

INFORMATION HANDOUT

WATER QUALITY

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

PERMITS

UNITED STATES ARMY CORPS OF ENGINEERS

AGREEMENTS

CALIFORNIA DEPARTMENT OF FISH AND GAME
NOTIFICATION NO.1600-2007-0209-R2

UNITED STATES FISH AND WILDLIFE SERVICE (Biological Opinion)

MATERIALS INFORMATION

[FOUNDATION REPORT FOR MARKHAM RAVINE BRIDGE LEFT
DATED JUNE 15, 2011](#)

[FOUNDATION REPORT FOR LINCOLN AIRPORT CREEK BRIDGE LEFT
DATED JUNE 16, 2011](#)

[FINAL HYDRAULIC REPORT OF MARKHAM RAVINE BRIDGE DATED
JULY 8, 2011](#)

[FINAL HYDRAULIC REPORT OF LINCOLN AIRPORT CREEK BRIDGE
DATED JUNE 28, 2011](#)

[FOUNDATION REVIEW DATED AUGUST 23, 2011](#)

[INSTALLATION DETAIL FOR BATTERY BACKUP SYSTEM](#)

Memorandum

*Flex your power!
Be energy efficient!*

To: MR. GARY BLAKESLEY
Design Branch Chief
Office of Bridge Design - North
Design Branch 5

Date: June 15, 2011
File: 03-PLA-65-16.7
03-3338U1
Markham Ravine
Bridge Left
Bridge No. 19-0192L

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

Subject: Foundation Report

The Office of Geotechnical Design - North (OGD-N) received a request dated March 8, 2011 for a Foundation Report (FR) for a new left structure, Markham Ravine Bridge Left, Br. No. 19-0192L. This structure is to be constructed along the "D13" alignment of the newly constructed Lincoln Bypass. This project is located to the west of the City of Lincoln (PM 12.2/23.8) along State Highway Route 65 in Placer County, approximately 6.0 miles northwest of Roseville and approximately 11.6 miles south of Wheatland.

This study consisted of a subsurface investigation conducted during August 2003 and August 2004. Five mud rotary borings were drilled in the vicinity of the proposed structure. One hole was drilled from a barge in the center of the lake to collect data as near as possible to the proposed pier location. Data will be shown on the "Log of Test Borings" (LOTBs) and will be forwarded when complete.

Structure Description

The proposed new bridge structure will be constructed along the "D13" alignment of the new Lincoln Bypass and will be the fourth structure location for this project from the south end of the new alignment. The proposed structure will be a two span, twin cast in place/prestressed concrete box girder (CIP/PS). This structure will be supported on driven steel H-Piles (HP 12x74).

Regional Geology

According to the Geologic Map of the Sacramento Quadrangle, California, 1:250,000, compilation by D. L. Wagner, C.W. Jennings, T. L. Bedrossian and E. J. Bortugno, published 1981, this site lies within Quaternary alluvium and alluvium of the Riverbank Formation.

Materials observed during the foundation investigation are indicative of those mapped in the area. Based on the subsurface investigation, foundation material at the site consists of predominately, sand, silt, clay and gravel.

We have reviewed the following report by the State of California, Department of Conservation, Division of Mines and Geology, "A General Location Guide for Ultramafic Rocks in California - Areas More Likely to Contain Naturally Occurring Asbestos" dated August 2000. According to this map, the site is not in an area of naturally occurring asbestos. In addition, during our foundation investigation at the proposed structure location, the presence of ultramafic minerals was not observed.

Seismic Recommendations

Based on the Caltrans 2009 Seismic Design Procedure, the nearest active fault to the site is the Bear Mountains fault zone (Spenceville fault section) (Fault ID No. 79) with Mmax of 6.5. The fault is located northeast of the bridge site, and the rupture distance to the fault plane from the bridge site is estimated to be 11.2 miles.

Based on the 2003 and 2005 Log of Test Borings, a Vs30 (average shear wave velocity for the top approximate 100 feet of soil) was estimated by using the SPT blow counts and the correlation formulas to be 950 feet /second.

Using the above shear wave velocity, the ground motion generated from the nearest active fault is less than the probabilistic and the statewide minimum requirements; and since neither probabilistic nor the statewide minimum requirements governed the entire range of the spectral acceleration (SA), the attached design Acceleration Response Spectrum (ARS) curve is an envelope of the two methods. The probabilistic method is based on the USGS 5% probability of exceedance in 50 years with a return period of 975 years. The peak ground acceleration as shown on the ARS curve is about 0.23g.

The liquefaction analysis indicates minimal potential for liquefaction during an earthquake event.

The potential for surface rupture at the site due to fault movement is considered insignificant since there are no known faults projecting towards or passing directly through the project site.

We will re-evaluate the seismicity if additional subsurface data becomes available.

Any questions regarding the final seismic design recommendations should be directed to Reza Mahallati with the Office of Geotechnical Design North. Reza can be reached at (916) 227-1033.

Ground Water

Ground water levels were measured following the completion of mud rotary drilling near the proposed abutments in the month of August 2003. The structure was then shortened and the abutment locations were moved inside the lake boundary. The ground water level was measured from the barge deck in August 2004. The ground water levels measured at the previous abutment locations in the rice fields were very consistent, but the ground water level measured within the lake limit was higher than those levels measured in the fields. At the BB (Begin Bridge) ground water was found to be at depths of 33.8 and 34.8 feet, an approximate elevation of 72.2 feet (on land). Ground water at the EB (End Bridge) was measured at a depth of 34.8 and 35.4 feet for an approximate elevation of 69.5 feet (on land), while the ground water level at Pier 2 was measured at a depth of 0.89 feet, an approximate elevation of 102.7 feet (lake level). There was water in the lake at the time of drilling and the ground water level measured near Pier 2 was higher than those found in the rice fields. Water levels will fluctuate due to irrigation demands and seasonal precipitation changes and are expected to be higher during the winter months and the spring of the year. For design purposes the highest ground water elevation should be used.

Scour

The Final Hydraulics Report dated June 23, 2004 states, "The total potential scour is calculated, assuming migration to all bents, in accordance with the Federal Highway Administration (FHWA) Hydraulic Engineering Circular Number 18. The estimated potential total channel degradation is approximately 3.3 feet for an assumed life span of 75 years. Total potential scour due to contraction is negligible due to the bridge length. Local pier scour is approximately 5.0 feet; therefore, the total potential scour at the piers is approximately 8.2 feet from thalweg or elevation 85.0 feet. Top of pile cap footing should be 2.6 feet below original ground at all pier locations. The total potential scour at the abutments is approximately at elevation 89.9 feet."

Corrosion

Corrosion samples were collected from this site during the field investigation. Samples were submitted to the Office of Testing and Technology Services, Corrosion Technology Branch, Transportation Laboratory, 5900 Folsom Blvd., Sacramento, CA for corrosion analysis. Initial corrosion test results indicated a corrosive environment. These samples were collected from the rice fields near the proposed abutment locations and could potentially be corrosive due to the use of fertilizers. The structure was later shortened, removing the foundations from the rice fields. Additional corrosion samples were submitted in June 2011 and these test results indicate a non-corrosive environment.

Foundation Recommendations

The following foundation recommendations are based on the General Plan (GP) for the Markham Ravine Bridge Left dated May 2, 2011 and from the subsurface investigation conducted at the site. All elevations used for this report are based on the Vertical Datum NGVD 29.

The request for final foundation recommendations dated March 8, 2011 called for recommendations for driven steel H-Piles (HP 12x74) at both the abutments and at the pier.

The recommended pile type is: driven steel H-Piles (HP 12x74) at all support locations. The pile size has been increased due to the corrosive soils at this site. Data are shown in Table 1 below.

Table 1: Pile Data Table
Markham Ravine Bridge Left, Br. No. 19-0192L

Location	Pile Type	Design Loading	Nominal Resistance		Cut Off Elevation	Design Tip Elevations	Specified Tip Elevations
			Compression	Tension			
Abutment 1	HP 12x74	60 tons	120 tons	0 tons	102.42	49.0 (1,2)	49.0
Pier 2	HP 12x74	62 tons	124 tons	0 tons	87.42	42.6 (1,2)	42.6
Abutment 3	HP 12x74	60 tons	120 tons	0 tons	103.42	49.0 (1,2)	49.0

Design tip elevation is controlled by the following demands:

(1) Compression; (2) Scour Potential exists to Elev. 89.9 @ Abutments 1 and 3; Scour Potential exists to Elev. 85.0 @ Pier 2.

Notes to Designers

1. The Structural Engineer shall indicate on the plans, in the pile data table, the design pile tip elevations required to meet the lateral load demand.
2. If the specified pile tip elevations given in the above pile data table are not adequate for lateral load demands, our Office shall be contacted for further recommendations.
3. All support locations are to be plotted in plan view on the Log of Test Borings as stated in the "Memo to Designers" 4-2. The plotting of the support locations should be made prior to requesting a final foundation review.

Construction Considerations

1. Hard driving should be expected to achieve steel H-Pile tip elevations due to the presence of dense sand, gravel and moderately to strongly cemented layers.

2. At the Contractor's option and after the lateral control tip has been achieved, any driven steel H-Pile which refuses within 10.0 feet of the specified tip elevation may be considered adequate. Refusal shall be defined as 3X the required bearing, 180.0 tons for the HP 12x74 abutment piles and 186.0 tons for HP 12x74 pier piles.
3. This structure is in an existing lake and access roads, construction pads or platforms will need to be constructed. Ground water control measures will be necessary for pile cap excavations and construction. Cofferdams may be necessary.
4. All pile cap excavations shall be cleaned of loose material and debris prior to concrete placement.
5. A 30-day settlement period will be required for all approach fill embankments. No surcharge will be required.
6. Type A structure excavation will be required at the Pier 2 location to a bottom of footing elevation of 87.0 feet.
7. Piles to be driven through embankment constructed by the Contractor, shall be driven in holes predrilled or spudded through the embankment per Standard Specifications Section 49-1.06.
8. The Geotechnical Design Report (GDR) addresses the approach fill embankments and the Reinforced Slope Protection (RSP).

Project Information

Standard Special Provision (SSP) 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.

Mr. Gary Blakesley
June 15, 2011
Page 7

Bridge No. 19-0192L

Data and information attached with the project plan are:

A. Log of Test Borings.

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

A. Foundation Report for Markham Ravine Bridge Left dated June 15, 2011.

Data and information available for inspection at the District Office:

A. None.

Data and information available for inspection at the Transportation Laboratory:

A. Soil core samples from soil borings.

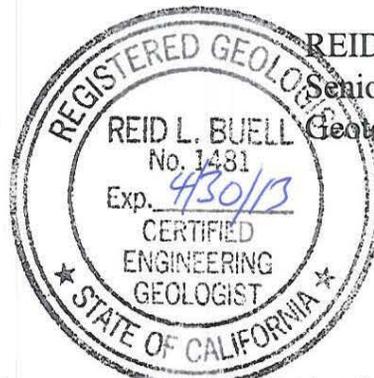
If any conceptual changes are made during final project design, the Office of Geotechnical Design - North should review those changes to determine if these foundation recommendations are still applicable.

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:

Supervised by:

JOHN L. THORNE
Engineering Geologist
Geotechnical Design - North



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

Mr. Gary Blakesley
June 15, 2011
Page 8

Bridge No. 19-0192L



REZA MAHALLATI, PE 49374
Senior Materials and Research Engineer
Geotechnical Design - North

Attachment: Final Design Response Spectrum for Markham Ravine Bridge – Left

c: SamJordan- DPM (E-copy)
R.E. Pending File (E-copy)
JohnStayton – SOE (E-copy)
JoePeterson – DME-D03 (E-copy)
GeoDog Archive

Markham Ravine Bridge - Left

Bridge No. 19-0192L

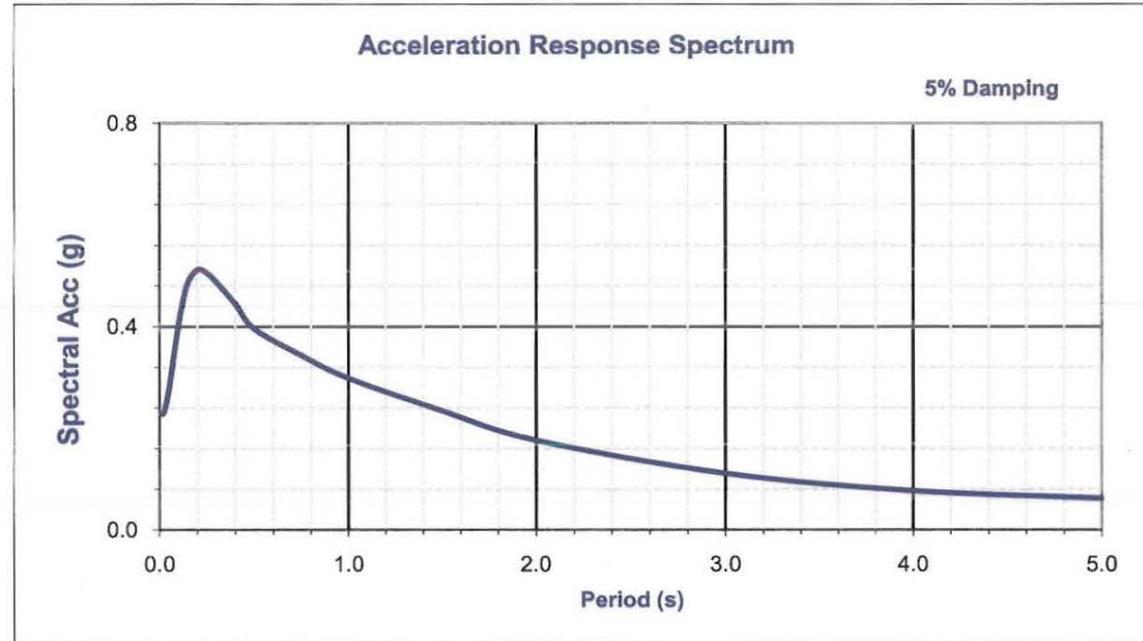
EFIS 0300000408

Latitude 38.8889

Longitude -121.3616

Control Envelope

Period (s)	Sa(g)
0.010	0.227
0.020	0.230
0.030	0.241
0.050	0.278
0.075	0.343
0.100	0.406
0.120	0.445
0.150	0.488
0.200	0.512
0.250	0.505
0.300	0.487
0.400	0.444
0.500	0.395
0.750	0.343
1.000	0.298
1.500	0.234
2.000	0.176
3.000	0.111
4.000	0.077
5.000	0.062



Deterministic Procedure Data

Fault Bear Mountains fault zone (Spenceville fault section)
Fault ID 79
Style N
Mmax 6.5
Dip 90 deg
Z_{TOR} 0 km

R_{rup} 18 km
R_{jb} 18 km
R_x 18 km
V_{S30} 290 m/s
Z_{1.0} N/A m
Z_{2.5} N/A km

Notes

Please note the Design ARS curve is an envelope of minimum and probabilistic spectrum.
 The probabilistic method is based on the USGS 5% Probability of Exceedance in 50 years (975 years return period).

Final Design Response Spectrum

Memorandum

*Flex your power!
Be energy efficient!*

To: MR. GARY BLAKESLEY
Design Branch Chief
Office of Bridge Design - North
Design Branch 5

Date: June 16, 2011
File: 03-PLA-65-28.4
03-3338U1
Lincoln Airport Creek
Bridge Left
Bridge No. 19-0194L

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

Subject: Foundation Report

The Office of Geotechnical Design - North (OGD-N) received a request dated March 8, 2011 for a Foundation Report (FR) for a new left structure, Lincoln Airport Creek Bridge Left, Br. No. 19-0194L. This structure is to be constructed along the "D13" alignment of the newly constructed Lincoln Bypass. This project site is located approximately 3.0 miles west to slightly northwest of the City of Lincoln (PM 12.2/23.8) along State Highway Route 65 in Placer County, approximately 14.9 miles northwest of Roseville and approximately 9.0 miles south of Wheatland.

This study consisted of a subsurface investigation conducted during the month of April 2003. Two mud rotary borings were drilled in the vicinity of the proposed structure. Data will be shown on the "Log of Test Borings" (LOTBs) and will be forwarded when complete.

Structure Description

The proposed new bridge structure will be constructed along the "D13" alignment of the new Lincoln Bypass to the west of the existing State Route 65 at Airport Creek. The proposed simple span structure will be a cast in place, pre-stressed concrete slab bridge. The abutments are to be supported on driven steel H-Piles (HP 10x57).

Regional Geology

According to the Geologic Map of the Sacramento Quadrangle, California, 1:250,000, compilation by D. L. Wagner, C.W. Jennings, T. L. Bedrossian and E. J. Bortugno, published 1981, this site lies within Quaternary alluvium of the Riverbank Formation.

Materials observed during the foundation investigation are indicative of those mapped in the area. Based on the subsurface investigation, foundation material at the site consists of predominately, sand, silt, clay and gravel or in any combination and from weakly cemented to strongly cemented.

We have reviewed the following report by the State of California, Department of Conservation, Division of Mines and Geology, "A General Location Guide for Ultramafic Rocks in California - Areas More Likely to Contain Naturally Occurring Asbestos" dated August 2000. According to this map, the site is not in an area of naturally occurring asbestos. In addition, during our foundation investigation at the proposed structure location, the presence of ultramafic minerals was not observed.

Seismic Recommendations

Based on the Caltrans 2009 Seismic Design Procedure, the nearest active fault to the site is the Bear Mountains fault zone (Spenceville fault section) (Fault ID No. 79) with M_{max} of 6.5. The fault is located northeast of the bridge site, and the rupture distance to the fault plane from the bridge site is estimated to be 10.9 miles.

Based on the 2003 Log of Test Borings, a V_{s30} (average shear wave velocity for the top approximate 100 feet of soil) was estimated by using the SPT blow counts and the correlation formulas to be 1000 feet /second.

Using the above shear wave velocity, the ground motion generated from the nearest active fault is less than the probabilistic and the statewide minimum requirements; and since neither probabilistic nor the statewide minimum requirements governed the entire range of the spectral acceleration (SA), the attached design Acceleration Response Spectrum (ARS) curve is an envelope of the two methods. The probabilistic method is based on the USGS 5% probability of exceedance in 50 years with a return period of 975 years. The peak ground acceleration as shown on the ARS curve is about 0.23g.

The liquefaction analysis indicates minimal potential for liquefaction during an earthquake event.

The potential for surface rupture at the site due to fault movement is considered insignificant since there are no known faults projecting towards or passing directly through the project site.

We will re-evaluate the seismicity if additional subsurface data becomes available.

Any questions regarding the final seismic design recommendations should be directed to Reza Mahallati with the Office of Geotechnical Design North. Reza can be reached at (916) 227-1033.

Ground Water

The ground water level was measured on August 18, 2003, four days after the completion of drilling near the EB (End Bridge) abutment location. At this location, ground water was measured at a depth of 41.7 feet, an approximate elevation of 59.4 feet. There was water in the creek at the time of drilling and the ground water level measured was considerably deeper than the creek level. Ground water levels will fluctuate due to irrigation demands and seasonal precipitation changes and are expected to be higher during the winter months and the spring of the year. For design purposes the highest ground water elevation should be used.

Scour

The preliminary hydraulics studies indicated scour did not seem to be an issue at this time. However, the Final Hydraulics Report dated June 25, 2004 states "Channel migration and channel constriction are not included as part of the potential abutment scour calculation, 3.3 feet of potential channel degradation was included in the total potential abutment scour. The total potential scour at the abutments is approximately at elevation 94.5 feet."

Corrosion

Corrosion samples were collected from this site during the field investigation. Samples were submitted to the Office of Testing and Technology Services, Corrosion Technology

Branch, Transportation Laboratory, 5900 Folsom Blvd., Sacramento, CA for corrosion analysis. Corrosion test results indicate this site is not corrosive to foundation elements.

Foundation Recommendations

The following foundation recommendations are based on the General Plan (GP) dated May 2, 2011 for the proposed Lincoln Airport Creek Bridge Left and from the subsurface investigation conducted at the site. All elevations used for this report are based on the Vertical Datum NGVD 29.

The request for final foundation recommendations dated March 8, 2011 calls for recommendations on the following foundation types: Abutments, driven steel H-Piles (HP 10x57). Data are shown in Table 1 below.

Table 1: Pile Data Table
Lincoln Airport Creek Bridge Left, Br. No. 19-0194L

Location	Pile Type	Design Loading	Nominal Resistance		Cut Off Elevation	Design Tip Elevations	Specified Tip Elevations
			Compression	Tension			
Abutment 1	HP 10x57	70 tons	140 tons	0 tons	98.82	32.8 (1,2)	32.8
Abutment 2	HP 10x57	70 tons	140 tons	0 tons	98.02	37.7 (1,2)	37.7

Design tip elevation is controlled by the following demands:
(1) Compression; (2) Scour Potential exists to Elev. 94.5.

Notes to Designers

1. The Structural Engineer shall indicate on the plans, in the pile data table, the design pile tip elevations required to meet the lateral load demands.
2. If the specified pile tip elevations given in the above pile data table are not adequate for lateral load demands, our Office shall be contacted for further recommendations.

3. All support locations are to be plotted in plan view on the Log of Test Borings as stated in the "Memo to Designers" 4-2. The plotting of the support locations should be made prior to requesting a final foundation review.

Construction Considerations

1. Hard driving should be expected to achieve steel H-Pile tip elevations due to the presence of sand, gravel and strongly cemented layers.
2. At the Contractor's option and after the lateral control tip has been achieved, any driven steel H-Pile which refuses within 10.0 feet of the specified tip elevation may be considered adequate. Refusal shall be defined as 3X the required bearing, 210.0 tons for HP 10x57 piles.
3. Ground water control measures may be necessary for pile cap excavations and construction.
4. All pile cap excavations shall be cleaned of loose material and debris prior to concrete placement.
5. A 30-day settlement period will be required for all approach fill embankments. No surcharge will be required.
6. Piles to be driven through embankment constructed by the Contractor, shall be driven in holes predrilled or spudded through the embankment per Standard Specifications Section 49-1.06.

Project Information

Standard Special Provision (SSP) 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.

Mr. Gary Blakesley
June 16, 2011
Page 6

Bridge No. 19-0194L

Data and information attached with the project plan are:

A. Log of Test Borings.

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

A. Foundation Report for Lincoln Airport Creek Bridge Left dated June 16, 2011.

Data and information available for inspection at the District Office:

A. None.

Data and information available for inspection at the Transportation Laboratory:

A. Soil core samples from soil borings.

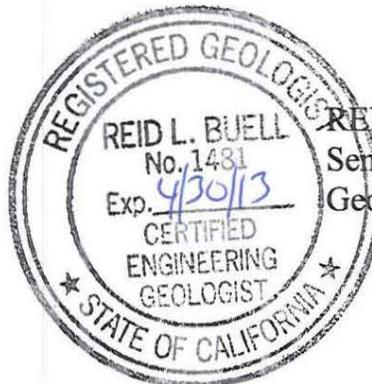
If any conceptual changes are made during final project design, the Office of Geotechnical Design - North should review those changes to determine if these foundation recommendations are still applicable.

