" CIDH	3430	0	-54 (a-II) -50 (a-I) -15 (b-II)	-54
Bent/Pier 3	60" CIDH	3430	0	-54 (a-II) -50 (a-I) -15 (b-II)	-54
Abut 4	24" CIDH	400	0	15 (a)	15

Notes:

1. The Design Tip Elevation are controlled by: (a) Compression, (a-I) Compression (Strength Limit), (a-II) Compression (Extreme Limit), and (b-II) Tension (Extreme Limit).
2. The Design Tip Elevation controlled by lateral load is typically provided by SD.
3. The Specified Tip Elevation shall not be raised if controlled by lateral load.
4. Unsuitable soil layers (scourable) that do not contribute to the design nominal resistance exist at Bents 2 and 3 extending to elevation of –10 feet.

Retaining Wall

Based on subsurface conditions indicated in the LOTBs and Caltrans 2006 Standard Plan B3-1, the bearing pressures for standard Type 1 retaining walls with height of 8 to 19 feet should be adequate at the proposed Abutment 1 Right site.

Construction Considerations

CIDH Piles

1. Hard to extremely hard rock is present at the site. Difficult drilling/rock coring should be expected to install the CIDH piles.

2. Loose materials containing sands, gravels, and cobbles are present above the bedrock at the site. In addition, some of the bedrock is moderately to very intensely weathered and fractured. Caving of drilled shafts should be expected.

3. Seepage or groundwater infiltration into the drilled shafts should be expected at the site. The locations and flow rates of the seepage will vary depending on seasonal precipitations and other local conditions.

4. Temporary casings may be used to stabilize the drilled shafts. Temporary casings, if used, shall be retrieved from the drilled shafts.

5. The drilled shafts shall be inspected and approved by the Engineer prior to concrete placement.

6. All necessary precautions should be exercised to prevent pile anomalies. If the casings are to be installed by oscillation or rotation, this Office shall be notified prior to installation for review and evaluation.

Spread Footing

1. Hard to extremely hard rock is present at the site. Difficult excavation should be expected to install the spread footings.

2. The bottom of the spread footing excavations shall be level, smooth, and cleaned of loose materials, water, and other debris prior to placement of concrete.

3. Elevations of rock vary at the site. The bottom of the spread footing excavations may be adjusted during construction when rock is encountered.

4. Spread footing excavations shall be inspected and approved by the Engineer prior to the placement of concrete.

Project Information

Standard Special Provisions 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(s) of this report via electronic mail.

Data and information attached with the project plans are:

A. *Log of Test Borings for Greenwood Creek Bridge (Replace), Structure Number 10-0156.*

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

A. *Foundation Report for Greenwood Creek Bridge (Replace), Structure Number 10-0156, dated August 24, 2009.*
B. *Geotechnical Design Report, 01-MEN-1 PM 33.0/34.0, dated March 13, 2009*
C. *Foundation Report, Retaining Wall No. 10E021, dated August 24, 2009*

Data and information available for inspection at the district Office:

A. None

Data and information available for inspection at the Transportation Laboratory:

A. *Core samples obtained during 2002 foundation investigations.*

If you have any questions regarding this report, please contact Thomas Song at (916) 227-1039, John Huang at (916) 227-1037, or Reid Buell at (916) 227-1012.

REGISTERED PROFESSIONAL ENGINEER
THOMAS NAXIN SONG
No. C 69325
Exp. 6/30/2010
CIVIL
STATE OF CALIFORNIA

for

John L. Thorne
Associate Engineering Geologist
Geotechnical Design – North

Thomas Naxin Song, P.E.
Transportation Engineer (Civil)
Geotechnical Design – North

c: Reid Buell
John Huang
Reza Mahallati
Structural OE (E-copy)
PCE (E-copy)
DME (E-copy)
R.E. Pending
D01 (2)
GDN File
GS File

Appendix

file

Memorandum

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GEOTECHNICAL SERVICES
FILE COPY

To: MR. JEFF SIMS
DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN – MS 9 – 4/11G
OFFICE OF BRIDGE DESIGN - *NORTH*
Design Branch 1

Attention: Doug Menzmer

Date: October 10, 2002

File: 01-MEN-01-KP 54.1
01-310101
Greenwood Creek Br. (Replace)
Bridge No. 10-0156

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES - MS 5
OFFICE OF GEOTECHNICAL EARTHQUAKE ENGINEERING

Subject: Final Seismic Design Recommendations

This memorandum is in response to your request dated July 12, 2002 and presents the final seismic design recommendations for the above referenced project on State Route 1 in Mendocino County. The proposed project includes replacing the existing structure (Bridge No. 10-0123) with a three-span 169 meters long CIP/PS concrete box girder superstructure supported on single column/shaft bents and abutment walls founded on piles.

Controlling Fault and Surface Rupture

As shown on the attached California Seismic Hazard Map by the California Department of Transportation, the bridge site is located approximately 7.9 kilometers north of the San Andreas/N fault (SAN, style strike-slip) that stretches from northwest to southeast. The fault is capable of generating a maximum credible earthquake of moment magnitude $M_w = 8$. The horizontal Peak Bedrock Acceleration at this site, based on the 1996 California Seismic Hazard Map, is estimated to be 0.6g (gravity acceleration). The surface rupture due to fault movement may not be a concern in designing the bridge at the site since there is no known fault crossing through the bridge site.

Potential for Liquefaction and Lateral Spreading

The Log of Test Borings (LOTB) completed in October 2002 for the bridge site is referenced for the seismic design recommendations. Subsurface materials at the bridge site consist of loose to very dense sand and gravel with silt underlain by highly weathered sandstone at a depth of 0.3 m (1 ft) below the current ground surface at abutments and at depths of 2 to 14.8m (6.5 to 48.5 ft) in the creek channel. Groundwater was encountered at a depth of 8.3m (27 ft) at Abutment 1 on August 30, 2002 and at a depth of 6.7 m (22 ft) at Abutment 4 on August 28, 2002. Based on the LOTB, the 2 to 5 meter (6.5 to 16.5 ft) thick top layer of loose sand within the channel is susceptible to soil liquefaction when saturated during earthquake shaking. The potential for lateral spreading at the bridge site is considered to be low.

Horizontal ARS Curve

For this seismic design recommendation, the soil profile at this site may be classified as a Type C as defined in the Seismic Design Criteria (SDC) by the California Department of Transportation. For structural design of the bridge, a modified SDC Acceleration Response Spectrum (ARS) corresponding to Type C soil profile, $M_w = 8$, and PBA of 0.6g is recommended as provided in the attachment. Due to the proximity of the site to the controlling fault, the SDC ARS curve has been modified for directivity. This modification is such that there is no increase in spectral acceleration for periods less than 0.5 seconds and a 20% increase for periods greater than 1.0 second. A linear interpolation is used between 0.5 and 1.0 second.

If there are any questions, please contact Jin-xing Zha at (916) 227-6938 or Angel Perez-Cobo at (916) 227-7167.

JIN-XING ZHA
Transportation Engineer – Civil
Office of Geotechnical Earthquake Engineering

ANGEL PEREZ-COBO
Senior Transportation Engineer
Office of Geotechnical Earthquake Engineering

Attachments

c: AAbghari – DES/GS
JEhsan – DES/GS

REGISTERED PROFESSIONAL ENGINEER
JINXING ZHA
NO. C057048
EXP. 06/30/02
CIVIL
STATE OF CALIFORNIA

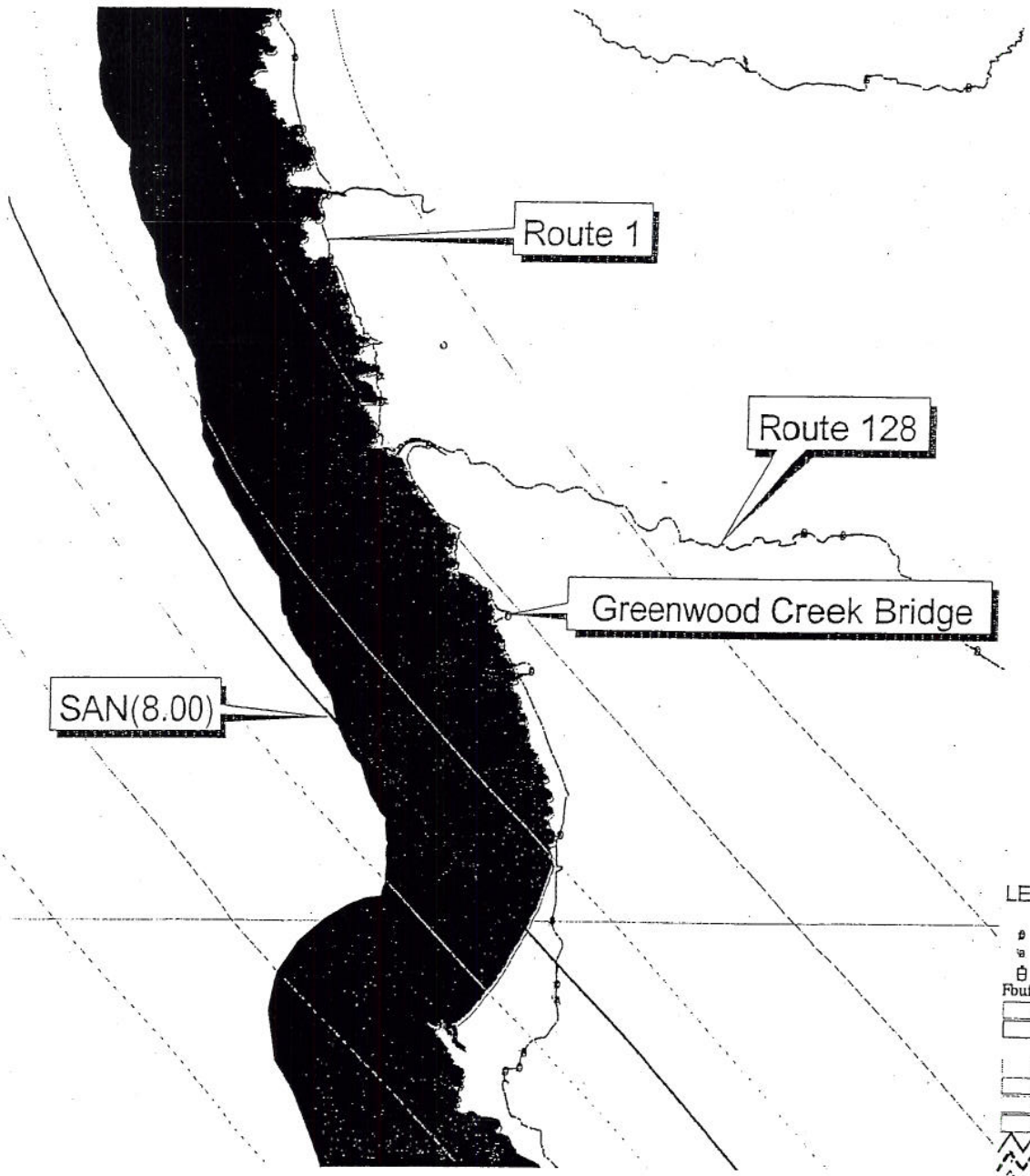
DEPARTMENT OF TRANSPORTATION

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY

ENGINEERING SERVICE CENTER

CALIFORNIA SEISMIC HAZARD DETAIL INDEX MAP 1996

BASED ON MAXIMUM CREDIBLE EARTHQUAKES (MCE)



LEGEND:

- State Bridges
- Main_sta.shp
- Majorcity.shp

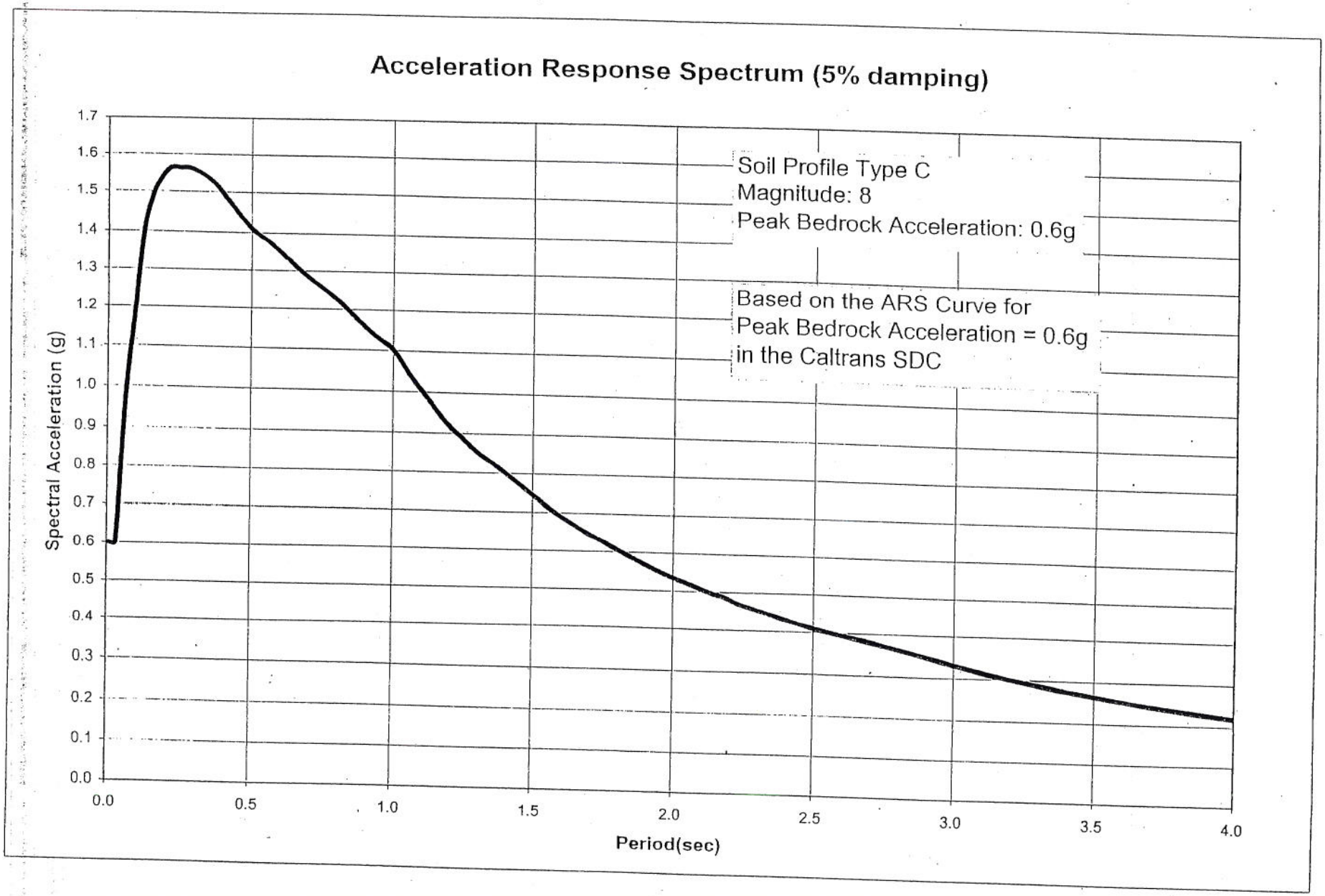
Fbuffers.shp

- 0.1g Buffer
- 0.2g Buffer
- 0.3g Buffer
- 0.4g Buffer
- 0.5g Buffer
- 0.6g Buffer
- 0.7g Buffer
- Faults.shp
- H-faults.shp
- St-hwys.shp
- Hydro_lk.shp
- Detail Index
- District.shp
- Cntybound.shp

NOTE: SEE ACCOMPANYING TECHNICAL REPORT FOR NAMES OF FAULTS CORRESPONDING TO FAULT CODES

REVISION 2 (July, 1997)
Plot Modified in January, 1999

Greenwood Creek Bridge (Replacement)
Bridge No. 10-0156
EA 01-310101



Memorandum

Flex your power!
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To: MR. JEFF SIMS
Branch Chief
Bridge Design Branch 1
Office of Bridge Design North

Date: November 30, 2009

File: 01-MEN-01-PM 32.9
01-310101
Greenwood Creek Bridge
(Replace)
Bridge No. 10-0156

Attention: Mr. Kyoung Lee

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

Subject: Addendum to Final Foundation Report

The Office of Geotechnical Design - North (OGD-N) received a request from the Office of Bridge Design North for a change to the Final Foundation Recommendations for Greenwood Creek Bridge dated August 24, 2009. This request requires a change to the **Corrosivity** section of the report. This section has been revised to read as follows:

Corrosivity

Based on the aforementioned previous report titled "Final Foundation Report, 01-MEN-01-K.P. 54.1, 01-310100, Greenwood Creek Bridge (Replace), Bridge No. 10-0156" dated March 3, 2003, representative soil samples were collected at the site and tested for corrosion. Based on the results, the soils in the vicinity of the proposed bridge site were found to be non-corrosive.

Based on the Caltrans Corrosion Guidelines, Version 1.0 (September 2003), if a project site is located within 1000 feet of marine or brackish water, and have soils that are characterized as non-corrosive, corrosion mitigation is needed for the structure exposed to a corrosive atmosphere.

Upon re-evaluation, it has been determined that this bridge site is located slightly more than 1000 feet from the Pacific Ocean and therefore, a non-corrosive atmosphere should be considered at the site.

Any questions regarding the above recommendations should be directed to John L. Thorne at (916)-227-1034 or Reid Buell at (916) 227-1012.

Report by:

JOHN L. THORNE
Engineering Geologist
Geotechnical Design - North

Supervised by:

REID BUELL, C.E.G. No. 1481
Senior Engineering Geologist
Geotechnical Design - North

REGISTERED GEOLOGIST
REID L. BUELL
No. 1481
Exp. 4/30/11
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

c: SteveNG –OSH
GDNFile
GS File Room

State of California
Department of Transportation

Business, Transportation and Housing Agency

Memorandum

Rec'd 9/1/09 cgs

Flex your power!
Be energy efficient!

To: MR. JEFF SIMS
Chief, Bridge Design North Branch 1
Office of Bridge Design North

Date: August 24, 2009

File: 01-MEN-1-PM 33.0-34.0
EA: 01-310101
Retaining Wall # 10E0021

Attn: Mr. Kyoung Lee

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services – MS 5
Office of Geotechnical Design – North

Subject: Foundation Report

This Foundation Report (FR) was prepared at the request of the Office of Bridge Design North (OBDN) and supersedes the previous Foundation Report dated March 20, 2009 by our Office. This FR is being provided due to changes in pile type and axial loads the General Plan by OBDN.

At your request, the Office of Geotechnical Design North (OGDN) prepared this Foundation Report (FR) for the above-referenced structure. This wall will be part of the Greenwood Creek Bridge widening project along State Route 1 in Mendocino County, California from post mile 33.0 to 34.0. A site vicinity map is attached as Plate 1. This wall will be utilized to widen a section of highway located on a through fill crossing Bonee Gulch. This area is the subject of a previous geotechnical study documented in a memorandum, entitled "Preliminary Geotechnical Report" (PGR) from Steve Mahnke to Kathryn Wing dated October 1999, discusses the site geology, ground water conditions, and seismicity among other issues with regards to the re-alignment project in the area.

As a part of this study four mud rotary borings were drilled in the vicinity of the proposed Soldier Pile wall to determine the subsurface materials. An additional two auger borings drilled for a standard plan wall located just south of the Soldier Pile wall were utilized for this report. A description of the subsurface conditions encountered during the drilling program is shown on the "Log-of-Test Borings" (LOTB) and will be forwarded when complete. In addition, we have attached gINT versions of the LOTB's as appendix 1.

Proposed Structure Description

The proposed retaining wall will consist of a ±165-foot long Soldier Pile wall with lagging.

Physical Setting

The physical setting of the project site and the surrounding area was reviewed to provide climate, topography, drainage, man-made and natural features, geology, seismicity, and soil survey characteristics to aid in project design and construction. The site itself is located along state route 1 approximately 0.5 mi. south of the town of Elk, California. The following is a discussion of the above review:

Climate

According to the Western Regional Climate Center for the period of 1895-2007, the average annual precipitation in the Fort Bragg, California area, located approximately 26 mi. north of the site, is about 40.35 in. The average annual air temperature is approximately 42.7°F with average monthly extremes of 40°F in January and 66°F in September.

Topography and Drainage

Based on a review of the Elk and Mallo Pass Creek Quadrangles, and observations in the field, the project is located on the south side of the town of Elk, California. The topography is generally comprised of a mix of flat terrace and moderately to steeply sloping hillside topography. Elevations within the project limits vary from approximately 140ft. above mean sea level to as low as 35ft. at the elevation of Greenwood Creek. The drainage in this area generally flows southwest through Greenwood Creek and northwest through Bonee Gulch towards the Pacific Ocean. The Pacific Ocean is located approximately 0.35 mi. west of the project site. Several residential structures are depicted on the map just northeast of the project site and were observed in the field adjacent to Greenwood/Philo road which parallels a portion of the northern limits of the project. In addition, one commercial structure is located just southwest of the highway in the northern limits of the project.

Man-made and Natural Features of Engineering and Construction Significance

The current highway appears to have been constructed by cutting into hillsides (east side) and filling in low-lying areas (west side). The native materials in the area consist of soil comprised of brown to reddish-brown, dry, loose to medium dense (estimated) silty-sand/sandy-silt with some cobbles and boulders.

Cuts within the project limits exhibit varying slope ratios from near vertical to 1.5:1 (H:V). Fills within the project limits typically have a slope ratio of 1.5:1. A number of the cuts and fills within the project area have re-vegetated with grass and small brush.

An existing concrete culvert is located at the base of the existing through fill crossing Bonee Gulch which lays within the central area of the project limits. Greenwood Creek Bridge is located at northern limits of the project. Overhead utility lines are located on the east side of the highway throughout the project limits and a pull box for a fiber optic line is located on the north side of Greenwood Creek Bridge.

Vegetation consists of abundant weeds/grass, brush and trees on existing cut slopes and moderate weeds and trees on existing fill slopes.

Regional Geology and Seismicity

According to the California Geologic Survey (CGS), "Geologic Map of California Ukiah Sheet" (1:250,000), published 1960, the project is located in an area mapped as Undivided Cretaceous marine rocks (K). More detailed mapping of the Elk Quadrangle provided in CGS's "North Coast Watersheds Mapping", 1999, depicts the northern portion of the project limits as being located in Costal Belt Franciscan Complex (TKfs) and the southern portions of the project limits as being located in Quaternary Marine terrace deposits (Qmts). Rock outcrops observed in the project area compare favorably with the materials described within the more detailed mapping found within the North Coast Watersheds Mapping. A portion of the North Coast Watersheds map showing project limits is attached as Plate 2.

We have reviewed the CGS Map of California Showing Principal Asbestos Deposits, 2000, the Regional Geologic Map identified above and Caltrans "A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos District 1", 2000, for the presence of serpentine or rock types that may contain naturally occurring asbestos. According to the maps reviewed, the site is not in an area of naturally occurring asbestos. In addition, the presence of rock containing serpentine was not observed within the project limits or within the subsurface borings completed for the project.

We reviewed the Caltrans California Seismic Hazard Map dated 1996. The map indicates the San Andreas Fault Zone located offshore of the California coast as the closest proximity fault. The San Andreas Fault Zone is at its closest point is located approximately 4.8 mi. southwest of the site. The San Andreas Fault is a right-lateral strike-slip fault. The map indicates that the maximum credible earthquake of Moment Magnitude 8.0 from this fault would result in a peak horizontal bedrock acceleration of up to 0.6g within the project limits.

National Resource Conservation Soil Survey

According to the United States Department of Agriculture Soil Conservation *Soil Survey of Mendocino County, California Western Part*, the project lies within soils mapped as Dystropepts.

Dystropepts, are comprised of 30-75% slopes. This unit consists of thin veneers of weathered sandstone and/or shale overlying the parent rock. Surface runoff is rapid and erosion potential is slight. Corrosion potential, permeability, hydrologic group and frost heave potential are not defined.

Field Investigation

Site Visit

Mr. Bill Webster of this Office performed the field review of the general project limits on November 7 and 18, 2005, with a subsequent visit on January 6, 2009.

The current alignment of the highway roughly trends north/south. The current highway appears to be in good shape, extensive cracking or deformation of the highway pavement section was not observed within the project limits. The existing cuts and fills within the project limits appear to be performing adequately. Existing fills within the project limits range up to 40 ft. in vertical height. Fill slope ratios were observed to be 1.5:1 (H:V) or flatter. Soil observed in the fills appears to be comprised of silty-sand and/or sandy-silt with gravels, cobbles and boulders. The existing cuts within the project limits range up to 50 ft. in vertical height. Cuts on the north side of the existing bridge were near vertical to 1.5:1 and the steeper cuts exhibited abundant rockfall, while cuts on the south side of the bridge were 1.5:1 and were vegetated with grass and small brush. Bedrock outcrops exposed within the project limits are comprised of sedimentary rock. The existing cuts and fills are slightly too moderately vegetated with grasses, brush and small conifer trees except the near vertical cuts on the north side of the bridge.

Based on a conversation with the Maintenance Supervisor of the Manchester Highway Maintenance Station, they have not encountered maintenance concerns from a geotechnical standpoint within the proposed project limits.

Subsurface Exploration

Subsurface exploration was performed at the site to assess foundation conditions for a proposed standard plan wall (Wall 1) and the proposed soldier pile wall (Wall 2). Kleinfelder (Geotechnical Consultants) for OGDN and OGDN drilled a combined four

mud-rotary borings and four auger borings to define subsurface conditions, 2 borings (02-1 and 02-2) were drilled adjacent to the anticipated "Wall 1" layout line (proposed standard plan wall) and an additional 4 borings (05-1 to 05-4) were drilled adjacent to the "Wall 2" layout line (proposed Soldier-Pile wall). The final 2 borings (02-3 and 02-4) were drilled north of the existing bridge structure in an area where cuts were proposed; however, it is our understanding that these cuts have been eliminated from the current proposed project scope of work. The locations of these borings are shown on the Boring Location Map attached as Plate 3, as 05-1 to 05-4 and 02-1 through 02-4. The borings for this project were completed by our Office in October 2002 and Kleinfelder in November 2005.

"Relatively undisturbed" samples were collected at various depths by advancing a "Standard Penetration Test" (SPT) sampler (1.4 inch O.D.) and "California Modified Sampler" (2.0 inch O.D.) under a standard striking force weight (140 lb) dropped 30 inches. Materials obtained within the sampler and cuttings from the hole were utilized to visually classify the subsurface material encountered.

Subsurface Soil and Rock Conditions

Materials at this site consist of an upper layer of soil (fill material), of variable thickness, that was classified as varying brown color, medium dense to dense/hard, clayey-sand/silty-sand and sandy-silt with gravel and some boulders and cobbles (effective strength parameters γ=130 pcf, φ=30°, c=200 psf). Below the fill layer is a layer of native soil, also of variable thickness, that was classified as very loose to dense silty-sand. Below the native soil layer, very intensely to intensely weathered sedimentary bedrock (Sandstone) was encountered in two of the four borings completed for this wall. The two borings bedrock was encountered in were located near the southern and northern banks of the gulch. Bedrock was encountered at elevations 49.5' and 64.9' in borings 05-2 and 05-3 respectively.

A more detailed description of the subsurface conditions encountered during our subsurface exploration is presented on the project LOTB's which will be forwarded upon completion.

Laboratory Testing

Representative soil samples were chosen for testing from the borings for this investigation. A total of nineteen soil samples were selected from borings 05-1 to 05-4 for testing to determine classification and engineering properties.

Three soil samples were chosen from borings 02-1 and 02-2 for corrosion testing. Results of the corrosion testing are provided in the corrosion section of this report.