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:

Supervised by:

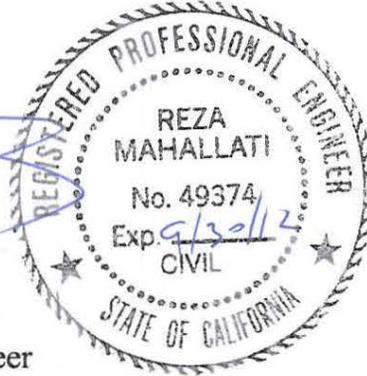
JOHN L. THORNE
Engineering Geologist
Geotechnical Design - North



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

Mr. Gary Blakesley
June 16, 2011
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Bridge No. 19-0194L



REZA MAHALLATI, PE 49374
Senior Materials and Research Engineer
Geotechnical Design - North

Attachment: Final Design Response Spectrum for Lincoln Airport Creek Bridge – Left

c: SamJordan- DPM (E-copy)
R.E. Pending File (E-copy)
JohnStayton – SOE (E-copy)
JoePeterson – DME-D03 (E-copy)
GeoDog Archive

Lincoln Airport Creek Br Left

Bridge No. 19-0194L

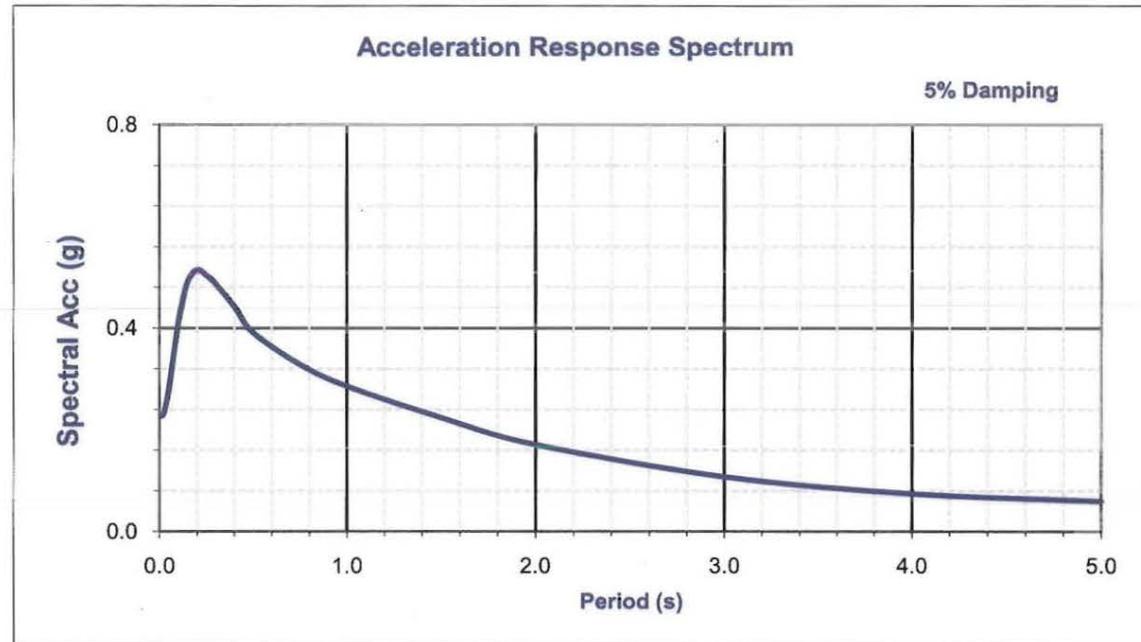
EFIS 03000004083

Latitude 38.9007

Longitude -121.3686

Control Envelope

Period (s)	Sa(g)
0.010	0.227
0.020	0.230
0.030	0.242
0.050	0.279
0.075	0.346
0.100	0.411
0.120	0.449
0.150	0.493
0.200	0.515
0.250	0.504
0.300	0.487
0.400	0.442
0.500	0.391
0.750	0.329
1.000	0.286
1.500	0.225
2.000	0.171
3.000	0.108
4.000	0.075
5.000	0.060



Deterministic Procedure Data

Fault Bear Mountains fault zone (Spenceville fault section)

Fault ID 79

Style N

Mmax 6.5

Dip 90 deg

Z_{TOR} 0 km

R_{rup} 17.5 km

R_{jb} 17.5 km

R_x 17.5 km

V_{S30} 305 m/s

Z_{1.0} N/A m

Z_{2.5} N/A km

Notes

Please note the Design ARS curve is an envelope of minimum and probabilistic spectrum.

The probabilistic method is based on the USGS 5% Probability of Exceedance in 50 years (975 years return period).

Final Design Response Spectrum

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

Structure Hydraulics and Hydrology

FINAL HYDRAULIC REPORT

Markham Ravine

Located on Lincoln Bypass West of Lincoln CA in the County of Placer

Bridge No. 19-0192 New Bridge

Project ID 03000004083

03-PLA-SR65-28.4

July 8, 2011

PREPARED BY:
Ronald McGaugh

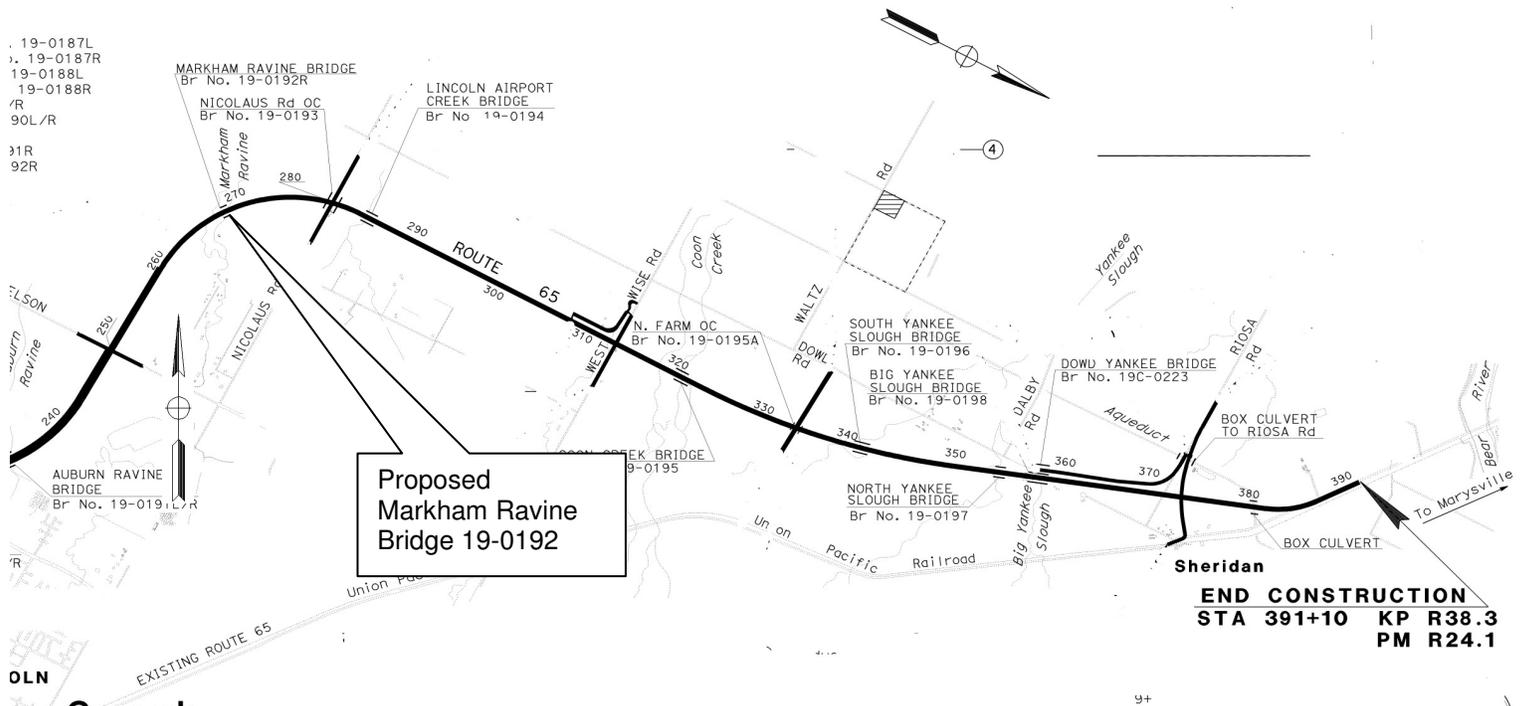
REVIEWED BY:
XXXXXXXXXXXXXXXXXX

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



REGISTERED ENGINEER

REGISTRATION NUMBER C 61217



General:

It is proposed to evaluate the proposal to place a two span bridge structure along the new alignment of State Route 65. This evaluation was based on the General Plans dated May 2011.

The proposed new bridge length of 233 feet will span over the Markham Ravine. Vertical alignment will change in elevation by the use of roadway fill leading to and away from the bridge. Structure depth for the new two span, cast-in-place, prestressed, Box Girder Bridge will be 5.0 feet. The new bridge will be supported on short-seated abutments on driven piles and will have sufficient waterway area to pass the 100-year event, with at least 2 foot of freeboard.

This evaluation is based on a review of Caltrans Bridge Maintenance Records, As-Built plans, hydrologic, and hydraulic reports submitted for FEMA. The general plan is in English units.

The data and references of this hydraulic report are obtained from the following sources:

- Caltrans' Bridge Maintenance Records.
- Final Hydraulic Report dated August 18 2004.
- Field photo documentation, and bridge site submittal info received by this office dated May 2011.
- US Geological Survey (Regional Regression Method) Magnitude and Frequency of Floods in California--Bulletin 77-21. Used for the National Stream Statistics Program.
- Evaluating Scour At Bridges 4th edition

All elevations in this report are based on the survey data provided by District 3 CAiCE, and the preliminary design information provided by Structure Design. The Vertical Datum is NGVD 29

Flood History:

There is sheet flooding history for this location. Presently there are numerous flood control structures for this general area.

Basin:

Markham ravine drains approximately 9.7 square miles. The watershed is located northwest of the City of Lincoln on the west side of Highway 65 and terminates at the East Side Canal near the town of Pleasant Grove in Placer County. The western region consists mainly of very gently sloped farmlands and foothill sage lands. Approximately 60 percent of the watershed is open/agricultural land at this time. Placer County has future plans for more residential, commercial and industrial development.

This region has a history of flood related sheet flow problems. Watershed elevations range from 100 feet at the bridge site to about 500 ft in the upper reaches of the watershed. This watershed has low potential for moderate debris yield. Channel slope was estimated at 0.3 %. Average annual precipitation within the watershed is about 22 inches.

Drift:

It is not anticipated that there will be a problem with drift or debris.

Discharge:

Structure Hydraulics will use the discharges provided by the District Hydraulics Office in which Caltrans, City of Lincoln, and Placer County were in agreement with. The 50-year and 100-year recurrence intervals are approximately 2280 ft³/s and 2850 ft³/s, respectively.

Streambed:

The existing channel carrying the anticipated flow to the proposed structure is relatively straight. The streambed is mainly composed of sand, silt and clay soils. Away from the bridge site, in the upper reaches, the soils are generally gravelly loam and broken rocky soils. The channel is shallow and approximately 60 feet wide at the top. At the bridge site, the slope is fairly flat with a gradient of 0.003. The channel floodplain has light to moderate vegetation. Most of the vegetation in the channel around the bridge site is due to the existing berm downstream of the proposed bridge site which ponds the water; therefore, creating a lake environment with tules, berry bushes and tall trees. The dirt berm acts like a Dam and helps reduce channel degradation. There is little evidence that channel degradation or migration will occur. It was not determined from aerial photos if a potential of channel migration exists or not. Local farmers may keep the channel confined at one location. From the General Plan It is anticipated that the bridge will have no hydraulic but some structural skew normal to the centerline of the channel.

Model Preparation

US Army Corps of Engineers software Hec-Ras was used to create the 1 dimensional model for this project. The lowest calculated chord of the proposed bridge was used for the soffit elevation. The structural section depth was added to the soffit to get the planned deck elevation height.

Model Results and Water Surface Elevations:

Based on the General Plan the water surface at the upstream end of the proposed structure and other parameters are shown in the table below:

Structure depth 5.0 ft	Lowest modeled soffit elevation 112.3 ft
Q ₁₀₀ = 2850 cfs	Water surface elevation 102.9 ft
Manning's n=0.030	Watershed Channel Slope = 0.003
Freeboard = 9.4 ft	

Scour:

The scour calculations are performed assuming the worst condition i.e. sandy soil. The Log of Test Boring indicates a thin layer of lean clay with sand over roughly a 8-ft layer of well-graded sand with silt and gravel at Elevation 92-ft. This suggests that the top layer may be more resistant to erosion than the 8-ft layer below.

For this two span structure the following scour evaluation was calculated;

Local Scour	4.1 ft
Contraction Scour (ft):	0.3 ft
Degradation Abutments	0.05 ft/year
Total Pier Scour	4.4 ft
Total Abutment Scour	0.3 ft

Bank Protection:

Thalweg migration is not apparent, and velocities are less than 10ft/s so bank protection should not be needed. The recommendation of bank protection is respectfully yielded to the District.

Summary & Recommendation:

The proposed project involves constructing a new left structure downstream of the existing right structure. The proposed Q₁₀₀ water surface elevation is unchanged from the existing flow profile.

Hydrologic Summary		
<i>Drainage Area: 7.1 mi² (1929 NVGD Datum)</i>		
Frequency	50-year Event (Q₅₀)	100-year Event (Q₁₀₀)
<i>Discharge (cfs)</i>	2280	2850
<i>WSEL at Bridge (ft)</i>	102.5	102.9
<i>Average Velocity (ft/s)</i>	1.8	2.2

Flood plain data are based upon information available when the plans were prepared and are shown to meet federal requirements. The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation.

Proposed Bridge Length	233.75 ft
Minimum Soffit Elevation	112.3 ft
Potential Scour Elevation At Piers	92.6 ft
Potential Scour Elevation at Abutments	95.0 ft

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

Structure Hydraulics and Hydrology

FINAL HYDRAULIC REPORT

Lincoln Airport Creek

Located on Lincoln Bypass West of Lincoln CA in the County of Placer

Bridge No. 19-0194 New Bridge

Project ID 03000004083

03-PLA-SR65-28.4

June 28 2011

PREPARED BY:
Ronald McGaugh

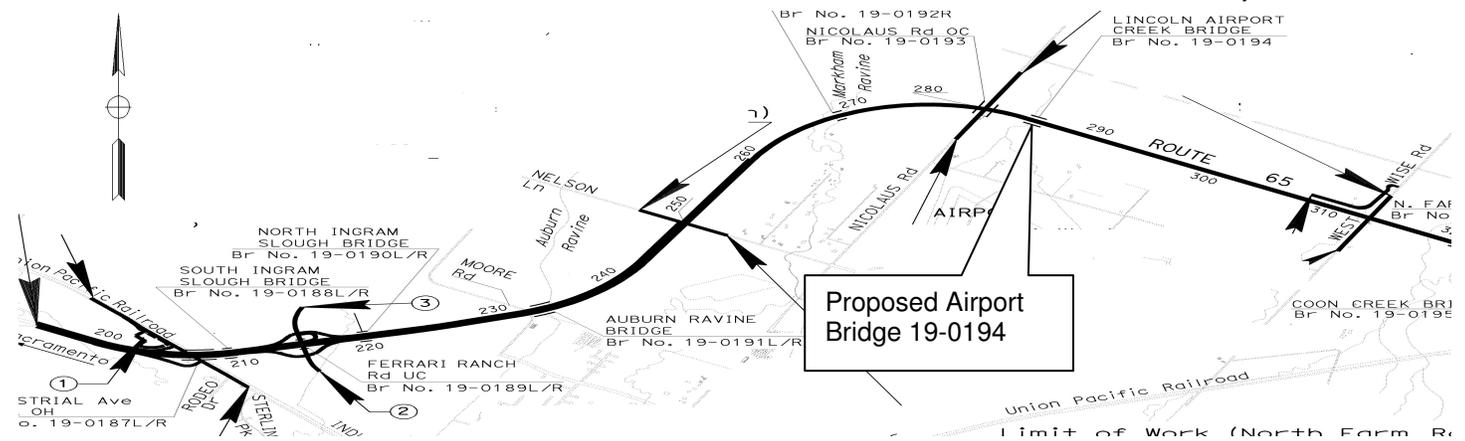
REVIEWED BY:
XXXXXXXXXXXXXXXXXX

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



REGISTERED ENGINEER

REGISTRATION NUMBER C 61217



General:

It is proposed to evaluate the proposal to place a new single span bridge structure along the new alignment of State Route 65. This evaluation was based on the General Plans dated May 2011.

This evaluation is based on a review of Caltrans Bridge Maintenance Records, As-Built plans, hydrologic, and hydraulic reports submitted for FEMA. The general plan is in English units.

The data and references of this hydraulic report are obtained from the following sources:

- Caltrans' Bridge Maintenance Records.
- Final Hydraulic Report dated June 25 2004.
- Field photo documentation, and bridge site submittal info received by this office dated May 2011.
- Historical cross sections.
- US Geological Survey (Regional Regression Method) Magnitude and Frequency of Floods in California--Bulletin 77-21. Used for the National Stream Statistics Program.
- Evaluating Scour At Bridges 4th edition

All elevations in this report are based on the survey data provided by District 3 CAiCE, and the preliminary design information provided by Structure Design. The Vertical Datum is NGVD 29

Flood History:

There is sheet flooding history for this location. Presently there is a culvert and a small bridge structure.

Basin:

Lincoln Airport Creek drains approximately 2 square miles. The watershed is located northwest of the City of Lincoln on the west side of Highway 65 and terminates at the East Side Canal near the town of Pleasant Grove in Placer County. The western region consists mainly of very gently sloped farmlands. Approximately 70 percent of the watershed is open/agricultural land at this time. The Lincoln Airport, warehouses and residential lots occupy the other 30 percent of the watershed. Placer

County has future plans for more residential, commercial and industrial development. This region has a history of flood problems. Watershed elevations range from 31 feet at the bridge site to about 45 ft in the upper reach areas. Elevations range from approximately 150 feet at the higher elevations to approximately 100 feet at the proposed bridge site. This watershed has low potential for moderate debris yield. Channel slope was estimated at 2 %. Average annual precipitation within the watershed is about 22 inches.

Drift:

It is not anticipated that there will be a problem with drift or debris.

Discharge:

Since this watershed is un-gauged the National Streamflow Statistics program (NSS) was used to estimate the discharge. This yielded a Q_{100} flow value of approximately 1352 cfs. The Q_{50} flow value is approximately 505 cfs. The calculated discharges were double to the values of the December 1994, Placer/Sutter County Joint Flood Study by CH2M Hill. For design purposes Q_{100} flow value of approximately 600 cfs based on the Joint Flood Study will be used.

Streambed:

The existing channel carrying the anticipated flow to the proposed structure is relatively straight. The streambed is mainly composed of sand, silt and clay soils. Away from the bridge site, in the upper reaches, the soils are similar. Airport Creek does not have a well-defined channel. The channel is shallow and approximately 15 meters wide at the top. The channel is fairly straight for about 500 meters upstream and downstream of the proposed bridge. At the bridge site, the slope is fairly flat with a gradient of 0.0042. The channel floodplain has light to moderate vegetation. There is little evidence that channel degradation or migration will occur. It was not determined from aerial photos if a potential of channel migration exists or not. Local farmers keep the channel confined at one location.

From the General Plan It is anticipated that the bridge will have no hydraulic or structural skew normal to the centerline of the channel.

Model Preparation

US Army Corps of Engineers software Hec-Ras was used to create the 1 dimensional model for this project. The lowest calculated chord of the proposed bridge was used for the soffit elevation. The structural section depth was added to the soffit to get the planned deck elevation height.

Water Surface Elevations:

Based on the General Plan the water surface at the upstream end of the proposed structure and other parameters are shown in the table below:

Structure depth 2.0 ft	Lowest modeled soffit elevation 105.2 ft
$Q_{100} = 600$ cfs	Water surface elevation 103.6 ft
Manning's $n = 0.035$	Slope = 0.006
Freeboard = 1.6 ft	

Scour:

The scour calculations are performed assuming the worst condition i.e. sandy soil. The Log of Test Boring indicates a thin layer of lean clay with sand over roughly a 8-ft layer of well-graded sand with silt and gravel at Elevation 92-ft. This suggests that the top layer may be more resistant to erosion than the 8-ft layer below.

Being a single span bridge, scour evaluation is performed only at abutments. .

Local Scour	Single span no scour
Contraction Scour (ft):	0.0 ft
Degradation Abutments	0.05 ft/year
Pier Scour	Single span no scour
Abutment Scour	0.1

Bank Protection:

Thalweg migration is not apparent, and velocities are slow so bank protection should not be needed. However, the recommendation of bank protection is respectfully yielded to the District.

Summary & Recommendation:

The proposed project involves constructing a new left structure downstream of the existing right structure. The Q100 water surface elevation raises 0-ft from the existing condition.

<i>Hydrologic Summary</i>		
<i>Drainage Area: 2.1 mi² (1929 NVGD Datum)</i>		
<i>Frequency</i>	<i>50-year Event (Q₅₀)</i>	<i>100-year Event (Q₁₀₀)</i>
<i>Discharge (cfs)</i>	502	600
<i>WSEL at Bridge (ft)</i>	103.5	103.6
<i>Average Velocity (ft/s)</i>	0.2	0.2
<small><i>Flood plain data are based upon information available when the plans were prepared and are shown to meet federal requirements. The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation.</i></small>		

FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: Structure Design

1. Design
2. R.E. Pending File
3. Specifications & Estimates
4. File

Geotechnical Services

1. GD - North ; South ; West
2. GS File Room

Date: 8/23/11

Markham Ravine Br. (Left)

Structure Name

03-Pla - 65 - 16.71

District County Route km Post

District Project Development

District Project Engineer

03-333821 19-192 L

E.A. Number Structure Number

Foundation Report By: J. Thorne

Dated: 6/15/11

Reviewed By: M. Cullen (SD)

R. Price (GS)

General Plan Dated: 8/19/11

Foundation Plan Dated: 8/19/11

No changes. The following changes are necessary.

FOUNDATION CHECKLIST

Pile Types and Design Loads

- Pile Lengths
- Predrilling
- Pile Load Test
- Substitution of H Piles For Concrete Piles
- Yes No

- Footing Elevations, Design Loads, and Locations
- Seismic Data
- Location of Adjacent Structures and Utilities
- Stability of Cuts or Fills
- Fill Time Delay

Effect of Fills on Abutments and Bents

- Fill Surcharge
- Approach Paving Slabs
- Scour
- Ground Water
- Tremie Seals/Type D Excavation

Structure Design

Bridge Design Branch No.

Geotechnical Services

FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: **Structure Design**

Date: 8/23/11

1. Design
2. R.E. Pending File
3. Specifications & Estimates
4. File

Lincoln Airport Creek Br. (left)
Structure Name

Geotechnical Services

1. GD - North ; South ; West
2. GS File Room

03-Pla-65-5617CC
District County Route km Post

District Project Development
District Project Engineer

03 00020583
03-333821 19-194L
E.A. Number Structure Number

Foundation Report By: J. Thorne

Dated: 6/16/11

Reviewed By: M. Cullen (SD)

R. Price (GS)

General Plan Dated: 5/2/11

Foundation Plan Dated: 8/19/11

No changes. The following changes are necessary.

FOUNDATION CHECKLIST

Pile Types and Design Loads

- Pile Lengths
- Predrilling
- Pile Load Test
- Substitution of H Piles For Concrete Piles Yes No

- Footing Elevations, Design Loads, and Locations
- Seismic Data
- Location of Adjacent Structures and Utilities
- Stability of Cuts or Fills
- Fill Time Delay

- Effect of Fills on Abutments and Bents
- Fill Surcharge
- Approach Paving Slabs
- Scour
- Ground Water
- Tremie Seals/Type D Excavation

M. J. Cullen
Structure Design Bridge Design Branch No.

R. Price
Geotechnical Services



California Regional Water Quality Control Board Central Valley Region

Karl E. Longley, ScD, P.E., Chair

Linda S. Adams
Secretary for
Environmental
Protection

11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Phone (916) 464-3291 • FAX (916) 464-4645
<http://www.waterboards.ca.gov/centralvalley>



Arnold
Schwarzenegger
Governor

26 September 2008

Mr. Jess Avila
California Department of Transportation
2389 Gateway Oaks Drive, Suite 100
Sacramento, CA 95833

AMENDED CLEAN WATER ACT §401 TECHNICALLY CONDITIONED WATER QUALITY CERTIFICATION FOR DISCHARGE OF DREDGED AND/OR FILL MATERIALS FOR THE STATE ROUTE 65 LINCOLN BYPASS PROJECT, (WDID#5A31CR00200a) PLACER COUNTY

WATER QUALITY CERTIFICATION STANDARD CONDITIONS:

1. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to §13330 of the California Water Code and §3867 of Title 23 of the California Code of Regulations (23 CCR).
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 23 CCR subsection 3855(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 of any non-denial certification action shall be conditioned upon total payment of the full fee required under 23 CCR §3833, unless otherwise stated in writing by the certifying agency.
4. Certification is valid for the duration of the described project. Discharger shall notify the Regional Board on writing within 7 days of project completion.