Groundwater

Groundwater was not encountered in the two auger borings completed for Retaining Wall 1, and due to the drilling method employed for the four borings for Retaining Wall 2 (Soldier Pile wall) measurements on groundwater could not be obtained. It is anticipated that groundwater would not be encountered in the fill but is likely at the elevation of the drainage in Bonee Gulch. It should be anticipated that groundwater elevations will fluctuate depending on the time of year, variations of water levels within Greenwood Creek and Bonee Gulch and annual rainfall/snowfall.

Corrosion

Corrosion testing was completed on selected samples from Borings 02-1 and 02-2. Results of the test are provided in the table below.

Boring Number	Depth of Sample (ft)	pH	Minimum Resistivity (ohm-cm)
02-1	5-10	8.0	5400
02-2	16	6.3	5700
02-2	25	7.7	6100

A site is considered to be corrosive if one or more of the following conditions exist for the representative soil: chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater, or pH is 5.5 or less. The minimum resistivity serves only as an indicator parameter for possible presence of soluble salts and is not included to define a corrosive site. It is the practice of the Corrosion Technology Branch that if the minimum resistivity of the sample is greater than 1000 ohm-cm, the sample is considered to be non-corrosive and testing to determine the sulfate and chloride content is not performed. Based on the results of the test performed the site should be considered non-corrosive.

Conclusions and Recommendations

General

Based on information provided by the Office of Bridge Design (OBDN), the general layout for the proposed soldier pile wall will be located roughly 20ft. right of AL-1 line for the proposed highway realignment. The lineal length of the wall will be approximately 165 feet.

It should be noted that foundations recommendations for Wall 1 will be provided to District 1 Design under a separate cover "Geotechnical Design Report", however due to the close proximity between Wall 1 and Wall 2 and similar subsurface materials encountered, information obtained from the borings completed for Wall 1 were utilized for developing recommendations provided in this report.

Based upon our literature review, subsurface investigation, analyses, and interaction with OBDN, we are providing the recommendations presented below for design of the proposed retaining wall.

Foundation Recommendations

The ultimate axial load on the piles, provided by OBDN are 48.1 kips for piles 1-11 and piles 14-27 and 64.3 kips for piles 12-13 which are located on each side of the existing concrete culvert. We have provided recommended minimum embedment depths for the axial loads provided for each pile in the table below.

Recommended pile embedment depth listed according to pile number for Wall 2

Pile *	Section	Pile Diameter (ft)	Top of Wall Elevation @ Pile (ft)	Minimum Pile Embedment Depth (ft)
1	HP 14x102	2.5	96.6	12 ft
2	HP 14x102	2.5	96.2	12 ft
3	HP 14x102	2.5	95.9	12 ft
4	HP 14x102	2.5	95.5	12 ft
5	HP 14x102	2.5	95.2	12 ft
6	HP 14x102	2.5	94.8	12 ft
7	HP 14x102	2.5	94.5	12 ft
8	HP 14x102	2.5	94.1	12 ft
9	HP 14x102	2.5	93.8	12 ft
10	HP 14x102	2.5	93.5	12 ft
11	HP 14x102	2.5	93.1	12 ft
12	W 24x207	3	92.8	12 ft
13	W 24x207	3	91.9	12 ft
14	HP 14x102	2.5	91.6	12 ft
15	HP 14x102	2.5	91.3	12 ft
16	HP 14x102	2.5	90.9	12 ft
17	HP 14x102	2.5	90.6	12 ft
18	HP 14x102	2.5	90.2	12 ft
19	HP 14x102	2.5	89.9	12 ft
20	HP 14x102	2.5	89.5	12 ft
21	HP 14x102	2.5	89.2	12 ft
22	HP 14x102	2.5	88.8	12 ft
23	HP 14x102	2.5	88.5	12 ft
24	HP 14x102	2.5	88.2	12 ft

Pile	Section	Pile Diameter (ft)	Top of Wall Elevation @ Pile (ft)	Minimum Pile Embedment Depth (ft)
25	HP 14x102	2.5	87.8	12 ft
26	HP 14x102	2.5	87.5	12 ft
27	HP 14x102	2.5	87.1	12 ft

Recommended embedment depths are based on axial loads provided from the OBDN. Embedment depths may be different for lateral loads. Design minimum embedment depths should be based on the deeper embedment required for lateral or axial loads.
Embedment depth is assumed to start at finish grade at front face of wall.

Construction Considerations

Caving conditions could be encountered in the subsurface during drilling of the pile holes due to the granular nature of the subsurface material identified at the site. Thus, temporary casing maybe needed to keep the holes open prior to placing grout and concrete. Should temporary casing be utilized, it shall be removed prior to placement of the lagging.

Groundwater may be encountered in the subsurface during drilling of the pile holes. If groundwater is encountered, pile installations will require dewatering or the placement of concrete using the slurry displacement method. If the contractor opts to place the concrete in wet conditions, the specifications should require the displacement of water via a closed system using a pump or a tremie tube to place concrete at the bottom of the hole.

Moderately hard to hard layers of Sandstone may be encountered in the subsurface during drilling of the pile holes.

Project Information

Standard Special Provisions 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(s) of this report via electronic mail.

Data and information attached with the project plans are:

A. None

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

A. "Foundation Report", Retaining Wall No. 10E001, dated August 24, 2009

B. *"Geotechnical Design Report", 01-MEN-1 PM 33.0/34.0, dated March 13, 2009.*
C. *"Foundation Report Addendum", Bridge No. 10-0156, dated March 3, 2009.*

Data and information available for inspection at the District Office:
A. *None*

Data and information available for inspection at the Transportation Laboratory:
A. *Recovered core material from borings*

If any conceptual changes are made during final project design, the Office of Geotechnical Design North should review those changes to determine if these foundation recommendations are still applicable. If you have any additional questions, please call me at (916) 227-1041.

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William Webster CEG. #2485
Engineering Geologist
Geotechnical Design - North

c: DBrittsan
CNarwold (E-Copy)
TPhillips (D1 Design E-Copy)
Structure OE (E-Copy)
MStapleton DME (E-Copy)
ETaddese PCE (E-Copy)
REPending File
GDN File
GS File Room

References:

1. Western Regional Climate Center, http://www.wrcc.dri.edu/ , February 2009.

2. United States Geological Survey (USGS) 7.5 minute Topographic Map "Elk Quadrangle," 1960 and "'Mallo Pass Quadrangle", 1974.

3. C.W. Jennings and R.G. Strand (1960) "Geologic Map of California, Ukiah Sheet", California Department of Conservation, Division of Mines and Geology, Scale 1:250,000.

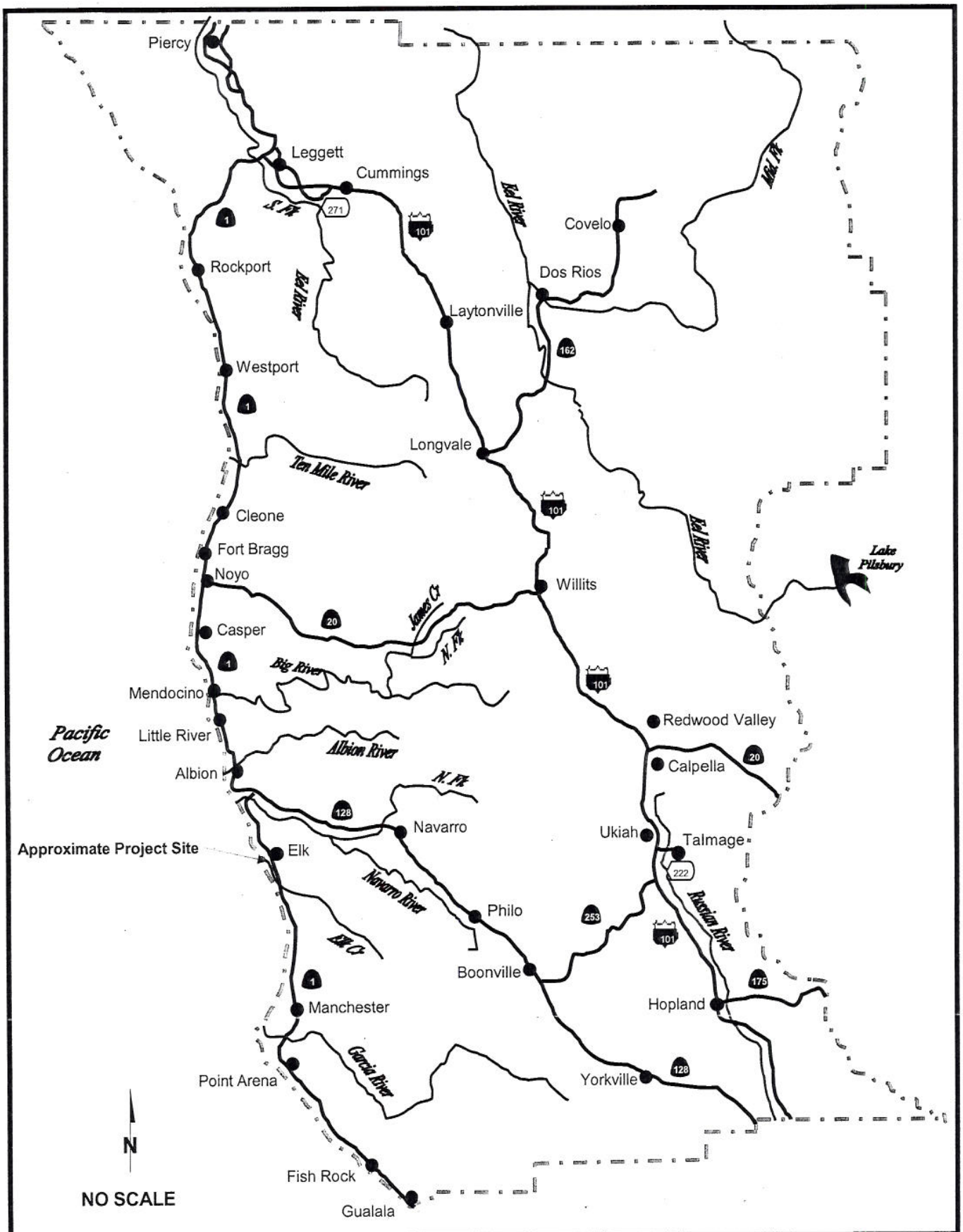
4. California Geologic Survey (CGS), DMG CD 99-002 "North Coast Watersheds Mapping", 1999.

5. CGS, Open File Report 2000-19 "A General Guide for Ultramafic Rocks in California - Areas More Likely to Contain Naturally Occurring Asbestos", 2000.

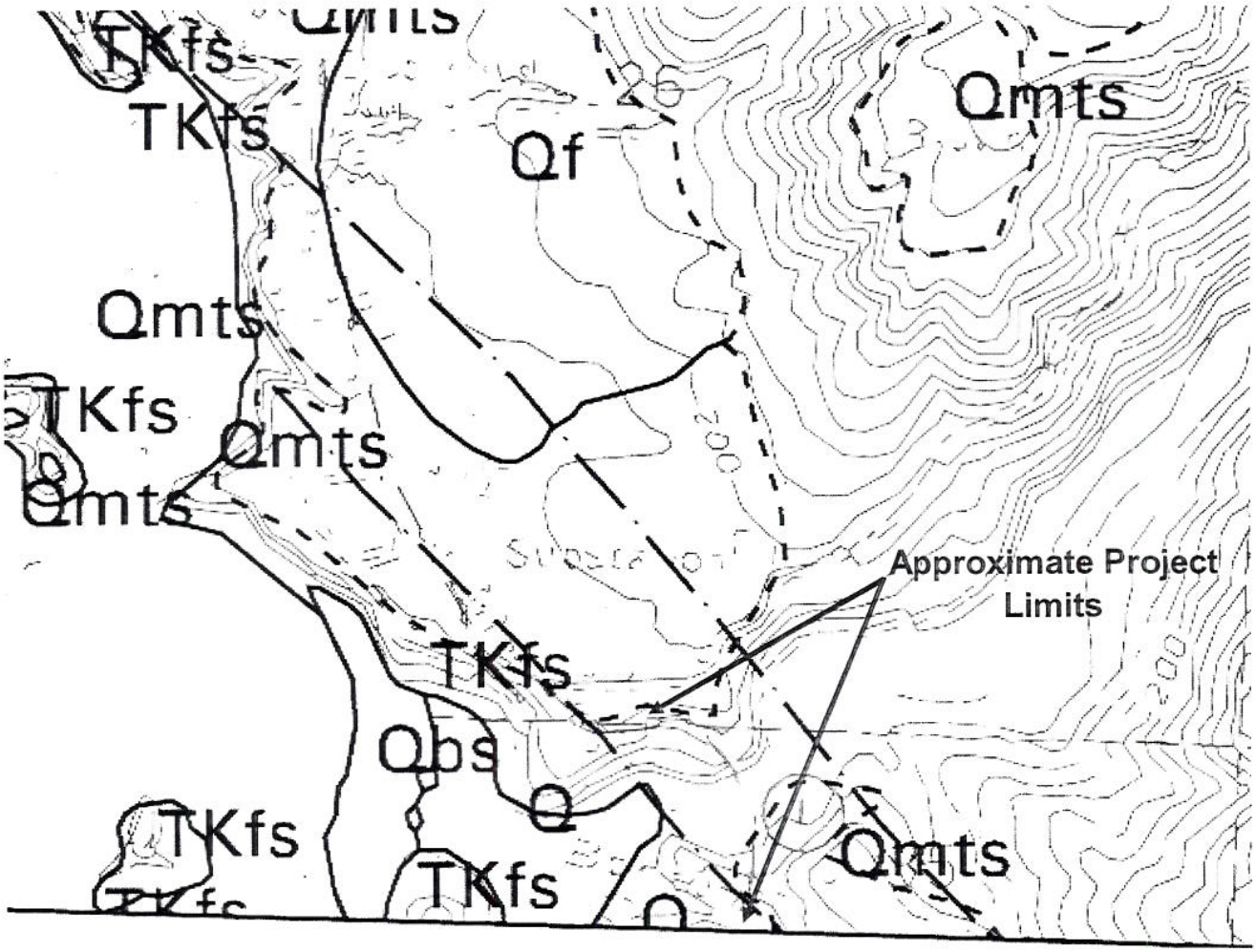
6. Caltrans DOT, "Asbestos Locations Map District 1", 2001.

7. Mualchin, L. (1996) "California Seismic Hazard Map 1996, Based on Maximum Credible Earthquake (MCE)", Office of Earthquake Engineering, California Department of Transportation.

8. United States Department of Agriculture "Soil Survey of Mendocino County, California Western Part", 2001.



Caltrans	CALTRANS Engineering Services Office of Geotechnical Services Geotechnical Design Branch - North	EA: 01-310101 Date: March-09	**VICINITY MAP**
		01-MEN-1 PM 33.0/34.0 **Geotechnical Design Report**	PLATE NO. **1**



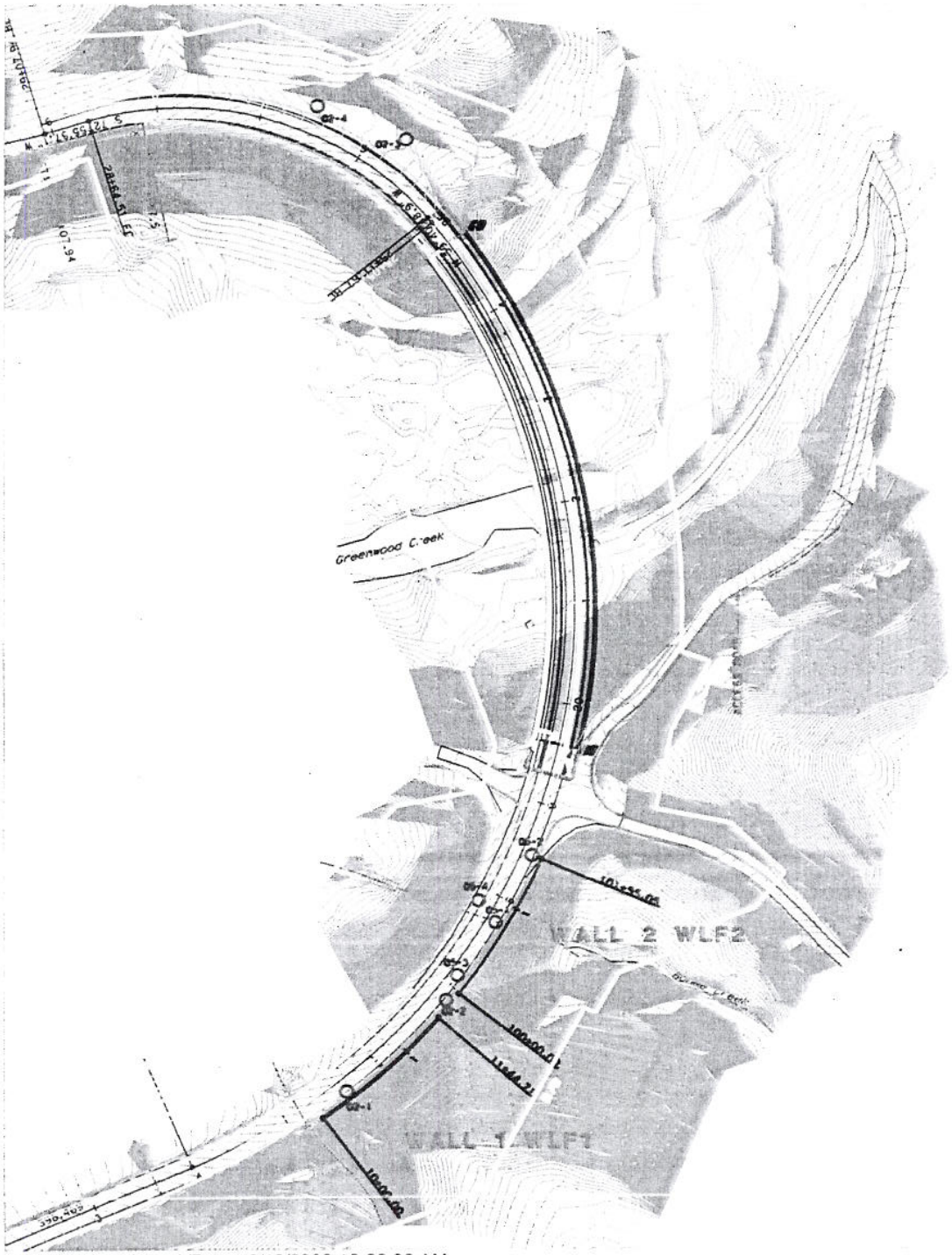
Q	undivided Quaternary sedimentary rocks
Qfp-Qmts	flood plain deposits-marine terrace deposits
Qmts	marine terrace deposits
TKfs	Coastal Belt Franciscan Complex

N

NO SCALE

CALTRANS
Engineering Services
Office of Geotechnical Services
Geotechnical Design Branch - North

EA: 01-310101		GEOLOGIC MAP
Date: March-09		
01-MEN-1 PM 33.0/34.0		PLATE NO.
Foundation Report		2



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CALTRANS Engineering Services Office of Geotechnical Services Geotechnical Design Branch - North	EA: 01-310101	**BORING LOCATION MAP**	
	Date: March-09		
	01-MEN-1 PM 33.0/34.0 **Foundation Report**		PLATE NO. **3**

Appendix 1
gINT Logs

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Thorne	10-10-02	10-10-02	NAD83	02-1
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line) ~ 12' Rt Sta ~ 5+61 Center line	SURFACE ELEVATION ~152 ft MLLW
DRILLING METHOD Hollow-Stem Auger			DRILL RIG Acker 75	BOREHOLE DIAMETER 6 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT			SPT HAMMER TYPE Safety Hammer (140#/30")	HAMMER EFFICIENCY, ERi
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING 25.4 ft

ELEVATION (ft)	DEPTH (ft)	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	GRAVELLY SILT with SAND (ML); medium stiff; dark brown; dry to moist [FILL].												Fill (Shoulder Backing)
149.50	2													
147.50	4													
	5	SEDIMENTARY ROCK (SANDSTONE), moderate yellowish brown, intensely to moderately weathered, moderately soft to moderately hard, intensely fractured [BEDROCK].		1	Ref									Encountered Bedrock at 5'
145.50	6													
143.50	8													
141.50	10			2	Ref									Hard Auguring
139.50	12													
137.50	14													
	15			3	Ref									
135.50	16													
133.50	18													
131.50	20			4	26 15									Hard Auguring
129.50	22													
127.50	24													
	25			5	Ref									
125.50	26	Bottom of borehole at 25.4 ft bgs												
123.50	28													
	30													

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Office of Geotechnical Design - North

REPORT TITLE				HOLE ID
BORING RECORD				02-1
DIST. 01	COUNTY Mendocino	ROUTE 1	POSTMILE D33.0/D34.0	EA 01-31010
PROJECT OR BRIDGE NAME Greenwood Creek				
BRIDGE NUMBER	PREPARED BY BWebster		DATE 2-11-02	SHEET 1 of 1

CALTRANS BORING RECORD MET+ENG FIXED LOGS.GPJ CALTRANS LIBRARY 040808.GLB 3/26/09

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Thorne	10-10-02	10-10-02	NAD83	02-2
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line) ~ 17.6' Rt Sta ~ 6+84.5 Center line	SURFACE ELEVATION ~126 ft MLLW
DRILLING METHOD Hollow-Stem Auger			DRILL RIG Acker 75	BOREHOLE DIAMETER 6 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT			SPT HAMMER TYPE Safety Hammer (140#/30")	HAMMER EFFICIENCY, ERi
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING 26.5 ft

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		GRAVELLY SILT with SAND (ML); medium stiff; dark brown; dry to moist [FILL].												
124.10	2														
122.10	4														
120.10	6			X	1	6 4 4	8								
118.10	8		SANDY SILTY CLAY to CLAYEY SILT with GRAVEL (CL/ML); medium stiff; dark brown; moist; organics.												
116.10	10			X	2	6 4 4	8								
114.10	12		Lean CLAY with SAND (CL); soft; dark reddish brown; moist to wet; trace gravel, organics, slight hydrocarbon odor.												
112.10	14														
110.10	16			X	3	1 2 2	4								
108.10	18														
106.10	20			X	4	4 10 9	19								
	21		SEDIMENTARY ROCK (SANDSTONE), moderate yellowish brown, intensely weathered, moderately soft to moderately hard, intensely fractured [BEDROCK].												
104.10	22														
102.10	24														
100.10	26			X	5	8 9 11	20								
	27		Bottom of borehole at 26.5 ft bgs												
98.10	28														
	30														

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REPORT TITLE				HOLE ID
BORING RECORD				02-2
DIST. 01	COUNTY Mendocino	ROUTE 1	POSTMILE D33.0/D34.0	EA 01-31010
PROJECT OR BRIDGE NAME Greenwood Creek				
BRIDGE NUMBER	PREPARED BY BWebster		DATE 2-11-02	SHEET 1 of 1

CALTRANS BORING RECORD MET+ENG FIXED LOGS.GPJ CALTRANS LIBRARY 040808.GLB 3/26/09

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
P.Holland	11-29-05	11-29-05	NAD83	05-1
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line) ~ 12.6' Rt Sta ~ 7+75.2 Center line	SURFACE ELEVATION ~85 ft MLLW
DRILLING METHOD Rotary Wash			DRILL RIG Mobile B47	BOREHOLE DIAMETER 3.7 in
SAMPLER TYPE(S) AND SIZE(S) (ID) 2" Cal. Mod.			SPT HAMMER TYPE Safety Hammer (140#/30")	HAMMER EFFICIENCY, ERi
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING 73.0 ft

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		ASPHALT.												
	1		Poorly graded GRAVEL with SILT and SAND (GP-GM); AGGREGATE BASE.												
82.90	2		CLAYEY SAND (SC); very dense; yellowish brown to dark brown; moist; trace GRAVEL; coarse to fine SAND; medium plasticity fines; stratified; weak cementation [FILL].												
	3														
80.90	4														
	5				05-1-1										
78.90	6														
	7				05-1-2	9 27 40	67			13	120				
76.90	8														
	9														
74.90	10				05-1-3										
	11														
72.90	12				05-1-4	8 14 21	35								
	13		Dense.												
70.90	14				05-1-5										
	15														
68.90	16														
	17		Dark yellowish brown.		05-1-6	14 28 31	59								
66.90	18														
	19														
64.90	20														
	21				05-1-7										
62.90	22		Vague stratification.		05-1-8	10 11 12	23								
	23														
60.90	24				05-1-8a										
	25														
58.90	26														
	27				05-1-9	15 22 36	58			17	119				
56.90	28		Increased sand content, increased fine angular gravel content.												
	29														
	30														

(continued)

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

REPORT TITLE				HOLE ID
BORING RECORD				05-1
DIST. 01	COUNTY Mendocino	ROUTE 1	POSTMILE D33.0/D34.0	EA 01-31010
PROJECT OR BRIDGE NAME Greenwood Creek				
BRIDGE NUMBER	PREPARED BY BWebster		DATE 2-19-09	SHEET 1 of 3

CALTRANS BORING RECORD MET+ENG FIXED LOGS.GPJ CALTRANS LIBRARY 040808.GLB 3/26/09

ELEVATION (ft)	DEPTH (ft)	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
	30	CLAYEY SAND (SC) *(continued)*.												
	31	SILTY SAND with GRAVEL (SM); dense; yellowish brown; moist; fine, angular GRAVEL; coarse to fine, angular SAND; pockets of more clayey material [FILL].												
52.90	32		05-1-10		14 13 21	34								
	33													
50.90	34													
	35													
48.90	36	Weathered sandstone cobble with quartz veins.												
	37		05-1-11		8 16 26	42			15	121				
46.90	38													
	39													
44.90	40													
	41													
42.90	42		05-1-12		10 11 11	22								
	43													
40.90	44													
	45													
38.90	46													
	47		05-1-13		18 31 29	60								
36.90	48													
	49	SILTY SAND (SM); very loose; bluish gray; wet; fine SAND; trace organics, vague stratification.												
34.90	50													
	51													
32.90	52		05-1-14		1 0 1	1								
	53													
30.90	54	SILTY SAND with GRAVEL (SM); medium dense; bluish gray; wet; subangular GRAVEL; fine SAND.												
	55													
28.90	56													
	57	Trace organicas, fine gravel.	05-1-15		11 8 7	15								
26.90	58													
	59	SILTY SAND (SM); dense; dark brown; wet; trace subangular GRAVEL; fine SAND.												
24.90	60													
	61													
22.90	62		05-1-16		8 31 29	60			13	133				
	63													
20.90	64													
	65													
	66	Lense of fine subangular gravel												

(continued)

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

REPORT TITLE				HOLE ID
BORING RECORD				05-1
DIST. 01	COUNTY Mendocino	ROUTE 1	POSTMILE D33.0/D34.0	EA 01-31010
PROJECT OR BRIDGE NAME Greenwood Creek				
BRIDGE NUMBER	PREPARED BY BWebster		DATE 2-19-09	SHEET 2 of 3

CALTRANS BORING RECORD MET+ENG FIXED LOGS.GPJ CALTRANS LIBRARY 040808.GLB 3/26/09

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
	66		SILTY SAND (SM) *(continued)*.												
	67		Medium dense.		05-1-17	5 6 9	15								
16.90	68														
	69														
14.90	70														
	71														
12.90	72				05-1-18	13 17 18	35								
	73		Medium dense.												
			Bottom of borehole at 73.0 ft bgs												
10.90	74														
	75														
8.90	76														
	77														
6.90	78														
	79														
4.90	80														
	81														
2.90	82														
	83														
0.90	84														
	85														
-1.10	86														
	87														
-3.10	88														
	89														
-5.10	90														
	91														
-7.10	92														
	93														
-9.10	94														
	95														
-11.10	96														
	97														
-13.10	98														
	99														
-15.10	100														
	101														
	102														

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

REPORT TITLE				HOLE ID
BORING RECORD				05-1
DIST. 01	COUNTY Mendocino	ROUTE 1	POSTMILE D33.0/D34.0	EA 01-31010
PROJECT OR BRIDGE NAME Greenwood Creek				
BRIDGE NUMBER	PREPARED BY BWebster		DATE 2-19-09	SHEET 3 of 3

CALTRANS BORING RECORD MET+ENG FIXED LOGS.GPJ CALTRANS LIBRARY 040908.GLB 3/26/09

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
B.Von Dessonneck	11-29-05	11-29-05	NAD83	05-2
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line) ~ 15' Rt Sta ~ 8+50 Centerline	SURFACE ELEVATION ~85 ft MLLW
DRILLING METHOD Rotary Wash			DRILL RIG Mobile B47	BOREHOLE DIAMETER 3.7 in
SAMPLER TYPE(S) AND SIZE(S) (ID) 2" Cal. Mod.			SPT HAMMER TYPE Safety Hammer (140#/30")	HAMMER EFFICIENCY, ERi
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING 45.0 ft

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		ASPHALT.												
	1		SILTY SAND (SM); medium dense; brownish yellow to very dark brown; moist; coarse to fine SAND; weak cementation [FILL].												
83.30	2														
	3														
81.30	4														
	5														
79.30	6				05-2-1	8 11 17	28	67		18	114				
	7														
77.30	8														
	9														
75.30	10														
	11		SILTY SAND with GRAVEL (SM); medium dense; olive brown; moist; coarse to fine SAND; weak cementation [FILL].		05-2-2	7 12 11	23	72							
73.30	12														PI
	13														
71.30	14														
	15														
69.30	16		SILTY SAND (SM); medium dense; dark olive gray; moist; medium to fine SAND; some clay [FILL].		05-2-3	16 16 10	26	50							
	17														
67.30	18														
	19														
65.30	20														
	21		SANDY SILT with GRAVEL (ML); hard; very dark gray; medium to fine SAND [FILL].		05-2-4	7 11 14	25	50							
63.30	22														
	23														
61.30	24														
	25														
59.30	26				05-2-5	12 11 6	17	22							
	27		SANDY SILT with GRAVEL (ML); medium stiff; light olive brown; coarse to fine SAND [FILL].												
57.30	28														
	29														
	30														

(continued)

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

REPORT TITLE				HOLE ID
BORING RECORD				05-2
DIST. 01	COUNTY Mendocino	ROUTE 1	POSTMILE D33.0/D34.0	EA 01-31010
PROJECT OR BRIDGE NAME Greenwood Creek				
BRIDGE NUMBER	PREPARED BY BWebster		DATE 2-24-09	SHEET 1 of 2

CALTRANS BORING RECORD MET+ENG FIXED LOGS.GPJ CALTRANS LIBRARY 040808.GLB 3/26/09

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
	30		SANDY SILT with GRAVEL (ML)*(continued)*.												
	31		SILTY SAND (SM); loose; light olive brown; fine SAND.		05-2-6	4 5 3	8	44							
53.30	32														
	33														
51.30	34														
	35														
49.30	36		SEDIMENTARY ROCK (SANDSTONE), fine-grained, grayish brown, very intensely weathered, moderately hard, intensely fractured, (thin Mn staining on fractures), moderately rough fractures.		05-2-7 05-2-8	50		11 76	15						
	37														
47.30	38														
	39														
45.30	40		At EL. 45.3 ft, grades to moderately weathered, hard, with numerous quartz veins.												
	41				05-2-9			79	36						
43.30	42														
	43														
41.30	44		At EL. 41.8 ft, becomes olive gray, intensely to moderately weathered.												
	45		Bottom of borehole at 45.0 ft bgs												
39.30	46														
	47														
37.30	48														
	49														
35.30	50														
	51														
33.30	52														
	53														
31.30	54														
	55														
29.30	56														
	57														
27.30	58														
	59														
25.30	60														
	61														
23.30	62														
	63														
21.30	64														
	65														
	66														

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

REPORT TITLE				HOLE ID
BORING RECORD				05-2
DIST. 01	COUNTY Mendocino	ROUTE 1	POSTMILE D33.0/D34.0	EA 01-31010
PROJECT OR BRIDGE NAME Greenwood Creek				
BRIDGE NUMBER	PREPARED BY BWebster		DATE 2-24-09	SHEET 2 of 2

CALTRANS BORING RECORD MET+ENG FIXED LOGS.GPJ CALTRANS LIBRARY 040808.GLB 3/26/09

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
B.Von Dessonneck	11-30-05	11-30-05	NAD83	05-3
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line) ~ 11.5' Rt Sta ~ 7+11 Centerline	SURFACE ELEVATION ~93 ft MLLW
DRILLING METHOD Rotary Wash			DRILL RIG Mobile B47	BOREHOLE DIAMETER 3.7 in
SAMPLER TYPE(S) AND SIZE(S) (ID) 2" Cal. Mod.			SPT HAMMER TYPE Safety Hammer (140#/30")	HAMMER EFFICIENCY, ERi
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING 35.0 ft

ELEVATION (ft)	DEPTH (ft)	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	ASPHALT.											
	1	SANDY SILT with GRAVEL (ML); hard; very dark grayish brown; moist; medium to fine SAND [FILL].											
90.80	2												
	3												
88.80	4												
	5			05-3-1	9 21 25	46	44						
86.80	6												
	7												
84.80	8												
	9												
82.80	10	SANDY SILT (ML); hard; very dark grayish brown; moist; fine SAND; some coarse sand [FILL].		05-3-2	8 12 15	27	50		20	116			
	11												
80.80	12												
	13												
78.80	14												
	15	SILTY SAND with GRAVEL (SM); medium dense; dark yellowish brown; moist; medium to fine SAND [FILL].		05-3-3	11 12 17	29	72						
76.80	16												
	17												
74.80	18												
	19												
72.80	20			05-3-4	7 11 11	22	44		15	120			
	21												
70.80	22												
	23												
68.80	24												
	25	SILTY SAND with GRAVEL (SM); medium dense; dark yellowish brown; moist.		05-3-5	3 6 15	21	56						
66.80	26												
	27	SEDIMENTARY ROCK (SANDSTONE), massive, grayish black, intensely weathered, very intensely fractured, (silica).											
64.80	28			05-3-6			72	43					
	29												
	30												

(continued)

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

REPORT TITLE				HOLE ID
BORING RECORD				05-3
DIST. 01	COUNTY Mendocino	ROUTE 1	POSTMILE D33.0/D34.0	EA 01-31010
PROJECT OR BRIDGE NAME Greenwood Creek				
BRIDGE NUMBER	PREPARED BY BWebster		DATE 2-24-09	SHEET 1 of 2

CALTRANS BORING RECORD MET+ENG FIXED LOGS.GPJ CALTRANS LIBRARY 040808.GLB 3/26/09

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
	30		SEDIMENTARY ROCK (Sandstone)*(continued)*.		05-3-7			100	55						
	31		At EL. 61.8 ft, grades to intensely to moderately weathered, with quartz veining.												
60.80	32														
	33														
58.80	34														
	35		Bottom of borehole at 35.0 ft bgs												
56.80	36														
	37														
54.80	38														
	39														
52.80	40														
	41														
50.80	42														
	43														
48.80	44														
	45														
46.80	46														
	47														
44.80	48														
	49														
42.80	50														
	51														
40.80	52														
	53														
38.80	54														
	55														
36.80	56														
	57														
34.80	58														
	59														
32.80	60														
	61														
30.80	62														
	63														
28.80	64														
	65														
	66														

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

REPORT TITLE				HOLE ID
BORING RECORD				05-3
DIST. 01	COUNTY Mendocino	ROUTE 1	POSTMILE D33.0/D34.0	EA 01-31010
PROJECT OR BRIDGE NAME Greenwood Creek				
BRIDGE NUMBER	PREPARED BY BWebster		DATE 2-24-09	SHEET 2 of 2

CALTRANS BORING RECORD MET+ENG FIXED LOGS.GPJ CALTRANS LIBRARY 040808.GLB 3/26/09

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
P.Holland	11-30-05	11-30-05	NAD83	05-4
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line) ~ 11.7' Lt Sta ~ 7+90 Centerline	SURFACE ELEVATION ~85 ft MLLW
DRILLING METHOD Rotary Wash			DRILL RIG Mobile B47	BOREHOLE DIAMETER 3.7 in
SAMPLER TYPE(S) AND SIZE(S) (ID) 2" Cal. Mod.			SPT HAMMER TYPE Safety Hammer (140#/30")	HAMMER EFFICIENCY, ERi
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING 62.0 ft

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		ASPHALT.											
	1		SILTY SAND with GRAVEL (SM); dense; reddish brown; moist; angular GRAVEL; coarse to fine, angular SAND; homogeneous, no organics [FILL].											
83.00	2													
	3													
81.00	4													
	5													
79.00	6				5-4-1	20 30 18	48			11	123			
	7													
77.00	8													
	9													
75.00	10													
	11				5-4-2	15 29 29	58			17	114			
73.00	12													
	13													
71.00	14													
	15													
69.00	16		Medium dense. Lenses of dark brown clayey sand.		5-4-3	10 12 18	30							
	17													
67.00	18													
	19		Dark brown.											
65.00	20													
	21				5-4-4	15 23 30	53							
63.00	22		Lenses of dark brown/dark gray clayey sand.											
	23													
61.00	24													
	25													
59.00	26				5-4-5	9 18 25	43							
	27		Stratified - alternating layers of red/yellow-brown silty sand/dark brown.											
57.00	28													
	29													
	30													

(continued)

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

REPORT TITLE				HOLE ID
BORING RECORD				05-4
DIST. 01	COUNTY Mendocino	ROUTE 1	POSTMILE D33.0/D34.0	EA 01-31010
PROJECT OR BRIDGE NAME Greenwood Creek				
BRIDGE NUMBER	PREPARED BY BWebster		DATE 2-24-05	SHEET 1 of 2

CALTRANS BORING RECORD MET+ENG FIXED LOGS.GPJ CALTRANS LIBRARY 040808.GLB 3/26/09

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
	30		SILTY SAND with GRAVEL (SM)*(continued)*.												
	31		Medium dense.		05-4-6	11 8 9	17								
53.00	32		Medium dense; wet; some coarse GRAVEL.												
	33														
51.00	34														
	35		SILTY SAND with GRAVEL (SM); dense; yellowish brown; wet; coarse to fine SAND; nonplastic fines.												
49.00	36				05-4-7	17 21 30	51			12	122				
	37														
47.00	38														
	39														
45.00	40														
	41				05-4-8	16 31 28	59								
43.00	42														
	43														
41.00	44														
	45														
39.00	46		Poorly graded SAND with SILT (SP-SM); medium dense; yellowish brown; trace fine GRAVEL; fine SAND; nonplastic fines.		05-4-9	15 15 14	29			17	103				
	47														
37.00	48														
	49														
35.00	50		Bluish gray.												
	51				05-4-10	28 27 31	58								
33.00	52		Dense.												
	53														
31.00	54														
	55														
29.00	56		Sandstone; cobbles.		05-4-11	38 44 50/5"									
	57														
27.00	58														
	59														
25.00	60														
	61		Medium dense.		05-4-12	10 12 15	27								
23.00	62		Bottom of borehole at 62.0 ft bgs												
	63														
21.00	64														
	65														
	66														

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

REPORT TITLE				HOLE ID
BORING RECORD				05-4
DIST. 01	COUNTY Mendocino	ROUTE 1	POSTMILE D33.0/D34.0	EA 01-31010
PROJECT OR BRIDGE NAME Greenwood Creek				
BRIDGE NUMBER	PREPARED BY BWebster		DATE 2-24-05	SHEET 2 of 2

CALTRANS BORING RECORD MET+ENG FIXED LOGS.GPJ CALTRANS LIBRARY 040808.GLB 3/26/09

STATE OF CALIFORNIA ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF INDUSTRIAL RELATIONS
DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT
2211 Park Towne Circle, Suite 2
Sacramento, California 95825

Telephone (916) 574-2540
FAX (916) 574-2542

November 24, 2009

Department of Transportation
PO Box 3700
Eureka, California 95502-3700

Attention: Thomas Phillips

Subject: Underground Classification No. C056-045-10T & C057-045-10T
Greenwood Creek Bridge Replacement Project

Mr. Phillips

The information provided to this office relative to the above project has been reviewed. On the basis of this analysis, an Underground Classification of "Potentially Gassy with Special Conditions" has been assigned to the tunnel identified on your submittal. Please retain the original Classification for your records and deliver a true and correct copy of the Classification to the tunnel contractor for posting at the job site.

When the contractor who will be performing the work is selected, please advise them to notify this office to schedule the mandated Prejob Conference with the Division prior to commencing any activity associated with construction or rehabilitation of the tunnel.

Please be informed that whenever an employee enters any bore or shaft being constructed under 30 inches in diameter, the Mining and Tunneling Unit then has immediate jurisdiction over that job. Please contact the Mining and Tunneling Unit prior to entering such spaces.

If you have any questions on this subject, please contact this office at your earliest convenience.

Sincerely,

John R. Leahy
Senior Engineer

cc: Richard Brockman
File

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C057-045-10T

DEPARTMENT OF TRANSPORTATION
(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 1656 Union Street, Eureka, California 95501
(MAILING ADDRESS)

at GREENWOOD CREEK BRIDGE REPLACEMENT PROJECT
(LOCATION)

has been classified as *** POTENTIALLY GASSY with Special Conditions***
(CLASSIFICATION)

as required by the California Labor Code Section 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The twenty-seven 30-inch diameter by 62 feet deep drilled soldier pile wall project located on Route 1, approximately 0.4 miles south of the intersection of Route 1 and Philo-Greenwood Road, Elk, Mendocino County.

This classification shall be conspicuously posted at the place of employment.

Date November 24, 2009

John R. Leahy
(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C056-045-10T

DEPARTMENT OF TRANSPORTATION
(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 1656 Union Street, Eureka, California 95501
(MAILING ADDRESS)

at GREENWOOD CREEK BRIDGE REPLACEMENT PROJECT
(LOCATION)

has been classified as *** POTENTIALLY GASSY with Special Conditions***
(CLASSIFICATION)

as required by the California Labor Code Section 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The ten 60-inch diameter by 50 feet deep drilled bridge pier project located on Route 1, approximately 0.4 miles south of the intersection of Route 1 and Philo-Greenwood Road, Elk, Mendocino County.

This classification shall be conspicuously posted at the place of employment.

Date November 24 , 2009

John R. Leahy
(SENIOR ENGINEER)

John R. Leahy

03 77059

State of California - The Resources Agency ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
Northern Region
601 Locust Street
Redding, California 96001
(530) 225-2367

RECEIVED
MAY 08 2009
D. F. G. – EUREKA

AGREEMENT TO AMEND and EXTEND

LAKE OR STREAMBED ALTERATION AGREEMENT No. **1600-2003-0426-3**
Greenwood Creek Bridge Replacement

WHEREAS, **Mr. Alan Escarda representing the California Department of Transportation (the Operator)** and the Department of Fish and Game (DFG) entered into Lake or Streambed Alteration Agreement **No. 1600-2003-0426-3** on **April 21, 2004;** and

WHEREAS, the terms of a lake or streambed alteration agreement (agreement) may be amended by mutual written consent of the parties to the agreement; and

NOW, THEREFORE, for and in consideration of the mutual covenants and conditions set forth below, the Operator and DFG agree as follows:

WHEREAS, the term of a lake or streambed alteration agreement (Agreement) may be extended one time as per Fish and Game Code Section 1605 (b)

All conditions in Agreement No. 1600-2003-0426-3 (including this and all other amendments) remain in effect, and Agreement No. 1600-2003-0426-3 is extended for a period of approximately 5 years, terminating on **December 31, 2013.**

NOW, THEREFORE, for and in consideration of the mutual covenants and conditions set forth below, the Applicant/Responsible Party and DFG agree as follows:

1. The extension and amendment of Agreement 1600-2003-0426-3 is non-transferable.

2. Except as stipulated in this amendment, all work shall be in accordance with the original agreement, subsequent amendments, and supplemental notification information for this amendment/extension received by DFG as of December 19, 2008.

3. A copy of this amendment shall be provided to all applicable contractors/subcontractors prior to the beginning of any operations, along with a copy of the original agreement and all subsequent amendments, and must be in their possession at all times during operations.

4. For the protection of anadromous fish species, project activities that are within100 feet of the wetted channel and result in sound levels exceeding 206 decibels dB_{peak} and/or 183 dB accumulated sound exposure level (SEL) shall immediately stop and Caltrans shall meet with DFG to discuss potential impacts to fish and wildlife, and appropriate underwater monitoring, mitigation and/or remediation options. These activities shall not restart until a sound attenuation plan is submitted to DFG for review and approval. DFG shall review and approve the plan no more than 72 hours after plan submittal.

5. DFG may request information from the Operator at any time during the life of this agreement/amendment regarding the activities described herein. The applicant shall provide the information within 5 working days of the request. If requested, the Operator shall provide evidence that water diverted under riparian claim was available at the time of diversion.

6. The Operator shall be revised to: Mr. Steven Blair, representing the California Department of Transportation, hereinafter jointly and severally called the OPERATOR.

IN WITNESS WHEREOF, the parties below have executed this amendment to Lake or Streambed Alteration Agreement No. **1600-2003-0426-3** as indicated below.

CONCURRENCE

RESPONSIBLE PARTY

(Signature)

STEVEN BLAIR
(Print Name)

PROJECT MANAGER / CALTRANS
(Title/Organization)

5-8-09
(Date)

CALIFORNIA DEPARTMENT OF FISH AND GAME

William Condon
Acting Habitat Conservation Program Manager, Northern Region

5/15/09
(Date)

Prepared by Environmental Scientist Rick Macedo on May 5, 2009

DEPARTMENT OF FISH AND GAME
CENTRAL COAST REGION
(707) 944-5520
Mailing address:
POST OFFICE BOX 47
YOUNTVILLE CALIFORNIA 94599
Street address:
7329 SILVERADO TRAIL
NAPA CALIFORNIA 94558

April 23, 2004

Notification Number: R3-2003-0426

Mr. Alan Escarda
Caltrans - District 1
1656 Union Street
Eureka, California 95501

Streambed Alteration Agreement Work Window Extension
Greenwood Creek Bridge Replacement
Mendocino County

Dear Mr. Escarda:

By this letter, the Department of Fish and Game is extending the work window of the above named agreement for the 8 specific tasks (described below. Work on the following activities is permitted during the winter months between October 16 and May 31:

1. Work on the retaining wall at the existing roadway at the terrace above the floodplain;
2. Bridge rail work on the deck of the new bridge at the roadway level;
3. Bridge abutment work atop each edge of the ravine and above the floodplain;
4. Superstructure work including falsework construction, provided there is no soil disturbance within the floodplain;
5. Form, place and finish the cast-in-place concrete for superstructure of the bridge;
6. Pre-stressing and grouting of the ducts within the cast-in-place concrete;
7. Removal of the existing bridge; and
8. Work on the roadway approaching the bridge.

All of the conditions of the original agreement (Notification Number R3-2003-0426), specifically the other work windows are to remain in effect.

Please keep this letter and the attached copy of your agreement (Notification Number R3-2003-0426) available on site for inspection by Department personnel.

Sincerely,

for Scott Wilson
Robert W. Floerke
Regional Manager
Central Coast Region

cc: Fred Botti
Warden Hofer
Corinne Gray

STATE OF CALIFORNIA THE RESOURCES AGENCY
ARNOLD SCHWARZENEGGER, GOVERNOR
DEPARTMENT OF FISH AND GAME
CENTRAL COAST REGION
(707) 944-5520
Mailing address:
POST OFFICE BOX 47
YOUNTVILLE CALIFORNIA 94599
Street address:
7329 SILVERADO TRAIL
NAPA CALIFORNIA 94558

April 21, 2004

Notification Number 1600-2003-0426-3

Mr. Alan Escarda
Caltrans – District 1
1656 Union Street
Eureka, California 95501

1602 LAKE AND STREAMBED ALTERATION AGREEMENT

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

WHEREAS, the applicant Mr. Alan Escarda representing Caltrans, hereafter called the Operator, submitted a signed NOTIFICATION proposing to substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of, or use material from the streambed or lake of the following water: Greenwood Creek, located at PM 33.63 on State Route 1 in the County of Mendocino, State of California; and

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

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

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

WHEREAS, the agreement shall expire on December 31, 2008; with the work to occur within 30 feet of Greenwood Creek between July 10 and October 15, all other work beyond 30 feet of Greenwood Creek to occur between June 1 and October 15; and

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

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

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

This agreement is approved by:

Sincerely,

Robert W. Floerke
Regional Manager
Central Coast Region

cc: Fred Botti
Warden Hofer
Corinne Medlin

STATE OF CALIFORNIA, THE RESOURCES AGENCY GRAY DAVIS, GOVERNOR
DEPARTMENT OF FISH AND GAME
CENTRAL COAST REGION
(707) 944-5586
Mailing address:
POST OFFICE BOX 47
YOUNTVILLE CALIFORNIA 94599
Street address:
7329 SILVERADO TRAIL
NAPA CALIFORNIA 94558

Notification Number: 1600-2003-0426-3

Operator: Mr. Alan Escarda
Caltrans, District 1
1656 Union Street
Eureka, California 95501

PROJECT DESCRIPTION and PROJECT CONDITIONS

Description

The project is located on State Route 1 at PM 33.63 in Mendocino County. The project will replace the existing Greenwood Creek Bridge with a new concrete box girder bridge 554' ~~505~~ feet long and ~~26~~ 43.5 feet wide. The work at the bridge abutments will begin with installing piles and the placement of footings and abutments. New piers and abutments will be constructed using the cast in drill hole method which will require construction of a coffer dam around the pier. The new piers will not be in Greenwood Creek itself but above the ordinary high water line. The first pier will be approximately 25 feet south of the creek and the other pier approximately 100 feet north of the creek. The existing pier that is partially within Greenwood Creek will be sheared off at the level of the creek bed. There will be a temporary bridge placed across Greenwood Creek for equipment access during construction. After the temporary access is ready, columns will be formed, placed in location and set. Next the falsework will be assembled along with protective platforms that will be placed over the creek. No falsework will be placed in the creek. Next the reinforcement steel placement begins and the concrete superstructure is poured. Once the concrete is cured the falsework and temporary bridge across the creek will be removed. The old bridge will be demolished using heavy equipment. A protective covering will be erected above the channel to contain any material that may fall during demolition.

In addition to the new bridge construction a culvert extension of approximately 32.5 feet will be placed in an unnamed tributary south of the existing bridge. The culvert extension will require constructing an access road that will necessitate removal of vegetation. The culvert extension will result in the fill of approximately 163 square feet of drainage.

Conditions

1. Any activity within 30 feet of Greenwood Creek shall be confined to the period July10 to October 15 provided a minimum of a 10 foot top of bank buffer is still maintained. All other work within Greenwood Creek and its associated riparian area shall be confined to

the period June 1 to October 15. If the Operator needs more time to complete the authorized activity, the work period may be extended on a day-to-day basis by Fred Botti at 707-944-5571 or alternately, to the Yountville Office at 707-944-5520.

2. Caltrans shall develop a riparian revegetation and monitoring plan to mitigate for the temporal and permanent impacts of construction on riparian habitat. The plan shall be submitted to the Department for review and written approval prior to the onset of any construction activity. Once approved the riparian revegetation and monitoring plan shall be incorporated into this Agreement as a required condition of approval. This Agreement is not valid until said written approval is received from this Department.

3. The specific type of protective covering over the stream channel during demolition is not restricted but it shall be anchored outside the creek and beyond the creek banks. It shall be of such a design that any and all material generated during the demolition of the existing bridge is contained within the protective covering. No material from the existing bridge, other than the footing of the existing pier, shall be allowed to enter the waters of the State.

4. Any trees which must be cut are to be cut at ground level and the root mass left in place so they can resprout.

5. If the excavation site must be dewatered, any muddy, or otherwise contaminated, water shall be pumped to a settling pond located outside the stream channel or to a stable upland site where the water can clear prior to re-entering the stream.

6. Staging/storage areas for equipment, materials, fuels, lubricants and solvents, will be located outside of the stream's high water channel and associated riparian area. Stationary equipment such as motors, pumps, generators, compressors, and welders, located within the dry portion of the stream channel or adjacent to the stream will be positioned over drip-pans. Vehicles will be moved out of the normal high water area of the stream prior to refueling and lubricating.

7. A copy of this agreement must be provided to the Contractor and all subcontractors who work within the stream zone and must be in their possession at the work site.

8. Building materials and/or construction equipment shall not be stockpiled or stored where they could be washed into the water or where they will cover aquatic or riparian vegetation.

9. Debris, soil, silt, bark, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from project related activities, shall be prevented from contaminating the soil and/or entering the waters of the state. Any of these materials, placed within or where they may enter a stream or lake, by Operator or any party working under contract, or with the permission of the Operator, shall be removed immediately.

10. The contractor shall not dump any litter or construction debris within the riparian/stream zone. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site.

11. The Operator is liable for compliance with the terms of this Agreement, including violations committed by the contractors and/or subcontractors. The Department reserves the right to suspend construction activity described in this agreement if the Department determines any of the following has occurred:
    i. A). Failure to comply with any of the conditions of this Agreement
    ii. B). Information provided in support of the Agreement is determined by the Department to be incomplete or inaccurate.
    iii. C). Information becomes available to the Department that was not known when preparing the original conditions of this Agreement (including, but not limited to, the occurrence of State or federally listed species in the area or risk to resources not previously observed).
    iv. D).The project as described in the Agreement has changed or conditions affecting fish and wildlife resources change.
12. Any violation of the terms of this Agreement may result in the project being stopped, a citation being issued, or charges being filed with the District Attorney. Contractors and subcontractors may also be liable for violating the conditions of this agreement.

13. Department personnel or its agents may inspect the work site at any time.

Amendments and Renewals

The Operator shall notify the Department before any modifications are made in the project plans submitted to the Department. Project modifications may require an amendment or a new notification.

This agreement is transferable to subsequent owners of the project property by requesting an amendment.

To renew the agreement beyond the expiration date, a written request for a renewal must be submitted to the Department (1600 Program, Post Office Box 47, Yountville, California 94599) for consideration at least 30 days before the agreement expiration date. A renewal requires a fee. The Fee Schedule can be obtained at www.dfg.ca.gov/1600 or by phone at (707) 944-5520. Renewals of the original Agreement are issued at the discretion of the Department.

To modify the project, a written request for an amendment must be submitted to the Department (1600 Program, Post Office Box 47, Yountville, California 94599). The fee for an amendment is half (1/2) the original fee. Amendments to the original agreement are issued at the discretion of the Department.

Please note that you may not proceed with construction until your proposed project has undergone CEQA review and the Department signs the Agreement.