ADDITIONAL TECHNICALLY CONDITIONED CERTIFICATION CONDITIONS:

In addition to the four standard conditions, the applicant shall satisfy the following:

1. The California Department of Transportation shall notify the Board in writing of the start of any in-water activities.
2. Except for activities permitted by the U.S. Army Corps under §404 of the Clean Water Act, soil, silt, or other organic materials shall not be placed where such materials could pass into surface water or surface water drainage courses.

California Environmental Protection Agency

3. The discharge of petroleum products or other excavated materials to surface water is prohibited.
4. Activities shall not cause turbidity increases in surface water to exceed:
 - (a) where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU;
 - (b) where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent;
 - (c) where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs;
 - (d) where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

Except that these limits will be eased during in-water working periods to allow a turbidity increase of 15 NTU over background turbidity as measured in surface waters 300 feet downstream from the working area. In determining compliance with the above limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected.

5. Activities shall not cause settleable matter to exceed 0.1ml/l in surface waters as measured in surface waters 300 feet downstream from the project.
6. Activities shall not cause visible oil, grease, or foam in the work area or downstream.
7. All areas disturbed by project activities shall be protected from washout or erosion.
8. For any project activities that occur in surface waters or any activities resulting in incidental deposition of material into surface waters, the following monitoring shall be conducted immediately upstream and 300 feet downstream of the work site and the results shall be reported to this office (contact person is indicated below) within two weeks:

Parameter	Unit	Type of Sample	Frequency of Sample
Turbidity	NTU	Grab	Every 4 hours during in water work
Settleable Material	ml/l	Grab	Same as above.

9. The California Department of Transportation shall notify the board immediately if the above criteria for turbidity, settleable matter, oil/grease, or foam are exceeded.
10. The California Department of Transportation shall notify the Board immediately of any spill of petroleum products or other organic or earthen materials.
11. The California Department of Transportation shall comply with all Department of Fish and Game 1600 requirements for the project.

12. The California Department of Transportation must obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activities issued by the State Water Resources Control Board.
13. As part of their stormwater Best Management Practices, the California Department of Transportation shall complete a soil particle size analysis, using test method ASTM D-422 soil particle size analysis (Standard Test Method for Particle-Size Analysis of Soils), as revised, to determine the percentages of sand, very fine sand, silt, and clay throughout the project site. Sediment controls must be designed based on the results of the soil particle size analysis.
14. Monitoring will occur during each intake screen cleaning event according to Condition 8 of this certification. Monitoring results will be submitted to the board for review as required. If water quality exceedences occur, the California Department of Transportation will immediately stop the cleaning and will implement alternative intake screen maintenance processes.

ADDITIONAL STORM WATER QUALITY CONDITIONS:

The applicant shall also satisfy the following additional storm water quality conditions:

1. During the construction phase, the California Department of Transportation must employ strategies to minimize erosion and the introduction of pollutants into storm water runoff. These strategies must include the following:
 - (a) the Storm Water Pollution Prevention Plan (SWPPP) must be prepared during the project planning and design phases and before construction.
 - (b) an effective combination of erosion and sediment control Best Management Practices (BMPs) must be implemented and adequately working prior to the rainy season and during all phases of construction.
2. The California Department of Transportation must minimize the short and long-term impacts on receiving water quality from the State Route 65 Lincoln Bypass project, by implementing the following post-construction storm water management practices:
 - (a) minimize the amount of impervious surface,
 - (b) reduce peak runoff flows,
 - (c) provide treatment BMPs to reduce pollutants in runoff
 - (d) ensure existing waters of the State (i.e. wetlands, vernal pools, or creeks) are not used as pollutant source controls and/or restore treatment controls,
 - (e) preserve and, where possible, create or restore areas that provide important water quality benefits, such as riparian corridors, wetlands, and buffer zones,
 - (f) limit disturbances of natural water bodies and natural drainage systems caused by development (including development of roads, highways, and bridges),
 - (g) use existing drainage master plans or studies to estimate increases in pollutant loads and flows resulting from projected future development and require incorporation of structural and non-structural BMPs to mitigate the projected pollutant load increases in surface water runoff,

- (h) identify and avoid development in areas that are particularly susceptible to erosion and sediment loss, or establish development guidance that protects areas from erosion/ sediment loss,
 - (i) control post-development peak storm water run-off discharge rates and velocities to prevent or reduce downstream erosion, and to protect stream habitat.
3. The California Department of Transportation must ensure that all development within the project provides verification of maintenance provisions for post-construction structural and treatment control BMPs. Verification shall include one or more of the following, as applicable:
 - (a) the developer's signed statement accepting responsibility for maintenance until the maintenance responsibility is legally transferred to another party; or
 - (b) written conditions in the sales or lease agreement that require the recipient to assume responsibility for maintenance; or
 - (c) written text in project conditions, covenants and restrictions for residential properties assigning maintenance responsibilities to a home owner's association, or other appropriate group, for maintenance of structural and treatment control BMPs; or
 - (d) any other legally enforceable agreement that assigns responsibility for storm water BMP maintenance.
4. Staff of the Regional Water Board has prepared total maximum daily load (TMDL) allocations that, if approved, would limit methylmercury in storm water discharges to the Sacramento-San Joaquin Delta. These proposed allocations are scheduled to be considered by the Regional Water Board for adoption. Should they be adopted by the Regional Water Board and eventually approved by the Environmental Protection Agency, they may limit the discharge of methylmercury from the proposed project. The purpose of this condition is to provide notice to the applicant that methylmercury discharge limitations and monitoring requirements may apply to this project at some time in the future and also to provide notice of the Regional Water Board's TMDL process and that elements of the planned construction may be subject to the proposed TMDL allocation.

REGIONAL WATER QUALITY CONTROL BOARD CONTACT PERSON:

Robert J. Solecki, Environmental Scientist
11020 Sun Center Drive #200
Rancho Cordova, California 95670-6114
(916) 464-4684
rsolecki@waterboards.ca.gov

WATER QUALITY CERTIFICATION:

I hereby issue an order certifying that any discharge from the California Department of Transportation, State Route 65 Lincoln Bypass project (WDID#5A31CR00200a) will comply with the applicable provisions of §301 ("Effluent Limitations"), §302 ("Water Quality Related Effluent Limitations"), §303 ("Water Quality Standards and Implementation Plans"), §306 ("National Standards of Performance"), and §307 ("Toxic and Pretreatment Effluent Standards") of the Clean Water Act. This discharge is also regulated under State Water

Resources Control Board Water Quality Order No. 2003-0017 DWQ "Statewide General Waste Discharge Requirements For Dredged Or Fill Discharges That Have Received State Water Quality Certification (General WDRs)".

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



PAMELA C. CREEDON
Executive Officer

Enclosure: Project Information

cc: U.S. Army Corps of Engineers, Sacramento
Dave Smith, Wetlands Section Chief (WTR-8), U.S. Environmental Protection Agency,
Region 9, San Francisco
U.S. Fish & Wildlife Service, Sacramento
Bill Orme, 401 Certification and Wetlands Unit Chief, State Water Resources Control Board,
Sacramento
Jeff Drongesen, Department of Fish and Game, Sacramento
Bill Jennings, CA Sportfishing Protection Alliance, Stockton
Rick Harlacher, LSA Associates, Rocklin

PROJECT INFORMATION

Application Date: 9 March 2007

Applicant: Jess Avila
The California Department of Transportation
2389 Gateway Oaks Drive, Suite 100
Sacramento, CA 95833

Applicant Representatives: Rick Harlacher
LSA Associates
4200 Rocklin Road
Rocklin, CA 95677

Project Name: State Route 65 Lincoln Bypass project

Application Number: WDID#5A31CR00200a

U.S. Army Corps File Number: 199500363

Type of Project: Freeway construction

Project Location: The project is 12.8 miles long and the central coordinates are Latitude: 38° 52' and Longitude: 121°18'00"

The project occurs in the following townships, ranges and sections:

Township 13N, Range 5E, Sections 10, 11, 13, 14, 15, 23, 24, 25, 26, 35, and 36;

Township 13N, Range 6E, Section 31;

Township 12N, Range 5E, Sections 1, 12, and 13;

Township 12N, Range 6E, Sections 4, 5, 6, 7, 8, 9, 16, 17, 18, 19, 20, 21, 27, and 28.

County: Placer County

Receiving Water(s) (hydrologic unit): From north to south there are nine water courses: North Ingram Slough, South Ingram Slough, Auburn Ravine, Markham Ravine, Airport Creek, Coon Creek, North Yankee Slough, South Yankee Slough, and Big Yankee Slough. Waters on the project site also include an artificial irrigation drainage, adjacent wetlands, vernal pools, and swales. Waters on the project site are eventually tributary to the Sacramento River, Sacramento Hydrologic Basin, Valley-American Hydrologic Unit #519.22, Pleasant Grove HSA

Water Body Type: Streambed

Designated Beneficial Uses: The Basin Plan for the Central Valley Regional Board has designated beneficial uses for surface and ground waters within the region. Beneficial uses that could be impacted by the project include: Municipal and Domestic Water Supply (MUN); Agricultural Supply (AGR); Industrial Supply (IND), Hydropower Generation (POW); Groundwater Recharge, Water Contact Recreation (REC-1); Non-contact Water Recreation

(REC-2); Warm Freshwater Habitat (WARM); Cold Freshwater Habitat (COLD); and Wildlife Habitat (WILD).

Project Description (purpose/goal): The State Route 65 Lincoln Bypass project (WDID#5A31CR00200) is being amended to include the proposed relocation of the Scheiber pumping facility, a property owner's irrigation pump, along Auburn Ravine. The existing pump is near the centerline of the proposed highway where it crosses Auburn Ravine. The proposed relocation plans call for a new pumping location to be sited approximately 130 feet from the highway right of way, in a southeasterly direction along Auburn Ravine. The pump relocation will consist of installing a 12 inch (in) stainless steel well screen in Auburn Ravine, approximately five to six feet (ft) below the stream bottom and installing a pipe connecting the well screen to a canned vertical turbine pump located beyond the bank of Auburn Ravine. The stainless steel well screen will be surrounded with a pea gravel backfill wrapped in Mirafi 140N geotextile fabric. This will be covered with approximately a 2-foot deep layer of Caltrans facing stone to protect the intake system from scour damage. The discharge piping from the vertical turbine pump will then be piped underground to a location approximately 55 ft east of the pump location. At this location a casing will be bore and jacked five to six feet below the streambed of Auburn Ravine to a location approximately 35 ft beyond the north stream bank to deliver the irrigation water to the other side of Auburn Ravine. Flows in Auburn Ravine will be diverted around the well screen installation site to the other side of Auburn Ravine as necessary (depending on flows). This step could require dewatering or the installation of sheet piles.

The new irrigation pump contains a water circulation maintenance-free system that allows water movement from one intake screen to the another intake screen. The system is not designed to allow any backwash of irrigation water into Auburn Ravine, but allows for a circulating backflow of the system. When circulating the intake flows for screen cleaning, these "loop" flows will be isolated from the irrigation system. The loop circulation is designed to let water move only through the intake screens in both directions to loosen any fine debris on top of the fabric, which is buried 3 feet beneath the streambed. The maintenance-free system includes an airflow line that can blow air out through the buried fabric, thus eliminating potential clogging and failure of the intake system. Any debris dislodged from the fabric is expected to be trapped within the voids of the stream substrate. Native stream material that may move up into surface flows should quickly settle out again and deposit in close proximity to the buried system.

The installation of the new pump will temporarily disturb 0.0092-acre (20 linear feet of riparian and 20 linear feet of unvegetated streambed) of waters in Auburn Ravine. Temporary impacts include the disturbance of grasses and blackberry on the south side of Auburn Ravine and the diversion of the stream around the well screen installation site. The installation of the well screen will permanently fill 0.002 acres (15 linear feet) of unvegetated streambed. Nineteen cubic yards of clean fill will be placed below the streambed in Auburn Ravine.

Original Project Description: The following information is as described in the original certification for the project. This information is still part of the project, however, the temporary impact acreages have slightly increased due to the irrigation pump relocation.

The California Department of Transportation (Caltrans), in conjunction with the Federal Highway Administration (FHWA), proposes to modify existing State Route (SR) 65 near the City of Lincoln in Placer County. The overall project purpose is to relieve congestion and improve safety on existing Route 65 in the City of Lincoln and provide for a regional traffic

solution to accommodate projected traffic volumes for the year 2025. The proposed modification of existing Route 65 entails construction of a four-lane roadway on a new alignment around (to the west of) the City of Lincoln. The new alignment will begin approximately one mile south of the City of Lincoln. The alignment leaves existing Route 65 and crosses Industrial Avenue and the UPRR railroad tracks, proceeding in a northwesterly direction across Riosa Road, and rejoins existing Route 65 south of the Bear River. Ultimately, three interchanges will be constructed at Industrial Avenue, Nelson Lane, and Riosa Road. The total length of the alignment is 12.8 miles. A four-lane freeway with three interchanges has been proposed as the ultimate design.

The roadway will be constructed on a raised prism to provide all-weather passage and will require approximately 3.5 million yards of fill material, which will mostly be placed at the south end of the project. Sources of fill material will probably be clean borrow material from the local area. The project includes the construction of fourteen bridges, nine of which span nine natural watercourses. The bridges will be cast-in-place box girder design. Bridges may be designed with several spans depending on the length of the bridge. At some crossings, piers/bents will be placed in the waterways to support the bridges. Where economically feasible, bridges were designed to span across waterways. Where bridge supports are needed in waterways, they will be strategically placed to avoid the middle of the stream. Crossings of Auburn Ravine and Coon Creek, which provide habitat for Central Valley Steelhead and Central Valley fall-run Chinook salmon, shall be clear-spanned, with no permanent structures, bank protection, or other improvements placed within the live stream channel.

The typical temporary stream crossing for access across most streams in the project area will consist of rounded river cobbles no larger than 3" placed over appropriate sized culverts to a minimum elevation of 3 feet above the water surface. Culverts of sufficient number and size will be installed within the stream such that there is no significant change in stream flow velocity upstream or downstream of the crossing. Filter fabric will be placed across the top of the cobbles to contain the temporary road base material. Filter fabric and road base are to be removed at the end of each season. Once the permanent crossing is constructed, the culverts and majority of river cobbles will be removed and/or graded and restored to the original channel flow.

Temporary access across Markham Ravine during construction of the permanent bridge structure will either be accomplished using a temporary timber wood trestle supported by steel beams and driven steel piles or by using temporary workpads built from one or both banks that are wide enough to support a crane's reach across the waterway.

The project will permanently fill a total of 25.33 acres of wetlands and non-wetland open waters under Corps jurisdiction, which include approximately 10.58 acres of vernal pools and swales, and 14.75 acres of vernal marsh, permanent freshwater marsh, and open water habitat. An additional 1.38 acres of riparian habitat that is only subject to DFG jurisdiction and 4.49 acres of waters that are only under the Water Board's jurisdiction will also be directly impacted by the project. Indirect impacts may also occur to 31.10 acres of vernal pools and swales subject to Corps jurisdiction that are outside of the project footprint. The project will also result in the temporary fill of 0.33 acres of freshwater marsh, 3.07 acres of riparian habitat (which is subject to DFG jurisdiction), and 0.0092-acre of federal waters along Auburn Ravine.

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

Proposed Mitigation to Address Concerns: Caltrans will implement Best Management Practices (BMPs) to control sedimentation and erosion. All temporary affected areas will be restored to pre-construction contours and conditions upon completion of construction activities. Caltrans will conduct turbidity and settleable matter testing during in water work, stopping work if Basin Plan criteria are exceeded or are observed.

Caltrans will implement the following BMPs and Avoidance and Minimization Measures:

- Stormwater runoff from the proposed roadway will be collected and routed into water treatment systems before discharging into drainages in the project area. The water treatment systems will incorporate bioswales, biostrips, or a detention/settling basin to remove suspended solids before stormwater exits the facility. As a result, the amount of pollutants discharged in stormwater runoff will be minimized.
- Construction of the portion of the pumping facility in Auburn Ravine will occur between June 1 and October 31, which is the time period when stream flows are at their lowest and salmonids are least likely to occur.
- Measures consistent with the current Caltrans' Construction Site BMPs Manual (including the SWPPP and WPCP Manuals) shall be implemented to minimize effects to Auburn Ravine during construction.
- All riparian habitat adjacent to the designated work areas in Auburn Ravine shall be designated as Environmentally Sensitive Areas (ESAs) and clearly indicated on construction plans.
- Graded or otherwise bare areas resulting from construction activities shall be revegetated using native species after construction is completed.

Fill/Excavation Area: Approximately 40,000 cubic yards of clean, uncontaminated soil, sand, rock, and concrete typically used for construction will be used to permanently fill 25.33 acres of waters of the U.S. An additional 63 cubic yards of fill will be discharged into streams and adjacent wetlands in conjunction with permanent structures at bridge crossings. Approximately 5,000 cubic yards of temporary fill will be used to fill 0.33 acres of freshwater marsh for temporary structures during construction. 19 cubic yards of clean geotextile fabric, pea gravel backfill, stainless steel well screen, and rock fill will be placed beneath 0.002 acre of unvegetated streambed in Auburn Ravine. Construction activity will temporarily disturb 0.0092-acre of federal waters in Auburn Ravine.

Dredge Volume: Not Applicable

U.S. Army Corps of Engineers Permit Number: Individual Permit

Federal Public Notice: #199500363

Department of Fish & Game Streambed Alteration Agreement: Caltrans plans to submit a Streambed Alteration Agreement to DFG on 4 May 2007.

Possible Listed Species: Central Valley steelhead, Central Valley fall-run chinook salmon, giant garter snake, valley elderberry longhorn beetle, vernal pool fairy shrimp, and vernal pool tadpole shrimp.

Status of CEQA Compliance: Caltrans approved the Final Environmental Impact Report for the project on 30 May 2006.

Compensatory Mitigation: Caltrans has prepared a Mitigation Monitoring Proposal (MMP) to address impacts to vernal pools, freshwater marsh, and other wetlands; riparian habitat; oak woodlands; and special status species. The MMP serves as documentation of proposed mitigation for Section 7 consultation with U.S. Fish and Wildlife Service (FWS), for permitting through the Corps of Engineers (Corps), California Department of Fish and Game (DFG), and the Central Valley Regional Water Quality Control Board (Water Board).

Impacts to all waters have already been mitigated for through the purchase of the following approved conservation areas, mitigation bank credits, and conservation easements. Approximately \$ 21 million in compensatory mitigation has been purchased for the project:

- Caltrans has entered into an agreement with Wildlands, Inc for the purchase and conservation of Aitken Ranch, located in Auburn Ravine. The Aitken Ranch conservation area will fulfill much of the proposed compensatory mitigation for the Route 65 project. The estimated cost of Aiken Ranch is \$ 3.2 million.
- Caltrans has purchased, in fee title, the 514-acre Rockwell Ranch property west of the Route 65 project area. Rockwell Ranch includes an estimated 29.37 ac of vernal pools, swales and seasonal wetlands and is located within designated critical habitat for vernal pool fairy shrimp. The cost of Rockwell Ranch is \$ 7.1 million.
- Caltrans has purchased \$ 2.3 million in credits at the Orchard Creek Conservation bank for preservation of 7.53 acres of vernal pool/ tadpole shrimp habitat.
- Caltrans has purchased 14 acres of preservation credits, valued at \$4.4 million, from the Mariner Vernal Pool Conservation Bank.
- Caltrans will purchase 9.80 acres of marsh habitat credits at Beach Lake Mitigation Bank at an estimated cost of \$1 million.
- Caltrans is establishing a conservation easement in the Coon Creek watershed valued at \$ 3.9 million. This project feature will purchase 180 acres on Rockwell Ranch.

The table on page 11 (next page) provides a summary of the impacts and compensatory mitigation for the project.

Application Fee Provided: A fee of \$40,000 was submitted on 9 March 2007 as required by 23 CCR §3833b(2)(A) and by 23 CCR § 2200(e)

Summary of Impacts and Compensatory Mitigation for the Project			
Habitat	Impacts	Mitigation Details	Mitigation Summary
Vernal Pool and Swales	10.58 ac direct impacts 31.10 ac indirect impacts	Preservation of vernal pools & swales: 11.06 ac at Aitken Ranch 31.15 ac at Rockwell Ranch 14 ac at Mariner Ranch 7.5 ac at Orchard Creek Creation of vernal pools & swales: 10.35 ac at Aitken Ranch	Preservation of vernal pools & swales: 61.81 ac Creation of vernal pools & swales: 10.35 ac
Open Water - 4.49 ac (non-federal waters) and 0.32 ac (federal waters) direct impacts Vernal Marsh - 11.31 ac direct impacts Freshwater Marsh - 3.13 ac direct impacts Temporary impacts to open water, vernal marsh, freshwater marsh, and creek water = 0.46 ac		Preservation: 12.37 ac emergent marsh at Aitken Ranch Creation: 4.95 ac emergent marsh at Aitken Ranch 9.8 ac of marsh habitat at Beach Lake Restoration: 0.30 ac freshwater marsh at Ingram Slough 0.15 ac open water at Auburn Ravine	Preservation: 12.37 ac marsh habitat Creation: 14.75 ac marsh habitat Restoration: 0.45 ac of aquatic habitat
Mixed Riparian Forest	1.38 ac (DFG jurisdiction) permanent direct impacts 3.07 ac (DFG jurisdiction) temporary direct impacts	Preservation: 3.40 ac mixed riparian forest at Aitken Ranch Creation: 5.89 ac mixed riparian forest at Beach Lake Restoration: 3.76 ac onsite at Auburn Ravine and Coon Creek 0.85 ac off site	Preservation: 3.40 ac mixed riparian forest Creation: 5.89 ac mixed riparian forest Restoration: 4.61 ac mixed riparian forest
Totals	Direct impacts to federal waters: 25.34 ac Direct impacts to state waters: 29.83 ac		Preservation: 74.18 ac aquatic habitat (does not include mixed riparian forest) Creation: 25.1 ac aquatic habitat (does not include mixed riparian forest) Restoration: 0.45 ac aquatic habitat (does not include mixed riparian forest)

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In reply refer to:
1-1-04-F-0119

FEB 2 2005

Mr. Gene Fong
Division Administrator
Federal Highway Administration
U.S. Department of Transportation
650 Capitol Mall, Suite 4-100
Sacramento, California 95814

Subject: Section 7 Consultation for the Proposed Route 65 Lincoln Bypass Project
Placer County, California

Dear Mr. Fong:

This is in response to the Federal Highway Administration's (FHWA) request for formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Route 65 Lincoln Bypass project (proposed project) in Placer County, California. Your May 10, 2004, request was received in our office on May 13, 2004. This document represents the Service's biological opinion on the effects of the action on the federally threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (beetle), the federally endangered vernal pool tadpole shrimp (*Lepidurus packardii*) and threatened vernal pool fairy shrimp (*Branchinecta lynchii*) (vernal pool crustaceans), and designated critical habitat for the vernal pool fairy shrimp, in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act).

The findings and recommendations in this consultation are based on: (1) a January 21, 2005, letter from FHWA to the Service, providing comments on the draft biological opinion; (2) the November 2004 *Draft Mitigation and Monitoring Proposal for Route 65 Lincoln Bypass, Placer County, California* (MMP), prepared by LSA Associates (LSA), the consultant; (3) the September 7, 2004, letter from FHWA to the Service requesting initiation of formal consultation on proposed project; (4) the August 2004 *Supplement to Biological Assessment for U.S. Fish and Wildlife Service Consultation: Route 65 Lincoln Bypass, Placer County* (Supplement), prepared by LSA; (5) a June 22, 2004, site visit conducted by representatives of the Service, the California Department of Transportation (Caltrans), FHWA, LSA, and Placer County Transportation Planning Authority (County); (6) the May 2004 *Indirect and Cumulative Impact Analysis for Lincoln Bypass—State Route 65, Placer County, California* document, prepared by Caltrans; (7) the *Route 65 Lincoln Bypass Biological Assessment* (Biological Assessment), dated February 2004, revised April 2004, prepared by LSA; (8) meetings, electronic mail (email)

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correspondence, and telephone conversations between representatives of the Service, FHWA, Caltrans, and LSA; (9) the November 14, 2001, *Draft Environmental Impact Statement/Report and 4(f) Evaluation for Lincoln Bypass, Placer County, State Route 65 (DEIS/R)*, prepared by Caltrans; (10) the November 18, 1999, *Route 65 Lincoln Bypass Natural Environmental Study Report*, prepared by Caltrans; and (11) other information available to the Service.

Consultation History

February 26, 2004. Caltrans submitted a letter to the Service requesting our review of the enclosed draft Biological Assessment. The Service received this letter and enclosures on March 1, 2004.

March 17, 2004. The Service submitted a letter to Caltrans (Service file number 1-1-04-I-1062), providing our comments and suggestions on the draft Biological Assessment.

April 28, 2004. Kelly Fitzgerald and Ken Sanchez of the Service attended a meeting at Aitken Ranch, Placer County. This meeting included representatives of the Service, U.S. Army Corps of Engineers (Corps), California Department of Fish and Game (CDFG), Wildlands, Inc., Caltrans, and FHWA. Wildlands, Inc. and Caltrans discussed the use of Aitken Ranch as a possible site to offset the effects of the proposed project on vernal pool habitat crustacean habitat.

April 30, 2004. Caltrans submitted a letter to the Service, providing responses to our comments on the draft Biological Assessment.

May 4, 2004. Representatives of the Service, FHWA, Caltrans, and LSA met to discuss the proposed project. Caltrans provided the Service with copies of the DEIS/R and a report analyzing the indirect and cumulative effects of the proposed project. Participants discussed additional information that was needed to complete the formal consultation initiation package.

May 10, 2004. FHWA submitted a letter to the Service requesting the initiation of formal consultation on the proposed project. Enclosed was a revised Biological Assessment. The Service received the letter and enclosure on May 13, 2004.

May 24, 2004. The Service submitted a letter to FHWA requesting additional information on the proposed project (Service file number 1-1-04-I-1770). Requested information included: (1) a projected timeline for project construction; (2) a quantification of acreages of the proposed project footprint; (3) an identification, quantification, and analysis of the effects of the fill source; (4) a revision of the analysis guidelines used to analyze direct and indirect affects associated with the proposed project; and (5) a description and/or revision of proposed conservation measures to avoid, minimize, and offset direct and indirect affects on vernal pool crustaceans and their habitat.

June 22, 2004. Kelly Fitzgerald and Ken Fuller of the Service conducted a tour of the proposed project site with representatives of FHWA, Caltrans, LSA, and the County.

July 20, 2004. Kelly Fitzgerald and Ken Sanchez met with representatives of Caltrans, the County, and the City of Lincoln to discuss the proposed project. Caltrans presented their revised analysis of the direct and indirect affects that would result from the proposed project. The Service and Caltrans discussed appropriate compensation guidelines, and Caltrans presented options they are pursuing with regards to offsetting the effects of the proposed project on vernal pool crustacean habitat. The Service indicated that additional analysis on the effects to vernal pool fairy shrimp critical habitat was necessary.

August 19, 2004. Representatives of the Service met to discuss a Service-analysis of the effects the proposed project would have on vernal pool crustacean habitat and designated critical habitat.

September 7, 2004. FHWA submitted a letter to the Service requesting the initiation of formal consultation on the proposed project. Enclosed was a Supplement to the Biological Assessment. The Service received this letter and enclosures on September 7, 2004.

September 16, 2004. Representatives of the Service, FHWA, Caltrans, and LSA met to discuss the proposed project. The Service stated that the U.S. Department of Interior had issued a moratorium on the signing of biological opinions that pertain to proposed projects occurring in designated or proposed critical habitat. The Service presented our recommendations for effectively offsetting direct and indirect effects to vernal pool crustaceans habitat and critical habitat.

November 1, 2004. Representatives of the Service, FHWA, and the County met with Congressman Doolittle to discuss the effects and conservation measures for the proposed project.

November 5, 2004. Representatives of the Service, FHWA, Environmental Protection Agency (EPA), Corps, Caltrans, and the County met to discuss the effects and conservation measures for the proposed project.

November 19, 2004. Caltrans submitted a letter and the Draft MMP to the Service. The Service received these on November 22, 2004.

January 7, 2005. The Service issued a draft biological opinion for the proposed project to FHWA (Service file number 1-1-05-I-0418).

January 21, 2005. FHWA submitted a letter to the Service, providing comments on the draft biological opinion.

BIOLOGICAL OPINION

Description of the Proposed Action

The project proponents, Caltrans in conjunction with FHWA, propose to modify the existing State Route (SR) 65 near the City of Lincoln. A total of six highway bypass alternatives were initially evaluated by Caltrans. Based on environmental review and public comment; the

preferred alternative (*i.e.*, the proposed project) was determined by Caltrans to affect a less wetlands than the other alternatives (LSA 1999; Caltrans 2001). The proposed project will construct a new 12.8-mile alignment of SR 65 to the west of Lincoln, including a four-lane freeway with four interchanges. Interchanges would be constructed at Industrial Avenue, Nelson Lane, Riosa Road, and Wise Road. Bridges will be constructed at North and South Ingram Slough, Auburn Ravine, Markham Ravine, Airport Creek, Coon Creek, and three branches of Yankee Slough. The ultimate freeway will have a 78-foot median width and a 300-foot minimum right-of-way. The total 1,755-acre proposed action area includes the project alignment footprint and 250-foot zones of indirect affects on either side of the alignment (LSA 2004a).

As stated on page 2 of the Biological Assessment, the stated purpose of the proposed project is "to relieve congestion and improve safety on existing Route 65 in the vicinity of the City of Lincoln and provide for a regional traffic solution to accommodate projected traffic volumes for the year 2025." The proposed project includes several conservation easements, as well as numerous avoidance and minimization measures, which are described in further detail on pages 8-9 of the Biological Assessment.

The proposed project will adversely affect the beetle by directly affecting two elderberry (*Sambucus* sp.) shrubs, which are its obligate host plant. The proposed project will also adversely affect, directly and indirectly, 47,898 wetted acres of vernal pool crustacean habitat. Furthermore, approximately 40,713 wetted acres of this is located within designated critical habitat for the vernal pool fairy shrimp.

Proposed Project Footprint and Action Area

The 1,755-acre proposed project action area includes both the proposed 12.8-mile alignment right-of-way footprint and a 250-foot "indirect effects" zone on either side of this alignment (LSA 2004a). The "indirect effects" zone may extend to greater than a 250-foot distance from the edge of the proposed alignment. This may occur if a vernal pool crustacean habitat feature (*e.g.*, vernal pool or vernal swale) extends beyond 250 feet from the edge of the proposed alignment and maintains hydrological connectivity and is contiguous with the features and/or within the same vernal pool complex.

The proposed action area includes the proposed project footprint as well as the area contained within a four-mile circle (*i.e.*, two-mile radius) around each of the four proposed intersections/interchanges (*i.e.*, Industrial Avenue, Nelson Lane, Riosa Road, and Wise Road). The action area is used to evaluate possible indirect and cumulative effects that may result from the implementation of the proposed project.

Proposed Conservation Measures

The applicant has proposed conservation measures to avoid, minimize, and compensate for effects to the beetle and vernal pool crustaceans that result from the implementation of the proposed project.

Valley Elderberry Longhorn Beetle

1. The 2 elderberry shrubs, which are located within 20 feet of the centerline of the proposed alignment of the project and cannot be avoided, will be transplanted to a Service-approved conservation area that will be protected in perpetuity.
2. To compensate for direct affects to the beetle, prior to ground breaking activities at the project site, the project proponents will establish 29 rooted elderberry seedlings and 29 associated native plants at a Service-approved conservation area (see Table 1).
3. The proposed conservation area is the 317-acre Aitken Ranch property, located west of the City of Lincoln in western Placer County (*see* page 53 of the Biological Assessment and page 76 of the MMP). The project applicant proposes to establish the two transplanted shrubs and the seedlings and plantings on this property. The minimum area required is 0.24 acre (10,440 square feet) to ensure that no more than five elderberry seedlings and five associated native plants are planted per 1,800 square feet. The conservation area shall be managed in perpetuity as outlined in the Beetle Conservation Guidelines (Service 1999). Wildlands, Inc. will oversee the transplanting and long-term management and supervision of the conservation area.

**Table 1: Elderberry Stem Size and Stem Numbers and Compensation; Route 65
Lincoln Bypass Project, Placer County, California**

Stem Size	# of stems	Exit Holes	Elderberry Seedling Ratio	# Elderberry Seedlings	Associate Native Spp. Ratio	# Associate Native Spp.
1"-3"	3	No	2:1	6	1:1	6
1"-3"	0	Yes	4:1	0	2:1	0
3"-5"	5	No	3:1	15	1:1	15
3"-5"	0	Yes	6:1	0	2:1	0
>5"	2	No	4:1	8	1:1	8
>5"	0	Yes	8:1	0	2:1	0
Total	10			29		29
<i>* All elderberry shrubs are located in riparian habitat.</i>						

Vernal Pool Crustacean Species

1. Habitat Preservation/Creation

Approximately 40.50 wetted acres of vernal pool crustacean habitat will be directly (26.94 wetted acres) and indirectly (13.56 wetted acres) affected by the proposed project (refer to Table 2). The project applicant has proposed to compensate acre for acre for the loss of function and value of these vernal pool crustacean habitats through the preservation of vernal pool crustacean habitat, located primarily in Placer County. Direct affects will be compensated through a combination of creation and preservation of vernal pool crustacean habitat.

Indirect affects will be compensated through the preservation of vernal pool crustacean habitat. Therefore, prior to ground-breaking, the applicant will preserve in perpetuity approximately 97.59 wetted acres of existing vernal pool crustacean habitat, including 11.06 wetted acres on Aitken Ranch, approximately 79 wetted acres on the Rockwell-Mariner property, and 7.53 wetted acres at the Bryte Ranch Conservation Bank. In addition, the applicant will create approximately 10.35 wetted acres of vernal pool crustacean habitat at Aitken Ranch, which will be protected in perpetuity. Vernal pool crustacean habitat preservation and creation will be accomplished through the acquisition of specified properties, such as Aitken Ranch and the Rockwell-Mariner property in Placer County, and the purchase of vernal pool crustacean habitat credits Bryte Ranch Conservation Bank in Sacramento County (refer to Table 3).

Table 2: Proposed Compensation for Vernal Pool Crustacean Habitat for the Route 65 Lincoln Bypass Project, Placer County, California

	Acreage Affected	Acres of Preservation	Acres of Creation
Direct Total	26.94	70.47	10.35
Indirect Total	13.56	27.12	--
TOTAL	40.50	97.59	10.35

Table 3: Proposed Conservation Areas to Create and Preserve Vernal Pool Habitat in Perpetuity for the Route 65 Lincoln Bypass, Placer County

	Aitken Ranch (in acres)	Rockwell- Mariner (in acres)	Bryte Ranch (in acres)	TOTAL ACREAGE
Preservation	11.06	~79.00	7.53	97.59
Creation	10.35	--	--	10.35
TOTAL	21.41	~79.00	7.53	107.94

2. Avoidance and Minimization Measures

- a. As described on pages 56-59 of the Biological Assessment, the project proponent will implement several avoidance and minimization measures to reduce the effects the proposed project would have on listed vernal pool crustacean habitat and designated critical habitat. Measures, which will be implemented during project construction to avoid adverse affects to these habitat features, include the following:
 - i. All wetlands, riparian areas, and other sensitive vegetation/habitats adjacent to designated work areas will be designated as Environmentally Sensitive Areas (ESAs) and clearly indicated as such on project construction plans. Project specifications will include a requirement that ESAs are clearly delineated with brightly colored fencing, rope, or equivalent prior to beginning construction.

- ii. Measures consistent with the current Caltrans' Construction Site Best Management Practices (BMPs) Manual, including the Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Manuals, will be implemented. Best management practices will be implemented to reduce erosion, dust, noise, and other deleterious aspects of construction related activities. These practices are described at: http://www.dot.ca.gov/hq/construc/Construction_Site_BMPs.pdf.

The biological conservation measures, as proposed above and in the project materials reviewed by the Service, are considered part of the proposed actions evaluated by the Service in this biological opinion. Any change in these plans or their implementation that might adversely affect listed species, either directly or indirectly, requires re-initiation of consultation with the Service, as set forth in the final paragraphs of this letter.

Status of the Species

Valley Elderberry Longhorn Beetle

On August 8, 1980, the valley elderberry longhorn beetle was listed as a threatened species (45 FR 52803). Critical habitat for this species was designated and published at 50 CFR §17.95. Two areas along the American River in the Sacramento metropolitan area have been designated as critical habitat for the beetle. These designated areas of critical habitat are the American River Parkway Zone, an area along the lower American River at Goethe and Ancil Hoffman Parks, and the Sacramento Zone, an area located approximately one-half-mile from the American River downstream from the American River Parkway Zone. In addition, an area along Putah Creek, Solano County, and the area east of Nimbus Dam along the American River Parkway, Sacramento County, are considered essential habitat, according to the Recovery Plan for the beetle (Service 1984). These critical and essential habitat areas support large numbers of mature elderberry shrubs with extensive evidence of use by the beetle.

The beetle is dependent on its host plant, elderberry, which is a locally common component of the remaining riparian forests and savannah areas and, to a lesser extent, the mixed chaparral-foothill woodlands of the Central Valley. Each stage of the beetle's life cycle requires a slightly different part of the elderberry plant as its habitat. The adult beetles feed on the flowers. Females lay eggs on the bark. The larvae burrow into the wood after hatching from their eggs. Larvae feed down the pith of a healthy stem into the larger living branches (Halstead and Oldham 2000). Use of the elderberry shrubs by the beetle is rarely apparent. Frequently, the only exterior evidence of the shrub's use by the beetle is an exit hole created by the larva just prior to the pupal stage. Emergence holes are usually observed in living stems more than one inch in diameter and less than nine feet from the ground (Talley and Holyoak, in prep.). Observations made of elderberry shrubs along the Cosumnes River, in the Folsom Lake area and near Blue Ravine in Folsom indicate that the beetle may be present in an elderberry shrubs with no evidence of exit holes; the larvae either succumb prior to constructing an exit hole or are not far enough along in the developmental process to construct an exit hole. Larvae appear to be distributed in stems which are one inch or greater in diameter at ground level. The *Valley*

Elderberry Longhorn Beetle Recovery Plan (Service 1984) and Barr (1991) contain further details on the beetle's life history.

Vernal Pool Tadpole Shrimp and Vernal Pool Fairy Shrimp

The vernal pool tadpole shrimp and vernal pool fairy shrimp were listed as endangered and threatened, respectively, on September 19, 1994 (59 FR 48136). The final rule to designate critical habitat for 15 vernal pool species, including two crustaceans, was published on August 6, 2003 (68 FR 46684). Further information on the life history and ecology of the vernal pool fairy shrimp and vernal pool tadpole shrimp may be found in the final listing rule, the final rule to designate critical habitat, Eng *et al.* (1990), Helm (1998), and Simovich *et al.* (1992).

The vernal pool tadpole shrimp has dorsal compound eyes, an approximately one-inch (2.5-cm) long large shield-like carapace that covers most of its body, and a pair of long cercopods at the end of its last abdominal segment (Linder 1952; Longhurst 1955; Pennak 1989). It is primarily a benthic animal that swims with its legs down. Vernal pool tadpole shrimp climb or scramble over objects, and plow along bottom sediments as they forage for food. Its diet consists of organic detritus and living organisms, such as fairy shrimp and other invertebrates (Pennak 1989; Fryer 1987). The females deposit their eggs on vegetation and other objects on the pool bottom. Tadpole shrimp eggs are known as cysts, and during the dry months of the year, they lie dormant in the dry pool sediments (Lanaway 1974; Ahl 1991).

The life history of the vernal pool tadpole shrimp is linked to the environmental characteristics of its vernal pool habitat. After winter rains fill the pools, its dormant cysts may hatch in as little as four days (Ahl 1991, Rogers 2001), and the animals may become sexually mature within three to four weeks after hatching (Ahl 1991; Helm 1998; King 1996). A portion of the cysts hatch immediately and the rest remain dormant in the soil to hatch during later rainy seasons (Ahl 1991). The vernal pool tadpole shrimp is a relatively long-lived species (Ahl 1991), and will generally survive for as long as its habitat remains inundated, sometimes for six months or more (Ahl 1991, Gallagher 1996, Helm 1998). Adults are often present and reproductive until the pools dry up in the spring (Ahl 1991; Gallagher 1996; Simovich *et al.* 1992).

Vernal pool tadpole shrimp are found only in ephemeral freshwater habitats, including alkaline pools, clay flats, vernal lakes, vernal pools, vernal swales, and other seasonal wetlands in California (Helm 1998). The vernal pool tadpole shrimp is known from 168 occurrences in the Central Valley (CNDDDB 2004), ranging from east of Redding in Shasta County south to Fresno County, and from a single vernal pool complex located in the San Francisco Bay National Wildlife Refuge in Alameda County. It inhabits vernal pools containing clear to highly turbid water, ranging in size from 54 square feet (5 square meters) in the Mather Air Force Base area of Sacramento County, to the 89-acre Olcott Lake at Jepson Prairie in Solano County; the potential ponding depth of occupied habitat ranges from 1.5 inches to 59 inches. Although vernal pool tadpole shrimp are found on a variety of geologic formations and soil types, Helm (1998) found that over 50 percent of vernal pool tadpole shrimp occurrences were on High Terrace landforms and Redding and Corning soils. Vernal pool tadpole shrimp are uncommon even where vernal pool habitat occurs (Service 2004). The largest concentration of vernal pool tadpole shrimp occurrences are found in the Southeastern Sacramento Valley Vernal Pool Region, as defined in

the Service's *Draft Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (2004). In this vernal pool region, this species occurs on a number of public and private lands in Sacramento County, and from a few locations in Yuba and Placer Counties, including Beale Air Force Base.

Vernal pool fairy shrimp have delicate elongate bodies, large stalked compound eyes, no carapace, and 11 pairs of phyllopods, or gill-like structures that also serve as legs. Typically less than one-inch (2.5-cm) long, they swim or glide gracefully upside-down by means of complex, wavelike beating movements. Fairy shrimp feed on algae, bacteria, protozoa, rotifers, and detritus. The second pair of antennae in adult male fairy shrimp are greatly enlarged and specialized for clasping the females during copulation. The females carry eggs in an oval or elongate ventral brood sac. The eggs are either dropped to the pool bottom or remain in the brood sac until the female dies and sinks. The dormant cysts are capable of withstanding heat, cold, and prolonged desiccation, and they can remain viable in the soil for decades after deposition. When the pools refill in the same or subsequent seasons, some, but not all, of the cysts may hatch. The cyst bank in the soil may therefore be comprised of cysts from several years of breeding (Donald 1983). The early stages of the fairy shrimp develop rapidly into adults and may become sexually mature within two weeks after hatching (Gallagher 1996; Helm 1998). Such quick maturation permits populations to persist in short-lived shallow bodies of water (Simovich *et al.* 1992). In pools that persist for several weeks to a few months, fairy shrimp may have multiple hatches during a single season (Helm 1998; Gallagher 1996).

Vernal pool fairy shrimp are found only in ephemeral freshwater habitats, including alkaline pools, ephemeral drainages, rock outcrop pools, vernal pools, and vernal swales in California and Southern Oregon (Eriksen and Belk 1999). Occupied habitats range in size from rock outcrop pools as small as 11 square feet to large vernal pools up to 12 acres; the potential ponding depth of occupied habitat ranges from 1.2 inches to 48 inches.

The vernal pool fairy shrimp is known from 342 occurrences extending from the Stillwater Plain in Shasta County through most of the length of the Central Valley to Pinnacles in San Benito County (Eng *et al.* 1990; Fugate 1992; Sugnet and Associates 1993; CNDDDB 2004). Five additional, disjunct populations exist: one near Soda Lake in San Luis Obispo County; one in the mountain grasslands of northern Santa Barbara County; one on the Santa Rosa Plateau in Riverside County; one near Rancho California in Riverside County; and one on the Agate Desert near Medford, Oregon (CNDDDB 2004; Helm 1998; Eriksen and Belk 1999; Volmar 2002; Service 1994, 2003). Three of these isolated populations each contain only a single pool known to be occupied by the vernal pool fairy shrimp. Although the vernal pool fairy shrimp is distributed more widely than most other fairy shrimp species, it is generally uncommon throughout its range, and rarely abundant where it does occur (Eng *et al.* 1990; Eriksen and Belk 1999). The greatest number of known occurrences of the vernal pool fairy shrimp are found in the Southeastern Sacramento Vernal Pool Region (see Service 2004), where it is found in scattered vernal pool habitats in Placer, Sacramento, and San Joaquin Counties, in the vicinity of Beale Air Force Base in Yuba County, and at a single location in El Dorado County.

Although the vernal pool crustaceans addressed in this biological opinion are not often found in the same vernal pool at the same time, when coexistence does occur, it is generally in deeper,

longer lived pools (Eng *et al.* 1990; Thiery 1991; Gallagher 1996). In larger pools, vernal pool crustacean species may be able to coexist by utilizing different physical portions of the vernal pool or by eating different food sources (Daborn 1978; Mura 1991; Hamer and Appleton 1991; Thiery 1991), or by hatching at different temperatures or developing at different rates (Thiery 1991; Hathaway and Simovich 1996).

The primary historic large-scale dispersal method for the vernal pool tadpole shrimp and vernal pool fairy shrimp likely was large scale flooding resulting from winter and spring rains which allowed colonization of different individual vernal pools and other vernal pool complexes (King 1996). This dispersal is currently non-functional due to the construction of dams, levees, and other flood control measures, and widespread urbanization within significant portions of the range of this species. Waterfowl and shorebirds may now be the primary dispersal agents for vernal pool tadpole shrimp and vernal pool fairy shrimp (King 1996; Simovich *et al.* 1992). The eggs of these branchiopods are either ingested (Krapu 1974; Swanson *et al.* 1974; Driver 1981; Ahl 1991) and/or adhere to the legs and feathers where they are transported to new habitats. Cysts may also be dispersed by a number of other species, such as cattle and humans (Eriksen and Belk 1999).

At the local level, vernal pool crustaceans are often dispersed from one pool to another through surface swales that connect one vernal pool to another. These dispersal events allow for genetic exchange between pools and create a population of animals that extends beyond the boundaries of a single pool. These dispersal events also allow vernal pool crustaceans to move into pools with a range of sizes and depths. In dry years, animals may only hatch in the largest and deepest pools. In wet years, animals may be present in all pools. The movement of vernal pool crustaceans into vernal pools of different sizes and depths allows these species to survive the environmental variability that is characteristic of their habitats.

The genetic characteristics of these species, as well as ecological conditions, such as watershed continuity, indicate that populations of vernal pool crustaceans are defined by pool complexes rather than by individual vernal pools (Fugate 1992). Therefore, the most accurate indication of the distribution and abundance of these species is the number of inhabited vernal pool complexes. The pools and, in some cases, pool complexes supporting these species may be small. Human-caused and unforeseen natural catastrophic events such as long-term drought, non-native predators, off-road vehicles, pollution, berming, and urban development, threaten their extirpation at some sites. Vernal pool fairy shrimp and vernal pool tadpole shrimp continue to be threatened by all of the factors which led to the original listing of this species, primarily habitat loss through agricultural conversion and urbanization (CNDDDB 2004).

Vernal Pool Fairy Shrimp Critical Habitat

The Service designated approximately 1,184,513 acres of critical habitat for vernal pool crustaceans and vernal pool plants throughout California and southern Oregon on August 6, 2003 (68 FR 46683). Approximately 123,012 acres of proposed critical habitat for vernal pool species on State reserves, military lands, and national wildlife refuges were not included in the final designation (67 FR 59884; 68 FR 46683). Furthermore, approximately 721,452 acres of proposed critical habitat for vernal pool species located within the counties of Butte, Madera,

Merced, Sacramento, and Solano were excluded in the final designation. Thus, the Service, after excluding approximately 310,664 acres of proposed critical habitat for the vernal pool fairy shrimp, designated approximately 839,460 acres as critical habitat for the vernal pool fairy shrimp, consisting of 68 Critical Habitat units and subunits distributed from southern Oregon to southern California. Within Placer County, of the proposed 47,788 acres, approximately 32,134 acres were designated as critical habitat for the vernal pool fairy shrimp (Service 2003). Approximately 15,868 acres of Unit 12 are actual vernal pool grassland complexes containing the primary constituent elements for the listed vernal pool crustacean species (pers. comm., J. Wild, Sacramento Fish and Wildlife Office, 2005).