I, the undersigned, state that the above is the final description of the project I am submitting to the Department for CEQA review, leading to an Agreement, and agree to implement the conditions above required by the Department as part of that project. I will not proceed with this project until the Department signs the Agreement. I also understand that the CEQA review may result in the addition of measures to the project to avoid, minimize, or compensate for significant environmental impacts:

Operator's name (print): Alan ESCARDA

Operator's signature: Alan Escarda

Signed the 6th **day of** April, 200~~3~~4

For Department Use Only					
Notification Number:		Date Received:		Date Completed:	
Fees Enclosed?	Yes $ _____		No		
Action Taken/Notes:					

1600-2003-0426-3
ck Rec'd 5-28-03

#82-743695
$772.75
Caltrans

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

Hofer
Morse

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

(See attachment/enclosure for instructions)

Notification Type		
☑ 1601 (Public)	☐ Timber Harvest Plan	(No. _____)
☐ 1603 (Private)	☐ Commercial Gravel Extraction	(No. _____)
	☐ Water Application	(No. _____)

Applicant Information			
	Name	Address	Telephone/FAX
Applicant:	State of California Department of Transportation (Caltrans) ATTN: Alan Escarda, Project Manager	1656 Union Street Eureka, CA 95501	Business: (707) 441-2097 Fax: (707) 441-5733
Operator:	Alan Escarda Project Manager		Business: Fax:
Contractor: *(if known)*			Business: Fax:
Contact Person: *(if not applicant)*	Don Schmoldt Caltrans Biologist		Business: (916) 274-0573 Fax:
Property Owner:	State of California		Business: Fax:

Project Location					
Location Description:	State Route 1, Mendocino County, Greenwood Creek Bridge, south of the town of Elk.				
County			Assessor's Parcel Number		
Mendocino County			Existing State right of way, 127-240-05, 127-250-03, 05, 10, 11		
USGS Map		Township	Range	Section	Latitude/Longitude
Elk and Malo Pass Creek		15N	17W	35	
Name of River, Stream, or Lake:	Greenwood Creek and tributary to Greenwood Creek				
Tributary To?	Pacific Ocean				

California Regional Water Quality Control Board
North Coast Region
Geoffrey M. Hales, Chairman

www.waterboards.ca.gov/northcoast
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
Phone: (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135

Linda S. Adams
Acting Secretary for Environmental Protection

Edmund G. Brown, Jr.,
Governor

March 25, 2011

In the Matter of

Water Quality Certification

for the

California Department of Transportation
Highway 1 - Greenwood Creek Bridge Replacement Project
WDID No. 1B03100WNME

APPLICANT:	California Department of Transportation
RECEIVING WATER:	Greenwood Creek and tributaries
HYDROLOGIC AREA:	Mendocino Coast Hydrologic Unit No. 113.00
COUNTY:	Mendocino
FILE NAME:	CDOT - HWY 1, Greenwood Creek Bridge Replacement Project

BY THE EXECUTIVE OFFICER:

1. On June 9, 2009, the North Coast Regional Water Quality Control Board (Regional Water Board) received an application from the California Department of Transportation (Caltrans), requesting Federal Clean Water Act (CWA), section 401, Water Quality Certification for activities related to the proposed Highway 1 – Greenwood Creek Bridge Replacement Project (project). Additional project information required for a complete application was received on January 25, 2011. The proposed project will cause disturbances to waters of the United States (U.S.) and waters of the State associated with unnamed intermittent tributaries to Greenwood Creek located within the Mendocino Coast Hydrologic Unit (HU) No.113.00 (Greenwood Creek Hydrologic Sub-Area 113.61). The Regional Water Board provided public notice of the application pursuant to title 23, California Code of Regulations, section 3858 on February 9, 2011, and posted information describing the project on the Regional Water Board's website. No comments were received.

2. The proposed project is located on Highway 1 from post mile (PM) 33.4 to 33.9, in Mendocino County. The purpose of the proposed project is to replace the existing structurally deficient bridge, at the above-referenced section of Highway 1 with a three-span cast-in-place pre-stressed box girder bridge. The new bridge would be constructed on an alignment 6.7 feet east of the existing alignment, and would be 520 feet long, with 12-foot lanes and 6-foot shoulders. The new bridge includes bike railing and sidewalks. Two retaining walls are proposed within the project limits. A soldier pile retaining wall with timber lagging will be constructed in the Bone Gulch area and a comparable type of wall just south of Bonee Gulch. The wall at the southern location may be eliminated if it can be determined that a near vertical cut would remain stable.

3. Construction access would use the existing Elk County Water District access road located east and beneath the existing bridge. The southern pier of the newly proposed bridge will be located near two existing municipal water supply wells for the Elk County Water District (ECWD). To avoid potential impacts to the water supply wells during construction, Caltrans has provided funds to the ECWD to relocate and install two additional water supply wells.

4. Caltrans proposes 2.7 acres of ground disturbing activities, including: slope excavation; bridge demolition and construction; culvert repair and replacement at three locations; construction of retaining wall(s); implementing erosion and sediment control; and revegetation activities. The proposed project will result in an additional 0.18 acres (approximately 7,841 ft^2) of new impervious surface, primarily as a result of widening the bridge lanes and shoulder widths. Caltrans has incorporated post-construction storm water treatment Best Management Practices (BMPs) to the Maximum Extent Practicable (MEP) within the project, which provides the treatment of storm water runoff for 0.38 acres (16,600 ft^2) of impervious surface.

5. The proposed project will result in temporary and permanent impacts to waters of the U.S and waters of the State. Caltrans has determined that impacts to wetlands identified as waters of the U.S. would total 174 ft^2 of permanent impacts and 741 ft^2 of temporary impacts. The impacts to streams identified as waters of the U.S. total 9 ft^2 of permanent impacts and 6,512 ft^2 (0.15 acres and 145 linear ft) of temporary impacts. Temporary impacts to riparian vegetation identified as waters of the State total 2.02 acres (87,991 ft^2 and 750 linear ft).

6. As mitigation to compensate for impacts associated with this project, Caltrans proposes both on- and off-site restoration projects and on-site revegetation following construction. The off-site mitigation plan includes the restoration of an unnamed tributary to the Big River located within the Big River State Park. The restoration will include the removal of a failed culvert and the associated fill, the

installation of a prefabricated steel bowstring truss bridge, and riparian revegetation. Approximately 250 linear feet of stream will be restored and all alluvial sediment behind the fill prism will be excavated and removed down to native slopes and stream channel/corridor. The restored stream channel is to be 20 feet wide beneath the bridge and sideslope, and excavations upstream of the bridge would only occur as necessary to unbury or restore native slopes and match grades. In addition, plantings will occur outside of the stream channel, for a total of 1.24 acres of revegetation. The Big River Restoration project will be conducted in accordance with the Caltrans Prepared *Off-site Coastal Wetland Mitigation at Big River State Park, Mendocino Mitigation and Monitoring Plan*, received January 25, 2011. Subsequent to the completion of bridge, culvert, and wall construction, Caltrans will perform on-site revegetation activities for areas disturbed at a 1:1 ratio. The on-site restoration will encompass approximately 2.6 acres and include riparian and wetland restoration. The on-site restoration will be conducted in accordance with Caltrans-prepared *Greenwood Creek Bridge Replacement Project Mitigation and Monitoring Proposal*, received September 9, 2010.

7. The proposed project construction activities are scheduled to be conducted in 2011 through the end of 2014. The entire project is expected to take approximately three years to complete; however, the proposed in-channel work will only be conducted between May 15th and October 15th, when flows are low. Additional avoidance and minimization measures in the form of work window restrictions associated with construction near Greenwood Creek will be implemented as proposed by Caltrans in the application. For example, Caltrans will preserve a riparian buffer with a minimum of 10 linear feet from each bank of Greenwood Creek during construction. This buffer is to be left undisturbed, unless some trimming is necessary for taller species for equipment and construction clearance. Caltrans will utilize BMPs to provide erosion and sediment control and pollution prevention throughout the project area during construction. All graded areas within the project affected by the construction activities will be appropriately stabilized and BMPs will be implemented to ensure erosion is minimized and controlled.

8. Caltrans has applied for authorization from the Unites States Army Corps of Engineers to perform the project under their Nationwide Permits No. 14 (linear transportation projects) pursuant to Clean Water Act, section 404. Caltrans has also applied for a California Department of Fish and Game 1602 Streambed Alteration Agreement and to the California Coastal Commission for a Coastal Development Permit. In order to comply with the California Environmental Quality Act, Caltrans certified an Initial Study/Negative Declaration in December, 2002 (State Clearing House No. 2002052090). Based on project changes and amended requirements, Caltrans certified a Subsequent Negative Declaration in January, 2004. Additional project changes resulted in the preparation of an Amended Negative Declaration, certified in May, 2009. The Regional Water Board has considered the environmental documents and any proposed changes incorporated

into the project or required as a condition of approval to avoid significant effects to the environment.

9. To ensure compliance with sediment, temperature and other related Water Quality Objectives within the Basin Plan, adequate wetland and riparian protection and stringent requirements to avoid, minimize, and mitigate the sediment and temperature impacts associated with the proposed project will be incorporated as enforceable conditions this Water Quality Certification. In addition, Caltrans will be required to conduct surface water monitoring, sampling, and analysis in accordance with the conditions of the Water Quality Certification. Additionally, storm water runoff monitoring, sampling, and analysis will be conducted as required by the State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water Discharges from the State of California, Department of Transportation (Caltrans) Properties, Facilities and Activities Order No. 99 – 06 - DWQ. The surface water data collected will be utilized to assess the adequacy of BMPs during construction as well as site specific mitigation measures proposed to minimize impacts to the environment, including sediment and temperature impacts.

10. The federal antidegradation policy requires that state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. This Order is consistent with applicable federal and State antidegradation policies, as it does not authorize the discharge of increased concentrations of pollutants or increased volumes of treated wastewater, and does not otherwise authorize degradation of the waters affected by this project.

Receiving Waters:	Greenwood Creek and Tributaries Mendocino Coast Hydrologic Unit No. 113.00, Greenwood Creek Hydrologic Sub-Area No. 113.61.
Filled or: Excavated Areas	Permanent – wetlands (Waters of U.S.): 174 feet^2 Permanent - streams (Waters of U.S.): 9 feet^2 Temporary – wetlands (Waters of U.S.): 741 feet^2 Temporary – streams (Waters of U.S.): 0.15 acres (6,512 feet^2) Temporary - riparian areas (Waters of State): 2.02 acres (87,991 feet^2)

Total Linear Impacts:	Permanent - streams (Waters of U.S.): 10 linear ft
	Temporary - streams (Waters of U.S.): 145 linear ft Temporary - riparian areas (Waters of State): 750 linear ft
Dredge Volume :	None
Latitude/Longitude:	39.1264 N / 123.7119 W

ACCORDINGLY, BASED ON ITS INDEPENDENT REVIEW OF THE RECORD, THE REGIONAL WATER BOARD CERTIFIES THAT THE CALTRANS HIGHWAY 1 GREENWOOD CREEK BRIDGE REPLACEMENT PROJECT (FACILITY NO. 1B03100WNME), as described in the application will comply with sections 301, 302, 303, 306 and 307 of the Clean Water Act, and with applicable provisions of state law, provided that the Caltrans complies with the following terms and conditions:

All conditions of this order apply to Caltrans (and all its employees) and all contractors (and their employees), sub-contractors (and their employees), and any other entity or agency that performs activities or work on the project (including the off-site mitigation lands) as related to this Water Quality Certification.

1. This certification action is subject to modification or revocation upon administrative or judicial review; including review and amendment pursuant to Water Code section 13330 and title 23, California Code of Regulations, section 3867.

2. This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to title 23, California Code of Regulations, section 3855, subdivision (b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3. The validity this certification is conditioned upon total payment of any fee required under title 23, California Code of Regulations, section 3833, and owed by the applicant.

4. Except as may be modified by any preceding conditions, all certification actions are contingent on: a) the discharge being limited, and all proposed revegetation and mitigation being completed, in strict compliance with the applicant's project description, as approved herein, and b) compliance with all applicable water quality requirements and water quality control plans including the requirements of the Basin Plan, and amendments thereto.

5. All conditions required by this Order shall be included in the Plans and Specifications prepared by Caltrans for the Contractor. In addition, Caltrans shall require compliance with all conditions included in this Order in the bid contract for this project.

6. Caltrans shall construct the project in accordance with the project described in the application and the findings above, and shall comply with all applicable water quality standards as detailed in the Basin Plan.

7. Any change in the design or implementation of the project that would have a significant or material effect on the findings, conclusions, or conditions of this Order must be submitted to the Executive Officer of the Regional Water Board for prior review, consideration, and written concurrence.

8. Caltrans shall provide a copy of this Order and State Water Resources Control Board (SWRCB) Order No. 2003-0017-DWQ to the contractor, all subcontractors, and all utility companies conducting the work, and require that copies remain in their possession at the work site. Caltrans shall be responsible for work conducted by its contractor, subcontractors, or utility companies.

9. The Regional Water Board shall be notified in writing each year at least five working days (working days are Monday – Friday) prior to the commencement of channel, vegetation or ground disturbing activities, dewatering activities, major concrete pours, deck grinding or water diversion activities with details regarding the construction schedule, in order to allow Regional Water Board staff to be present on-site during installation and removal activities, and to answer any public inquiries that may arise regarding the project. Caltrans shall provide Regional Water Board staff access to the project site to document compliance with this order.

10. The Resident Engineer (or appropriately authorized agent) shall hold on-site water quality permit compliance meetings (similar to tailgate safety meetings) to discuss permit compliance, including instructions on how to avoid violations and procedures for reporting violations. The meetings shall be held at least every other week, before forecasted storm events, and when a new contractor or subcontractor arrives to begin work at the site. The contractors, subcontractors and their employees, as well as any inspectors or monitors assigned to the project, shall be present at the meetings. Caltrans shall maintain dated sign-in sheets for attendees at these meetings, and shall make them available to the Regional Water Board on request.

11. Caltrans shall alert the Elk County Water District at least 5-days in advance of any work which includes borehole drilling and concrete or cement pours or for any

aspect of the project that may affect the municipal water supply for the community of Elk.

12. All activities and best management practices (BMPs) shall be implemented according to the submitted application and the conditions in this certification. BMPs for erosion, sediment, turbidity and pollutant control shall be implemented and in place at commencement of, during, and after any ground clearing activities, construction activities, or any other project activities that could result in erosion, sediment, or other pollutant discharges to waters of the State. The BMPs shall be implemented in accordance with the Caltrans Construction Site Best Management Practice Manual (CCSBMPM) and all contractors and subcontractors shall comply with the CCSBMPM. In addition, BMPs for erosion and sediment control shall be utilized year round, regardless of season or time of year. Caltrans shall stage erosion and sediment control materials at the work site. All BMPs shall be installed properly and in accordance with the manufacturer's specifications. If the project Resident Engineer elects to install alternative BMPs for use on the project, Caltrans shall submit a proposal to Regional Water Board staff for review and concurrence.

13. Caltrans shall prioritize the use of wildlife-friendly biodegradable (not photo-degradable) erosion control products wherever feasible. Caltrans shall not use or allow the use of erosion control products that contain synthetic netting for permanent erosion control (i.e. erosion control materials to be left in place for two years or after the completion date of the project). If Caltrans finds that erosion control netting or products have entrapped or harmed wildlife, personnel shall remove the netting or product and replace it with wildlife-friendly biodegradable products. Caltrans shall not use or allow the use of erosion control products that contain synthetic materials within waters of the United States or waters of the State at any time. Caltrans shall request approval from the Regional Water Board if an exception from this requirement is needed for a specific location.

14. Work in flowing or standing surface waters, unless otherwise proposed in the project description and approved by the Regional Water Board, is prohibited. If construction dewatering of groundwater is found to be necessary, Caltrans shall use a method of water disposal other than disposal to surface waters (such as land disposal) or Caltrans shall apply for coverage under the Low Threat Discharge Permit or an individual National Pollutant Discharge Elimination System (NPDES) Permit and receive notification of coverage to discharge to surface waters, prior to the discharge.

15. Caltrans is prohibited from discharging waste to waters of the State, unless explicitly authorized by this Order. For example, no debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or concrete washings, welding slag, oil or petroleum products, or other organic or earthen material from any

construction or associated activity of whatever nature, other than that authorized by this Order, shall be allowed to enter into waters of the State. In addition, none of the materials listed above shall be placed within 150 linear feet of waters of the State or where the materials may be washed by rainfall into waters of the State.

16. If, at any time, an unauthorized discharge to surface water (including wetlands, rivers or streams) occurs, or any water quality problem arises, the associated project activities shall cease immediately until adequate BMPs are implemented. The Regional Water Board shall be notified promptly and in no case more than 24 hours after the unauthorized discharge or water quality problem arises.

17. Caltrans and their contractor are not authorized to discharge wastewater (e.g., water that has contacted uncured concrete or cement, or asphalt) to surface waters, ground waters, or land. Wastewater may only be disposed of to a sanitary waste water collection system/facility (with authorization from the facility's owner or operator) or a properly-licensed disposal or reuse facility. If Caltrans or their contractor proposes an alternate disposal method, Caltrans or their contractor shall apply for a permit from the Regional Water Board. Plans to reuse or recycle wastewater require written approval from Regional Water Board staff.

18. Caltrans shall submit, subject to approval by the Regional Water Board staff, a dewatering and/or diversion plan that appropriately describe the dewatered or diverted areas and how those areas will be handled during construction. The diversion/dewatering plans shall be submitted no later than 30 days prior to conducting the proposed activity. Information submitted shall include the area or work to be diverted or dewatered and method of the proposed activity. All diversion or dewatering activities shall be designed to minimize the impact to waters of the State and maintain natural flows upstream and downstream. All dewatering or diversion structures shall be installed in a manner that does not cause sedimentation, siltation or erosion upstream or downstream. All dewatering or diversion structures shall be removed immediately upon completion of project activities. The in-channel work will only be conducted between May 15th and October 15th. This Water Quality Certification does not authorize Caltrans to draft surface waters.

19. Fueling, lubrication, maintenance, storage and staging of vehicles and equipment shall be at least 150 linear feet beyond waters of U.S. and the State with the exception of cranes and stationary equipment which shall only be refueled using a company certified by the CDFG. Proper certification and documentation of fueling (field logs) shall be provided to the Regional Water Board upon request. In addition, prior to setting a fueling location and fueling equipment within waters of the State, Caltrans must obtain Regional Water Board staff concurrence. Fueling, lubrication, maintenance, storage and staging of vehicles and equipment shall not result in a discharge or a threatened discharge to any waters of the State or the

U.S. At no time shall Caltrans or its contractors allow use of any vehicle or equipment, which leaks any substance that may impact water quality.

20. Caltrans shall implement appropriate BMPs to prevent the discharge of equipment fluids to the stream channel. The minimum requirements will include: storing hazardous materials at least 150 linear feet outside of the stream banks; checking equipment for leaks and preventing the use of equipment with leaks; pressure washing or steam cleaning equipment to remove fluid residue on any of its surfaces prior to its entering any stream channel in a manner that does not result in a discharge to waters of the State.

21. Spill kits are required at each fueling location and at each location that work will be conducted within streams. In the event of an unauthorized release of fuel (spill or leak) to waters of the State, Caltrans shall immediately stop work and conduct the following measures:

    a) Notify the appropriate agencies including the Regional Water Board, CDFG, and the California Emergency Management Agency at 1(800)-852-7550;

    b) Utilized the appropriate spill kits for containment and clean up of the release;

    c) Collect samples within the release, 50 feet downstream, and downstream to the full extent of the release; and

    d) Analyze samples for total petroleum hydrocarbons as diesel (TPH-D), total petroleum hydrocarbons as gasoline (TPH-G), and benzene, toluene, ethlybenzene, total xylenes (BTEX).

22. Caltrans shall clearly define stream setbacks that limit construction activities as described in the application and prohibit ground disturbing activities within 50 linear feet of streams during the rainy season (October 15th to May 15th). If an exception from this requirement is needed for a specific location, Caltrans shall request approval from the Regional Water Board at least 5 working days in advance. At no time shall in-stream activities be conducted outside the work window of May 15th to October 15th. Exceptions may be granted by Regional Water Board staff on a case by case review, only if the streams are dry or have minimal flow, and CDFG and NMFS have concurred.

23. If work is allowed within the stream channel or on the banks outside of the above referenced work window, Caltrans shall monitor the seventy-two (72) hour forecast from the National Weather Service. When forecast indicates a probability of precipitation of 50 percent or greater within the 72-hour period, or at the onset of any precipitation, ground disturbing activities shall cease and erosion and sediment control measures shall be implemented to stabilize exposed soils and prevent the mobilization of sediment into the stream channel or adjacent wetland or riparian areas. Caltrans bears full liability should the BMPs employed fail to prevent any discharge to waters of the State that exceeds applicable water quality standards or

is beyond the certified area of impact. All earthwork and ground disturbing activities halted due to precipitation may resume when precipitation ceases and a 50 percent or less chance of precipitation is forecast throughout the duration of the subsequent 72-hour weather forecast.

24. Caltrans shall provide analysis and verification that placing non-hazardous waste or inert materials (which may include discarded product or recycled materials) will not result in degradation of water quality, human health, or the environment. All project-generated waste shall be handled, transported, and disposed in strict compliance with all applicable State and Federal laws and regulations. When operations are complete, any excess material or debris shall be removed from the work area and disposed of properly and in accordance with the Special Provisions for the project and/or Standard Specification 7-1.13, Disposal of Material Outside the Highway Right of Way. Caltrans shall submit to the Regional Water Board the satisfactory evidence provided to the Caltrans Engineer by the Contractor referenced in Standard Specification 7-1.13. In accordance with State and Federal laws and regulations, Caltrans is liable and responsible for the proper disposal of waste generated by their project.

25. All imported fill material shall be clean and free of pollutants. All fill material shall be imported from a source that has the appropriate environmental clearances and permits. The reuse of low-level contaminated solids as fill on-site shall be performed in accordance with all State and Federal policies and established guidelines and must be submitted to the Regional Water Board for review and concurrence.

26. Only clean washed spawning gravel (0.5" – 4") with a cleanliness value of at least 85, using the Cleanness Value Test Method for California Test No. 227 will be placed in the streams. Gravel bag fabric shall be nonwoven polypropylene geotextile (or comparable polymer) and shall conform to the following requirements:

    - Mass per unit area, grams per square meter, min ASTM Designation: D 5261 – 270
    - Grab tensile strength (25-mm grip), kilonewtons, min. ASTM Designation: D4632* 0.89
    - Ultraviolet stability, percent tensile strength retained after 500 hours, ASTM Designation: D4355, xenon arc lamp method 70 or appropriate test method for specific polymer
    - Gravel bags shall be between 600 mm and 800 mm in length, and between 400 mm and 500 mm in width.
    - Yarn used in construction of the gravel bags shall be as recommended by the manufacturer or bag supplier and shall be of a contrasting color. Gravel shall

be between 0.5" – 4" in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags shall be secured to prevent gravel from escaping. Gravel-filled bags shall be between 13 kg and 22 kg in mass.

- Caltrans shall request approval from the Regional Water Board if an exception from this requirement is needed for a specific location.

27. Surface water monitoring shall be conducted whenever a project activity is conducted within waters of the State (e.g. demolition, pier construction, stream diversions). Surface water monitoring shall be conducted when any project activity has, or has the potential to, mobilize sediment and/or alter background conditions within waters of the State. In order to demonstrate compliance with receiving water limitations and applicable water quality standards, field measurements shall be collected whenever a project activity may alter background conditions.

28. Caltrans shall establish effluent, upstream (background) and downstream monitoring locations to demonstrate compliance with all applicable water quality objectives as detailed in the Basin Plan. The downstream location shall be no more than 50 feet from the effluent location. Field measurements shall be taken from each location four times daily for flow, pH, temperature, dissolved oxygen, total dissolved solids, turbidity and specific conductance. In addition, visual observations shall be made four times daily and include the appearance of the discharge including color, turbidity, floating or suspended matter or debris, appearance of the receiving water at the point of discharge (occurrence of erosion and scouring, turbidity, solids deposition, unusual aquatic growth, etc), and observations about the receiving water, such as the presence of aquatic life. Measurements shall be collected from each sampling location four times daily while work is being conducted within waters of the State.

29. Whenever, as a result of project activities, downstream measurements exceed the following water quality objectives, appropriate measurements shall be collected from all monitoring locations every hour during the period of increase, and shall continue until measurements demonstrate compliance with receiving water limitations and the water quality parameters are no longer increasing as a result of project activities.

pH	<6.5 or >8.5 (any changes >0.5 units)
temperature	>0.5°F above background
dissolved oxygen	<7 milligrams per liter (mg/L)
turbidity	20% above natural background

If any measurements are beyond the water quality objectives 50 feet downstream of the source(s), all necessary steps shall be taken to install, repair, and/or modify

BMPs to control the source(s). In addition, the overall distance from the source(s) to the downstream extent of the exceedance shall be measured.

Monitoring results shall be reported to appropriate Regional Water Board staff person by telephone within one hour of taking any measurements that exceed the limits detailed above (turbidity only if it is higher than 20 NTU as well). Upstream and downstream pictures within the working and/or disturbed area shall be taken and submitted to the appropriate Regional Water Board staff via e-mail or fax within 24 hours of the incident. All other monitoring data shall be reported on a monthly basis and is due to the Regional Water Board by the 15th of the following month.

30. Rainy Day Reports: Caltrans shall take photos of all areas disturbed by project activities, including all excess materials disposal areas, after rainfall events that generate visible runoff from these areas in order to demonstrate that erosion control and revegetation measures are present and have been installed appropriately and successfully. A brief report containing these photos shall be submitted within 30 days of the rainfall event that generated runoff from the disturbed areas. Once the site has demonstrated appropriate and effective erosion and sediment control, Caltrans may request a reprieve from this condition from the Regional Water Board.

31. Monthly Monitoring Reports: shall be submitted to the Executive Officer of the Regional Water Board. The monthly monitoring reports shall include at a minimum a summary of discharges, a summary of corrective actions taken (if necessary), photographs, all field sampling measurements and/or results, project status (i.e. upcoming construction schedule and disturbed soil area updates), water quality monitor reports and field logs, and all field monitoring equipment calibration logs. Caltrans shall develop, and Regional Water Board shall approve, a data management and reporting system to efficiently and effectively report sampling and monitoring data. Monthly monitoring reports are due to the Regional Water Board by the 15th of each month once work on the project has been initiated.

32. Caltrans proposes to reduce the project impacts by implementing on-site and off-site restoration and revegetation activities. The on-site restoration will encompass approximately 2.6 acres and include riparian and wetland restoration. The on-site restoration will be conducted in accordance with Caltrans-prepared *Greenwood Creek Bridge Replacement Project Mitigation and Monitoring Proposal*, received September 9, 2010. The on-site restoration project shall be completed the subsequent season after the bridge replacement project is complete. Monitoring reports for the on-site restoration project are due to the Regional Water Board on December 31, in years three, five, seven, and ten subsequent to the completion of the project. The Big River Restoration project will be conducted in accordance with the Caltrans-Prepared *Off-site Coastal Wetland Mitigation at Big River State Park,*

Mendocino Mitigation and Monitoring Plan, received January 25, 2011. In addition, the Big River Restoration project shall be completed by October 15th, 2015. Monitoring reports for the Big River Restoration project shall be submitted to the Regional Water Board on December 31, at years one, three, and five after completion of the mitigation project.

33. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under applicable state or federal law. For the 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 Order. In response to a suspected violation of any condition of this certification, the State Water Board may require the holder of any federal permit or license subject to this Order to furnish, under penalty of perjury, any technical or monitoring reports the State Water Board deems appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In response to any violation of the conditions of this Order, the Regional Water Board may add to or modify the conditions of this Order as appropriate to ensure compliance.

34. The Regional Water Board may add to or modify the conditions of this Order, as appropriate, and to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act.

35. This Order is not transferable. In the event of any change in control of ownership of land presently owned or controlled by Caltrans, Caltrans shall notify the successor-in-interest of the existence of this Order by letter and shall forward a copy of the letter to the Regional Water Board. The successor-in-interest must send to the Regional Water Board Executive Officer a written request for transfer of this Order to discharge dredged or fill material under this Order. The request must contain the following:

    a. requesting entity's full legal name
    b. the state of incorporation, if a corporation
    c. address and phone number of contact person
    d. description of any changes to the project or confirmation that the successor-in-interest intends to implement the project as described in this Order.

36. The authorization of this certification for any dredge and fill activities expires on March 24, 2016. Conditions and monitoring requirements outlined in this Order are

not subject to the expiration date outlined above, and remain in full effect and are enforceable.