These designated critical habitat units for the vernal pool fairy shrimp contain primary constituent elements that support feeding, growth, breeding, reproduction, and dispersal. The first primary constituent element of vernal pool critical habitat is vernal pools, swales, and other ephemeral wetlands and depressions of appropriate sizes and depths that typically become inundated during winter rains and hold water for sufficient lengths of time necessary for incubation, reproduction, dispersal, feeding, and sheltering, but which are dry during the summer and do not necessarily fill with water every year. This primary constituent element provides the aquatic environment required for cyst incubation and hatching, growth and maturation, reproduction, feeding, sheltering, and dispersal, and the appropriate periods of dessication for cyst dormancy and to eliminate predators such as bullfrogs (*Rana catesbeiana*), fish, and other aquatic predators that depend on year round inundation of wetland habitats to survive.

The second primary constituent element is the geographic, topographic, and edaphic features that support aggregations or systems of hydrologically interconnected pools, swales, and other ephemeral wetlands and depressions within a matrix of surrounding uplands that together form hydrologically and ecologically functional units called vernal pool complexes. These features assist in the maintenance of the aquatic phase of the vernal pool habitat, by contributing to the filling and drying of the vernal pool, and maintaining suitable periods of pool inundation, water quality, and soil moisture for vernal pool crustacean hatching, growth and reproduction, and dispersal, but not necessarily every year. The entire vernal pool complex, including the pools, swales, and associated uplands, is essential to support the aquatic functions of the vernal pool habitat. Although the uplands are not actually occupied by vernal pool crustaceans, they nevertheless are essential to the conservation of vernal pool habitat and crustaceans because they maintain the aquatic phase of vernal pools and swales. Associated uplands also provide essential nutrients that form the basis of the vernal pool food chain, including a primary food source (e.g., algae, diatoms) for the vernal pool crustaceans. All of the above described primary constituent elements do not have to occur simultaneously within a unit for the unit to constitute critical habitat for one of these species.

The proposed project lies within the Western Placer County Unit (Unit 12) of critical habitat for the vernal pool fairy shrimp. This 32,134-acre critical habitat unit forms one of the remaining large vernal pool complex areas in the Southeastern Sacramento Valley Vernal Pool Region (Keeler-Wolf *et al.* 1998). This unit generally occurs in western Placer County, immediately north of the Sacramento County line, north of the City of Roseville, and northeast of the City of Rocklin (Service 2003). The northern boundary occurs just north of the City of Lincoln. This unit occurs mostly west of SR 65.

Unit 12 contains numerous occurrences of the vernal pool fairy shrimp (CNDDDB 2004) and is considered essential for the conservation of the species. Vernal pool fairy shrimp within this unit occur in both Northern Hardpan and Northern Volcanic Mudflow vernal pools as described by Sawyer and Keeler-Wolfe (1995). Unit 12 also contains vernal pool fairy shrimp found in vernal pools on Exchequer soils on the Mehrten geologic formation, a rare type of Northern Volcanic Mudflow vernal pool which has been reduced to only a few acres within Placer County (Service 2003). These pools are generally short-lived and do not provide habitat for most other species of fairy shrimp (CNDDDB 2004).

This unit contains 70 percent of the remaining vernal pool habitats in Placer County. Furthermore, this unit includes a large number of conservation areas established specifically to contribute to the recovery of vernal pool fairy shrimp. These protected areas include the Ahart Preserve and the Orchard Creek Conservation Bank. The Ahart Preserve is one of the few remaining examples of Northern Volcanic Mudflow vernal pools in the region (criterion 2). The 632.2-acre Orchard Creek Conservation Bank contains approximately 43.14 wetted acres of vernal pool crustacean habitat. Additional smaller preserves that protect vernal pool habitat in and around the cities of Lincoln and Roseville have also been established within this unit. All in all, approximately 20 percent of all habitat compensation areas established for the long-term protection of the vernal pool fairy shrimp is found in this unit. In addition, Placer County is currently developing a Habitat Conservation Plan (HCP) for the conservation of vernal pool fairy shrimp in this area; a 157-acre WRP easement for the protection of wetland resources occurs in this area.

The proposed alignment of the SR 65 Bypass project is located within the northern third of Unit 12, generally skirting along the perimeter of large, contiguous blocks of critical habitat (LSA 2004b). The proposed project action area, consisting of the project footprint and 250 feet or greater on either side of the footprint, includes approximately 519 acres of designated critical habitat for the vernal pool fairy shrimp, or 1.6 percent of Unit 12 (LSA 2004b). Approximately 47 percent of the proposed project alignment extends through or abuts designated critical habitat for the vernal pool fairy shrimp (LSA 2004b). Furthermore, 31.8 percent of proposed project's study area, which comprises approximately 5,122 acres encompassing the areas of and around six proposed alignments including the preferred alternative, consists of upland grasslands interspersed with Northern Hardpan and Northern Volcanic Mudflow vernal pool complexes (LSA 2004a), including vernal pools situated on the rare Exchequer soils of the Exchequer-Rock Outcrop Complex and the Inks-Exchequer Complex (LSA 2004a). The portions of Unit 12 located within the proposed project action area contain all of the constituent elements of vernal pool fairy shrimp critical habitat.

Environmental Baseline

Valley Elderberry Longhorn Beetle

When the beetle was listed as threatened in 1980, the species was known from less than ten localities along the American River, the Merced River, and Putah Creek. By the time the *Valley Elderberry Longhorn Beetle Recovery Plan* was issued in 1984, additional species localities had been found along the American River and Putah Creek. As of 2004, the California Natural

Diversity Data Base (CNDDDB) contains 215 occurrences of this species in 23 counties throughout the Central Valley, from a location along the Sacramento River in Shasta County southward to an area along Caliente Creek in Kern County (CNDDDB 2004). The beetle continues to be threatened by habitat loss and fragmentation, invasion by Argentine ants (*Linepithema humile*), and possibly other factors such as pesticide drift, exotic plant invasions, and grazing.

Factors Affecting the Beetle within the Action Area

Habitat Loss: Habitat loss has been ranked as the single greatest threat to biodiversity in the United States (Wilcove *et al.* 1998). In the final rule listing the beetle, habitat destruction was cited as the primary factor causing the decline of this animal (45 FR 52803). At the time the species was listed, its habitat had largely disappeared throughout much of its range due to agricultural conversion, levee construction, and stream channelization. The recovery plan reiterated that the primary threat to the beetle was loss and alteration of habitat by agricultural conversion, livestock overgrazing, levee construction, stream and river channelization, removal of riparian vegetation, riprapping of shoreline, plus recreational, industrial and urban development (Service 1984).

Some accounts state that the Sacramento Valley, as of 1848, supported approximately 775,000 to 800,000 acres of riparian forest (Smith 1977; Katibah 1984). Based on early soil maps, however, more than 921,000 acres of riparian habitat are believed to have been present throughout the Central Valley under pre-settlement conditions (Katibah 1984). Another source estimates that of approximately five million acres of wetlands in the Central Valley in the 1850s, approximately 1,600,000 acres were riparian wetlands (Warner and Hendrix 1985; Frayer *et al.* 1989).

Extensive destruction of California's Central Valley riparian forests has occurred during the last 150 years due to expansive agricultural and urban development (Katibah 1984; Smith 1977; Thompson 1961; Roberts *et al.* 1977). Since colonization, these forests have been "...modified with a rapidity and completeness matched in few parts of the United States" (Thompson 1961). As of 1849, the rivers and larger streams of the Central Valley were largely undisturbed. They supported continuous bands of riparian woodland four to five miles in width along some major drainages such as the lower Sacramento River, and generally about two miles wide along the lesser streams (Thompson 1961). Most of the riverine floodplains supported riparian vegetation to about the 100-year flood line (Katibah 1984). A large human population influx occurred after 1849, however, and much of the Central Valley riparian habitat was rapidly converted to agriculture and used as a source of wood for fuel and construction to serve a wide area (Thompson 1961). By as early as 1868, riparian woodland had been severely affected in the Central Valley, as evidenced by the following excerpt:

This fine growth of timber which once graced our river [Sacramento], tempered the atmosphere, and gave protection to the adjoining plains from the sweeping winds, has entirely disappeared - the woodchopper's axe has stripped the river farms of nearly all the hard wood timber, and the owners are now obliged to rely upon the growth of willows for firewood. (Cronise 1868 *in* Thompson 1961).

The clearing of riparian forests for fuel and construction made this land available for agriculture (Thompson 1961). Natural levees bordering the rivers, once supporting vast tracts of riparian habitat, became prime agricultural land (Thompson 1961). As agriculture expanded in the Central Valley, needs for increased water supply and flood protection spurred water development and reclamation projects. Artificial levees, river channelization, dam building, water diversion, and heavy groundwater pumping have further reduced riparian habitats to small, isolated fragments (Katibah 1984). In recent decades, these riparian areas have continued to decline as a result of ongoing agricultural conversion as well as urban development and stream channelization. As of 1989, there were over 100 dams within the Central Valley drainage basin, as well as thousands of miles of water delivery canals and stream bank flood control projects for irrigation, municipal and industrial water supplies, hydroelectric power, flood control, navigation, and recreation (Framer *et al.* 1989). Riparian forests in the Central Valley have dwindled to discontinuous strips of widths currently measurable in yards rather than miles.

Between 1980 and 1995, the human population in the Central Valley grew by 50 percent, while the rest of California grew by 37 percent. The Central Valley's population was 4.7 million in 1999, and it is expected to more than double by 2040. The American Farmland Trust estimates that by 2040 more than one million cultivated acres will be lost and 2.5 million more put at risk (Ritter 2000). With this growing population in the Central Valley, increased development pressure is likely to result in continuing loss of riparian habitat.

Based on a CDFG riparian vegetation distribution map, only about 102,000 acres out of an estimated 922,000 acres of Central Valley riparian forest remain (Katibah 1984). This represents a decline in acreage of approximately 89 percent as of 1979 (Katibah 1984). More extreme figures were given by Framer *et al.* (1989), who reported that approximately 85 percent of all wetland acreage in the Central Valley was lost before 1939; and that from 1939 to the mid-1980s, the acreage of wetlands dominated by forests and other woody vegetation declined from 65,400 acres to 34,600 acres. Differences in methodology may explain the differences between the studies. In any case, the historical loss of riparian habitat in the Central Valley strongly suggests that the range of the beetle has been reduced and its distribution greatly fragmented. Loss of non-riparian habitat where elderberry occurs (*e.g.* savanna and grassland adjacent to riparian areas, oak woodland, mixed chaparral-woodland), and where the beetle has been recorded (Barr 1991), suggests further reduction of the beetle's range and increased fragmentation of its upland habitat.

A number of studies have focused on riparian habitat loss along the Sacramento River, which supports some of the densest known populations of the beetle. Approximately 98 percent of the middle Sacramento River's historic riparian vegetation was believed to have been extirpated by 1977 (DWR 1979). The State Department of Water Resources estimated that native riparian habitat along the Sacramento River from Redding to Colusa decreased 34 percent from 27,720 acres to 18,360 acres between 1952 and 1972 (McGill 1975; Conrad *et al.* 1977). The average rate of riparian loss on the middle Sacramento River was 430 acres per year from 1952 to 1972, and 410 acres per year from 1972 to 1977. In 1987, riparian areas as large as 180 acres were observed converted to orchards along this river (McCarten and Patterson 1987). There is no comparable information on the historic loss of non-riparian beetle habitat, such as elderberry savanna and other vegetation communities where elderberry occurs, including oak or mix-

chaparral woodland, or grasslands adjacent to riparian habitat. All natural habitats throughout the Central Valley, however, have been heavily impacted within the last 200 years (Thompson 1961), and it can, therefore, be assumed that non-riparian beetle habitat also has suffered a widespread decline.

Habitat Fragmentation: While habitat loss is clearly a large factor leading to the species' decline, other factors are likely to pose significant threats to the long-term survival of the beetle. Approximately nine percent of 79 Central Valley sites that supported beetle habitat in 1991 no longer supported beetle habitat in 1997 (Barr 1991). Only approximately 20 percent of riparian sites with elderberry observed by Barr (1991) and Collinge *et al.* (2001) were found to support beetle populations. The fact that a large percentage of apparently suitable habitat is unoccupied suggests that the beetle is limited by factors other than habitat availability, such as habitat quality or limited dispersal ability. The beetle is patchily distributed throughout the remaining riparian habitat of the Central Valley from Redding to Bakersfield.

Destruction of riparian habitat in central California has resulted not only in a loss of acreage, but also in habitat fragmentation. Habitat fragmentation can be an important factor contributing to species declines because (1) it divides a large population into two or more small populations that become more vulnerable to direct loss, inbreeding depression, genetic drift, and other problems associated with small populations, (2) it limits a species' potential for dispersal and colonization, and (3) it makes habitat more vulnerable to outside influences by increasing the edge-to-interior ratio (Primack 1998).

Barr (1991) found that small isolated habitat remnants were less likely to be occupied by beetles than larger patches, indicating that beetle subpopulations are extirpated from small habitat fragments. Barr (1991) and Collinge *et al.* (2001) consistently found beetle exit holes occurring in clumps of elderberry bushes rather than isolated bushes, suggesting that isolated shrubs do not typically provide long-term viable habitat for this species. The beetle appears to be only locally common, *i.e.*, found in population clusters which are not evenly distributed across available elderberry shrubs. Plants used by the beetle usually show evidence of repeated use over a period of several years, but sometimes only one or two exit holes are present. Similar observations on the clustered distributions of exit holes were made by Jones and Stokes (1988). Barr (1991) noted that elderberry shrubs and trees with many exit holes were most often large, mature plants; young stands contained exit holes.

The beetle, a specialist on elderberry plants, tends to have small population sizes and to occur in low densities (Barr 1991; Collinge *et al.* 2001; Service 1984), and studies suggest that the beetle is unable to re-colonize drainages where the species has been extirpated because of its limited dispersal ability (Huxel 2000; Barr 1991; Collinge *et al.* 2001). Low density and limited dispersal capability cause the beetle to be vulnerable to the negative effects of the isolation of small subpopulations due to habitat fragmentation. With extensive riparian habitat loss and fragmentation, these naturally-small beetle populations are broken into even smaller and more isolated populations. Once a small beetle population has been extirpated from an isolated habitat patch, the species may be unable to re-colonize this patch if it is unable to disperse from nearby occupied habitat. Insects with limited dispersal and colonization abilities may persist better in large habitat patches than small patches because small fragments may be insufficient to maintain

viable populations and the insects may be unable to disperse to more suitable habitat (Collinge 1996). Recent research indicates that isolated habitats unoccupied by the beetle remain so (Barr 1991; Collinge *et al.* 2001).

Species that characteristically have small population sizes, such as habitat specialists, are more likely to become extinct than species that typically have large populations (Primack 1998), and populations of species that naturally occur at lower density become extinct more rapidly than do those of more abundant species (Bolger *et al.* 1991). Small, isolated subpopulations are susceptible to extirpation from random demographic, environmental, and/or genetic events (Shaffer 1981; Lande 1988; Primack 1998). While a large area may support a single large population, the smaller subpopulations that result from habitat fragmentation may not be large enough to persist over a long time period. As a population becomes smaller, it tends to lose genetic variability through genetic drift, leading to inbreeding depression and a lack of adaptive flexibility. Smaller populations also become more vulnerable to random fluctuations in reproductive and mortality rates, and are more likely to be extirpated by random environmental factors.

Habitat fragmentation not only isolates small populations, but also increases the interface between habitat and urban or agricultural land, increasing negative edge effects such as the invasion of non-native species (*e.g.* the Argentine ant; see Huxel 2000), pesticide contamination (Barr 1991), and livestock grazing (Service 1984). These threats are described in further detail below.

Invasive Species: Recent evidence indicates that the invasive Argentine ant poses a risk to the long-term survival of the beetle. Surveys along Putah Creek found beetle presence where Argentine ants were not present or had only recently colonized, and beetle absence from otherwise suitable sites where the ants had become established (Huxel 2000). The Argentine ant has negatively affected populations of other native arthropod species (Holway 1995; Ward 1987). Predation on eggs, larvae, and pupae are the most likely impacts these ants have on the beetle. In Portugal, Argentine ants have been found to be significant egg predators on the eucalyptus borer (*Phorocantha semipunctata*), another cerambycid like the beetle. Egg predation on the beetle could lead to local extirpations, as indicated by a population viability study that suggested that egg and juvenile mortality are significant factors affecting the probability of extinction for the beetle (Huxel and Collinge, in prep.). The Argentine ant has been expanding its range throughout California since its introduction in 1907, especially in riparian woodlands associated with perennial streams (Holway 1995; Ward 1987). Huxel (2000) felt that with the potential for Argentine ants to spread with the aid of human activities, such as movement of plant nursery stock and agricultural products, this species may come to infest most drainages in the Central Valley along the valley floor inhabited by the beetle.

Competition from invasive exotic plants, such as giant reed (*Arundo donax*), negatively affects riparian habitat supporting the beetle. Giant reed, a native of Asia, has become a serious problem in California riparian habitats, forming dense, homogenous stands essentially devoid of wildlife (Rieger and Kreager 1989). This species grows up to 2.5 inches per day and yields 8.3 tons of oven-dry cane per acre (Rieger and Kreager 1989, Perdue 1958). It can tolerate drought, floods, and extreme temperatures, and is not significantly affected by insects, disease,

herbivory, fire, or mechanical disturbance. It has an extensive root system allowing it to resprout rapidly after any disturbance and out-compete native riparian vegetation. Giant reed also introduces a more frequent fire cycle into the riparian ecosystem, disrupting natural riparian dynamics and eventually forming homogenous climax communities. The extent to which giant reed has affected elderberry shrubs and the beetle specifically, however, has not been studied.

Pesticide Contamination: Direct spraying and drift of pesticide, including herbicides and/or insecticides, in or near riparian areas (which is done to control mosquitoes, crop diseases, invasive and/or undesirable plants, or other pests) is likely to adversely affect the beetle and its habitat. Although there have been no studies specifically focusing on the effects of pesticides on the beetle, the species is likely to be affected by these agents. As of 1980, the prevalent land use adjacent to riparian habitat in the Sacramento Valley was agriculture, even in regions where agriculture was not generally the most common land use (Katibah 1984); therefore, the species is likely vulnerable to pesticide contamination from adjacent agricultural practices. Recent studies of major rivers and streams documented that 96 percent of all fish, 100 percent of all surface water samples, and 33 percent of major aquifers contained one or more pesticides at detectable levels (Gilliom 1999). Pesticides were identified as one of the 15 leading causes of impairment for streams included in the section 303(d) lists of impaired waters of the Federal Water Pollution Control Act, as amended (Clean Water Act). As the beetle occurs primarily in riparian habitat, the contamination of rivers and streams affects this species and its habitat. Pesticides have been identified as one of a number of potential causes of the decline of both pollinator species declines and other insects beneficial to agriculture (Ingraham *et al.* 1996); therefore, it is likely that the beetle, typically occurring adjacent to agricultural lands, has suffered a similar decline due to pesticides.

Livestock Grazing: Livestock grazing damages or destroys elderberry plants and inhibits regeneration of seedlings. Cattle readily forage on new elderberry growth, which may explain the absence of beetles at manicured elderberry stands (Service 1984). Habitat fragmentation exacerbates problems related to exotic species invasion and livestock overgrazing by increasing the edge to interior ratio of habitat patches, facilitating penetration of these influences.

To summarize, the Service believes that the beetle, though relatively wide-ranging, is in long-term decline due to widespread alteration and fragmentation of its riparian habitats, and to a lesser extent, its upland habitats, by human activities. Long-term protection of habitat for the beetle would be provided by the creation and protection of conservation areas and the implementation of various protective measures.

There are seven records for the beetle in Placer County and in the vicinity of the proposed project (CNDDDB 2004). The CNDDDB identifies beetle locality records from the Bear River, just north of the proposed project site, and from Roseville and Rocklin, approximately 10 miles south of the proposed project site (2004). Therefore, based on the distribution of the beetle, its ecology and biology, the presence of suitable habitat in the action area in the form of elderberry shrubs, as well as the recent records, the Service believes it is reasonably certain that the beetle inhabits the proposed project site.

Vernal Pool Tadpole Shrimp and Vernal Pool Fairy Shrimp

The vernal pool tadpole shrimp and vernal pool fairy shrimp are imperiled by a variety of human-caused activities. Their habitats have been lost through direct destruction and modification due to filling, grading, disking, leveling, and other activities. In addition, vernal pools have been imperiled by a variety of anthropogenic modifications to upland habitats and watersheds. These activities, primarily urban development, water supply/flood control projects, land conversion for agriculture, off-road vehicle use, certain mosquito abatement measures, and pesticide/herbicide use can lead to disturbance of natural flood regimes, changes in water table depth, alterations of the timing and duration of vernal pool inundation, introduction of non-native plants and animals, and water pollution. These can result in adverse effects to vernal pool species.

In addition to direct loss, the habitats of the vernal pool tadpole shrimp and the vernal pool fairy shrimp have been and continue to be highly fragmented throughout their ranges due to conversion of natural habitat for urban and agricultural uses. Fragmentation results in smaller isolated shrimp populations. Ecological theory predicts that such populations will be highly susceptible to extirpation due to chance events, inbreeding depression, or additional environmental disturbance (Gilpin and Soulé 1988; Goodman 1987a, 1987b). If an extirpation event occurs in a population that has been fragmented, the opportunities for re-colonization would be greatly reduced due to geographic isolation from other source populations.

Historically, vernal pools and vernal pool complexes occurred extensively throughout the Sacramento Valley of California. Conversion of vernal pools and vernal pool complexes, however, has resulted in a 91 percent loss of vernal pool resources in California (California Office of Planning and Research 2003). By 1973, between 60 and 85 percent of the area within the Central Valley that once supported vernal pools had been destroyed (Holland 1978). In subsequent years, threats to this habitat type have continued and resulted in a substantial amount of vernal pool habitat being converted for human uses in spite of Federal regulations implemented to protect wetlands. The Corps' Sacramento District has several thousand vernal pools under its jurisdiction (Coe 1988), which includes most of the known populations of these listed species. Between 1987 and 1992, 467 acres of wetlands within the Sacramento area were filled pursuant to the Corps' Nationwide Permit 26 (Service 1992). A majority of those wetlands losses involved vernal pools, the endemic habitat of the vernal pool tadpole shrimp and the vernal pool fairy shrimp. King (1998) has estimated that approximately 15 to 33 percent of the original biodiversity of Central Valley vernal pool crustaceans has been lost since the 1800s. It is estimated that within 20 years human activities will destroy 60 to 70 percent of the remaining vernal pools (Coe 1988). Of the several thousand vernal pools that are located around Sacramento, Coe (1988) suggested that perhaps 1,800 vernal pools will be adversely affected due to future development in western Placer County alone.

Western Placer County is located in the Southeastern Sacramento Vernal Pool Region, one of 17 vernal pool regions in the State of California defined by the CDFG in the California Vernal Pool Assessment Preliminary Report (Keeler-Wolf *et al.* 1998; Service 2004). The regions were identified according to biological, geomorphological, and soils information. The Southeastern Sacramento Valley Vernal Pool Region contains almost 15 percent of the remaining vernal pool

grasslands in the State, and it supports 35 percent of the known occurrences of the vernal pool fairy shrimp. It is the most threatened by development of the 17 regions. According to Holland (1998), Placer County has lost 1,525 acres of vernal pool habitat from 1994 to 1997, at a rate of approximately 508 acres per year, or just over 1 percent per year. In this vernal pool region, both the vernal pool fairy shrimp and the vernal pool tadpole shrimp are threatened by urban development, and also by lack of management and monitoring on mitigation sites and other protected lands where these species are known to occur (Service 2004).