37. Please contact our staff Environmental Specialist / Caltrans Liaison Jeremiah Puget at (707) 576-2835 or jpuget@waterboards.ca.gov if you have any questions.

for Catherine Kuhlman
Executive Officer

110325_JJP_CDOT_Hwy1_GreenwoodCreekBridge_401cert

Weblink: State Water Resources Control Board Order No. 2003-0017 -DWQ, General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification can be found at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0017.pdf

Original sent to: Ms. Sandra Rosas, California Department of Transportation, P.O. 911, Marysville, CA 95901

Copies sent to: Mr. Alfred Kannely, California Department of Transportation, P.O. 911, Marysville, CA 95901

Ms. Jane Hicks, U.S. Army Corps of Engineers, Regulatory Functions, 1455 Market Street, San Francisco, CA 94103-1398

U.S. Army Corps of Engineers, District Engineer, 601 Startare Drive, Box 14, Eureka, CA 95501

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

DEC 10 2009

Regulatory Division

SUBJECT: File Number SPN-2009-00381 N

Ms. Sandra Rosas
Environmental Management, M2 Branch
California Department of Transportation, District 3
PO Box 911
Marysville, California 95901-0911

Dear Ms. Rosas:

This letter is written in response to your September 1, 2009, request for a Department of the Army authorization for the Greenwood Creek Bridge Replacement Project. The project is located on Highway 1, south of the town of Elk, in Mendocino County, California.

The project will involve the demolition of the existing bridge and the construction of a new bridge for Highway 1 over Greenwood Creek. The new bridge will be a three-span cast-in-place pre-stressed concrete box girder bridge with cast-in-drill footings. The new bridge will be constructed approximately 7 feet upstream of the existing bridge. The new bridge will include bike railing and a 5 foot pedestrian sidewalk. Two columns will support the bridge (piers 2 and 3). Both footings will be located away from Greenwood Creek. In order to access the area with equipment, vegetation will be cleared 75 feet upstream and 75 feet downstream of the centerline of the bridge.

A temporary bridge will be constructed to provide access for the construction of the piers, to build temporary false work supports, and to remove the existing bridge. The temporary bridge will be removed after construction.

Culverts will be extended 4 feet on two small tributaries to Greenwood Creek. Rock slope protection will be installed at the outlet of the culverts to prevent future erosion.

The project will permanently impact 0.03 acres of tributaries to Greenwood Creek. The project would also temporarily impact 0.15 acres of Greenwood Creek and 0.04 acres of tributaries and adjacent wetlands.

Based on a review of the information you submitted, your project qualifies for authorization under Department of the Army Nationwide Permit 14 for Linear Transportation Projects (72 Fed. Reg. 11092, March 12, 2007), pursuant to Section 404 of the Clean Water Act (33 U.S.C. Section 1344). See Enclosure 1. All work shall be completed in accordance with the plans and

figures titled "Alternative 4B Project Layout" and "Temporary and Permanent Impacts to Wetlands and Other Waters of the U.S. within the Project Area", dated March 2009.

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

This authorization will remain valid for two years from the date of this letter unless the Nationwide Permit is modified, suspended or revoked. If you have commenced work or are under contract to commence work prior to the suspension, or revocation of the Nationwide Permit and the project would not comply with the resulting Nationwide Permit authorization, you have 12 months from that date to complete the project under the present terms and conditions of the Nationwide Permit. Upon completion of the project and all associated mitigation requirements, you shall sign and return the Certification of Compliance, Enclosure 3, verifying that you have complied with the terms and conditions of the permit.

This authorization will not be effective until you have obtained a concurrence from the California Coastal Commission that your certification that your project will comply with California's Coastal Zone Management Act. If the Commission fails to act on a valid request for concurrence with your certification within six months after receipt, the Corps will presume a concurrence has been obtained. You shall submit a copy of the concurrence to the Corps prior to the commencement of work.

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

1. This authorization will not be effective until you have obtained a Section 401 water quality certification from the North Coast Regional Water Quality Control Board (RWQCB). You shall submit a copy of the certification to the Corps prior to the commencement of work.

2. You shall notify the Corps in writing of the anticipated start and stop dates of construction, at least 5 days prior to the initiation of construction.

3. If there are any changes in the project design, materials, or construction methods prior to construction, those modifications must be approved by the Corps in writing.

4. Environmentally sensitive areas (ESA) shall be clearly delineated on the construction plans and demarcated in the field with high-visibility fencing prior to commencement of

construction activities. ESA fencing shall be properly maintained throughout the duration of the project. The ESA shall be off limits to construction activity and personnel at all times.

5. No debris, oil, petroleum products or other organic material resulting from construction activities shall be allowed to enter or be placed where it may be washed by rainfall or runoff into areas subject to the jurisdiction of the Corps.

6. In the event of any unanticipated discoveries of potential cultural/historic resources, you shall immediately halt work in the vicinity of the discovery and contact the appropriate regulatory authorities. You shall complete consultation pursuant to 36 CFR 800 to the satisfaction of the SHPO prior to resuming work.

7. Mitigation for temporary impacts to waters of the U.S., including wetlands, shall be accomplished by implementation of the "Greenwood Creek Bridge Replacement Project Mitigation and Monitoring Proposal" (plan), submitted with the November 1, 2009 application package, prepared by your office. You shall revegetate the 1.48 acres of temporarily impacted riparian habitat, scrub, and freshwater seep on-site.

a. The on-site revegetated area and off-site enhancement area shall be monitored for five years. For the mitigation to be considered successful, the site shall meet those success criteria listed on page 14 of the plan.
b. Failure to meet the success criterion shall require the re-evaluation of site conditions followed by remedial or adaptive management measures such as replanting and/or weed control.
c. You shall provide a copy of the third year and fifth year monitoring reports for the on-site revegetation area and off-site riparian habitat enhancement area to our office.

8. You shall provide a one-page post-construction report within 45-days after completing the project. Any modifications made to the bridge design during construction should be annotated in the report and as-builts should be provided. Transmitting the report by electronic mail (email) to the project manager is acceptable.

Should you have any questions regarding this matter, please call Andrea Meier of our Regulatory Division at 415-503-6798 or email her at andrea.j.meier@usace.army.mil. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

Jennie Monaury

for

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copy furnished without enclosures:

US EPA, San Francisco, CA
US FWS, Arcata, CA
US NMFS, Arcata, CA
CA CC, Eureka, CA
CA DFG, Redding, CA
CA RWQCB, Santa Rosa, CA

Nationwide Permit 14 - *Linear Transportation Projects*

Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project. This NWP also authorizes temporary structures, fills, and work necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The areas affected by temporary fills must be revegetated, as appropriate. This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars. *Notification:* The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) The loss of waters of the United States exceeds 1/10 acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 27.) (Sections 10 and 404)

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

*** The project impact areas shown on this map supersede those shown on Figure 1.

N

0 200 400
Feet

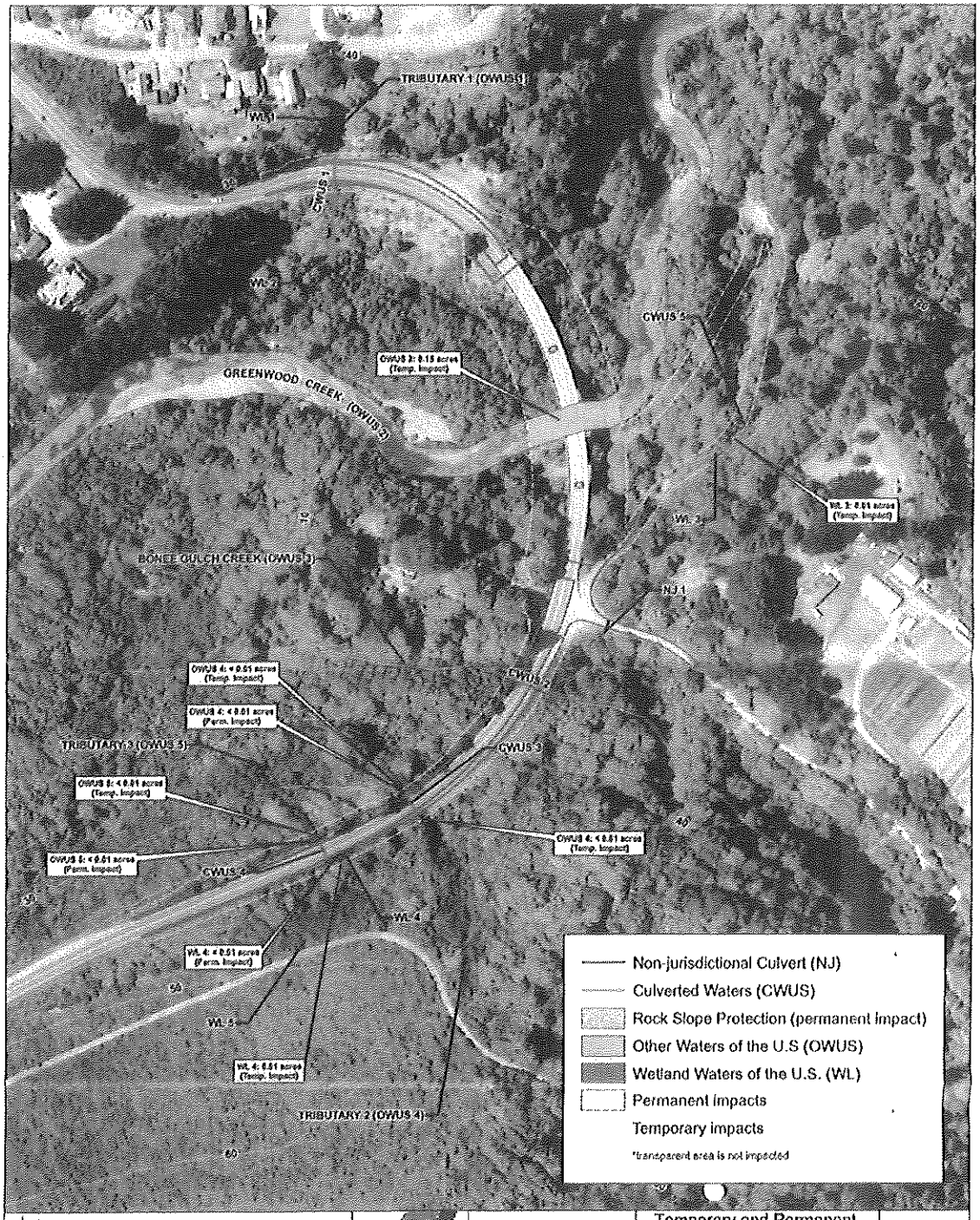
Caltrans

GREENWOOD CREEK
Elk, California
Mendocino County

Figure 4

Alternative 4B
Project Layout

MAR 2009



0 200 400
Feet
Contours: 5 meter intervals

Caltrans

GREENWOOD CREEK
Elk, California
Mendocino County

Temporary and Permanent Impacts to Wetlands and Other Waters of the U.S. within the Project Area

Figure 6

MAR 2009

Enclosure 2

Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as appropriate, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/ or Coastal Zone Management Act consistency for an NWP.

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 NWPs 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 preconstruction 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 preconstruction 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.

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 pre-construction 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 preconstruction 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 NWPs 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 NWPs 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 NWPs 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 preconstruction 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

(Transferee)_____
(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: (1) Until 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) If 45 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.

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.

Enclosure 3

Permittee:Environmental Management, M2 Branch (c/ Ms Sandra Rosas)

File Number: 2009-00381S

Certification of Compliance
for
Nationwide Permit

"I hereby certify that the work authorized by the above referenced File Number and all required mitigation have been completed in accordance with the terms and conditions of this Nationwide Permit authorization."

(Permittee)

12/14/09
(Date)

Return to:

Andrea Meier
U.S. Army, Corps of Engineers
San Francisco District
Regulatory Division, CESPN-OR-R
1455 Market Street
San Francisco, CA 94103-1398

STATE OF CALIFORNIA - NATURAL RESOURCES AGENCY EDMUND G. BROWN JR., *Governor*

CALIFORNIA COASTAL COMMISSION
NORTH COAST DISTRICT OFFICE
710 E STREET, SUITE 200
EUREKA, CA 95501
(707) 445-7833 FAX (707) 445-7877

Date: **April 25, 2011**

Permit Application No.: **1-09-027**

COASTAL DEVELOPMENT PERMIT

On **October 7, 2009**, the California Coastal Commission granted to

California Department of Transportation

this permit subject to the attached Standard and Special conditions, for development consisting of

Replace the Greenwood Creek Bridge crossing on Highway One, south of Elk, in Mendocino County. The 2-lane, 5-span, 505-ft.long, 31-ft. wide, 80 ft. high, reinforced concrete box bridge constructed in 1955 would be replaced with a 2-lane, 3-span, 520-ft.long, 46-ft. wide cast-in-place pre-stressed concrete box girder bridge aligned 7 feet east of the existing bridge centerline and extending the new bridge deck approximately 14 feet further eastward. The new design includes a 5-ft. wide Coastal Trail corridor on the west side that will be separated from traffic by a guard rail. The outer rails will include a bicycle rail on the east side placed on top of a ST-10 guard rail, totaling 42 inches in height. Concrete retaining walls up to 4 feet in height are proposed along the toe of cut slopes visible from the traveled way. No pile-driving is proposed. One-way signalized traffic control would be required during much of the three-year construction schedule. The off-bridge highway sections would be realigned to the point of conformity with the existing highway. Proposed grading includes approximately 4,750 cubic yards of excavation, 3,450 cubic yards of fill, and 1,400 cubic yards of export. Demolition of the old bridge would produce up to 10,000 cubic yards of asphalt & concrete debris. Off-site compensatory wetland mitigation equivalent to a 4:1 ratio of new wetland area to impacted wetland area is proposed at Mendocino Headlands State Park (Big River Unit)

more specifically described in the application filed in the Commission offices.

The development is within the coastal zone at

Greenwood Creek Bridge, State Route 1, south of Elk, Mendocino County

Issued on behalf of the California Coastal Commission by

PETER M. DOUGLAS
Executive Director

Melanie Faust

By: **Melanie Faust**
Senior Staff Analyst

RECEIVED
APR 27 2011
CALIFORNIA
COASTAL COMMISSION

COASTAL DEVELOPMENT PERMIT

ACKNOWLEDGMENT:

The undersigned permittee acknowledges receipt of this permit and agrees to abide by all terms and conditions thereof.

The undersigned permittee acknowledges that Government Code Section 818.4 which states in pertinent part that: "A Public entity is not liable for injury caused by the issuance. . . of any permit. . . " applies to the issuance of this permit.

IMPORTANT: THIS PERMIT IS NOT VALID UNLESS AND UNTIL A COPY OF THE PERMIT WITH THE SIGNED ACKNOWLEDGMENT HAS BEEN RETURNED TO THE COMMISSION OFFICE. 14 Cal. Admin. Code Section 13158(a).

4-27-2011
Date

Signature of Permittee

STANDARD CONDITIONS:

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

COASTAL DEVELOPMENT PERMIT

SPECIAL CONDITIONS:

1. FINAL STATE & FEDERAL AUTHORIZATIONS; RESPONSIBILITY.

A. PRIOR TO ISSUANCE OF CDP 1-09-027, Caltrans shall submit evidence to the satisfaction of the Executive Director (including copies of the pertinent final documents) that final approvals or authorizations of all state and federal agencies with review authority over the subject project have been received by Caltrans. Caltrans may, however, submit evidence of final authorization from the Army Corps of Engineers prior to commencement of construction, after CDP 1-09-027 has been issued. The applicant shall inform the Executive Director of any changes to the project required by any state or federal agency at any time during the life of the project. No changes shall be incorporated into the project unless the applicant obtains a coastal development permit amendment unless the Executive Director determines no amendment is legally required.

B. Responsibility: This permit authorization requires, and by accepting the benefits of CDP 1-09-027, Caltrans agrees to and accepts the following:

1) Caltrans shall ensure that the relevant bidding documents and eventual contract and construction oversight by Caltrans include: a) sufficient and accurate provisions for Caltrans to ensure the obligation of the winning bidder to comply with all of the conditions of CDP 1-09-027 and to construct the project in accordance with the approved project description, including all measures protective of coastal resources imposed by all state and federal agencies with review authority over the subject project; and b) the specific legal requirement that the contractor and any employees, subcontractors, agents, or other representatives of the contractor or contractors who are responsible for constructing any portion of the project, shall undertake all related activities in full compliance with the project approved pursuant to CDP 1-09-027, including all terms and conditions imposed by the Commission in approving the permit, and the requirements of other state and federal agencies.

2) It shall be Caltrans' responsibility to ensure that the bidding documents contain general and special provisions necessary to fully and accurately incorporate all requirements imposed by the Commission or other state or federal agencies with regulatory authority over the project, including timelines for review of documents and other potentially limiting measures that may affect construction scheduling and the timing of construction. Further, before awarding the project contract, Caltrans shall verify that the apparent winning bid is adequate to ensure that the contractor has taken into consideration and provided for the full cost of compliance with the requirements set forth herein.

COASTAL DEVELOPMENT PERMIT

3) After the contract is awarded, Caltrans shall ensure that the contractor(s), subcontractor(s), and other parties selected by Caltrans or otherwise designated to implement any portion of the project approved pursuant to CDP No. 1-09-027, are fully informed of, and continuously comply with, the obligations set forth in the findings and special conditions adopted and imposed by the Coastal Commission in approving CDP No. 1-09-027. Nothing in these provisions shall prevent the Commission from taking enforcement action against the contractor or subcontractor(s) for non-compliance with the terms and conditions of CDP 1-09-027, either individually or in addition to enforcement action against Caltrans in any instance of non-compliance.

4) All activities associated with performing the development authorized pursuant to CDP 1-09-027 shall at all times be undertaken in full accordance with the terms and conditions imposed by the Commission in conditionally approving CDP 1-09-027. It shall be Caltrans' responsibility to ensure such compliance by any party to whom Caltrans assigns the right to construct or undertake any part of the activities authorized herein; this requirement does not relieve other parties of responsibility for compliance with the permit or immunize such parties from enforcement action by the Coastal Commission's enforcement program.

5) Caltrans shall ensure that any contractor, subcontractor, or other representative of Caltrans, and Caltrans employees, understand and accept the terms and conditions of CDP 1-09-027 and all other applicable permits and authorizations imposed or granted by other state and federal agencies, and shall submit evidence to the satisfaction of the Executive Director, prior to commencement of construction by any selected contractor, that all of the above-referenced parties have received and reviewed the applicable permits, agreements, and authorizations and understand and agree to comply with the requirements set forth therein.

2. <u>CONSTRUCTION RESPONSIBILITIES</u>.

A. This permit authorization requires, and by accepting the benefits of CDP 1-09-027 Caltrans agrees to and accepts the following:

1) No construction materials, debris, graded soils, waste, concrete washout residues, chemicals, fuels, drilling muds or additives thereto, or non-compliant dewatering effluent (effluent with turbidity, pH, or other water quality measure that does not comply with the requirements of the Regional Water Quality Control Board or other state or federal agencies), or any other substance or material capable of degrading coastal waters, shall be stored, placed, or discharged within the Greenwood Creek Corridor or within the corridor of any stream, seep, or tributary thereto whether flowing or

COASTAL DEVELOPMENT PERMIT

intermittent, or adjacent riparian or other sensitive habitat areas, or other areas where such releases may reach Greenwood Creek, or nearby tributaries and other coastal waters, whether directly or indirectly, unless specifically and affirmatively authorized by CDP 1-09-027 including by reference in these special conditions; and

2) No machinery shall be allowed at any time within the wetted channel of Greenwood Creek Bridge or other surface waters or wetlands/seeps, except as may be specifically authorized in the temporary stream crossing plan required herein and through other provisions of CDP 1-09-027; and

3) No work within 30 feet of the top of the bank of any stream channel shall be undertaken outside of the June 1 through October 15 work window, annually, except as may be specifically authorized by the Executive Director in accordance with the applicable special conditions set forth in this permit, such as for limited vegetation removal for site preparation before the onset of nesting season in a specific year; and

4) Vehicles, equipment and materials allowed on the gravel bars in the river channel during the authorized annual low water flow construction season of July 10 through October 15, annually, shall be limited to the minimum necessary to perform essential project activities. If the Caltrans site supervisor determines that this requirement is not being met, the supervisor shall direct that the excess be immediately re-located outside of the river channel. No vehicles, equipment or materials, except as specifically authorized in the annual river access plan, shall be allowed within the ambulatory wetted channel of the river. Fueling on the dry gravel bars of the channel shall be subject to all BMPs and over-water fueling procedures that set the highest possible standards for fuel containment and spill response readiness, and shall be limited to major tracked vehicles such as cranes that cannot feasibly be relocated outside of the corridor for fueling, with full containment of any potential fuel spill in place prior to commencement of any re-fueling operation, and verified by the biological monitor. Other fueling requirements shall be as further specified in Subparagraph 10, below. All hydraulic fuels used within the river corridor shall be vegetable-based. Generators and other potential sources of fuel or oil spills shall be fully contained to prevent spills or leakage onto the gravel bar and shall be inspected at least twice per day for evidence of leaks or spills. No fuels shall be stored closer to the channel than the area defined as a minimum of one hundred (100) feet landward of the top-of-bank of the Greenwood Creek, and all fuels, oils or other potential contaminants shall be stored within areas protected by berms and other containment structures sufficient to contain the maximum spill that could occur within the bermed area and authorized for such placement, and in a manner that prevents spills or leaks from reaching the river corridor. The adequacy of such containment and preventative structures shall be determined by the

COASTAL DEVELOPMENT PERMIT

Caltrans supervisor in consultation with Caltrans' water quality specialists and the biological monitor. Any leaks or spills anywhere on the subject site shall be cleaned up immediately and noted in the SWPPP reports and pertinent biological monitoring reports retained by Caltrans as part of the permanent files. Caltrans shall ensure that the biological monitor reviews and verifies the contractor's self-monitoring SWPPP reports during the contractor's site review and report preparation, notes the results of such review in the monitoring logs, and that copies of the SWPPP reports are provided with the monitor's logs, or, during the season or activities when biological monitoring is not required daily, the Supervising Engineer shall ensure that a qualified member of Caltrans staff with water quality assurance expertise shall perform the SWPPP report review in a similar manner on a weekly or monthly basis and shall confirm each report's accuracy and provide a copy of the verified SWPPP report to the Executive Director within 24 hours of the review of each such report; and

5) Staging and storage areas for construction machinery, materials, equipment, fuel, or any other material, or storage of debris or graded material, shall be field marked in a manner that shall remain in place for the duration of the job (or be relocated under the supervision of the biological monitor as needed) and the biological monitor shall verify in the field that such authorized locations are not sited within sensitive habitat areas or within the pertinent setbacks from top of bank (except as specifically provided in these special conditions), and that the perimeters of sensitive habitat areas near authorized construction activities, but not authorized for trimming or clearance, shall be adequately identified and marked in the field prior to commencement of construction and re-identified as often as needed thereafter to continuously maintain the identification and protection of sensitive habitat areas during construction; and

6) Demolition of the existing bridge or roadbed shall not be undertaken through the use of explosives, and no portion of the existing bridge or roadbed may be removed in a manner that allows debris to fall into any area of the stream channel (from top of bank to top of bank) of Greenwood Creek or other watercourses, streams, and seeps within the project area, whether or not surface water is present in the subject locations at the time of demolition. Construction debris shall be captured by rigging methods undertaken from the top of the bridge deck or by crane, and the resultant debris shall be removed without relying on dropping the material to the ground for collection. Visible amounts of concrete dust and small rubble shall not be released into the air or water during construction and dust suppression measures shall be implemented. Dust control via water spray shall be implemented cautiously and monitored by the biological monitor, and all measures necessary to ensure that excessive water contaminated by concrete dust does not drain into the banks, channel, or waters within the project area. All demolition debris shall be recycled, and concrete debris

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shall be recycled at a licensed facility qualified to accept such wastes, and, if the material is suitable for reuse in concrete production, it shall be reduced to constituents necessary to produce new wet concrete product rather than resold in a manner that could allow the subject debris to be used as fill. Alternatively, if the material is not suitable for this purpose, Caltrans shall require the contractor to recycle the material within the project footprint if feasible, where fill material is required and where the material would reduce the import of fill and would not be subject to erosion into the adjacent riparian corridors. Caltrans shall require the subject contractor to provide evidence that the demolition debris has been properly processed or otherwise recycled in a suitable manner and shall provide written evidence of such disposal to the satisfaction of the Executive Director within thirty (30) days after completion of demolition activities in each year that demolition is undertaken during the life of the project. If feasible without adding a fourth year of project construction within the stream corridor, demolition activities shall be undertaken after the end of bridge-nesting season for migratory birds and before the onset of rainy season (September 1 – October 15) in the year or years that such demolition activities are scheduled; where this would add another year of construction to the project schedule or otherwise substantially delay the project as demonstrated to the satisfaction of the Executive Director, netting of the bridge prior to the onset of the nesting season, annually, may be undertaken under the direction of the biological monitor, after the monitor verifies that alternative nesting facilities have been placed in the nearest location to the subject bridge that is likely to offer a viable alternative nesting site for the purple martins. In addition, not less than five (5) days prior to active demolition activities, the Caltrans biological monitor shall inspect the bridge areas that would be affected to verify that no nesting birds or roosting migratory bats are present, and the results of this inspection shall be logged into the biological monitoring notes and reports. Demolition shall not commence if nesting birds or roosting bats are present unless a rescue/removal plan authorized by the Executive Director has been implemented; and

7) All debris, materials, equipment, vehicles, staging and storage features, concrete washout areas, de-watering facilities, the bermed fueling/fuel storage location, and any other material or temporary feature associated with project construction shall be removed immediately after project completion and the affected areas returned to pre-construction conditions and restored in accordance with other special conditions set forth herein; and

8) All waste material, including demolition debris as noted in subparagraph 6 above, or excess graded material generated by demolition or construction, shall be removed from the construction site and disposed of at a facility that is: a) located outside of the Coastal Zone, with necessary permits and approvals to accept the material for disposal or recycling, or b) inside the

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Coastal Zone at a facility demonstrated by Caltrans to the satisfaction of the Executive Director to have all necessary permits and approvals, including a coastal development permit where applicable, for such use. The location and volume of project wastes so disposed shall be documented by the resident engineer and verified in monitoring reports submitted to the Executive Director. The disposal records shall additionally be retained by Caltrans as part of the permanent project files and such project files shall promptly be made available at the request of any state or federal agency with review authority over the subject project; and

9) All lead-contaminated soils that will be disturbed within the project area shall be excavated, managed, and disposed of in a manner that is authorized by and compliant with the requirements of the California Department of Toxic Substances Control as being protective of coastal waters and resources, and the Caltrans resident engineer shall note the manner in which such compliance is achieved and such records shall additionally be retained by Caltrans as part of the permanent project files. The permanent project files shall be made available at the request of any state or federal agency with review authority over the subject project; and

10) Fueling, except for large tracked equipment such as cranes that cannot be feasibly relocated for each re-fueling, shall take place in a single designated offsite area that is bermed and otherwise set up to fully contain any potential spill without release outside of the designated area, and the designated area shall be continuously equipped with all materials necessary to control and cleanup any spill that may occur. The integrity of the containment berm and the readiness of control and cleanup materials and equipment shall be periodically verified by the Caltrans resident engineer/supervisor and noted in the permanent project records and additionally verified by the biological monitor and noted in the monitoring reports. The designated fueling/fuel storage area may not be located closer to the Greenwood Creek corridor, or the corridor of any other streamcourse or seep, than a minimum of 100 feet landward from the top of bank. Only equipment that cannot be readily relocated to the designated offsite fueling location (such as cranes, large tracked vehicles) may be fueled in other areas of the site and these shall be re-fueled only by a California Department of Fish and Game-certified over-water re-fueler, in a manner authorized in accordance with all requirements of the Department of Fish and Game and the Regional Water Quality Control Board, including but not limited to the requirement that such re-fueling be undertaken by a minimum of two crew members certified for such operations, with one on standby to shut off the flow of fuel and the other at the delivery point, in constant communication with each other, with full deployment of absorbent pads with sufficient capacity to absorb the maximum amount of fuel that could escape from the fueling hose before shutoff occurs in the event of equipment failure. No fueling of any kind may

COASTAL DEVELOPMENT PERMIT

take place anywhere on site except during daylight hours and when visibility is sufficient for the re-fueling crew to maintain visual contact; and