Throughout the Central Valley, approximately 13,000 acres of vernal pool habitats, including mitigation banks, have been set aside for the vernal pool fairy shrimp specifically as terms and conditions of section 7 consultations (Service 2004). In the Southeastern Sacramento Valley Vernal Pool Region, vernal pool fairy shrimp occurrences are protected from development at a number of private mitigation areas, mitigation banks, private ranches with conservation easements, and the Beale Air Force Base in Yuba County. Very few actions have been taken specifically to benefit the vernal pool tadpole shrimp, although several Habitat Conservation Plans are developing vernal pool preserve plans in the region, including Sacramento and Placer Counties (Service 2004).

Nonetheless, human population growth in Placer County continues to steadily increase, particularly in the communities of Roseville and Lincoln, thereby threatening extant occurrences of listed vernal pool crustaceans. The City of Lincoln is projected to have a population of 62,414 in 2025, up from 16,154 in the year 2000 (Caltrans 2003). The fastest growing housing markets in the Sacramento metropolitan region include the communities of Lincoln and Roseville. Population growth in the City of Lincoln has corresponded to the growth of housing, which increased from 3,359 housing units in 1999 to 6,766 housing units in 2002; the Sun City Lincoln Hills development was a significant contributor to this population and housing surge, adding approximately 2,800 homes with an additional 3,800 homes yet to be built (Caltrans 2003). Housing units in the City of Lincoln are expected continue to increase by 26 percent over the next 20 years, from approximately 6,541 units in 2003 to approximately 24,964 units in 2025 (Caltrans 2003). It is anticipated that job growth will increase 40 percent between 2000 and 2025 in the suburban areas of the Sacramento metropolitan region, including Lincoln and Roseville, thereby increasing the demand upon transportation infrastructure (Caltrans 2003).

A number of State, local, private, and unrelated Federal actions have occurred within the project area and adjacent region affecting the environmental baseline of these species. Some of these projects have been subject to section 7 consultation. The Service has issued 106 biological opinions on proposed projects in Placer County that have adversely affected one or both of these shrimp species since they were listed in 1994. This total does not reflect the formal consultations that were amended. These projects in Placer County actions have resulted in both direct and indirect affects to vernal pools within the region, and have contributed to the loss of vernal pool tadpole shrimp and vernal pool fairy shrimp populations. Although these projects in Placer County have eliminated vernal pools and vernal pool complexes, the offsetting compensating measures are designed to minimize the effects of take of listed vernal pool crustaceans resulting in both negative and positive effects to these species. Although a reduction of the two shrimp populations has not been quantified, the acreage of lost habitat continues to grow.

The proposed project is underlain by terrace and alluvial bottom soils typical of western Placer County. Twelve soil types are mapped within the proposed action area (USDA-SCS 1980). These include the Cometa-Fiddymment complex, the Cometa-Ramona sandy loams, the Fiddymment-Kaseberg loams, the Kilaga loam, the Ramona sandy loam, the San Joaquin and San Joaquin-Cometa sandy loams, the Exchequer-Rock outcrop complex, and the Inks-Exchequer complex, all of which may support vernal pools and vernal swales. The vernal pools situated on Exchequer soils on the Mehrten geologic formation, a rare type of Northern Volcanic Mudflow vernal pool which has been reduced to only a few acres within Placer County, are also biologically unique and rare (Service 2003). The Mehrten geologic formation and its associated soils are found along portions of the proposed project alignment. This formation is characterized by eroded, high-standing remnants of fans from volcanic mud and lava flows. Along the distal edges of this geologic formation are flatter areas that commonly contain a disjunct network of vernal pools and swales (Smith and Verrill 1998). This geographically-restricted geological formation and biological habitat has nearly been eliminated in western Placer County. Because of the rarity of the Mehrten geologic formation in western Placer County and the possibility of unique adaptations that vernal pool species may have in the associated vernal pools, this geologic formation is biologically important.

Western Placer County represents important, high quality habitat for the two shrimp populations by providing large, nearly contiguous areas of relatively undisturbed vernal pool habitat. Although Placer County has relatively few documented occurrences of vernal pool tadpole shrimp within the range of the species as compared to other counties, it contains the third greatest number of occurrences of vernal pool fairy shrimp within the range of the species. Placer County contains 37 (11 percent) out of the total of 347 reported occurrences of vernal pool fairy shrimp, and 2 (1 percent) out of the total of 174 reported occurrences of vernal pool tadpole shrimp (CNDDDB 2004). Further, Sugnet and Associates (1993) reported that of the 3,092 "discrete populations" checked, 178 locations (6 percent) were found to support the vernal pool fairy shrimp. Of this total, 42 locations (24 percent) were within Placer County. Of the 3,092 locations checked, only 345 locations, or about 11 percent of all locations checked, were found to support the vernal pool tadpole shrimp. Of these 345 locations supporting the vernal pool tadpole shrimp, only 1 (less than one percent) was in Placer County.

The proposed action area was surveyed for the presence of listed vernal pool crustaceans as a part of the Natural Environment Study (Beak 1991; Caltrans 1994; LSA 2000). These surveys found vernal pool fairy shrimp throughout all the proposed alignments, including the preferred alignment for the proposed project. There are records for vernal pool tadpole shrimp in the immediate vicinity of the proposed project (LSA 1999), including one record at the U.S. Air Force's Lincoln Communications Facility, located approximately four miles southwest of the proposed project alignment (CNDDDB 2004). Consequently, it is inferred that vernal pool tadpole shrimp occur in suitable habitat throughout the proposed project action area (LSA 1999, 2004a). The Service believes that the vernal pool tadpole shrimp is reasonably certain to occur within the action area because of the biology and ecology of the animal, the presence of suitable habitat in and adjacent to the action area, as well as the recent observations of this listed species.

Vernal Pool Fairy Shrimp Critical Habitat

Approximately 32,134 acres of the designated 32,230-acre critical habitat Unit 12 (for the vernal pool fairy shrimp) are located in Placer County (Service 2003). Unit 12 contains 70 percent of the remaining vernal pool habitat in Placer County (Service 2003). This unit has been identified as one of the outstanding vernal pool sites remaining in the Sacramento Valley (Service 2003). Vernal pool fairy shrimp within Unit 12 occur in both Northern Hardpan and Northern Volcanic Mudflow vernal pools (Service 2003; Sawyer and Keeler-Wolfe 1995), but also in vernal pools on Exchequer soils on the Mehrten geologic formation, a rare type of Northern Volcanic Mudflow vernal pool which has been reduced to only a few acres within Placer County (Service 2003). Unit 12 occurs mostly west of SR 65, and consists two primary portions: 1) a larger contiguous block extending southerly and southwesterly from the southern limits of the City of Lincoln to the Sacramento County border and 2) a smaller contiguous block extending northerly and northwesterly from the northeastern limits of the City of Lincoln to Coon Creek. The proposed project would bisect several distinct vernal pool complexes within the northern block of Unit 12.

A number of State, local, private, and unrelated Federal actions have occurred within the project area and adjacent region affecting the designated critical habitat of the vernal pool fairy shrimp. Some of these projects have been subject to prior section 7 consultation. The Service has issued five biological opinions to Federal agencies on proposed projects in California that have affected the critical habitat of the vernal pool fairy shrimp since it was designated in 2003. The Service is currently consulting on six additional proposed projects, including this one and another in Placer County, which may adversely modify designated critical habitat for the vernal pool fairy shrimp.

Development projects completed within western Placer County and critical habitat Unit 12 for the vernal pool fairy shrimp include the Highland Reserve, Highland Reserve North, Sunset West, Stanford Ranch, Twelve Bridges, Sun City Lincoln Hills, and Stoneridge Specific Plan Area (e.g., Olympus Oaks and Cavitt Ranch projects). General and Specific Plans for the western Placer County area are currently being prepared and/or evaluated, such as the proposed Placer Vineyards, Antonio Mountain Ranch, Three-D South, Whispering Springs, Placer Parkway, Lincoln Crossing, Aitken Ranch, Sundance, and Nader property. In addition, we are aware of other proposed housing, industrial, infrastructure, energy facilities, universities, hospitals, and other development projects in and around the cities of Lincoln, Rocklin, Roseville and in Placer County.

Portions of Unit 12 include the City of Lincoln, which in recent years has experienced a rapid rate of growth, particular in the southern portion of the City. In the area south of Lincoln Airport, approximately 521 acres of designated critical habitat in Unit 12 has already been developed (LSA 2004b). The City of Lincoln is currently updating its General Plan. Three alternatives are being considered that propose varying degrees of additional growth around the current city limits. Depending on the alternative selected, between 2,200 and 3,700 acres of additional critical habitat in Unit 12 could be lost to development (LSA 2004b).

The southeastern boundary of Unit 12 abuts the western limit of the City of Roseville. The Service recently issued a biological opinion on the proposed 3,162-acre West Roseville Specific Plan that would allow for a mixed-use development consisting of residential, commercial, industrial, and open space uses to the west of the current city boundary; this area would be annexed into the City (LSA 2004b). The City is currently reviewing a separate but related Sphere of Influence adjustment that includes an additional 2,378 acres in this area. The total area of 5,540 acres is almost entirely within Unit 12 (LSA 2004b).

These completed and proposed projects have resulted in or will likely result in significant, unavoidable affects to biological communities. These effects include the elimination of vernal pools, intermittent drainages and other seasonal wetlands, the reduction of the number of vernal pool complexes within the area, all of which result in both direct and indirect effects to vernal pools, and contributes to the loss of vernal pool fairy shrimp and vernal pool tadpole shrimp occurrences. Despite these affects, we assume that city and county governments will continue to approve development projects within the area. According to one study, the combination of recent and proposed development in the cities of Lincoln and Roseville may eventually eliminate up to 9,768 acres, or approximately 31 percent, of the designated Critical Habitat Unit 12 for the vernal pool fairy shrimp (LSA 2004b). According to a Service analysis of various development scenarios proposed in General and Specific Plans for the western Placer County area, however, the loss of vernal pool grasslands in western Placer County and Critical Habitat Unit 12 could actually approach 70 percent (pers. comm., J. Wild, Sacramento Fish and Wildlife Office, 2005).

In summary, the condition of Critical Habitat Unit 12 retains the primary constituent elements that resulted in its designation. The high density and contiguous arrangement of vernal pool complexes within Unit 12 indicate the relatively high quality and functionality of vernal pool habitat within this unit. This condition of Unit 12, however, is threatened by habitat fragmentation and degradation resulting from ongoing development within Placer County. The proposed project will contribute towards this fragmentation and degradation of Unit 12.

The proposed project will affect approximately 40.713 wetted acres of vernal pool fairy shrimp Critical Habitat Unit 12, including approximately 23.589 wetted acres directly and 17.124 wetted acres indirectly. In addition, approximately 206 acres of contributing uplands associated with vernal pools and vernal swales within critical habitat Unit 12 will be similarly affected (LSA 2004b). This accounts for 1.6 percent of the total Unit 12 acreage, as originally designated. If the loss of designated critical habitat resulting from the recent and projected growth of the cities of Lincoln and Roseville is evaluated, then the proposed project will affect approximately 2.3 percent of the remaining portion of designated Critical Habitat Unit 12 for the vernal pool fairy shrimp (LSA 2004b). The proposed project will effectively bisect several distinct vernal pool complexes within the northern block of Unit 12, contributing to the on-going fragmentation of Unit 12.

Effects of the Proposed Action

Direct Effects

Direct effects are the immediate effects of the proposed project on the species or its habitat and include the effects of interrelated action and interdependent actions. Interrelated actions are those actions that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those actions that have not independent utility apart from the proposed action (50 CFR §402.02).

Valley Elderberry Longhorn Beetle

The proposed action is likely to adversely affect the beetle by removing 2 elderberry shrubs located within 20 feet of the centerline of the project's proposed alignment. The shrubs are located in the riparian habitat and, in total, have 10 stems greater than one inch in diameter at ground level. None of these shrubs contain beetle exit holes. Transplantation of 2 shrubs will temporarily reduce the amount of habitat available to the beetle, and may harm any beetle larvae which may presently be developing within the plants.

Vernal Pool Tadpole Shrimp and Vernal Pool Fairy Shrimp

Although vernal pool fairy shrimp and vernal pool tadpole shrimp exhibit slightly differing habitat requirements and life cycles, they often inhabit the same vernal pool complexes and have been known to co-occur in individual vernal pools. These species are supported by similar habitat types, including vernal pools, seasonally ponded areas within vernal swales, rock outcrop ephemeral pools, playas, alkali flats, and other depressions that hold water of similar volume, depth, area, and duration. Therefore, both species are subject to a common set of threats and considerations.

Surveys identified the presence of vernal pool fairy shrimp within the action area of the proposed project (Beak 1991; Caltrans 1994). There are records for vernal pool tadpole shrimp in the immediate vicinity of the proposed project (LSA 1999; CNDDDB 2004). Consequently, it is assumed that vernal pool tadpole shrimp occur in suitable habitat throughout the proposed project action area (LSA 1999, 2004a). All of the vernal pools and seasonal wetlands on the proposed project site, however, provide appropriate habitat for both vernal pool fairy shrimp and vernal pool tadpole shrimp. Because these species are known from the within the proposed project's action area and/or the immediate vicinity, and it is likely the vernal pool crustaceans would disperse within the watershed between the project sites, the applicant assumes presence of vernal pool fairy shrimp and vernal pool tadpole shrimp in all suitable habitat on the proposed project site. Therefore, construction of the proposed project in any portion of the proposed project site that supports suitable habitat is likely to adversely affect populations of vernal pool fairy shrimp and vernal pool tadpole shrimp.

The proposed project would result in direct effects to 26.941 wetted acres of vernal pool crustacean habitat, including 23.589 wetted acres of designated critical habitat for the vernal pool fairy shrimp. An entire vernal pool or seasonal wetland will be directly affected even when only

a portion of it is filled or subject to similar direct affects because this may result in a an alteration to the hydrology of the vernal pool/seasonal wetland and/or increased sedimentation (see Adamus *et al.* 2001; Sheldon *et al.* 2003).

Vernal Pool Fairy Shrimp Critical Habitat

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statute and the August 6, 2004, Ninth Circuit Court of Appeals decision in *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service* (No. 03-35279) to complete the following analysis with respect to critical habitat.

The direct effects to the species, described above, similarly affect vernal pool fairy shrimp designated critical habitat and its primary constituent elements (*i.e.*, habitat components that are essential for the primary biological needs of the species). Of the 26.941 wetted acres of vernal pool crustacean habitat that would be directly affected by the proposed project, approximately 23.589 wetted acres of this is designated critical habitat for the vernal pool fairy shrimp (*i.e.*, Unit 12). Due to the nature of the proposed project, most of the direct affects to critical habitat are permanent and will occur at the time of project construction which will extend over a period of two to four years. Many of the vernal pools and vernal swales within the proposed project footprint will be graded and filled, others will be affected by the construction of drainage facilities, installation of fencing, and/or landscaping (LSA 2004b). Approximately 206 acres of contributing uplands associated with vernal pools and vernal swales within critical habitat Unit 12 will be similarly affected (LSA 2004b).

Interrelated and Interdependent Actions

Additional effects from interrelated and interdependent actions are expected from the proposed project. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no significant independent utility apart from the proposed action.

Continuing development in western Placer County, and particularly in the City of Lincoln, and the expansion of planned growth that is facilitated by the implementation of the proposed project will require the extension of utilities and the enlargement of roads in areas adjacent to and surrounding the proposed project's action area. Utility improvements may include the development of a well field, water supply lines, and water treatment facilities and sewer lines. These future projects may adversely affect several federally-listed species, some of which may occur outside of the action area for the proposed project, including the vernal pool crustaceans, beetle, the California red-legged frog (*Rana aurora draytonii*), the slender Orcutt grass, and designated critical habitat for the vernal pool fairy shrimp.

The development and urbanization of western Placer County has resulted in the destruction of seasonal wetlands and the loss of habitat for listed vernal pool crustaceans. Urbanization has also resulted in the channelization and degradation of creeks and riparian areas in the region, which may contain elderberry shrubs, potential habitat for the beetle. This development has

resulted in the conversion of habitat for listed vernal pool crustaceans and the beetle to incompatible uses. Additional effects include degradation of water quality, increased pollutant run-off, and habitat fragmentation.

Indirect Effects

Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. Indirect effects may occur outside of the area directly affected by the action (50 CFR §402.02).

The purpose of the proposed action is to alleviate the associated increase of vehicular traffic resulting from current and projected increases in human population in the region. Because the existing transportation network, which has less capacity than the network associated with the proposed action, would limit the development potential of the area, it is likely that the implementation of the proposed project will facilitate the development of privately owned lands adjacent to and in the vicinity of the proposed project, resulting in indirect effects to listed species and habitat.

Although the proposed project may change the pattern of growth in the area, much of the growth that would occur in the vicinity of the proposed action area can be determined by reviewing plans of the City of Lincoln and Placer County, obtaining information on projected growth, recent development patterns, discussions with City and County personnel, and the policies currently implemented in the proposed project area (Caltrans 2003). Planned growth is occurring in the proposed project area, and the proposed project may accelerate some of this planned growth. Growth is likely to occur along the new highway corridor and particularly at the locations of proposed new interchanges, as stated in the *Route 65 Lincoln Bypass Natural Environment Study Report* (LSA 1999): "Given the project's proximity to the City of Lincoln, and the growth anticipated for the Lincoln area, it is reasonable to expect that the [proposed] Route 65 project may facilitate additional development at these interchange locations beyond what would be expected to occur without the bypass project." Studies have shown that development will likely occur when new roads allow access to land previously inaccessible and the area is prime for development (Caltrans 2003). In evaluating indirect effects, a four mile circle was drawn around each of the proposed intersections/interchanges associated with the proposed project. These circles are considered to be potential influence areas from both the proposed project and development patterns already occurring in the area (Caltrans 2003).

The proposed intersections at Industrial Avenue, Nelson Lane, Wise Road, and Riosa Road are each expected to be eventually upgraded to interchanges (Caltrans 2003). These interchanges would accommodate heavy volumes of traffic that are expected in the area, serving the residents of the Twelve Bridges and Lincoln Crossing subdivisions, commuters and inter-regional travelers, providing access to the Lincoln Regional Airport and the industrial area adjacent to the Airport, and serving the community of Sheridan (Caltrans 2003). Much of the land surrounding these proposed interchanges is zoned for residential development, industrial uses, and agriculture (Caltrans 2003). Although it is the City of Lincoln's policy is to ensure that agriculture will continue to be a significant land use within the City, it can be expected that the agricultural areas would be under increased pressure to develop when access is provided and the roads are

improved (Caltrans 2003). Development companies, not farmers or ranchers, however, own agriculturally-zoned land near the proposed intersections/interchanges and most of the investment properties are within the area that is projected for annexation into the City of Lincoln (Caltrans 2003).

The majority of vernal pool complexes, including approximately 1,480 acres of vernal pool grasslands, within the proposed project's action area (*i.e.*, within the four mile circles surrounding the proposed intersections/interchanges), are located around the proposed Wise Road intersection/interchange (Caltrans 2003). Approximately 2,124 total acres of vernal pool grasslands are located around the other three proposed interchanges (Caltrans 2003). Caltrans has worked in coordination with Placer Legacy and EPA to develop an avoidance strategy to conserve the Coon Creek corridor by including acquisition of conservation parcels that will both keep the Coon Creek corridor intact and minimize facilitated planned growth around the proposed Wise Road intersection/interchange (Caltrans 2003).

The City of Lincoln is one of the fastest growing areas in the State of California and is accommodating this growth with plans and policies. The City of Lincoln has proposals to expand the Airport, construct a new wastewater treatment and reclamation facility to serve both current customers and expected residents of the new subdivisions, and carry out local road improvements to accommodate the expected growth under the City's new general plan (Caltrans 2003). The area between the City of Lincoln and the proposed bypass is expected to be developed within the general plan horizon (Caltrans 2003). This growth has occurred in spite of the transportation infrastructure not keeping pace with the need (Caltrans 2003). Since the details for much of the development that is facilitated by this project has not been provided, the Service has not fully evaluated or analyzed future affects. Therefore, this biological opinion will not cover in our incidental take statement these affects.

Valley Elderberry Longhorn Beetle

Since there are no other elderberry shrubs located within the proposed project's alignment, there will be no indirect effects to the beetle.

Vernal Pool Tadpole Shrimp and Vernal Pool Fairy Shrimp

Indirect effects to vernal pools in the project vicinity that could result from the implementation of the proposed project include hydrologic alteration, habitat fragmentation, disturbances from construction equipment, non-point source pollution, and impacts from human encroachment. All vernal pool crustacean habitats within 250 feet of proposed construction activities will be indirectly affected by project implementation. The habitat located more than 250 feet outside of proposed construction activities also could be indirectly affected if it is part of and contiguous to habitat affected.

The draft MMP (LSA 2004c) determined, based on a "watershed analysis", that 13.56 wetted acres of vernal pool crustacean habitat would be indirectly affected by the proposed project (see page 40, LSA 2004c). An analytical approach utilized by the Service indicates otherwise. The Service asserts that vernal pool habitats within 250 feet of the project footprint, plus any

additional vernal pools that are hydrologically interconnected or within the vernal pool complex, will be indirectly affected by construction activities. Thus, it is the Service's opinion that the proposed project could result in indirect effects to a total of 20.957 wetted acres of suitable vernal pool crustacean habitat, including 17.124 wetted acres of designated critical habitat for the vernal pool fairy shrimp. These features will be indirectly affected by construction activities occurring within 250 feet of them. Individual crustaceans and their cysts, which may inhabit these vernal pools and seasonal wetlands, may be injured or killed by any of the following indirect effects:

Erosion: The ground disturbing activities in the watershed of vernal pools associated with the proposed project action area are expected to result in siltation when pools fill during the wet season following construction. Siltation in pools supporting listed crustaceans may result in decreased cyst viability, decreased hatching success, and decreased survivorship among early life history stages, thereby reducing the number of mature adults in future wet seasons. The proposed project construction activities could result in increased sedimentation transport into vernal pool crustacean habitats during periods of heavy rains.

Changes in hydrology: The biota of vernal pools and swales can change when the hydrologic regime is altered (Bauder 1986, 1987). Survival of aquatic organisms like the vernal pool fairy shrimp and vernal pool tadpole shrimp are directly linked to the water regime of their habitat (Zedler 1987). Construction activities may alter a pool's hydro-period by blocking or impairing surface and subsurface flows or by damaging the impervious subsoil layer, for instance, through excavation or compaction of the subsurface strata, in the vicinity of the vernal pool. Therefore, construction near vernal pool areas will, at times, result in the decline of local sub-populations of vernal pool organisms, including fairy shrimp and tadpole shrimp.

Introduction of non-natives: There is an increased risk of introducing weedy, non-native plants into the vernal pools both during and after project construction due to the soil disturbance from clearing and grubbing operations, and general vegetation disturbance associated with the use of heavy equipment.

Human intrusion and chemical contamination: The project may increase the amount of human-related disturbance on vernal pool crustacean habitats within and adjacent to the proposed project action area. De Weese (1994) found that the most frequently observed adverse impacts to vernal pool species habitat were human-related. Pollutants such as petroleum products, pesticides, herbicides, fertilizers, soap, and other hazardous materials could be conveyed into vernal pool crustacean habitats by overland runoff during the rainy season, thereby adversely affecting the listed vernal pool crustaceans and/or their cysts and their habitats. The runoff from chemical contamination can kill listed species by poisoning. Vernal pool crustaceans are very sensitive to the chemistry of their habitat (Belk 1977; Eng *et al.* 1990; Gozalez *et al.* 1996). Individuals may be killed directly or suffer reduced fitness through physiological stress or a reduction in their food base due to the presence of these chemicals. Vernal pools adjacent to the proposed project site are likely to experience some level contamination by constituents contained in roadway runoff. The project proponent, however, has incorporated into the project's design roadside drainage ditches; these ditches would be constructed along the new alignment in order to contain and filter roadway runoff, thus minimizing the effects of roadway runoff on adjacent vernal pool

crustacean habitat. Contamination of adjacent ponds may increase as a result of increased discharge of sediments into surface waters from landscaped areas. Fertilizer contamination can lead to eutrophication of seasonal ponds, which can kill vernal pool species by reducing concentrations of dissolved oxygen (Rogers 1998). Implementation of Best Management Practices for hydrologic and stormwater features as proposed by the applicant will decrease the potential indirect effects on ponds located adjacent to the project site.