11) Sufficient oil absorbent booms and/or pads shall be on site at all times during project construction to ensure an immediate, effective response to any spill that may reach coastal waters or sensitive habitat areas. Site personnel shall be verified as fully trained to deploy such equipment and the presence of the booms/pads/equipment and the adequacy of personnel training shall be periodically verified by the Caltrans site supervisor and noted in the permanent project records retained by Caltrans. All equipment used during construction shall be free of oil and fuel leaks at all times, and where parked or operated within or over the river channel from top of bank to top of bank, oil pans or other containment materials or devices shall be continuously placed beneath such equipment to ensure that leaks that do arise will not enter the river environment. Vehicles or machinery cleared to enter the wetted channel, such as for construction of temporary crossings, shall be fully steam-cleaned, including the undercarriage, and inspected and verified to be free of leaks by the Caltrans site supervisor or designated representative before the subject vehicles or machinery are allowed to enter the wetted channel. No vehicles or machinery shall enter the wetted channel at any time unless under the constant supervision of the monitoring fisheries biologist and the Caltrans site supervisor; and

12) Cement/concrete shall be prepared and poured or placed in a manner that will prevent discharges of wet cement, or waters that have been in contact with cement/concrete, into coastal waters. Such measures include but are not limited to placement of measures such as catch basins, mats or tarps beneath the construction area to prevent spills or overpours from entering coastal waters, and use of Baker Tanks or the equivalent to collect, treat and test potentially contaminated de-watering effluent. De-watering of effluent that has been in contact with cement/concrete or other potential contaminants shall not be de-watered into coffer dams or sediment basins within the project area unless first collected and treated to ensure that the chemistry of the water is consistent with the background pH and other measures of water quality of Greenwood Creek and as otherwise required by the Regional Water Quality Control Board, and shall be fully captured and taken to a licensed disposal facility offsite if the contamination is such that on-site treatment would be inadequate to meet this standard. The manner in which treatment and/or disposal of contaminated effluent is undertaken and in which treatment results are tested and verified shall be documented by the Caltrans resident engineer and noted by the biological monitor in the monitoring reports to be retained by Caltrans as part of the permanent files; and

13) Rinsate from the cleaning of equipment, including cement mixing equipment, shall be contained and handled only in upland areas where

COASTAL DEVELOPMENT PERMIT

drainage to coastal waters is fully prevented and otherwise outside of any environmentally sensitive habitat area or wetland or buffers thereto as generally depicted on Exhibits 6 and 7. No concrete washout areas shall be authorized except as specifically shown in final pre-construction staging plans submitted for the review and approval of the Executive Director not less than ninety (90) days prior to commencement of construction, and such facilities shall in no case be located above, or upgradient of, coastal waters; and

14) Reporting protocols and contact information for the appropriate public and emergency services/agencies in the event of a spill shall be prominently posted on site at all times; and

15) All forms that may be utilized for wet concrete/cement pours shall be grout-sealed, or the equivalent to prevent release of concrete/cement, and the grout shall be allowed to cure adequately and be inspected by the biological monitor and the resident engineer to ensure complete seal before any wet concrete/cement or other chemical treatments may be applied to the forms. No placement/pour of concrete/cement within or above the river channel from top of bank to top of bank, including within de-watered coffer dams, shall occur unless the biological monitor is present; and

16) No vegetation removal, including clearing, grubbing, limbing, trimming, or other disturbance of existing vegetation may occur between March 1 and August 31 of any year of construction unless a qualified biologist provides a survey undertaken to the satisfaction of the Executive Director not less than ten (10) days prior to proposed commencement of such activities, demonstrating conclusively that no birds are nesting in the area that would be affected, and the results of the survey have been provided to the Executive Director's satisfaction not less than five (5) days prior to proposed commencement of such activities, and the vegetation removal has additionally been authorized by a California Department of Fish and Game biologist familiar with the bird species likely to nest in the subject area; and

17) Exclusionary netting against bird nesting shall not be used unless installed prior to March 1 but not earlier than February 1 of any pertinent year in which exclusion of nesting birds is required, under the immediate supervision of the Caltrans biological monitor in accordance with the requirements of these special conditions. Bridge netting that is installed, shall be removed at the end of the nesting season and disposed. New netting without tears or holes shall be required for each subsequent installation. The biological monitor shall inspect the netting prior to installation to ensure that it is of the kind, and size necessary to exclude bridge nesting species with no risk of trapping birds. The biological monitor shall inspect the bridge netting daily between March 15 and August 31 every year of construction, or until the nets are removed, if the nets are

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removed at an earlier date, to ensure that the nets are fully secured and have not trapped birds. If trapped birds are observed, project activities shall be interrupted for as long as necessary to allow the biological monitor and others under her supervision to rescue and release net-trapped birds of any species. The biological monitor shall also ensure that the openings that have allowed any birds into the netted areas are secured against repeat occurrences. The biological monitor shall log all daily observations, inspections, and interventions to release trapped birds, noting the number and species of birds affected by the nets. These logs shall be included in the monitoring reports and shall be included in the permanent project files retained by Caltrans. The biological monitor shall ensure that the netting is fully removed not later than August 31 of any year, or within three (3) days after cessation of any annual construction activities that require the exclusion of nesting birds, whichever occurs first; and

18) Placement of temporary Rock Slope Protection and other slope stabilization measures prior to October 15 may be authorized annually by the Executive Director if no more effective method of erosion control is available. The preferred method of erosion control shall be the anchored placement of geotextiles and mulch provided these would be stable and would not contribute to discharge into the river waters during the rainy season. If RSP is used, the RSP must be placed, removed, and stored annually in compliance with the other provisions of CDP 1-09-027 and must be finally removed and disposed of in accordance with the waste disposal provisions of this Special Condition, prior to October 15 of the final year of construction. No new RSP may be placed permanently within the bed and banks, from top-of- bank to top -of -bank of the river channel, except as specifically shown on the proposed project plans for the areas of the new bridge abutments that are located above the 100-year flood plain. No permanent placement of RSP below the limits of the 100-year flood plain is authorized by CDP 1-09-027; and

19) No night work is authorized in this permit except between August 31 – October 15, inclusive, annually, if the Caltrans resident engineer in charge of the project determines that night work is necessary to maintain the proposed construction schedule. Night work shall not be authorized if the purpose of the work is to accelerate the project schedule. Work within the project area shall otherwise be limited to one hour after sunrise through one hour before sunset. To the extent that night lighting is authorized by these provisions, no artificial lighting within the project area that could illuminate habitat within the stream channel beyond the area necessary for a safe work area shall be allowed, and no lighting shall be directed into the surrounding wooded areas or canyons or toward the Greenwood Beach State Park. The Executive Director may authorize specific, limited extensions to the six-week night lighting window upon a showing of good cause to the Executive Director's satisfaction and in consultation with the

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biologists of pertinent resource agencies if it can be shown that such exception would significantly correct the project construction schedule if the schedule has fallen significantly behind, and that no nesting migratory birds would be adversely affected. Such an exception is limited to a period of not more than two consecutive weeks immediately before or after the night work window otherwise applicable; and

20) All project activities shall be undertaken at all times in full compliance with these requirements. Any proposed project changes or procedures that are not consistent with these requirements shall require an amendment to CDP 1-09-027 to become effective, unless the Executive Director determines that no amendment is legally required.

3. <u>TEMPORARY BRIDGE CROSSING PLAN</u>

A. Prior to commencement of construction, but in not less than sixty (60) days prior to Caltrans' proposed commencement of work to install the subject temporary bridge crossing of Greenwood Creek, Caltrans shall submit a Temporary Bridge Crossing Plan (TBCP) for the review and approval of the Executive Director. Work requiring the use of such temporary bridge crossing shall not commence until Caltrans provides a revised copy of the TBCP incorporating any changes required by the Executive Director subject to the Executive Director's final review and approval. Caltrans shall additionally provide copies of the TBCP to any requesting agency, state department, or local government requesting a review copy at the same time the TBCP is submitted to the Executive Director. The TBCP shall include at a minimum:

1) a complete set of to-scale construction plans, including elevations and site plan views of the proposed temporary crossing bridge, including the bridge support structures; and
2) detailed construction/installation plan for the bridge installation, including schedule that limits installation and removal of the temporary bridge to the season from June 1 through October 15 of any pertinent year;
3) a vegetation impact survey prepared by a qualified Caltrans botanist based on the proposed TBCP and conducted not more than thirty (30) days prior to submittal of the TBCP for Executive Director approval, showing the location and limits of all vegetation that will be affected, including the extent and duration of such impacts and verification that the identified impacts are within the footprint of the approved project limits; and
4) a complete proposal for the final removal and disposal of the temporary crossing, including timing, any restorative grading or channel contouring necessary to return the site to pre-construction condition under the supervision of the Caltrans supervisor and biologists, and plans for revegetation of any disturbed areas (or evidence from the Caltrans botanist that the affected area has been fully considered and included in the approved site restoration plans).

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B. The Plan shall specify the kinds of equipment that would be authorized to install the temporary bridge crossing, and the maximum number of stream crossings necessary to install the temporary bridge crossing. The Plan shall include provisions to require the inspection of equipment that may enter the waters of Greenwood Creek during installation of the crossing to ensure that no fuel leaks are present and that the undercarriage of such equipment has been steam cleaned prior to use. The Plan shall provide Best Management Practices (BMPs) specifically designed for implementation during the installation of the bridged crossing to ensure that the release of sediment downstream of the immediate construction area is prevented or at a minimum fully contained.

C. No impact-driven piles shall be installed to support the bridged crossing (pile-driving is not authorized for any portion of the Greenwood Creek Bridge construction proposal, including the installation of the temporary bridge crossing, nor is pile-driving by impact hammer authorized for "proofing" the adequacy of the "set" of piles installed by vibratory hammer).

D. No fuel, hydraulic oil, or other chemicals, materials, or wastes shall be placed or stored on the temporary bridge crossing.

E. If requested, Caltrans shall stake the proposed location and limits of the proposed crossing in the field for the purpose of the Executive Director's review of the proposed TBCP, and the stakes shall remain in place until post-installation monitoring has been undertaken to the satisfaction of the Executive Director.

F. If Caltrans determines that the temporary bridge crossing must be installed and removed annually during project construction, Caltrans shall, at the Executive Director's discretion, submit an annual installation and crossing plan not less than sixty (60) days prior to the onset of the pending construction season requiring the use of the crossing, subject to the Executive Director's review and approval before the annual installation and use of such crossing may commence, each year after the first TBCP is implemented.

G. The temporary bridge crossing shall be installed on the west side of the existing bridge, within the limits of project disturbance that have been authorized by CDP 1-09-027 and shall not expand the limits of authorized site disturbance, require clearance of additional vegetation, or call for the removal or encroachment into the root zones of any additional trees. The temporary bridge crossing of Greenwood Creek shall not be installed on the eastward side of the existing bridge.

H. The temporary bridge crossing shall be installed, operated, and removed in full accordance with the TBCP(s) approved by the Executive Director. Any proposed changes to the approved TBCP that are inconsistent with the requirements set forth herein shall require an amendment of CDP 1-09-027 unless the Executive Director determines that no amendment is legally required.

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4. FINAL EROSION CONTROL and REVEGETATION PLAN

The applicant shall undertake all final landscaping and erosion control measures in accordance with the plan titled "Greenwood Creek Bridge Replacement Erosion Control and Revegetation Plan," prepared by Caltrans North Region Office of Landscape Architecture, dated April 27, 2009, and as supplemented by the site-specific planting plan dated August 17, 2009.

A) In addition, the following requirements shall apply:

1) The boundaries of the adjacent State Department of Parks and Recreation property shall be clearly identified on the Landscape Plan, and the boundaries of these lands shall be staked, flagged and clearly labeled in the field, prior to commencement of construction, and maintained during the construction of the subject project, to the satisfaction of the California State Parks and Recreation Department staff. A copy of the final approved Plan shall be provided to the California State Parks and Recreation Department and a copy of the Plan shall be maintained on the site at all times during construction activities; and

2) The planting of at least 60 Douglas fir seedlings proposed by Caltrans to mitigate the project's adverse impacts on California red tree vole habitat shall be installed east of the proposed new bridge and where there is sufficient space for the seedlings to reach maturity, in proximity to the other red tree vole habitat identified in that area, and where such plantings would not limit the restoration of the complex mosaic of vegetation communities documented in the project area. The seedlings shall not be installed on the west side of the proposed bridge where coastal views of travelers on the bridge would eventually be blocked by the trees. If there is insufficient area within the disturbed area east of the bridge to accommodate the seedlings without limiting the plantings of other plant communities representing a similar pattern of native species presence and abundance in the mosaic of plant communities documented as present prior to construction, Caltrans shall ensure that the supplemental Douglas fir plantings are installed on the off-site wetlands mitigation site at Big River Unit under the supervision of State Parks, in an area appropriate to establish or enhance habitat for the California red tree vole. Caltrans shall include provisions to ensure that the seedlings are monitored and re-planted as necessary until all sixty (or more) seedlings are at least ten (10) years old and no longer required exclosure fencing or any supplemental water or care. All planted seedlings shall be given a unique identifying number and shall be shown on a supplemental map provided to the satisfaction of the Executive Director not less than sixty (60) days after Commission approval of CDP 1-09-027. Caltrans shall report to the Executive Director annually on the progress of the seedling

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establishment and/or adaptive management measures undertaken by Caltrans or State Parks.

3) Within sixty (60) days after Commission approval of CDP 1-09-027, Caltrans shall submit a detailed, supplemental revegetation and planting plan and map prepared by a qualified botanist with experience in site restoration and the local flora showing how the pre-construction mosaic of native plant communities will be re-established by the plan. The plan shall include measurable ecological goals, invasive plant control measures, and an implementation and reporting schedule. The plan shall show how the proposed Douglas fir plantings will be incorporated within the long-term habitat mosaic. The preparing botanist shall be identified in the plan, and the plan shall be submitted to the supervising State Parks biologist for Greenwood Creek Beach State Park and to the Executive Director for review and approval in consultation with State Parks staff.

4) All revegetation activities, including planting, monitoring, adaptive management, and reporting, shall be undertaken or directly supervised by a qualified botanist familiar with the flora of Mendocino County.

5) Caltrans shall, during the three-year construction period, annually remove invasive non-native plant species from the right-of-way area surrounding and including the entire project area that is subject to the development authorized by CDP 1-09-027, in accordance with a plan prepared by Caltrans for the review and approval of the Executive Director prior to commencement of construction, that establishes feasible performance standards based on ecologically important vegetation management, with particular attention to the eradication of pampas grass. Caltrans shall thereafter, upon completion of project construction, remove invasive species within the revegetation area on a schedule and in a manner approved by the Executive Director that ensures that the revegetation goals have been achieved to the satisfaction of the Executive Director.

6) All plantings shall be maintained in good condition for the minimum of ten (10) years after the initial planting, and any new plantings that must be undertaken to replace weak or dead plantings shall require additional monitoring as necessary to ensure that the last plantings are successfully established and require no further artificial inputs for successful survival, and all plantings shall be watered, weeded, replaced, and otherwise maintained by Caltrans as necessary to achieve and maintain this standard. It shall be the responsibility of Caltrans to repair and remediate any erosion that occurs in any area disturbed during the construction or operation of the development approved by CDP 1-09-027 for the life of the approved project.

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B) Temporary Erosion Control Measures:

Should an unscheduled interruption in the construction schedule arise and be expected to last more than thirty (30) days, Caltrans shall ensure that all Best Management Practices to prevent the erosion of disturbed areas of the subject site shall be implemented and maintained as necessary until construction resumes. If an extended delay arises, and construction will be delayed for more than six (6) months, Caltrans shall immediately submit a complete application for an amendment to CDP 1-09-027 for the purpose of identifying interim or permanent restoration measures necessary to protect coastal resources, including water quality, in and adjacent to the subject site.

C) Monitoring and Reporting; Final Compliance Determination.

The applicant shall submit annual monitoring reports and photographs documenting the progress of revegetation of the site in accordance with the approved plan. The applicant's obligations for achieving final landscaping and revegetation success criteria shall continue until the Executive Director determines that final compliance requirements have been satisfied.

D) Development in Conformance With Approved Plans

The applicant shall undertake development in accordance with the approved plans. Any proposed changes to the approved plans shall be reported to the Executive Director. No changes to the approved plans shall occur without a Coastal Commission - approved amendment to the coastal development permit, unless the Executive Director determines that no amendment is legally required.

5. PROTECTION OF FUTURE PUBLIC ACCESS.

A. By acceptance of Commission approval of CDP 1-09-027, Caltrans acknowledges and agrees that continued public access for bicyclists and pedestrians to the paved shoulder and bridge crossing provided within the bounds of the portion of the Highway One right-of-way subject to this coastal development permit shall be provided by Caltrans upon completion of construction of the bridge. No signage shall be installed within the bounds of the project approved pursuant to CDP 1-09-027 that would restrict pedestrians or bicyclists from the use of these transportation facilities. Any proposed change to these access amenities shall require an amendment to CDP 1-09-027 and such amendment shall not be accepted for processing unless accompanied by a proposal to provide equivalent or superior access alternatives within the same corridor.

B. PRIOR OF ISSUANCE OF CDP 1-09-027, Caltrans shall submit a written agreement, in a form and content acceptable to the Executive Director, evidencing Caltrans' agreement to be bound by the requirements of subsection A.

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6. **WETLAND MITIGATION.**

PRIOR TO ISSUANCE OF CDP 1-09-027:

A. An authorized representative of Caltrans and State Parks shall submit for the review and approval of the Executive Director a written agreement, in a form and content acceptable to the Executive Director, evidencing both Caltrans' and State Park's agreement to be bound by the terms of a Memorandum of Understanding (MOU) executed by State Parks and Caltrans, including a copy of the proposed MOU, which incorporates all of the requirements of the wetland mitigation program required by CDP 1-09-027, including the requirements of this special condition. In addition the agreement between Caltrans and State Parks shall demonstrate that it contains adequate provisions to ensure the implementation of the wetland mitigation program required by CDP 1-09-027, including the requirements of Special Condition 6 below.

1) A wetland mitigation fee consistent with the requirements of subsection C below, The subject wetland mitigation fee must be deposited in a separate and independent interest bearing account created solely to provide for the management and disbursal of the funds for the assigned purpose;

2) State Parks shall provide a report to the Executive Director annually describing the financial status of the fund and all expenditures from the fund during the year, as well as a summary of progress toward the completion of the overall mitigation project goals;

3) The Agreement shall include provisions to address failure by State Parks to implement the Agreement, including but not limited to Caltrans' and State Park's obligations to transfer the funds to an alternate entity able to implement the Agreement, subject to the authorization of the Executive Director, or, if approved by an amendment to this coastal development permit, to apply the nonrefundable funds to alternative wetland mitigation. The Agreement shall also include the requirement that upon request of the Executive Director, Caltrans shall submit a complete application for an amendment of CDP 1-09-027 for the purpose of authorizing such alternative wetland mitigation and/or State Parks shall transfer the funds to an Alternate Entity approved by the Executive Director that is able to implement the wetland mitigation requirements of CDP 1-09-027 or any amendment thereto.

B. Caltrans shall submit a revised wetland mitigation plan prepared in consultation with the biologists of the California Department of Parks and Recreation, for the review and approval of the Executive Director. The revised plan shall provide a site-specific wetland mitigation plan that will be funded by Caltrans and implemented by State Parks, based on the draft wetland mitigation plan titled "Conceptual Mitigation Plan, Greenwood Creek Bridge Replacement Study" dated

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May, 2009, prepared by URS Corporation, Oakland, California. The offsite wetland mitigation will be performed at the Mendocino Headlands State Park (Big River Unit). The compensatory wetland mitigation at the Big River Unit shall be designed to mitigate the wetland impacts caused by the construction of the development authorized by CDP 1-09-027 to the Executive Director's satisfaction, creating or restoring wetland acreage and enhancing existing wetland habitat at an overall minimum 4:1 ratio of mitigation to impact, of which, at least 0.17 acres of new wetland area shall be provided through creation of a new wetland habitat or restoration of former wetland habitat.

C. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY CDP 1-09-027, Caltrans shall provide to State Parks, through a financial instrument subject to the review and approval of the Executive Director, a non-refundable mitigation fee in the amount deemed necessary by State Parks to successfully undertake and complete the final mitigation plan approved by the Executive Director pursuant to the provisions of this Special Condition. In addition, Caltrans shall provide evidence to the satisfaction of the Executive Director that an additional amount equal to not less than ten percent (10%) shall be included as a contingency amount in the contract with State Parks, and in addition, a separate ten percent (10%) of the mitigation fee paid to State Parks shall be held in a reserve account by Caltrans (for a total contingency amount of 20%) for the purpose of ensuring that adequate funds are available for adaptive management and further monitoring that may be necessary to address unforeseen problems in meeting the milestones and goals of either the on-- or off-site restoration components necessary to comply with the terms of the special conditions set forth herein. The funds shall be reserved until the Executive Director notifies Caltrans in writing that the wetland mitigation requirement has been fully satisfied. The term for this review shall be not less than five (5) years, but may be longer if adaptive management and further monitoring are required. The Executive Director shall determine when the final success criteria have been achieved.

D. Amendment. Caltrans shall undertake development in accordance with the approved final plan and with all approved terms and conditions of CDP 1-09-027. Any proposed changes to the approved final plan or the approved terms and conditions of CDP 1-09-027 shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

7. ASSUMPTION OF RISK.

A. By acceptance of Commission approval of CDP 1-09-027, Caltrans acknowledges and agrees: (i) that the site of the proposed Greenwood Creek Bridge replacement and associated roadway improvements may be subject to hazards from seismic events, tsunamis, liquefaction, storms, floods and erosion; (ii) to assume the risks to employees and assigns of Caltrans, including contractors and subcontractors

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and their officers, agents, and employees, and to the public utilizing the proposed project during and after construction, and to the property that is the subject of this permit of injury and/or damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense against such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.

B. PRIOR TO ISSUANCE OF CDP 1-09-027, Caltrans shall submit a written agreement, in a form and content acceptable to the Executive Director, evidencing Caltrans' agreement to be bound by the requirements of Subsection A.

8. <u>WATER QUALITY PROTECTION.</u>

A. Not less than sixty (60) days prior to commencement of construction covered by the subject Storm Water Pollution Prevention Plan (SWPPP) that shall be prepared subsequent to Commission approval of CDP 1-09-027 by the construction contractor eventually selected by Caltrans, the SWPPP shall be submitted for the review and approval of the Executive Director, in consultation with Caltrans environmental engineering/water quality protection staff. The SWPPP shall provide adequate measures to prevent contamination of the waters of Greenwood Creek and other watercourses that may be affected by the proposed construction activities authorized by CDP 1-09-027. If the Executive Director determines that the SWPPP is not adequate for this purpose, project activities other than those specifically authorized by Subparagraph A above shall not commence until all changes required by the Executive Director have been made and published in a revised SWPPP to the satisfaction of the Executive Director.

B. It shall be Caltrans' responsibility and the responsibility of the pertinent contractor to ensure that the draft SWPPP is prepared and submitted on a pre-construction timeline that allows for the review of the SWPPP required by subsection A above, which could require at least ninety (90) days, or longer if substantial changes to the draft SWPPP are necessary. The Executive Director may request copies of any SWPPP reporting documents prepared during project construction.

C. Upon request by Caltrans, the Executive Director may separately review a limited water quality protection plan prepared by Caltrans for site preparation activities that may be deemed necessary to implement the construction schedule prior to selecting a contractor. This review shall be undertaken at the discretion of the Executive Director and shall apply only to the minimum vegetation removal necessary to undertake site preparation in the year that construction is scheduled to commence, consistent with all applicable work windows and other limitations. The plan shall include all measures necessary to protect coastal water quality and

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restrict site disturbance to the minimum necessary, and shall be consistent with the applicable requirements of other state and federal agencies with review authority over the project. Caltrans shall provide all information deemed necessary by the Executive Director to complete this review.

D. Caltrans shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final SWPPP shall be reported to the Executive Director. No changes to the approved final SWPPP shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

9. <u>BIOLOGICAL MONITORING</u>

In accepting the Commission's authorization of CDP 1-09-027, Caltrans accepts responsibility for ensuring compliance with all terms and conditions imposed by the Commission. Not less than ninety (90) days prior to commencement of construction, Caltrans shall provide for the review and approval of the Executive Director, a Biological Monitoring Plan that includes at a minimum the following requirements and provisions:

A. Monitoring:

Caltrans shall provide qualified biological monitoring staff to observe and report on the compliance of the subject construction activities that are undertaken within, above, or that may drain into the Greenwood Creek channel or be undertaken within fifty (50) feet from the top-of-bank of the pertinent stream channel(s) within the project limits, or affect either other watercourses within the project limits or the sensitive habitat areas within the project limits generally depicted on Exhibits 6 and 7. The monitor shall be on site daily between March 1 and August 31, at least weekly through October 15, annually, and as otherwise deemed necessary by the Executive Director to ensure compliance with the requirements of CDP 1-09-027. No demolition, pouring or placement of concrete or other substances that may spill or drain into coastal waters, de-watering activities, temporary crossing installation or other similar activities with the potential to directly affect coastal waters shall be undertaken unless a qualified biological monitor is present; and

B. Qualifications, areas of duty of monitor:

Caltrans shall ensure that a qualified biologist or botanist, depending on the specific monitoring tasks (hereinafter "monitor") with significant pertinent field experience and familiar with the identification of wetlands and other sensitive habitats or species that may occur within or adjacent to the project area, approved by the Executive Director, shall monitor project activities as set forth in CDP 1-09-027, to the satisfaction of the Executive Director. Caltrans shall consult with the Executive Director, and the Executive Director shall resolve, any questions that may arise during project construction as to whether specific project activities require the presence of the biological monitor; and

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C. Education of on-site personnel:

Prior to commencement of construction, the monitor shall provide copies of, and brief all on-site personnel on, all the requirements of CDP 1-09-027, including requirements related to the protection of sensitive habitat and species, and of water quality, and shall provide additional copies and conduct additional briefings as new field personnel join the project, and as the monitor may otherwise determine to be additionally necessary, to ensure that all personnel understand and fully implement the applicable requirements of CDP 1-09-027; and

D. Reporting:

The monitor shall keep a detailed daily log and monitoring reports and shall submit copies to the Executive Director and any other local government, state department, or other agency as frequently as may be requested, and shall immediately report any suspected non-compliance with permit conditions to the Resident Engineer or other designated site supervisor, in addition to entering detailed accounts of any such incidents into both the daily log and monitoring reports to be retained by Caltrans as part of the permanent project file.

Within 24 hours following such a report, Caltrans shall report any observed or reported potential non-compliance with permit conditions or with requirements of the approved Stormwater Pollution Prevention Program Plan (SWPPP), to the Executive Director; and

E. Further Notification and Remedial Action:

The biological monitor shall also notify Caltrans' designated District 1 Environmental Unit Construction Liaison ("liaison") or the liaison's designated representative of any incident of non-compliance with the requirements of this permit or with the requirements of the approved SWPPP. In addition, if for any reason the usual Caltrans site supervisor is unavailable, Caltrans shall ensure that the liaison has the authority to order the immediate cessation of any activity identified by the liaison or the monitor as potentially non-compliant with the construction of the project as permitted, or with the special conditions of CDP 1-09-027 or the approved SWPPP. If work is stopped due to potential non-compliance, the assigned Caltrans supervisor shall not allow the project activities of concern to re-commence until the state and federal regulatory agencies (which may include: California Department of Fish and Game, California Department of Parks and Recreation, Regional Water Quality Control Board, Coastal Commission – North Coast District Office, NOAA National Marine Fisheries Service, U.S. Fish and Wildlife Service, and Army Corps of Engineers) with applicable authority have been notified and have had an opportunity to advise Caltrans of, and Caltrans has implemented, any remedial action(s) that may be necessary, and Caltrans has

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obtained any additional authorizations that may be deemed necessary by the Executive Director or other regulatory agencies; and

F. Monitor to verify SWPPP compliance reports:

The monitor shall verify the accuracy and completeness all Storm Water Prevention Plan (SWPPP) Best Management Practices compliance reports, prepared by the contractor chosen by Caltrans (the contractor's reports are in all cases first reviewed by the Caltrans site supervisor or other Caltrans construction employee designated by the supervisor), to ensure that the reports are consistent with the observations of the monitor and that any remedial action requested by the monitor or by the Caltrans site supervisor or other designated Caltrans staff has been adequately addressed. When the monitor is unavailable (such as during construction periods when a biological monitor is not ordinarily required to be on site), the Caltrans site supervisor shall submit copies of the contractor's reports as reviewed and approved by the Caltrans site supervisor directly to the Executive Director rather than combining the reports with the biological monitor's routine reports that would otherwise be submitted. The results shall be recorded in the engineer's daily records, and transmitted to the Executive Director and to any other agency requesting copies, along with a copy of the SWPPP report reviewed, with the biological monitor's reports. During periods when project construction does not require direct biological monitoring on a daily basis, the SWPPP report reviews may be undertaken instead by the Caltrans site supervisor or a designated water quality specialist from the Caltrans environmental engineering staff, and shall be submitted to the Executive Director and any other state or federal agency that requests copies, together with a copy of the completed SWPPP report, within ten (10) business days after the report's completion, or more frequently if requested; and

G. Records & Reporting:

The monitor shall keep detailed field notes of all observations, including biological and physical environmental baseline observations, and shall document in writing with supporting photographs where possible - any potential incidence of non-compliance with the provisions of CDP 1-09-027, including any instance of sediment or other discharge into the Greenwood Creek or nearby watercourses that may be affected by project activities and shall include such information in the monitoring reports submitted to the Executive Director. The monitor shall additionally record a professional estimate of the nature and degree of adverse impact on sensitive habitat, species or water quality observed by the monitor. The site supervisor shall ensure that copies of the biological monitor's notes, logs, photographs, reports or other records prepared by the biological monitor are fully preserved and retained with the permanent Caltrans project files. The monitor shall additionally ensure and document that rainy season protective measures are fully in place before the onset of rainy season, established as commencing annually on October 15, and shall verify as often as necessary throughout the rainy season that

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the implemented measures perform adequately to protect the coastal waters and sensitive habitat areas generally depicted on Exhibits 6 and 7.

10. SITE INSPECTIONS

Coastal commission staff, and staff of local government or other agencies that the Coastal Commission staff may coordinate site visits with, shall be authorized to enter the site at any time to observe project activities without prior notice. Caltrans shall ensure that adequate personal safety equipment is available on site at all times for site visitors. If activities are underway that could cause a hazard to site visitors, the site supervisor or designee shall require that these activities be temporarily suspended as soon as practicable, for a reasonable amount of time to allow safe site inspection and the site supervisor or designee shall accompany staff during such site visits. Site visitors will notify the Caltrans supervisor on site of their arrival, and the site supervisor will maintain on site and provide safety gear (such as goggles, safety vests, and hearing protection) and instructions for the visitors.

11. AUTHORIZED DEVELOPMENT ONLY; PERMIT AMENDMENT REQUIRED

All activities associated with the development authorized herein shall be undertaken in continual conformance with the approved project description and with the terms and conditions of approval of the permit. Any proposed changes to the approved project shall be reported to the Executive Director. No changes to the approved project shall occur without a Coastal Commission-approved amendment to the coastal development permit, unless the Executive Director determines that no amendment is legally required.

12. REVISED PLANS & DESIGNS

PRIOR TO ISSUANCE OF CDP 1-09-027, Caltrans shall submit a final design plan for the review and approval of the Executive Director, for the guard rails, pedestrian rails, bicycle rails, retaining walls, off-bridge protective barriers or retaining walls, lighting, or signage proposed within the project limits, and for the requirement that Caltrans/the contractor identify and use an off-site area for construction staging, subject to the requirements set forth herein:

A. The final designs shall be consistent with the designs recommended by the Commission's Road's Edge subcommittee and as authorized by the Commission in approving CDP 1-09-027. The final designs shall incorporate the lowest profile and most visually permeable structures that may be applied to the subject project consistent with applicable safety standards and the aesthetic requirements recommended by the Commission's Road's Edge Subcommittee, and imposed by the Commission; and

B. The protective features installed within the project limits shall not be painted or textured except as may be specifically required by the Commission in approving CDP 1-09-027. Pertinent structures shall be constructed of non-reflective matte

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metal, timber, natural stone, or a combination of these, or an alternate material deemed more attractive or less visually intrusive by the Executive Director, consistent with the Commission's approval of CDP 1-09-027. Timbers treated with chemical preservatives that may leach into coastal waters shall not be used within the project limits.

C. The signage, signal and lighting elements shall be shown in the final plans and shall be limited to the minimum number and profile necessary to comply with public safety requirements. No other signage or messaging displays, signs, solar installations, or other similar development may be installed within the project area. Any safety signage (such as speed limit signs) proposed in or near the project location shall be specified in the final plans as to the proposed size, color, design, content and location of such features. No architectural lighting shall be included in the final bridge plans and designs.

D. The protective barriers and retaining walls shall be wildlife permeable for all size classes of wildlife that may utilize the subject location, except in locations on the subject bridge where wildlife would not be expected to cross a specific section of the proposed barrier structure(s).

E. The temporary bridge crossing shall be limited to placement on the western side of the existing bridge, within the approved area of construction disturbance, and the vegetation clearance and project activities that would disturb vegetation shall be limited to a corridor extending not more than forty (40) feet eastward as measured from the eastward edge of the proposed bridge, and the placement of project staging/construction yard activities such as the storage of materials and equipment, shall be located in an identified upland area outside of the stream corridors and wetlands of Greenwood Creek or other tributaries within the project limits.

Caltrans shall undertake and maintain development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

13. <u>FINAL DISPOSAL PLAN</u>

NOT LESS THAN SIXTY (60) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION, Caltrans shall submit a Demolition Debris and Excess Graded Material Disposal Plan for the review and approval of the Executive Director. The Plan shall be consistent with the requirements of the special conditions of CDP 1-09-027. Project wastes, including demolition debris shall be recycled to the maximum extent feasible and as may otherwise be specified in the terms and conditions of this permit. The Plan shall identify recycling plans for all materials, unless recycling cannot be undertaken for some types of wastes. For wastes that cannot be recycled, the proposed disposal site(s) for residual debris, wastes, or excess graded material that may be generated by the subject

COASTAL DEVELOPMENT PERMIT

project shall be identified, Caltrans shall ensure that all necessary permits for use of the pertinent site for such purposes have been obtained. Waste materials may not be placed where coastal waters may be affected, either directly or indirectly, or where the waste materials will displace or otherwise adversely affect designated or zoned for agriculture, or where such disposal may adversely affect sensitive species or habitats, or be visible from any public viewing area. Caltrans shall additionally provide evidence that all necessary permits, including coastal development permits, for such disposal, have been obtained not less than thirty (30) days prior to commencement of disposal, and shall provide copies of the applicable permits to the Executive Director. Caltrans shall maintain records of the final disposal of any debris, wastes, other materials or excessive graded soils generated during the construction of the project authorized herein and submit a copy of such records to the Executive Director within sixty (60) days after project completion.

14. <u>FUTURE DEBRIS EXPOSURE DUE TO RIVER SCOUR OR EROSION</u>

A. In accepting the Commission's approval of Coastal Development Permit 1-09-027, Caltrans agrees that if any subsurface debris, such as remnant pilings, footings, or abutments that are not fully excavated and removed should become exposed in the future for any reason, Caltrans accepts responsibility for undertaking timely removal of such debris, which may pose hazards to coastal visitors, increase streambank erosion, or cause adverse visual impacts in the Highly Scenic river corridor. Removal of such debris shall require a new coastal development permit.

B. PRIOR TO ISSUANCE OF CDP 1-09-027, Caltrans shall submit a written agreement, in a form and content acceptable to the Executive Director, evidencing Caltrans' agreement to be bound by the requirements of Subsection A.

15. <u>PURPLE MARTIN MITIGATION</u>

A. Within ninety (90) days following Commission approval of CDP 1-09-927 and prior to commencement of construction, Caltrans shall submit final project plans for the review and approval of the Executive Director demonstrating the manner in which the new bridge design will incorporate species-appropriate bird nesting habitat that is the equivalent of the habitat provided by the existing bridge. In addition, Caltrans shall submit plans, specifications, and timing for the installation of temporary nesting habitat for the purple martin population that will be displaced during the three-year bridge construction project, for the review and approval of the Executive Director. Construction shall not commence until the approved temporary nesting structure has been installed as verified by the Caltrans biologist and biological monitor. The biological monitor shall include observations of the use of the temporary structure by purple martins and shall coordinate such observations with the daily evaluation of the bridge netting. The biological monitor's notes shall include any suggested changes or improvements to the temporary habitat that may be implemented in subsequent years, in consultation with other avian specialists, and if authorized by the Executive Director, Caltrans shall ensure that these

COASTAL DEVELOPMENT PERMIT

adjustments are made during the appropriate seasonal window. The final project plans (including the bridge plans and the temporary nesting structure plans) shall be accompanied by evidence that the plans have been reviewed by an identified Caltrans biologist with expertise in the subject area.

B. Caltrans shall undertake and maintain development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arcata Fish and Wildlife Office
1655 Heindon Road
Arcata, California, 95521
Phone: (707) 822-7201 FAX: (707) 822-8411

In Reply Refer To:
1-14-2001-1048
81331-2009-I-0084

JUN 30 2009

Sandra E. Rosas, Chief
Environmental Management, M2 Branch, District 3
California Department of Transportation
703 B Street
P.O. Box 911
Marysville, California 95901-0911

Subject: Informal Consultation on Greenwood Creek Bridge Replacement Project, Mendocino County, California

Dear Ms. Rosas:

This letter responds to your request, dated June 10, 2009, for informal consultation with the U.S. Fish and Wildlife Service (Service) regarding the proposed construction and replacement of a bridge along California State Route 1 (Highway 1) at Greenwood Creek, Mendocino County, California. In a biological assessment, dated July 2001, and in subsequent documents provided to the Service, the California Department of Transportation (Caltrans) determined that the proposed bridge construction activities may affect but are not likely to adversely affect the federally listed threatened northern spotted owl (*Strix occidentalis caurina*), marbled murrelet (*Brachyramphus marmoratus*), and critical habitat for California red-legged frog (*Rana draytonii*; formerly *Rana aurora draytonii*), and the federally listed endangered tidewater goby (*Eucyclogobius newberryi*). This response is prepared in accordance with the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act) and its implementing regulations (50 CFR § 402).

In our designation of critical habitat for the California red-legged frog, dated April 13, 2006 (71 FR 19244), the Service acknowledged recent genetic research on California red-legged frogs and northern red-legged frogs (*Rana aurora*; formerly, *Rana aurora aurora*) in Mendocino County, and subsequently changed the extent of the geographic range to reflect the entire range of the subspecies, which includes southern Mendocino County. In our proposed revised designation for critical habitat for the California red-legged frog, dated April 29, 2009 (74 Federal Register 19184), the Service proposed designating critical habitat (critical habitat unit MEN-1), located

approximately 7 miles southeast of the proposed project site. You requested our determination that the proposed action will not adversely affect critical habitat for the California red-legged frog. The proposed project occurs outside of proposed or designated critical habitat for the California red-legged frog, and consequently, the proposed action will not affect critical habitat for the California red-legged frog.

This consultation is based on: information provided in the July 2001, biological assessment; subsequent project information provided by Caltrans on May 15, 2009, and June 10, 2009; species information from the California Department of Fish and Game's Natural Diversity Database; and information in our files. The project description contains a complete description of the proposed action and its effects on the above species and critical habitat and is hereby incorporated by reference. A complete administrative record for this consultation is on file in this office.

On April 2, 2002, we sent a letter to the Federal Highway Administration with our determination that Caltrans' proposed construction of a bridge along Highway 1 at Greenwood Creek, Mendocino County, may affect but would not likely adversely affect the northern spotted owl, marbled murrelet and tidewater goby. On February 21, 2006, we received a letter from Caltrans stating that the proposed bridge design at this location was being re-evaluated by Caltrans, and that Caltrans would re-initiate consultation with the Service on a revised project.

On June 10, 2009, we received a revised project description for the proposed project. The new proposed bridge alternative would replace the existing bridge and consist of a three-span cast-in-drilled-hole pre-stressed box girder bridge. The new bridge would be constructed on an alignment approximately 7 feet upstream and east of the existing bridge alignment, and would measure approximately 520 feet in length, with two 12-foot wide lanes and two 6-foot wide shoulders. During construction, traffic would pass on one lane of the existing bridge while the other lane is under construction. Construction activities are expected to last from February 2010 until October 2012. The new bridge alternative differs from the previous proposed bridge in the following ways:

- permanent piles would be installed using the cast-in-drilled hole method, instead of pile driving;
- the new bridge alignment would shift the existing centerline about 7 feet to the east, instead of 40 feet;
- the new bridge would measure 520 feet in length, instead of 544 feet in length;
- the new bridge would measure 43 feet in width, instead of 40 feet in width;
- an existing access road is adequate and no additional access road would be constructed;
- proposed vegetation removal within the floodplain has been reduced from a distance of 80 feet up- and downstream of the bridge to a distance of 70 feet up- and downstream of the bridge;
- cut and fill would be reduced from 8,000 cubic yards to about 3,500 cubic yards;
- a tieback wall would be installed at Boone Gulch instead of extending the 6-foot diameter culvert 48 feet to the east;
- a 2-foot diameter culvert at "Tributary 2" would be extended 4 feet instead of 15 feet;

- a 1.5-foot diameter culvert at "Tributary 3" would be extended eastward by 4 feet instead of 20 feet;
- two smaller retaining walls would be installed, instead of three retaining walls.

The proposed project area occurs within the range of northern spotted owl, marbled murrelet, tidewater goby and California red-legged frog.

The nearest known northern spotted owl nest occurs approximately 1,800 feet northeast of the proposed project site. The nearest known inland detection for the marbled murrelet occurs approximately 3,000 feet northeast of the proposed project site. The nearest known breeding location for the tidewater goby occurs at Davis Pond, located approximately 9 miles south of the proposed project site, although focused surveys for the tidewater goby have not been conducted at the proposed project site. The nearest known occurrence of California red-legged frog is located within Greenwood Creek, approximately 4 miles upstream and southeast of the proposed project site.

Suitable nesting and roosting habitat for the northern spotted owl, consisting of multi-layered, multi-species stands with high (60-80 percent) canopy closure, large diameter (greater than 30 inches diameter-at-breast-height), and high incidence of large woody debris (snags, logs, deformed trees) occurs approximately one-half mile to the east of the proposed project site. Similarly, suitable nesting habitat for the marbled murrelet occurs approximately one-half mile east of the proposed project site. Suitable habitat for the tidewater goby may occur approximately 0.25 mile downstream of the proposed project site, near the mouth of Greenwood Creek. However, aquatic habitat at the proposed project site is not tidally influenced, and consists primarily of rocky substrate with riffles. Suitable aquatic breeding habitat for the California red-legged frog (deep pools with emergent and over-hanging vegetation) does not occur at the proposed project site.

Concurrence

Northern Spotted Owl

The Service has determined that the proposed bridge construction activities may affect but are not likely to adversely affect the northern spotted owl, based on the following factors:

1. Roosting and nesting habitat for the northern spotted owl will not be removed.

2. Although activities associated with bridge construction along Highway 1 at Greenwood Creek could occur during the breeding season of the northern spotted owl, the nearest known northern spotted owl nest occurs approximately 1,800 feet northeast of the proposed project site, and consequently, the noises generated in association with the proposed construction activities are not likely to disturb nesting northern spotted owls.

Marbled Murrelet

The Service has determined that the proposed bridge construction activities may affect but are not likely to adversely affect the marbled murrelet, based on the following factors:

1. Nesting habitat for the marbled murrelet will not be removed.

2. Although activities associated with bridge construction along Highway 1 at Greenwood Creek could occur during the breeding season of the marbled murrelet, the nearest known marbled murrelet inland detection (from 1995) occurs approximately 3,000 feet northeast of the proposed project site, and consequently, the noises generated in association with the proposed construction activities are not likely to disturb nesting marbled murrelets.

Tidewater Goby
The Service has determined that the proposed bridge construction activities may affect but are not likely to adversely affect the tidewater goby, based on the following factors:

1. Suitable habitat does not occur at the proposed project site, and thus, tidewater gobies are not likely to occur at the proposed project site.

2. Caltrans proposes to implement Best Management Practices, which should eliminate or minimize to a level of insignificance any potential adverse effects from the proposed project on habitat or water quality at or immediately downstream from the proposed project site.

California Red-legged Frog
You did not include a request for our determination of possible effects of the proposed action on the California red-legged frog. Nevertheless, the Service has determined that the proposed bridge construction activities may affect but are not likely to adversely affect the California red-legged frog, based on the following factors:

1. The nearest known location of California red-legged frogs occurs in Greenwood Creek, approximately 4 miles southeast and upstream of the proposed project, and California red-legged frogs were not detected during four surveys conducted at the proposed project site in June 2005.

2. Surveys for California red-legged frogs at the proposed project site were conducted in June 2005, and consequently did not conform to the Service's recent survey guidance, revised in August 2005, which would have resulted in additional surveys. However, the drainages within the proposed project site are relatively steep, with fast moving water and sparse emergent vegetation, and consequently, California red-legged frogs are not likely to occur at the proposed project site, and additional surveys likely would not have resulted in detections of California red-legged frogs.

3. As outlined in your request for informal consultation, dated June 10, 2009, you propose to implement measures to avoid take of California red-legged frogs, should they occur in the proposed project area, including: implementation of a worker awareness training program that includes a description of the California red-legged frog; designation of a biological monitor to ensure that workers comply with avoidance measures; and a measure to halt work and contact the Service immediately if a California red-legged frog is found on-site during project activities.

Conclusion

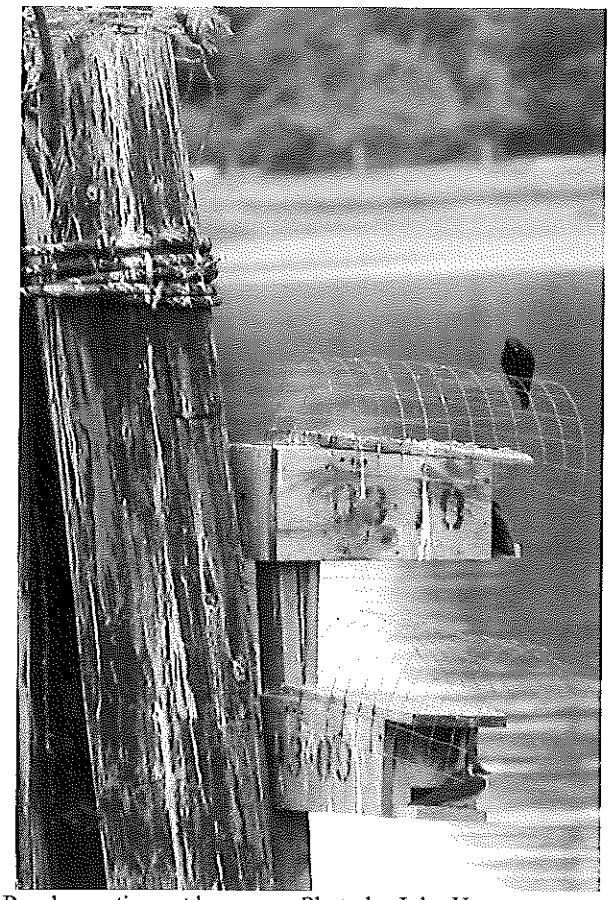
This concludes informal consultation on the proposed construction and replacement of Greenwood Creek Bridge along Highway 1. Unless new information reveals that the proposed action: (1) may affect listed species in a manner, or to an extent, not considered in your correspondence; (2) the action is modified in a manner that causes an effect on the listed species or critical habitat not considered in your correspondence; or (3) a new species is listed or critical habitat is designated that may be affected by the proposed action, no further action pursuant to the Act is necessary.

Please contact staff biologist Bill McIver at (707) 822-7201 should you have further questions regarding this consultation.

Sincerely,

Tamara McCandless
Acting Field Supervisor

Purple Martin Mitigation Plan for the Greenwood Creek Bridge Replacement Project
Mendocino County, CA
EA: 01-310100
July 2010



Purple martin nest boxes Photo by John Harvey

Prepared by:
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Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

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Appendix A: "Attracting and Managing Purple martins" from the Purple martin Conservation Association 11

The following sections are reference material compiled based on the research of Dan Airola and others. Much of these studies where performed on Purple martin colonies in the Sacramento area, however there is information about north coast populations and even some data specific to Greenwood Bridge.
This information is included in the report to support the mitigation measures proposed by Caltrans which are outlined in the "Mitigation/Management Measures at Greenwood Bridge" section.

Purple martin Population Status/ Biology

(From Airola 2009)

The Purple martin (*Progne subis*) has declined in the extent of its geographic range and population in California since the 1970s (Airola and Williams 2008), resulting in its designation by the California Department of Fish and Game as a Species of Special Concern (Shuford and Gardali 2008).
Airola (2009) describes "wide differences in the timing of nesting activities between the North Coast region (Humboldt County) and Sacramento" which is reflected in Table 1. However he is able to characterize "the known duration of nesting activities"... nest building, 4-8 days; egg laying, 4-7 days; incubation, 15-18 days; rearing to fledging 28 days; (Brown 1997, Airola unpub. data).

Table 1. Approximate mid-point dates of major nesting activities of Purple martins in various parts of California used in identifying optimal periods to conduct status surveys

			Nesting Activity				
Location	County	Elevation (ft)	Nest Building	Carrying Green Leaves[a]	On Eggs	Carrying Food or Fecal Sacs	Young Heard or Seen in Nest
Sacramento	Sacra-mento	10	5/20	6/5	5/15-6/4	6/25	6/29
Red Hills Rd	Lake	2,000	5/15			6/30	7/8
Shasta Lake	Shasta	300	6/7			6/25	7/1
Lake Britton	Shasta	2,740	6/15			6/30	7/5
Lava Beds NM	Siski-you	5,000					7/18
Shelter Cove	Hum-boldt	100	6/27	6/27	6/29	7/10	7/22

[a] Indicates incubation/brooding stage

Table 2 shows that Greenwood Creek Bridge as of 2009 likely has approximately 10 nesting pairs of Purple martin.

Table 2. Results of 2009 purple martin surveys at Northern California colony sites

Region/ County	Site	Nest Substrate	Occupied 1990s	Occupied 2000-2004	Site Still Suitable?	Number Survey Visits	Occupancy Verified 2009?	Number of Nesting Pairs: From Hole Use Mapping and Behaviors	Number of Nesting Pairs: Estimated from Counts
NORTH COAST									
Del Norte	Lake Earl Wildlife Area	Snag	X		Y?	1	N	0	0
Humboldt	Shelter Cove	Snag, nest box, building	X		Y	2	Y	35	45
Mendocino	Juan Creek Bridge	Bridge	X	X	Y	4	Y	13	11
	Ten Mile Bridge	Bridge	X		Y	4	Y	10	12
	Little Valley Rd	Snag	X		Y	4	Y	1	1
	Noyo Harbor Bridge	Bridge			Y	6	Y	7	5
	Casper Creek	Snag		X	Y	2	Y	1	4
	Big River Bridge	Bridge	X		Y	3	N	0	0
	Greenwood Creek Bridge	Bridge		X	Y	4	Y	7	10
	Van Arsdale Bridge	Bridge	X		Y	1	N	0	0

North Coast Population

(From Airola 2009)

Populations in North Coast Regions appear to be high relative to the available nesting habitat, as indicated by:

· Maintenance of relatively large populations at historically used sites (Shelter Cove, and bridges at Juan, Ten Mile, and Greenwood Creeks, and at the Gualala River)

· Recent rapid increases at Shelter Cove, partly in response to provision and adoption of nest boxes;

· Rapid re-colonization of reconstructed bridges after a period during which they were made unsuitable (Juan Creek, and possibly Ten Mile Creek); and

· Colonization of the Noyo Harbor Bridge after it was replaced with suitable design for martin nesting.

Notably, most surveys in this region were conducted at bridges, and therefore conclusions regarding long-term status may not be applicable to snag nesting populations.

Nonetheless, taken together, the survey results suggest that North Coast populations may be limited by nesting habitat, but are sufficiently productive to maintain relatively large colonies and occupy most available nesting habitat.

Greenwood Creek Bridge Population

(From Airola 2009)

This Highway 1 Bridge near the town of Elk was not identified as a martin nesting site by Williams (1998). The first known record was made by Stan Kostka, who saw at least 6 purple martins (with 1 ASY male) here and observed martin entries in four holes (two metal plates and two weep holes) on 29 June 2004. Based on the estimate that 50% of

known nesting birds are recorded during counts, these observations suggest potential use by 6 nesting pairs. Airola observed 1 pair (with 1 ASY male) in an afternoon visit on 12 June 2006. P. Metropulos reported 14 individuals here on 7 May 2007.
Kostka reported the site as heavily overgrown with riparian trees in 2004, a condition which has persisted through 2009. The overgrown conditions suggest that the site was colonized some years prior to 2004, presumably when conditions were more open. S. Grimes remembers that the immediate area surrounding the bridge was much more open during the 1980s, consistent with this hypothesized history.
Surveys conducted in 2009 at Greenwood Creek identified 29 weep holes in the bridge, although many of the holes in the central portion of the bridge appear to be inaccessible due to growth of dense vegetation.
Surveys in 2009 by Grimes and Airola resulted in an estimate of 5-7 nests pairs (3 confirmed by behavior, 2 inferred from frequency and duration of hole use, and 2 suspected based on late date of observed use). The average count of 10 birds yielded a higher estimate of 10 pairs.
The Greenwood Creek Bridge is scheduled for replacement, with construction of the new bridge expected to begin in 2010 (E. Engelby pers. comm.). It is not clear whether suitable sites will remain available during each of the construction years within either the new or old bridge.
Although bridges are more permanent structures than trees and snags, some of them also became unsuitable. Two bridges in Monterey County (Torrey Canyon and Buck Creek) are no longer occupied, apparently because they have become overgrown by trees since they were used in the past. The Greenwood Creek Bridge in Mendocino County also appears to be approaching an overgrown condition. Therefore, some occupied bridge sites may depend on periodic vegetation removal by floods, bridge repair or replacement, or other causes to remain suitable.

Habitat Conditions at Nesting Areas

(From Airola 2003)
Certain minimum conditions however, were present at all colony sites. Occupied areas were always within a span of bridge at least 85 m long (mean 301 m, standard deviation 184 m). There was at least 6 m of vertical space beneath all occupied bridge sections (mean 8 .3 m, standard deviation1 .5m); martins were absent from all surveyed areas with less space. Martins abandoned one former breeding site (Capital City Freeway between L and Q streets) in the mid-1980s when flight space was reduced to less than 3 m by construction of a two-story parking lot. Also, all occupied sites had unobstructed flight access and low to moderate traffic levels.

Nestling Mortality and Effectiveness of Nest Guards

(From Airola 2003)
Discovery of dead nestlings below weep holes during population surveys prompted investigation of the loss of nestlings from nest holes. On the assumption that young more than 7 days old that were found beneath nest holes had fallen accidentally, we hypothesized the cause to be the lack of any physical barrier at the upper edge of the vertical nest hole. We systematically monitored mortality beneath nests at several colonies where vegetation or debris did not obscure our ability to locate fallen young. We

conducted surveys for fallen nestlings every one to three days from mid-June to mid-July, the peak period of susceptibility, and left a sample of dead young in the field to assess losses due to scavenging by predators and pulverization by car tires.