Vernal Pool Fairy Shrimp Critical Habitat

The indirect effects to the species, described above, similarly affect designated critical habitat and constituent elements for vernal pool fairy shrimp. Indirect effects are more subtle and may occur over a long period of time. The intensity of indirect effects will vary depending on proximity to areas of direct effects, relative elevation, microtopography, and other factors. The habitats that are indirectly affected support habitat components that are essential for the primary biological needs of crustacean feeding, growth, breeding, reproduction, and dispersal, and plant germination, growth, reproduction, and dispersal. Of the 20.957 wetted acres of suitable vernal pool crustacean habitat that will be indirectly affected by the proposed project, approximately 17.124 wetted acres of this is designated critical habitat for the vernal pool fairy shrimp (*i.e.*, Unit 12). Approximately 17.124 wetted acres of designated critical habitat within Unit 12 will be indirectly affected by the proposed project.

Inclusive of the 23.589 wetted acres of directly effects and the 17.124 wetted acres of indirect effects, approximately 1.6 percent of designated critical habitat within Unit 12 will be directly and indirectly affected by the proposed project. This percentage may actually be higher and as much as 2.3 percent, however, if recent and projected development in the region is incorporated (LSA 2004b).

In addition to the adverse effects detailed above, the proposed project will contribute to a local and range-wide trend of habitat loss and degradation, the principal reasons that the vernal pool fairy shrimp and vernal pool tadpole shrimp have declined. The proposed project will contribute to the fragmentation and reduction of the acreage of the remaining listed vernal pool crustacean habitat located in western Placer County and throughout the range of these two listed vernal pool crustaceans.

Habitat Preservation

To offset the permanent loss of habitat for listed vernal pool crustaceans, the applicant has proposed such conservation measures as the creation, acquisition, permanent preservation, and management of up to 107.94 wetted acres of vernal pool crustacean habitat. One of the proposed preservation areas includes the 317-acre Aitken Ranch. The 317-acre Aitken Ranch Mitigation Site was established by Wildlands, Inc., a private habitat development company, to preserve and create habitat to offset the habitat losses which result from development in Placer County. This property has approximately 21.16 wetted acres of created or preserved vernal pools and vernal swales, in addition to other habitat features, and vernal pool fairy shrimp are known to occur on this property. Caltrans purchased these habitat preservation and creation values in advance of

environmental document approval to ensure that these resources are protected in perpetuity (Caltrans 2003).

The project proponent has also proposed to acquire the approximately 800-acre Rockwell-Mariner property, located south of Wise Road and west of Dowd Road, northwest of the City of Lincoln. This property has an estimated 79 wetted acres of vernal pool crustacean habitat, all within designated critical habitat for the vernal pool fairy shrimp. This figure has not been confirmed by ground truth techniques or delineation. The presence of listed vernal pool crustaceans are inferred within suitable habitat along the proposed project alignment, including the Rockwell-Mariner property (LSA 2004c). In addition, the project proponent has further proposed to purchase the equivalent of 7.53 acres of vernal pool habitat preservation credits at Bryte Ranch Conservation Bank located in Sacramento County. Bryte Ranch and the proposed project site are located within the same Southeastern Sacramento Valley Vernal Pool Region, as defined in the Service's *Draft Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (2004). The vernal pool crustacean habitats found on the two sites, however, are not comparable in quality and characteristics. Vernal pool crustacean habitat located on Bryte Ranch is qualitatively different from that found on the proposed project site for several reasons, including: 1) Bryte Ranch is located outside of designated critical habitat for the vernal pool fairy shrimp; 2) the soil types found on Bryte Ranch are different from those found on the proposed project site (LSA 2004c); 3) Bryte Ranch is located on a different geo-morphological surface than the proposed project site; and 4) within this Vernal Pool Region, Bryte Ranch is located within the Mather Core Area and the proposed project site is located within the Western Placer County Core Area. According to the Draft Recovery Plan (Service 2004), these core areas were established based on the understanding that these support viable populations of vernal pool species and/or will contribute to the connectivity of habitat and, thus, the increase of dispersal opportunities between populations. The preservation and enhancement of each core area is important to maintain and possibly expand the distribution of vernal pool species range-wide (Service 2004).

Of the 107.94 wetted acres of vernal pool crustacean habitat that the project proponent has proposed to protect in perpetuity, approximately 97.59 of this is existing habitat, and approximately 90.06 acres are located in western Placer County. Of this existing habitat that is proposed to be protected, approximately 81 percent, or approximately 79 acres, is located within designated critical habitat for the vernal pool fairy shrimp in western Placer County. The permanent protection of 90.06 acres of existing vernal pool crustacean habitat in western Placer County will achieve approximately a 69 percent rate of vernal pool crustacean habitat preservation in western Placer County, and likewise, represent approximately a 31 percent rate of vernal pool crustacean habitat loss therein.

Cumulative Effects

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

A number of highway improvement projects are proposed within the region to address existing congestion and safety concerns while providing for inter-regional transportation needs (Caltrans 2003). These improvements may facilitate planned development in some areas, but are not expected to accelerate conversion of agricultural and other open space lands to developed uses except where this conversion is already occurring or planned, such as in the City of Lincoln (Caltrans 2003). Most of these proposed road improvements are needed to keep pace with local and regional development conditions and prevent further deterioration of service levels and safety. Completed transportation improvement projects include the SR 65 improvement from Roseville to Industrial Avenue, the Blue Oaks Interchange, and the SR 193 improvements. Future improvements to the State highway system include the Wheatland Bypass, the widening of SR 70 between McGowen and Striplin, SR 99 improvements, the Third River Crossing, the Marysville Bypass, and Placer Parkway. These various projects will contribute to cumulative losses of habitat for federally-listed species such as vernal pool crustaceans and the beetle across their range. While these activities may alter the habitats of the vernal pool crustaceans and the beetle and can potentially harass, harm, injure, or kill these species, because they have a federal nexus, they will be subject to section 7 consultation, and, therefore, will be conducted in accordance with standard avoidance and minimization measures for the listed species.

The Service is aware of other projects currently under review by the State, County, and local authorities where biological surveys have documented the occurrence of federally-listed species. These projects include such actions as urban expansion, water transfer projects that may not have a Federal nexus, and continued agricultural development. The cumulative effects of these known actions pose a significant threat to the eventual recovery of these species.

Several specific plans have been developed to govern development in the region. These specific plans are as follows: Twelve Bridges, Lincoln Crossing, Three D, Laehr Estates, Joiner Ranch, Foskett Ranch, Air Center, Lincoln Gardens, and Sterling Point. These specific plans cover a total of 8,460 acres and up to 18,704 residential units and 41,584 people (Caltrans 2003).

The Placer County General Plan identifies the predictable effects of the planned growth within the County. Development under the Land Use Element described in the General Plan could result in a population increase of 45,000 over the 1990 baseline population, mostly occurring in southern Placer County (Caltrans 2003). Up to 17.2 percent, or 5,000 acres, of existing grassland and up to 32.4 percent, or 49,560 acres, of existing agricultural and range lands could be converted to or degraded by planned urban, suburban, and rural residential development in Placer County (Caltrans 2003). This growth and conversion would contribute to several potentially significant affects to listed species, including loss, alteration, or degradation of habitat, particularly of wetlands, degradation of water quality, and increases in the frequency and intensity of flooding.

The majority of vernal pools in the region of western Placer County have been disturbed in some fashion, due in part to agricultural uses (Caltrans 2003). Specific Plan environmental documents have indicated that at least 19.61 acres and as much as 63.62 acres of seasonal wetland habitat could be affected as these plans are implemented (Caltrans 2003). A total of 4,038 acres of vernal pool grasslands, including 25.1 acres of vernal pools and 7.91 acres of seasonal wetlands

that are located within the four-mile circles could be potentially affected by future development (Caltrans 2003; see also FHWA's January 25, 2005, letter to the Service).

Valley Elderberry Longhorn Beetle

Continued human population growth in the Central Valley, in general, and the Lincoln area, in particular, is expected to drive further development of agriculture, cities, industry, transportation, and water resources in the foreseeable future. Some of these future activities will not be subject to Federal jurisdiction, and thus are considered to enter into cumulative effects. These future activities are likely to result in loss of riparian and other habitats where elderberry shrubs and the beetle occur.

Many of the activities affecting the beetle may affect elderberry shrubs located within riparian ecosystems adjoining or within jurisdictional wetlands. These projects will be evaluated via formal consultation between the Service and the Corps via the Federal nexus provided by section 404 of the Clean Water Act. There are, however, a number of projects for which there is no need to discharge dredged or fill materials into waters of the U.S. These projects, for which no section 404 permit is required, may lack a Federal nexus and, thus, move forward with no formal consultation. These projects pose a significant threat to the recovery of the beetle, particularly when they result in the removal of elderberry savanna ecosystems. These foothill/upland landscapes often consist of mixed stands of elderberry shrubs and oak (*Quercus* spp.) trees which are interspersed with open grasslands in a savanna-like arrangement.

Elderberry shrubs in these savanna systems often achieve great size, perhaps due to the lack of light competition from broadleaf trees and/or entanglement with California grape (*Vitis californicus*) and/or Himalayan blackberry (*Rubus discolor* syn. *procerus*) vines, as often occurs in riparian communities. Elderberry savanna communities are important in that they represent a large portion of the diverse habitat in which elderberry shrubs occur and because urban sprawl threatens a significant acreage of these systems. This loss of habitat negatively affects the environmental baseline and is difficult to quantify.

Vernal Pool Tadpole Shrimp and Vernal Pool Fairy Shrimp

Because the vernal pool tadpole shrimp and vernal pool fairy shrimp are endemic to vernal pools in the Central Valley, coastal ranges, and a limited number of sites in the transverse range and Santa Rosa plateau of California, the Service anticipates that a wide range of activities will affect these species. Such activities include, but are not limited to: (1) urban development, (2) water projects, (3) flood control projects, (4) highway projects, (5) utility projects, (6) chemical contaminants, and (7) conversion of vernal pools to agricultural use. Many of these activities will be reviewed under section 7 of the Act as a result of the Federal nexus provided by section 404 of the Federal Water Pollution Control Act, as amended (Clean Water Act).

The proposed project is located in a region where future destruction and modification of vernal pool crustacean habitat is anticipated. Placer County will continue to develop within the County's sphere of influence. Development in the vicinity of the proposed project is expected to result in further destruction of habitat for the listed vernal pool crustaceans. Continued loss of

these habitats throughout the region could conceivably affect the genetic diversity of the local population(s) of listed vernal pool crustaceans. Any loss of genetic diversity can have significant effects on a population's ability to respond to environmental change over time (Frankel and Soulé 1981). Within the proposed action area, the predominant types of non-federal actions that might affect the listed vernal pool crustaceans consist of residential and commercial development.

Vernal Pool Fairy Shrimp Critical Habitat

Recent and projected development in western Placer County and in the vicinity of the proposed project is expected to result in the continued degradation and fragmentation of designated critical habitat for the vernal pool fairy shrimp, specifically Unit 12. Already, approximately 521 acres of designated critical habitat in Unit 12 has already been developed around the city of Lincoln (LSA 2004b). Depending on the alternative selected for the City of Lincoln's General Plan, between 2,200 and 3,700 acres of additional critical habitat in Unit 12 could be lost to development (LSA 2004b). The City of Roseville has proposed the development of approximately 5,540 acres of Critical Habitat Unit 12 (LSA 2004b). The combination of recent and proposed development in the cities of Lincoln and Roseville may eventually eliminate up to 9,768 acres, of approximately 31 percent, of the designated Critical Habitat Unit 12 for the vernal pool fairy shrimp.

Placer Legacy Habitat Conservation Plan

A number of on-going and proposed projects could contribute to the adverse affects to the beetle, vernal pool crustaceans, and designated critical habitat for the vernal pool fairy shrimp within Placer County as a whole. Within this area, the predominant types of non-federal actions that might affect these species consist of residential and commercial development.

Placer Legacy was established in 1998, using three groups (*i.e.*, Citizens Advisory Committee, Interagency Working Group, and a Scientific Working Group) to provide input from a variety of stakeholders in Placer County, to create a Habitat Conservation Plan (HCP), and to provide a conservation strategy for the region. The Placer Legacy is working on the HCP and a Natural Communities Conservation Plan (NCCP). Placer Legacy's activities should minimize and mitigate for some of the potential effects of facilitated planned growth that may result from the implementation of the proposed project (Caltrans 2003).

So while development activities in western Placer County may negatively affect vernal pool crustaceans and other listed species and their habitats, the HCP/NCCP will eventually ensure that development activities would avoid, minimize, and compensate for take of listed species to the greatest extent possible. The HCP/NCCP would address the indirect effects of facilitated planned development that result from the interrelated and interdependent actions that result from the proposed project. At minimum, the HCP/NCCP will address the Federal and State listed species known at this time that may be affected by actions that are reasonably foreseeable as a result of the proposed action. Additional HCP/NCCP-covered species may be added as the HCP/NCCP is being developed. The HCP/NCCP will be coordinated with CDFG and will include any appropriate State listed species. The HCP/NCCP will address actions that are within

the land use authority of Placer County and are reasonably foreseeable as a result of the proposed action, including land use approvals that are related to entitlements. Additional activities may be added as the HCP/NCCP is developed. The HCP/NCCP will cover a cumulative effects boundary area that is reasonably foreseeable as a result of the proposed project and the future projects.

Conclusion

After reviewing the current status of the beetle, vernal pool fairy shrimp, and vernal pool tadpole shrimp, the environmental baselines for the area covered by this biological opinion, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that Route 65 Lincoln Bypass project, as proposed, is not likely to jeopardize the continued existence of these species. Although the proposed project is likely to affect designated critical habitat for the vernal pool fairy shrimp, the conservation measures that have been proposed by the project proponent are sufficient to offset the loss of designated critical habitat of the vernal pool fairy shrimp.

We base this determination for the vernal pool crustaceans on the understanding that the acquisition and conservation of at least 107.94 wetted acres of suitable vernal pool crustacean habitat, including 97.59 acres of existing vernal pool crustacean habitat and 10.35 acres of created vernal pool crustacean habitat, should offset the direct and indirect effects of the proposed action.

Critical habitat has been designated for both the vernal pool tadpole shrimp and the vernal pool fairy shrimp. Because no designated critical habitat for the vernal pool tadpole shrimp exists within the proposed action area, none will be affected. Approximately 1.6 to 2.3 percent of the existing Critical Habitat Unit 12 for the vernal pool fairy shrimp will be adversely affected by the proposed project. At least 78.78 wetted acres of vernal pool crustacean habitat will be protected in perpetuity within designated Critical Habitat Unit 12 for the vernal pool fairy shrimp. Due to the relatively small amount of affects on designated critical habitat in consort with conservation measures which will ultimately achieve an eighty percent rate of preservation of this habitat within Placer County, the Service concludes that the project will not destroy or adversely modify critical habitat.

INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take

that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by the FHWA so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The FHWA has a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA (1) fails to require any entity participating in the project to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

Valley Elderberry Longhorn Beetle

The Service anticipates incidental take of the beetle will be difficult to detect or quantify. The cryptic nature of these species and their relatively small body size make the finding of an injured or dead specimen unlikely. The species occurs in habitats that make them difficult to detect. Due to the difficulty in quantifying the number of valley elderberry longhorn beetles that will be taken as a result of the proposed project, the Service is quantifying take incidental to the project as all valley elderberry longhorn beetles inhabiting or otherwise utilizing the elderberry shrubs/savannas containing stems 1.0 inch or greater in diameter at ground level located within 20 feet of the centerline of the proposed alignment on the project site. Therefore, the proposed project may incidentally take all beetles inhabiting two elderberry shrubs, totaling three stems measuring between one and three inches in diameter, five stems measuring between three and five inches in diameter, and two stems measuring greater than five inches in diameter on the proposed project site.

Vernal Pool Tadpole Shrimp and Vernal Pool Fairy Shrimp

Construction activities associated with the proposed project will directly affect 26.941 acres of listed vernal pool crustacean habitat, including 23.589 acres of designated critical habitat for the vernal pool fairy shrimp. Construction activities associated with the proposed project will indirectly affect 20.957 acres of listed vernal pool crustacean habitat, including 17.124 acres of designated critical habitat for the vernal pool fairy shrimp. Therefore, the proposed project will result in take of listed vernal pool crustacean species. The Service anticipates incidental take of vernal pool tadpole shrimp and vernal pool fairy shrimp will be difficult to detect or quantify for the following reasons: the aquatic nature of the organisms and their relatively small body size make the finding of a dead specimen unlikely; losses may be masked by seasonal fluctuations in numbers and other causes; and the species occurs in habitat that makes them difficult to detect. Due to the difficulty in quantifying the number of vernal pool fairy shrimp and vernal pool tadpole shrimp that will be killed as a result of the proposed action, the Service is quantifying take incidental to the project as the number of acres of vernal pool crustacean habitat that will

become unsuitable for the listed species due to indirect affects as a result of the proposed project. Therefore, the Service estimates that all vernal pool fairy shrimp and vernal pool tadpole shrimp inhabiting 47.898 acres of vernal pool crustacean habitat will become harassed, harmed, injured, or killed, as a result of the proposed project.

Vernal Pool Fairy Shrimp Critical Habitat

Approximately 40.713 acres of vernal pool fairy shrimp designated Critical Habitat Unit 12 will be permanently lost or degraded due to construction activities associated with the implementation of the proposed project. This loss represents 1.6 to 2.3 percent of Unit 12, and 0.005 percent of all designated fairy shrimp critical habitat. The 78.78 acres of vernal pool crustacean habitat on the approximately 800-acre Rockwell-Mariner property is within designated vernal pool fairy shrimp Critical Habitat Unit 12, which represents approximately 2.5 percent of Unit 12, will be protected in perpetuity.

Upon implementation of the following reasonable and prudent measures, incidental take associated with the proposed project on the beetle and vernal pool crustaceans in the form of harm, harassment, or death from habitat loss or direct mortality will become exempt from the prohibitions described under section 9 of the Act for direct and indirect effects. The incidental take associated with the proposed project is hereby exempted from prohibitions of take under section 9 of the Act.

Effect of the Take

In the accompanying biological opinion, the Service has determined that this level of anticipated take is not likely to result in jeopardy to the beetle and listed vernal pool crustaceans. Approximately 40.173 acres of designated critical habitat for the vernal pool fairy shrimp will be adversely affected and/or permanently lost. The proposed conservation measures, however, are sufficient to offset the loss of this designated critical habitat.

Reasonable and Prudent Measures

The Service has determined that the following reasonable and prudent measures are necessary and appropriate to minimize the effects of the proposed project on the vernal pool tadpole shrimp and vernal pool fairy shrimp.

1. FHWA shall minimize the adverse effects of the proposed project on the beetle and vernal pool crustaceans.
2. FHWA shall minimize temporary and permanent losses and degradation of habitat of the beetle and vernal pool crustaceans, and, to the greatest extent practicable, restore these habitats.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the FHWA must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

1. The following terms and conditions implement reasonable and prudent measure number one (1):
 - a. The FHWA shall assure all conservation measures as proposed by the project proponent as described in the *Draft Mitigation and Monitoring Proposal for Route 65 Lincoln Bypass, Placer County, California* (LSA 2004c), on pages 56-59 of the *Route 65 Lincoln Bypass Biological Assessment* (LSA 2004a), the September 7, 2004, letter from FHWA to the Service, in the notes from the July 20, September 16, October 19, November 1, and November 5, 2004 meetings between the Service, FHWA, Caltrans, and other participants), and identified by the Service in the project description of our biological opinion are fully implemented.
 - b. FHWA shall assure the following "Best Management Practices" (BMPs) are implemented during project construction:
 - i. The project proponent shall include a copy of this biological opinion within its solicitations for construction of the proposed project, making the prime contractor responsible for implementing all requirements and obligations included within the project description of this biological opinion, and to educate and inform all other contractors involved in the project as to the requirements of the biological opinion. The project proponents shall make all applicable terms and conditions in this biological opinion a required item in all contracts for the project that are issued by the State to all contractors.
 - ii. At least 30 calendar days prior to initiating construction activities, the project proponents shall submit the names and curriculum vitae of the biological monitor(s) for the project.
 - iii. A Worker Environmental Awareness Training Program for construction personnel shall be conducted before the commencement of construction. The program shall provide workers with information on their responsibilities with regard to the listed vernal pool crustaceans and beetle, an overview of the life-history of these species, information on take prohibitions, and an explanation of the relevant terms and conditions of this biological opinion. Written documentation of the training must be submitted to the Sacramento Fish and Wildlife Office within three (3) working days of the completion of instruction.
 - iv. To ensure that the temporary loss of vernal pool crustacean habitat will be confined to the proposed project site, prior to groundbreaking, high-visibility fencing shall be placed along the boundaries of the construction zone to clearly

mark this zone and to prevent construction vehicles or personnel from straying onto adjacent off-site habitat. A Service-approved biologist shall assist in the identification of environmentally sensitive areas and direct the placement of high-visibility fencing on the project site. Such fencing will be inspected by the Resident Engineer and/or Construction Inspectors at the beginning of each work day and maintained in good condition. The fencing may be removed only when the construction of the project is completed.

- v. A Service-approved biologist shall conduct weekly inspections of the project site throughout the period that construction activities may affect adjacent vernal pool habitat. The biologist shall be on-call and available at all times for on-site inspection throughout the duration of project construction. The biologist, the Resident Engineer, and Construction Inspectors shall have the authority to halt any action that might result in take of listed species. If construction activities are halted under this authority, the Service and the CDFG shall be notified by telephone and letter within one (1) working day.
- vi. During construction operations, the number of access routes, number and size of staging areas, and the total area of the proposed project activity will be limited to the minimum necessary. Routes and boundaries will be clearly demarcated. Movement of heavy equipment to and from the project site will be restricted to established roadways to minimize habitat disturbance. The stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging areas and exclusive of the wetland avoidance areas. All fueling, cleaning, and maintenance of vehicles and other equipment will occur only within designated areas and at least 250 feet away from any wetland habitats. The applicant will ensure contamination of habitat does not occur during such operations. All workers will be informed of the importance of preventing spills and appropriate measures to take should a spill occur. Any spills or hazardous materials will be cleaned up immediately. Such spills will be reported in the post-construction compliance reports.
- vii. To control erosion during and after implementation of the project, the applicant will implement best management practices (BMPs), as identified by the Central Valley Regional Water Quality Control Board. Erosion control measures and BMPs, which retain soil or sediment, runoff from dust control, and hazardous materials on the construction site and prevent these from entering the vernal pool complexes, will be placed, monitored, and maintained throughout the construction operations. These measures and BMPs may include, but are not limited to, silt fencing, sterile hay bales, vegetative strips, hydroseeding, and temporary sediment disposal. The Stormwater Pollution Prevention Plan (SWPPP) described in the Description of the Proposed Action section of this Biological Opinion shall include these and any other measures necessary to prevent the discharge of contaminated runoff onto the adjacent offsite wetland habitats.

- viii. All heavy equipment, vehicles, and supplies will be stored at the designated staging area at the end of each work period. The stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging areas and exclusive of the open space/wetland preserve and offsite wetland avoidance areas. Staging areas for construction equipment will be located so that spills of oil, grease or other petroleum by-products will not be discharged into any watercourse or sensitive habitat. All fueling, cleaning, maintenance, and staging of vehicles and other equipment will occur only within designated areas and at least 250 feet away from the open space/wetland preserve and any off-site vernal pool crustacean habitats. All machinery will be properly maintained and cleaned to prevent spills and leaks. All workers will be informed of the importance of preventing spills and appropriate measures to take should a spill occur. Any spills or hazardous materials will be cleaned up immediately in accordance with applicable local, state and/or federal regulations. Such spills will be reported in the post-construction compliance reports.
 - c. If requested during or upon completion of construction activities, the on-site biologist or the applicant's representative shall accompany the Service or CDFG personnel on an on-site inspection to review project effects on the beetle and listed vernal pool crustaceans.
 - d. FHWA shall ensure the applicant complies with the *Reporting Requirements* of this biological opinion.
2. The following terms and conditions implement reasonable and prudent measure number two (2):
- a. Valley Elderberry Longhorn Beetle
 - i. The 2 elderberry shrubs, which are located within 20 feet of the centerline of the proposed alignment of the project and cannot be avoided, shall be transplanted to a Service-approved conservation area. Transplanting must occur while the elderberry plants are dormant, between November and the first two weeks of February, after they have lost their leaves. The Service will be consulted prior to transplantation and a Service-approved biologist will monitor the transplanting activities. These shrubs will be transplanted according to the Service's July 9, 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (Beetle Conservation Guidelines; Service 1999).
 - ii. To compensate for direct affects to the beetle, prior to ground breaking activities at the project site, the project proponents will establish 29 rooted elderberry seedlings and 29 associated native plants at a Service-approved conservation area.