As a pilot project, Grantham devised wire nest guards and installed them in occupied and suitable weep holes at the 35th Street site from 1992 to1996 (Figure 1). The guards, made of 0.5-inch hardware cloth (wire screen), were designed to provide an internal barrier (i.e., a "fence") to prevent young from falling from nests (see Kostka et al. 2003 for nest-guard design and installation). Effectiveness of nest guards in reducing nestling mortality was evaluated by comparing results of surveys for fallen young before and after installation (1992 and 2002).

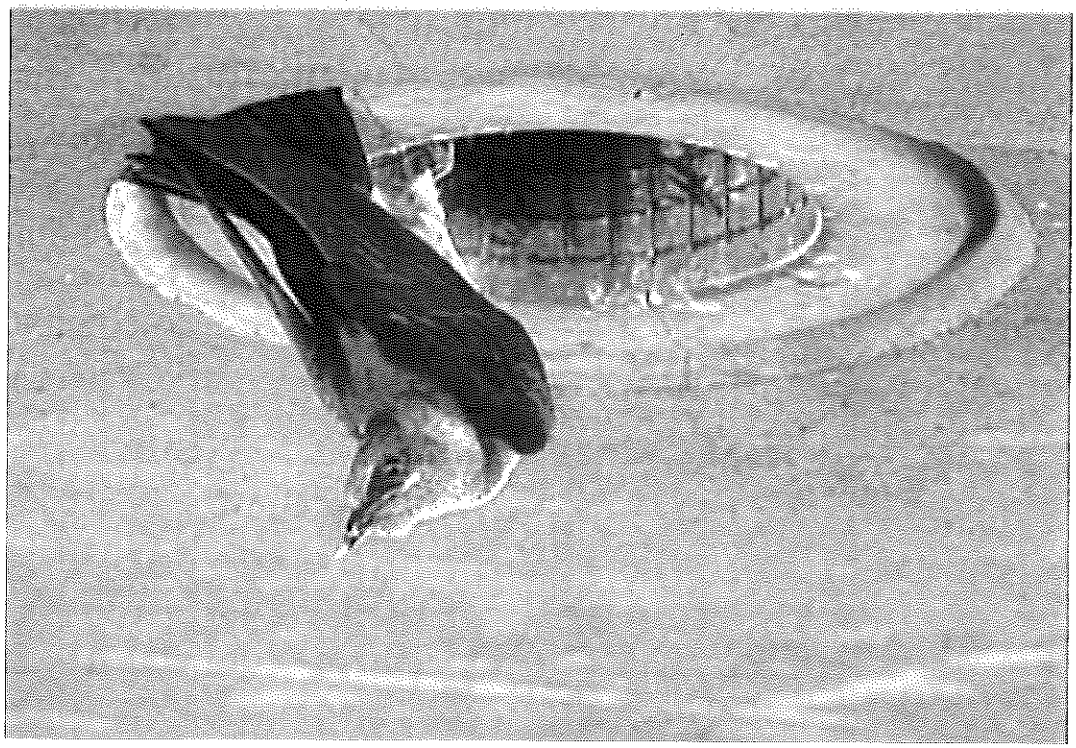

Figure 1. Female Purple martin with food perching at a wire "nest guard" inserted into a weep hole beneath an elevated freeway in Sacramento, California.
Photo by Sacramento Bee/Chris Crewell

In 1992, prior to installation of nest guards, we found 32 nestlings that had fallen from nest holes (1.07 per nest) at 35th Street and 12 (0.32 per nest) at 20th Street; in 2002, also prior to nest guard installation, we found three fallen young (0.21 per nest) at S Street In 2002, seven years following installation of nest guards at 35th Street, 23 (79%) of 29 nesting pairs used weep holes with nest guards, and only one dead nestling was found (0.03 per nest). Most nestlings fell from nests 8-14 days after hatching. Scavenging rates of fallen young appeared to be low; all six dead nestlings that we left in place at various colonies were still on the ground during subsequent monitoring periods 7-17 days later. Even young that fell onto active roadways were visible for more than a week; consequently, fallen nestlings did not likely escape detection during surveys.

Effects of Nest Guards on Roosting by Fledglings

(From Airola 2003)

Following fledging, Purple martin young typically roost at night in the nest cavity for 1 to 12 days (Brown 1997). Because we observed recently fledged young experiencing difficulty reentering weep holes to roost in the evening, nest guards were also designed to provide a wire ladder to enhance the ability of recent fledglings to reenter holes to roost. We monitored the return of fledglings at the 35th Street site during the post-fledging period in 1992 and 1993 to assess their abilities to enter roost holes with and without nest guards.

On evening returns to the 35th Street colony prior to installation of nest guards, we observed that many fledglings had difficulty reentering the vertical weep holes to roost. Young birds would misjudge the hole's location and not achieve sufficient vertical velocity to ascend through the hole. Fledglings showed extreme fatigue, which put them at risk of collision with passing vehicles. They eventually gave up and drifted off, apparently to roost outside holes. Some young began roosting in nest boxes that had been erected there. After nest guards were installed, fledglings regularly flew to holes, grasped the wire-mesh liner, and readily climbed into holes.

Competitor Use of Weep Holes with Nest Guards

(From Airola 2003)

Monitoring at 35th Street in 2002 showed that no potential nest-hole competitors regularly used holes with nest guards. We observed starlings, the most common competitors, entering 24 weep holes. Nesting behavior was confirmed at 10 holes, and we observed use on multiple days, which we considered to suggest nesting, at four other holes. Only two (8%) of the 24 holes that starlings entered had nest guards, and none of the sites where we observed either breeding behavior or multiple-day use had nest guards.

Management Recommendations

(from Airola, D.A. and B.D.C. Williams 2008)

• Retain an adequate supply of large snags on forested lands, especially on upper slopes and ridge-tops, by incorporating martin habitat considerations into National Fire Plan projects, post-fire burn recovery plans, and other salvage, roadside hazard tree removal, and general timber harvest plans.

• Protect occupied and suitable bridge sites from uses that restrict air space and martin access or that cause excessive human disturbance.

• Retain large trees in oak and sycamore woodlands occupied by martins, and control adjacent development that may increase starlings.

• Establish nest-box programs (see Fouts 1996, Copley et al. 1999, Horvath 2000) to diversify nesting habitats where nest-site competition threatens or has eliminated martins and where commitment to long-term management is certain. Do not foster complete conversion to nest boxes for populations that are successfully nesting in trees, bridges, or power poles.

• Evaluate martin occurrence in recently burned forests and protect occupied sites and other suitable sites in formerly occupied areas.

• Investigate and implement measures to reduce the effects of starlings on martins, through direct control locally at nest sites and by land-use protection and modifications.

• Evaluate the effects of bridge site characteristics on nest success of martins, use levels by starlings, and changes in species' use patterns over time.
• Continue to evaluate mortality factors, including vehicle collisions and predation by feral cats, which affect martins nesting under urban bridges.

Second-year male martin at nest box, Shelter Cove, Humboldt County. *Corinna Elwood*

(From Airola 2003)
-Since 1991, the area beneath the 20th Street colony has been used during the nesting season to stockpile top soil and to store trucks and construction materials, but this activity does not appear to have disturbed the breeding birds (Airola pers. obs.). Given the Sacramento martins' past record of tolerance of substantial human activity beneath nest sites, we believe it is unwise to exclude birds from nest sites during construction projects, except where the nesting areas would be affected directly. Scheduling activities from September to mid-March, however, would ensure that disturbance of nesting Purple martins is avoided.

-While encouraging martins at bridge sites to use nest boxes appears possible, we and other researchers and managers (Kostka et al. 2003) do not consider this a high priority. Developing a box-dependent population requires intensive human management, posing risks for the established colonies. Unless threats to bridge colonies (e.g., incompatible land uses, starling competition) increases substantially, we believe it is better to allow the existing colonies to breed in bridges, with provision of less intrusive management assistance (i.e. installing nest guards, protecting airspace, and avoiding exclusion during construction).

California Coastal Commission Permit Requirements for Purple martin

Below is an excerpt from the Notice of Intent issued by the California Coastal Commission (Permit Application No.: 1-09-027) outlining the responsibilities of Caltrans to protect Purple martin.

"...15. PURPLE MARTIN MITIGATION

A. Within ninety (90) days following Commission approval of CDP 1-09-927 and prior to commencement of construction, Caltrans shall submit final project plans for the review and approval of the Executive Director demonstrating the manner in which the new bridge design will incorporate species-appropriate bird nesting habitat that is the equivalent of the habitat provided by the existing bridge. In addition, Caltrans shall submit plans, specifications, and timing for the installation of temporary nesting habitat for the purple martin population that will be displaced during the three-year bridge construction project, for the review and approval of the Executive Director. Construction shall not commence until the approved temporary nesting structure has been installed as verified by the Caltrans biologist and biological monitor. The biological monitor shall include observations of the use of the temporary structure by purple martins and shall coordinate such observations with the daily evaluation of the bridge netting. The biological monitor's notes shall include any suggested changes or improvements to the temporary habitat that may be implemented in subsequent years, in consultation with other avian specialists, and if authorized by the Executive Director, Caltrans shall ensure that these adjustments are made during the appropriate seasonal window. The final project plans (including the bridge plans and the temporary nesting structure plans) shall be accompanied by evidence that the plans have been reviewed by an identified Caltrans biologist with expertise in the subject area.

B. Caltrans shall undertake and maintain development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required."

Mitigation/Management Measures at Greenwood Bridge

(by Al Kannely)

The following recommendations are based on the available research (primarily from studies authored by Daniel Airola) concerning the nesting requirements and behavior of the Purple martin.

The long term goal of the mitigation should be to promote and enhance bridge nesting even during construction, while providing pole mounted nest boxes as an alternative. Purple martin are not highly sensitive to line of site or visual disturbance, and while construction activities have the potential to disturb them this is preferential to their total exclusion from the bridge. The existing Purple martin colony (potentially 10 nesting pairs) is more likely to abandon the location entirely if they are completely excluded from the bridge even if nest boxes are constructed. Since construction will be occurring

throughout the work area providing nest boxes outside the disturbance area represents relocating the colony, which is highly discouraged. Therefore nest boxes will be placed within the work area to avoid relocation so it follows that the bridge, even during construction, should be allowed to remain open to nesting as it is preferred habitat to the boxes.

While bridge construction and displacement to nest boxes are a threat, the use of nest guards should significantly reduce mortality of chicks as well as reducing predation in juveniles. These factors coupled with the enhancement of foraging suitability through temporary vegetation reduction should improve the longterm outlook for the Purple martin population at Greenwood Bridge.

1. By February 15th preceding the construction season bird exclusion will be placed on the bridge covering potential nesting areas which are to be demolished as well as nesting areas which will be opened up by or otherwise put in danger by demolition activities.
2. The outermost portion of the bridge not to be demolished will not have bird exclusion.
3. By February 15th "nest guards" will be placed in the holes of the existing bridge that are not subject to bird exclusion. Nest guards will be constructed and placed according to the design by Kostka et al. 2003.
4. All suitable nest holes on the new bridge will have "nest guards" constructed in them.
5. By February 15th Purple martin nest boxes built according to the guidelines in Appendix A, sufficient to house 10 nesting pairs, will be placed along the access road south east of the bridge. The project biologist will determine the exact location onsite taking into account vegetation clearing, proximity to the bridge and construction activities.
6. Nest boxes will be left in place after construction is completed.
7. Nest boxes will be monitored on a weekly basis during nesting season for the duration of the project. In the event they become occupied by birds other than Purple martins CDFG will be consulted and the Executive Director of the Coastal Commission will be notified.
8. If Purple martin chicks are found fallen outside the nest work will stop and CDFG will be consulted and the Executive Director of the Coastal Commission will be notified.

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www.purplemartin.org Purple martin Conservation Association 301 Peninsula Dr., Suite 6 Erie, PA 16505 U.S.A.

Appendix A: "Attracting and Managing Purple martins" from the Purple martin Conservation Association

Over one million North Americans put up housing for Purple martins. Unfortunately, many of these folks are unable to attract breeding martins. The advice given here will increase your chances of attracting martins. Once martins nest at your location, they will come back every year if you manage the site properly. Landlords who lose their entire colony from one year to the next often suspect their 'flock' died in a storm during migration or was poisoned by pesticides on their wintering grounds. These scenarios are unlikely; the martins that share a breeding site do not migrate or overwinter as a group. The reason for total colony loss is most often the result of something that

happened in the landlord's own back yard during the nesting season. Good management practices can prevent or minimize most of these problems.

Species Profile

Purple martins (Progne subis) are the largest member of the swallow family in North America, measuring 7 1/2 inches (19 cm) long and weighing 1.9 ounces (55 grams).

They spend the non-breeding season in Brazil then migrate to North America to nest. East of the Rockies they are totally dependent on human-supplied housing. West of the Rockies and in the deserts they largely nest in their ancestral ways, in abandoned woodpecker nest cavities. In the Pacific northwest, Martins are beginning to use gourds and clusters of single-unit boxes for nesting.

The pair-bond of the Purple martin is monogamous. The male and female cooperate equally in building the nest out of mud, grass and twigs. The female lays two to seven pure-white eggs at a rate of one egg per day. The female incubates the clutch for approximately fifteen days, then the young hatch. The parents both feed the young continuously for a period of 26-32 days until the young fledge. The young continue to be dependent on their parents for food and training for an additional one to two weeks after fledging. It's not uncommon for the fledglings to return to their human-supplied housing at night to sleep during this period.

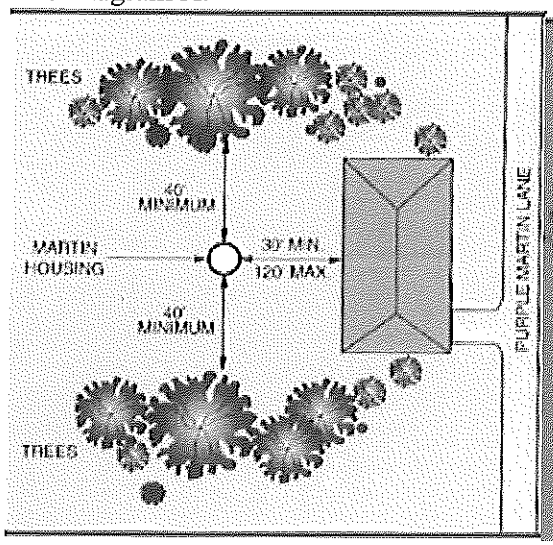
Martins, like all swallows, are aerial insectivores. They eat only flying insects, which they catch in flight. Their diet is diverse, including dragonflies, damselflies, flies, midges, mayflies, stinkbugs, leafhoppers, Japanese beetles, June bugs, butterflies, moths, grasshoppers, cicadas, bees, wasps, flying ants, and ballooning spiders. Martins are not, however, prodigious consumers of mosquitoes as is so often claimed by companies that manufacture martin housing. An intensive 7-year diet study conducted at PMCA headquarters in Edinboro, PA, failed to find a single mosquito among the 500 diet samples collected from parent martins bringing beakfuls of insects to their young. The samples were collected from martins during all hours of the day, all season long, and in numerous habitats, including mosquito-infested ones. Purple martins and freshwater mosquitoes rarely ever cross paths. Martins are daytime feeders, and feed high in the sky; mosquitoes, on the other hand, stay low in damp places during daylight hours, or only come out at night. Since Purple martins feed only on flying insects, they are extremely vulnerable to starvation during extended periods of cool and/or rainy weather.

Location

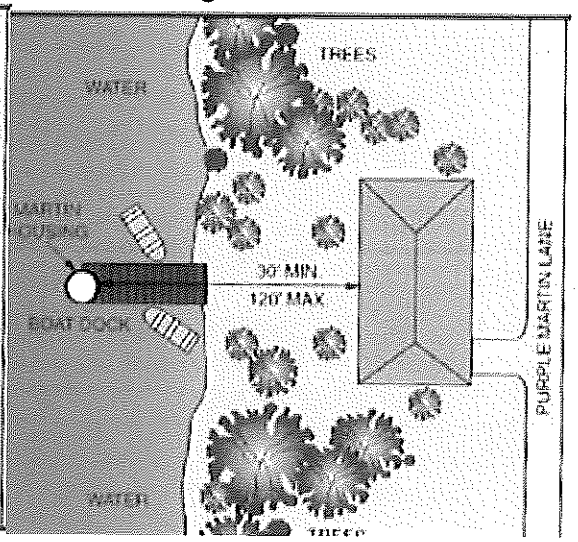
The major reason people fail to attract martins is that they place their martin housing incorrectly, or their site is inappropriate martin habitat to begin with. Martins have very specific aerial space requirements. Housing should be placed in the center of the most open spot available, about 30-120 feet from human housing. There should be no trees taller than the martin housing within 40 feet, preferably 60 feet. Generally, the farther the housing is placed from trees, the better. See site Diagram A. In the southern half of their breeding range, martins are less particular about house placement. Southern landlords can sometimes place housing within 15-20 feet of trees and still attract martins. Height of the housing can be anywhere from 10-20 feet. Keep tall bushes,

shrubs and vines away from the pole. Do not attach wires to a martin house, especially if they lead to trees, buildings, or to the ground. If your yard has too many trees near the martin housing, relocate the housing to a more open area, mount the housing higher, or prune (or remove) trees to create a more open site. If you have a wooded lot, but live near a body of water, refer to site Diagram B. Boat docks make ideal locations for mounting a martin house or gourd rack.

Site Diagram A.



Site Diagram B.



Timing

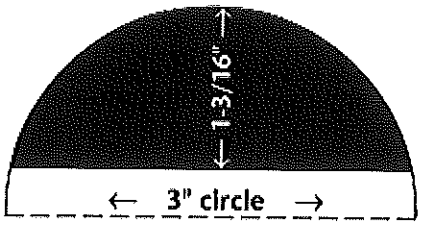
Most 'would-be' martin landlords rush to get their martin housing opened up for the arrival of martin "scouts" in their particular area. Contrary to popular folklore, "scouts" are not looking for new breeding sites for their flocks. "Scouts" are simply the first martins to arrive in, or pass through an area on their way back to their previous year's nesting sites. These martins aren't likely to switch to new housing.

Landlords of active sites can leave their housing completely closed up until the martins return and land on the housing. Purple martins exhibit a very high level of site fidelity. Once they have bred successfully at a specific location, the same individuals return there year after year. More information about timing is given under the heading 'Range & Migration' for those starting new colonies.

No matter where you live, keep your housing open through August. Martins may arrive and begin nesting as late as the end of June anywhere in North America, and in July and August this year's young will be scouting for next year's breeding sites.

Competition

If any other species of bird is allowed to claim martin housing first at an uncolonized site, any martins that may come around are not likely to stay because they will be aggressively chased away. All birds set up territories around their nest sites and defend them against other birds. When House Sparrows or European Starlings lay first claim to martin housing at unestablished sites, they fill the compartments with their nests, then chase off investigating martins. At established colony sites, House Sparrows and starlings will fight with nesting martins, kill their nestlings, and/or break eggs. Allowing House Sparrows and starlings to nest in martin housing will significantly reduce martin occupancy and productivity. Controlling nest-site competitors may require repeated lowering of the housing for nest tear-outs, and in the case of the non-native House Sparrow and European Starling, trapping and/or shooting. Starling-resistant entrance holes can be used to keep starlings from claiming martin housing. Should native bird species (e.g., Tree Swallows, Eastern Bluebirds, Great Crested Flycatchers, etc.) try to take over your empty martin housing, temporarily plug all the entrance holes with door stops or paper cups, and then put up appropriate, single-unit housing elsewhere on your property. Once these other birds have accepted the new housing, reopen the martin housing. Housing should be stored inside for the winter (or closed up) to keep paper wasps, squirrels, and other birds from claiming the house before the martins return.



This diagram shows the dimensions of a starling resistant entrance hole (SREH). This entrance hole will exclude most starlings (and all Screech Owls.) The height dimension (1 & 3/16") is extremely critical. If made a hair too big, starlings will get in; if made a hair too small, martins won't be able to. Also, the hole placement is very important; the bottom of the entrance hole should be no more than 1/2" above the porch, and is most effective in excluding starlings when placed flush with the porch and compartment floor. This hole will also work on gourds, both natural and plastic, as well as aluminum houses. When cutting this hole in wood houses or plastic/natural gourds, use a jigsaw, and cut it slightly small, then file or sand it to the proper height.

Housing

Houses and gourds should be painted white, or a light pastel color; trim can be any color. White housing seems to attract martins best. White housing reflects the heat of the sun, keeping nestlings cooler. Compartment floor dimensions should measure at least 6"x6," but 7" x 12" offers better protection against predators and weather, if starlings are controlled. Compartment height can be from 5" to 7" high. Place entrance holes about 1" above the floor. Hole size can range from 1-3/4" up to 2-1/4", but 2-1/8" is recommended. Many published plans for martin housing (and some manufactured houses) are made to improper dimensions. If your housing is unsuccessful, check the dimensions and modify where needed.

Look for housing designed to raise and lower vertically, with easy access to compartments. Landlords may need to lower housing daily to evict nest-site competitors, or to check on martin nestlings. Systems that telescope up and down, or raise and lower with a pulley and winch, are the most practical. Nest checks will not cause martins to abandon their nests or their colony site. Number the compartments and keep written records.

Replacing Active Housing

The same martins return each year and may abandon the site if the housing they are used to is gone, or drastically altered. To safely replace a single active house, place the new housing near the housing you plan to remove, and give the martins an entire season to get used to it. Do not remove the active housing until some of the martins have accepted and bred in the new housing for at least one season. Once martins have nested in the new housing, you can remove the old house, or put an additional new house in its place. Landlords with several active houses can replace a house between seasons without risk of colony loss.

Predation

The most common reason martins abandon their colony site is because predators have raided their nests. It only takes one foray up a martin pole by a snake, raccoon, or squirrel, or a few visits by an owl, hawk or crow, to cause all the surviving birds to abandon the site. Landlords who don't conduct weekly nest checks may never know martins, nestlings, or eggs are disappearing. All martin poles (wooden or metal) can easily be climbed by predators and should be equipped with pole-guards. Martin houses that have become regular targets for hawks, owls, or crows should be equipped with owl guards. Landlords should be alert for evidence of predation (e.g. dropped owl feathers, plucked martin feathers, chewed-off martin wings, etc.) under martin housing.

Weather Extremes

Since martins feed solely on flying insects, they are extremely vulnerable to weather conditions that affect insect availability. Prolonged bad weather, such as rain, snow, cool temperatures, and/or heavy winds, all reduce or eliminate insect flight. If poor weather persists for more than 2 or 3 days, martins begin to die of starvation. Heat waves and droughts can also be a problem. When air temperatures go above 100° F. for many days, nestlings can perish from overheating. Prolonged drought can also adversely affect insect numbers. Some weather conditions may contribute to a population explosion of external parasites normally found in martin nests, including fleas, nest mites, and blowfly larvae. Never use pesticides in nests or boxes. The safest way to reduce the number of nest parasites is to conduct a "nest replacement." First, remove the nestlings to a temporary container. Throw out the old parasite-infested nest. Then replace the old nest material with clean, dry wood shavings, pine straw (dried pine needles), or dry straw. Shape a shallow bowl in the new material and place the nestlings back in the nest.

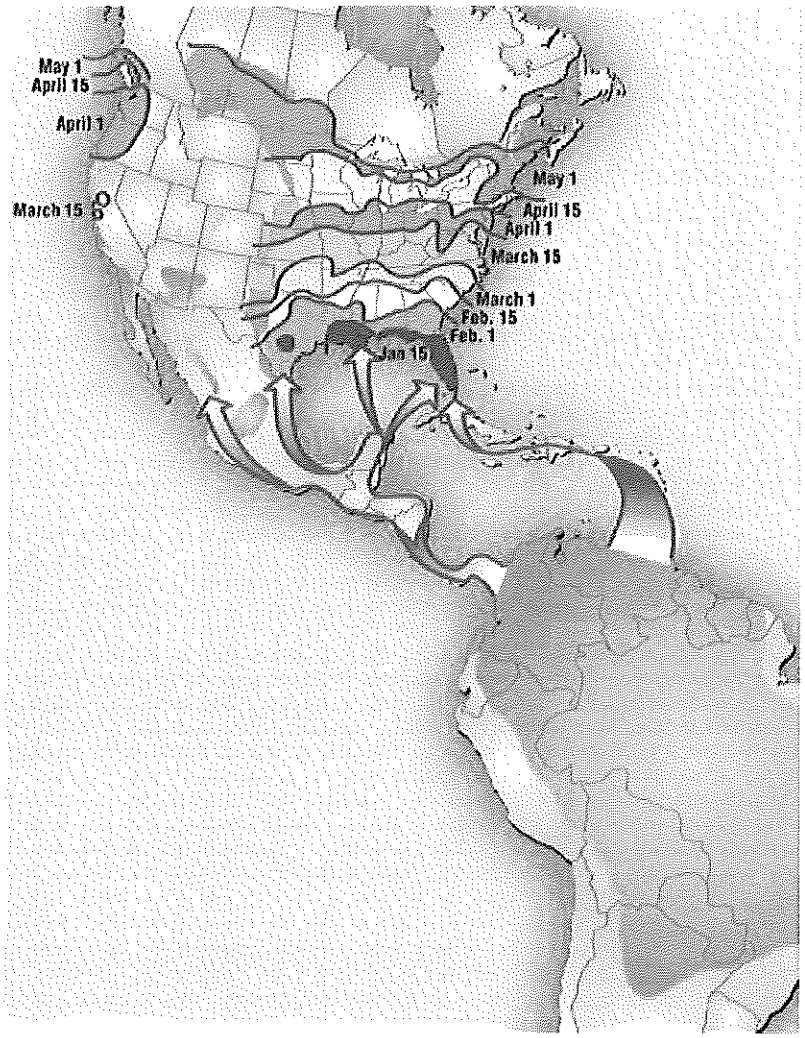
Range & Migration Map

The purple background on the map below (Figure 1.) shows the winter (non-breeding) range of the Purple martin in South America and the breeding range in North America. Colored sections mark average arrival dates of older martins at established colony sites. For example, there is a 95% likelihood that a martin spotted in the light blue section was reported arriving around February 1st. Yearling martins (subadults), the age-group that typically colonize new breeding sites, don't begin arriving until 4-6 weeks for the northern third of the continent, 6-8 weeks for the middle third of the continent, and 8-10 weeks in the southern third of the continent after these dates, and continue arriving for an additional 4-6 weeks in the north, 10-12 weeks in the south. This means martins can be attracted to new housing through late-May in the south, late-June in the north. West of the Rocky Mountains, Purple martins have different nesting habits. In the southwest, martins nest only in old woodpecker cavities excavated in giant cacti. In the Pacific Northwest, martins use gourds and single-unit boxes, but not multiple-room houses.

This arrival information does not take into account two-year-old (adult) birds that didn't breed as subadults, OR, birds of any age that had reproductive failure the previous year. Both of these categories of adult-plumaged returning birds will (or might be) looking for new breeding sites, AND will be arriving before subadult birds. Birds that lost their housing because it was removed or destroyed between nesting seasons will also be looking for new sites. Sometimes landlords with optimal habitat may be able to "steal" martins from housing that is in marginal habitat or that is neglected and overrun with starlings and House Sparrows.

Learning to be both patient (in waiting to attract martins) and persistent (in controlling undesirable birds) during the lengthy time window that runs from the return of adults, most of which are not looking for new breeding sites, through the period when prospecting subadults would begin arriving, is a skill that not all prospective landlords have mastered. As a result of this lapse in efforts, their martin housing can end up full of aggressive nest-site competitors that drive off timid subadult martins. Most housing today lowers easily and opens up for trapping and control of starlings and House Sparrows. In addition, there are now several kinds of starling-resistant entrance holes widely available, and numerous kinds of traps for sparrows and starlings.

The PMCA recommends to open your housing up around the dates adult martins are first scheduled to begin arriving in your area, BUT ONLY IF you are willing to follow through with the practices listed here: Use starling-resistant entrance holes. Be relentless in controlling House Sparrows and starlings. We also recommend use of the vocalization recording.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