- iii. The proposed conservation area is the 317-acre Aitken Ranch property, located west of the City of Lincoln in western Placer County (*see* page 53 of the Biological Assessment and page 76 of the MMP). The project applicant proposes to establish the two transplanted shrubs and the seedlings and plantings on this property. The minimum area required is 0.24 acre (10,440 square feet) to ensure that no more than five elderberry seedlings and five associated native plants are planted per 1,800 square feet. The conservation area shall be managed and monitored in perpetuity as outlined in the Beetle Conservation Guidelines (Service 1999). This includes the management and monitoring of the conservation area for either ten (10) consecutive years or seven (7) years over a 15-year period, with monitoring reports submitted for each monitoring year. Additionally, a management plan must be prepared which describes the long-term protection of this conservation area in order to protect the area in perpetuity as habitat for the beetle. Wildlands, Inc. will oversee the transplanting and long-term management and supervision of the conservation area.

b. Vernal Pool Crustaceans

- i. The project proponent has proposed to offset direct and indirect effects of vernal pool crustacean habitat loss through a combination of habitat preservation and creation offsite. Therefore, prior to ground-breaking, the applicant shall preserve in perpetuity at least 107.94 wetted acres, including 97.59 acres of existing and 10.35 acres of created, vernal pool crustacean habitat. The preservation of vernal pool crustacean habitat will be accomplished through the acquisition of specified properties, such as Aitken Ranch and the Rockwell-Mariner property in Placer County. Additional preservation will occur through the purchase of equivalent vernal pool habitat preservation credits commensurate with acreage commitment at the Bryte Ranch Conservation Bank in Sacramento County. The creation of vernal pool crustacean habitat will occur on Aitken Ranch.
- ii. At least 120 days prior to construction, the applicant shall submit documentation of the preservation habitat including conservation easements, management plans, funding instruments, easement holders, etc. for Service approval. Prior to groundbreaking, the project proponent shall provide documentation to the Service demonstrating the dedication of remaining credits commensurate with acreage commitment at the Bryte Ranch Conservation Bank.
- iii. The uppermost layer of soil in seasonally inundated habitat may contain cysts of listed vernal pool crustaceans. Therefore, before these wetlands are filled, the top layer of soil shall be made available prior to the start of the project grading to a vernal pool creation bank that requests it, with Service approval, for inoculating newly created vernal pools in western Placer County. The applicant will attempt to identify potential recipient sites. Soils stockpiled for this

purpose will be shielded from rain with a water-proof cover to ensure that it remains completely dry.

- c. After construction activities are complete, any temporary fill or construction debris shall be removed and disturbed areas restored to their pre-project conditions.
- d. The project proponents will maintain and monitor the project site for one (1) year following the completion of construction and restoration activities. Monitoring reports documenting the restoration effort should be submitted to the Service upon the completion of the restoration implementation and one (1) year after the restoration implementation. Monitoring reports should include photo-documentation, when restoration was completed, what materials were used, specified plantings, and justifications of any substitutions to the Service-recommended guidelines.

Reporting Requirements

Any contractor or employee who, during routine operations and maintenance activities, inadvertently kills or injures a listed wildlife species must immediately report the incident to their representative. The Service is to be notified within one (1) working day of the finding of any dead or injured listed wildlife species or any unanticipated take of the species addressed in this biological opinion. The Service contact persons for this are the Division Chief, Endangered Species Division (Central Valley) at (916) 414-6600 and Resident Agent-in-charge Scott Heard at (916) 414-6660.

The Service-approved biologist shall notify the Service immediately if any listed species are found on site, and shall submit a report including the date(s), location(s), habitat description, and any corrective measures taken to protect the species found. The Service-approved biologist shall submit locality information to the CDFG, using completed California Native Species Field Survey Forms, no more than 30 calendar days after completing the last field visit of the project site. Each form shall have an accompanying scale map of the site, such as a photocopy of a portion of the appropriate 7.5-minute U.S. Geological Survey map and shall provide at least the following information: township, range, and quarter section; name of the 7.5-minute or 15-minute quadrangle; dates (day, month, year) of field work; number of individuals and life stage, where appropriate, encountered; and a description of the habitat by community-vegetation type. The Service-approved biologist shall also provide a high quality copy of this information to the staff zoologist, California Department of Fish and Game, 1807 13th Street, Sacramento, California, 95814, phone (916) 445-0045.

The Sacramento Fish and Wildlife Office is to be notified within one (1) working day of the finding of any dead or injured listed wildlife species or any unanticipated take of the species addressed in this biological opinion. Any other federally listed or candidate species found on or adjacent to the project area must be reported within three working days of its finding. The Service contact person for this is the Chief, Endangered Species Division at (916) 414-6620.

Any dead or severely injured valley elderberry longhorn beetles found (adult, pupae, or larvae) shall be deposited in the Entomology Department of the California Academy of Sciences. The

Academy's contact in the Senior Curator of Coleoptera at (415) 750-7239. All observations of valley elderberry longhorn beetle—live, injured, or dead—or fresh beetle exit holes shall be recorded on California Natural Diversity Data Base (CNDDDB) field sheets and sent to California Department of Fish and Game, Wildlife Habitat Data Analysis Branch, 1416 Ninth Street, Sacramento, California 95814.

The project proponents shall submit a post-construction compliance report prepared by the monitoring biologists to the Sacramento Fish and Wildlife Office within 30 calendar days of the completion of construction activity. This report shall detail the following: (1) dates that construction occurred; (2) pertinent information concerning the success of the project in meeting conservation measures; (3) an explanation of failure to meet such measures, if any and recommendations for remedial actions and request for approval from the Service, if necessary; (4) known project effects on beetles and vernal pool crustaceans; (5) occurrence of incidental take of beetles and/or vernal pool crustaceans, if any; and (6) other pertinent information.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

1. FHWA should work with the Service to address significant, unavoidable environmental effects resulting from projects proposed by non-Federal parties.
2. FHWA should assist the Service in the implementation of recovery efforts for the beetle.
3. As recovery plans for listed vernal pool crustacean species are developed, FHWA should assist the Service in their implementation.
4. FHWA, in partnership with the Service, should develop maintenance guidelines for FHWA projects that will reduce adverse effects of routine maintenance on the beetle and vernal pool crustaceans and their habitats. Such action may contribute to the delisting and recovery of these species by preventing degradation of existing habitat and increasing the amount and stability of suitable habitat.

In order for the Service to be kept informed of actions minimizing or avoiding effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION--CLOSING STATEMENT

This concludes formal consultation with FHWA on the proposed Route 65 Lincoln Bypass project. As provided in 50 CFR §402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

Please contact this office at (916) 414-6600, if you have any questions regarding the proposed Route 65 Lincoln Bypass project.

Sincerely,



Kenneth Sanchez
Acting Field Supervisor

cc:

ARD (ES), Portland, OR

Mr. Thomas Cavanaugh, US Army Corps of Engineers, Sacramento, CA

Mr. Gary Sweeten, Federal Highway Administration, Sacramento, CA

Mr. Chris Collison, California Department of Transportation, Sacramento, CA

Mr. Kent Smith, California Dept. of Fish and Game, Rancho Cordova, CA

Ms. Celia McAdam, Placer County Transportation Planning Agency, Auburn, CA

Tables 1, 2, and 3 – In Text

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In reply refer to:
1-1-06-F-0071

MAR 21 2006

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Federal Highway Administration
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Subject: Amendment to the Biological Opinion for the Lincoln Bypass Project,
Placer County, California (Service File Number 1-1-04-F-0119).

Dear Mr. Fong:

This is in response to a January 4, 2006, letter from the Federal Highway Administration (FHWA) to the U.S. Fish and Wildlife Service (Service), requesting reinitiation of formal consultation on the Lincoln Bypass Project (Service file number 1-1-04-F-0119) due to changes in the amount of vernal pool crustacean habitat present on the Rockwell-Mariner property. The Service received your request for reinitiation of consultation on January 5, 2006. At issue are the effects of the project on the federally threatened vernal pool fairy shrimp (*Branchinecta lynchii*), the endangered vernal pool tadpole shrimp (*Lepidurus packardii*) (vernal pool crustaceans), the threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), and proposed critical habitat for the vernal pool fairy shrimp. This letter revises the conservation measures for the vernal pool crustaceans, the effects of the proposed action on vernal pool crustaceans, the conclusion for vernal pool crustaceans, and the terms and conditions and amends these changes to the project's biological opinion, as appropriate. This amended biological opinion is issued under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

The findings and recommendations in this consultation are based on: (1) the January 4, 2006, letter from the FHWA to the Service, requesting an amendment to the project's biological opinion; (2) a December 21, 2005, letter from the California Department of Transportation to the Service outlining the new information related to the amount of vernal pool crustacean habitat present on the Rockwell-Mariner property; (3) an August 2005, Mariner Property, Delineation of Jurisdictional Wetlands and Other Waters, prepared by LSA Associates, Inc.; (4) the Service's February 5, 2005, biological opinion on the Lincoln Bypass Project; and (5) other information available to the Service.



Received

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FHWA

Note: On August 11, 2005, the Service re-designated critical habitat for the vernal pool tadpole shrimp and the vernal pool fairy shrimp. The re-designation of critical habitat resulted in a decrease in the amount of designated critical habitat for the vernal pool fairy shrimp in Placer County. No designated critical habitat for vernal pool tadpole shrimp is present in Placer County. As a result of the re-designation of critical habitat for the vernal pool fairy shrimp, the proposed project will result potential effects to less designated critical habitat (12.61 acres) than analyzed in the February 5, 2005, biological opinion (23.1 acres). However, we have not amended the sections of the biological opinion that address vernal pool fairy shrimp critical habitat, as our determination regarding the effects of the proposed action on designated critical habitat for the vernal pool fairy shrimp has not changed as a result of the new designation.

Therefore, the February 5, 2005, biological opinion is now amended to read:

Pages 5-6: Change Conservation Measures (Vernal Pool Crustacean Species) from:

Vernal Pool Crustacean Species

1. Habitat Preservation/Creation

Approximately 40.50 wetted acres of vernal pool crustacean habitat will be directly (26.94 wetted acres) and indirectly (13.56 wetted acres) affected by the proposed project (refer to Table 2). The project applicant has proposed to compensate acre for acre for the loss of function and value of these vernal pool crustacean habitats through the preservation of vernal pool crustacean habitat, located primarily in Placer County. Direct affects will be compensated through a combination of creation and preservation of vernal pool crustacean habitat. Indirect affects will be compensated through the preservation of vernal pool crustacean habitat. Therefore, prior to ground-breaking, the applicant will preserve in perpetuity approximately 97.59 wetted acres of existing vernal pool crustacean habitat, including 11.06 wetted acres on Aitken Ranch, approximately 79 wetted acres on the Rockwell-Mariner property, and 7.53 wetted acres at the Bryte Ranch Conservation Bank. In addition, the applicant will create approximately 10.35 wetted acres of vernal pool crustacean habitat at Aitken Ranch, which will be protected in perpetuity. Vernal pool crustacean habitat preservation and creation will be accomplished through the acquisition of specified properties, such as Aitken Ranch and the Rockwell-Mariner property in Placer County, and the purchase of vernal pool crustacean habitat credits Bryte Ranch Conservation Bank in Sacramento County (refer to Table 3).

Table 2: Proposed Compensation for Vernal Pool Crustacean Habitat for the Route 65 Lincoln Bypass Project, Placer County, California

	Acreage Affected	Acres of Preservation	Acres of Creation
Direct Total	26.94	70.47	10.35
Indirect Total	13.56	27.12	--
TOTAL	40.50	97.59	10.35

Table 3: Proposed Conservation Areas to Create and Preserve Vernal Pool Habitat in Perpetuity for the Route 65 Lincoln Bypass, Placer County

	Aitken Ranch (in acres)	Rockwell- Mariner (in acres)	Bryte Ranch (in acres)	TOTAL ACREAGE
Preservation	11.06	~79.00	7.53	97.59
Creation	10.35	--	--	10.35
TOTAL	21.41	~79.00	7.53	107.94

To:

Vernal Pool Crustacean Habitat

1. Habitat Preservation/Creation

Approximately 40.50 wetted acres of vernal pool crustacean habitat will be directly (26.94 wetted acres) and indirectly (13.56 wetted acres) affected by the proposed project (refer to Table 2). The project applicant has proposed to compensate for the loss of function and value of these vernal pool crustacean habitats through the preservation of vernal pool crustacean habitat, located primarily in Placer County. Direct affects will be compensated through a combination of creation and preservation of vernal pool crustacean habitat. Indirect affects will be compensated through the preservation of vernal pool crustacean habitat. Therefore, prior to ground-breaking, the applicant will preserve in perpetuity approximately 61.81 wetted acres of existing vernal pool crustacean habitat, including 11.06 wetted acres on Aitken Ranch, approximately 43.22 wetted acres on the Rockwell-Mariner property, and 7.53 wetted acres at the Bryte Ranch Conservation Bank. In addition, the applicant will create approximately 10.35 wetted acres of vernal pool crustacean habitat at Aitken Ranch, which will be protected in perpetuity. Vernal pool crustacean habitat preservation and creation will be accomplished through the acquisition of specified properties, such as Aitken Ranch and the Rockwell-Mariner property in Placer County, and the purchase of vernal pool crustacean habitat credits at Bryte Ranch Conservation Bank in Sacramento County (refer to Table 3).

Table 2: Proposed Compensation for Vernal Pool Crustacean Habitat for the Route 65 Lincoln Bypass Project, Placer County, California

	Acreage Affected	Acres of Preservation	Acres of Creation
Direct Total	26.94	48.25	10.35
Indirect Total	13.56	13.56	--
TOTAL	40.50	61.81	10.35

Table 3: Proposed Conservation Areas to Create and Preserve Vernal Pool Habitat in Perpetuity for the Route 65 Lincoln Bypass, Placer County

	Aitken Ranch (in acres)	Rockwell- Mariner (in acres)	Bryte Ranch (in acres)	TOTAL ACREAGE
Preservation	11.06	43.22	7.53	61.81
Creation	10.35	--	--	10.35
TOTAL	21.41	43.22	7.53	72.16

Page 28-29, Effects of the Proposed Action: Change Habitat Preservation from:Habitat Preservation

To offset the permanent loss of habitat for listed vernal pool crustaceans, the applicant has proposed such conservation measures as the creation, acquisition, permanent preservation, and management of up to 107.94 wetted acres of vernal pool crustacean habitat. One of the proposed preservation areas includes the 317-acre Aitken Ranch. The 317-acre Aitken Ranch Mitigation Site was established by Wildlands, Inc., a private habitat development company, to preserve and create habitat to offset the habitat losses which result from development in Placer County. This property has approximately 21.16 wetted acres of created or preserved vernal pools and vernal swales, in addition to other habitat features, and vernal pool fairy shrimp are known to occur on this property. Caltrans purchased these habitat preservation and creation values in advance of environmental document approval to ensure that these resources are protected in perpetuity (Caltrans 2003).

The project proponent has also proposed to acquire the approximately 800-acre Rockwell-Mariner property, located south of Wise Road and west of Dowd Road, northwest of the City of Lincoln. This property has an estimated 79 wetted acres of vernal pool crustacean habitat, all within designated critical habitat for the vernal pool fairy shrimp. This figure has not been confirmed by ground truth techniques or delineation. The presence of listed vernal pool crustaceans are inferred within suitable habitat along the proposed project alignment, including the Rockwell-Mariner property (LSA 2004c). In addition, the project proponent has further proposed to purchase the equivalent of 7.53 acres of vernal pool habitat preservation credits at Bryte Ranch Conservation Bank located in Sacramento County. Bryte Ranch and the proposed project site are located within the same Southeastern Sacramento Valley Vernal Pool Region, as defined in the Service's *Draft Recovery Plan for Vernal Pool Ecosystems of California and*

Southern Oregon (2004). The vernal pool crustacean habitats found on the two sites, however, are not comparable in quality and characteristics. Vernal pool crustacean habitat located on Bryte Ranch is qualitatively different from that found on the proposed project site for several reasons, including: 1) Bryte Ranch is located outside of designated critical habitat for the vernal pool fairy shrimp; 2) the soil types found on Bryte Ranch are different from those found on the proposed project site (LSA 2004c); 3) Bryte Ranch is located on a different geo-morphological surface than the proposed project site; and 4) within this Vernal Pool Region, Bryte Ranch is located within the Mather Core Area and the proposed project site is located within the Western Placer County Core Area. According to the Draft Recovery Plan (Service 2004), these core areas were established based on the understanding that these support viable populations of vernal pool species and/or will contribute to the connectivity of habitat and, thus, the increase of dispersal opportunities between populations. The preservation and enhancement of each core area is important to maintain and possibly expand the distribution of vernal pool species range-wide (Service 2004).

Of the 107.94 wetted acres of vernal pool crustacean habitat that the project proponent has proposed to protect in perpetuity, approximately 97.59 of this is existing habitat, and approximately 90.06 acres are located in western Placer County. Of this existing habitat that is proposed to be protected, approximately 81 percent, or approximately 79 acres, is located within designated critical habitat for the vernal pool fairy shrimp in western Placer County. The permanent protection of 90.06 acres of existing vernal pool crustacean habitat in western Placer County will achieve approximately a 69 percent rate of vernal pool crustacean habitat preservation in western Placer County, and likewise, represent approximately a 31 percent rate of vernal pool crustacean habitat loss therein.

To:

Habitat Preservation

To offset the permanent loss of habitat for listed vernal pool crustaceans, the applicant has proposed such conservation measures as the creation, acquisition, permanent preservation, and management of 72.16 wetted acres of vernal pool crustacean habitat. One of the proposed preservation areas includes the 317-acre Aitken Ranch. The 317-acre Aitken Ranch Mitigation Site was established by Wildlands, Inc., a private habitat development company, to preserve and create habitat to offset the habitat losses which result from development in Placer County. This property has approximately 21.16 wetted acres of created or preserved vernal pools and vernal swales, in addition to other habitat features, and vernal pool fairy shrimp are known to occur on this property. Caltrans purchased these habitat preservation and creation values in advance of environmental document approval to ensure that these resources are protected in perpetuity (Caltrans 2003).

The project proponent has also proposed to acquire the approximately 800-acre Rockwell-Mariner property, located south of Wise Road and west of Dowd Road, northwest of the City of Lincoln. This property has an estimated 43.22 wetted acres of vernal pool crustacean habitat. The presence of listed vernal pool crustaceans are inferred within suitable habitat along the

proposed project alignment, including the Rockwell-Mariner property (LSA 2004c). In addition, the project proponent has further proposed to purchase the equivalent of 7.53 acres of vernal pool habitat preservation credits at Bryte Ranch Conservation Bank located in Sacramento County. Bryte Ranch and the proposed project site are located within the same Southeastern Sacramento Valley Vernal Pool Region, as defined in the Service's *Draft Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (2004). The vernal pool crustacean habitats found on the two sites, however, are not comparable in quality and characteristics. Vernal pool crustacean habitat located on Bryte Ranch is qualitatively different from that found on the proposed project site for several reasons, including: 1) Bryte Ranch is located outside of designated critical habitat for the vernal pool fairy shrimp; 2) the soil types found on Bryte Ranch are different from those found on the proposed project site (LSA 2004c); 3) Bryte Ranch is located on a different geo-morphological surface than the proposed project site; and 4) within this Vernal Pool Region, Bryte Ranch is located within the Mather Core Area and the proposed project site is located within the Western Placer County Core Area. According to the Draft Recovery Plan (Service 2004), these core areas were established based on the understanding that these support viable populations of vernal pool species and/or will contribute to the connectivity of habitat and, thus, the increase of dispersal opportunities between populations. The preservation and enhancement of each core area is important to maintain and possibly expand the distribution of vernal pool species range-wide (Service 2004).

Of the 72.16 wetted acres of vernal pool crustacean habitat that the project proponent has proposed to protect in perpetuity, approximately 61.81 acres of this is existing habitat, and approximately 54.28 acres are located in western Placer County. None of the existing habitat that is proposed for protection is located within designated critical habitat for the vernal pool fairy shrimp in western Placer County. The permanent protection of 54.28 acres of existing vernal pool crustacean habitat in western Placer County will achieve approximately a 56 percent rate of vernal pool crustacean habitat preservation in western Placer County, and likewise, represent approximately a 44 percent rate of vernal pool crustacean habitat loss therein. The Service's *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Portland, Oregon* (2006), recommends a preservation rate of at least 85 percent in the western Placer County core area. The proposed project does not, on its own, achieve the recommended recovery goal for listed vernal pool species in the region. The Service is concerned that the recovery of the vernal pool fairy shrimp and vernal pool tadpole shrimp may not occur unless this rate of loss is addressed by other means.

Page 33: Change Conclusion (Paragraphs 1 and 2) from:

Conclusion

After reviewing the current status of the beetle, vernal pool fairy shrimp, and vernal pool tadpole shrimp, the environmental baselines for the area covered by this biological opinion, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that Route 65 Lincoln Bypass project, as proposed, is not likely to jeopardize the continued existence of these species. Although the proposed project is likely to affect designated critical habitat for the vernal pool fairy shrimp, the conservation measures that have been proposed by the project

proponent are sufficient to offset the loss of designated critical habitat of the vernal pool fairy shrimp.

We base this determination for the vernal pool crustaceans on the understanding that the acquisition and conservation of at least 107.94 wetted acres of suitable vernal pool crustacean habitat, including 97.59 acres of existing vernal pool crustacean habitat and 10.35 acres of created vernal pool crustacean habitat, should offset the direct and indirect effects of the proposed action.

To:

Conclusion

After reviewing the current status of the beetle, vernal pool fairy shrimp, and vernal pool tadpole shrimp, the environmental baselines for the area covered by this biological opinion, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that Route 65 Lincoln Bypass project, as proposed, is not likely to jeopardize the continued existence of these species. Although the proposed project is likely to affect designated critical habitat for the vernal pool fairy shrimp, the conservation measures that have been proposed by the project proponent are sufficient to offset the loss of designated critical habitat for the vernal pool fairy shrimp.

We base this determination for the vernal pool crustaceans on the understanding that the acquisition and conservation of at least 72.16 wetted acres of suitable vernal pool crustacean habitat, including 61.81 acres of existing vernal pool crustacean habitat and 10.35 acres of created vernal pool crustacean habitat, should offset the direct and indirect effects of the proposed action, though not at the preservation ratios suggested in the Service's *Draft Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (2004).

Page 39, Terms and Conditions: Change Vernal Pool Crustaceans (i) from:

- i. The project proponent has proposed to offset direct and indirect effects of vernal pool crustacean habitat loss through a combination of habitat preservation and creation offsite. Therefore, prior to ground-breaking, the applicant shall preserve in perpetuity at least 107.94 wetted acres, including 97.59 acres of existing and 10.35 acres of created, vernal pool crustacean habitat. The preservation of vernal pool crustacean habitat will be accomplished through the acquisition of specified properties, such as Aitken Ranch and the Rockwell-Mariner property in Placer County. Additional preservation will occur through the purchase of equivalent vernal pool habitat preservation credits commensurate with acreage commitment at the Bryte Ranch Conservation Bank in Sacramento County. The creation of vernal pool crustacean habitat will occur on Aitken Ranch.

To:

- i. The project proponent has proposed to offset direct and indirect effects of vernal pool

crustacean habitat loss through a combination of habitat preservation and creation offsite. Therefore, prior to ground-breaking, the applicant shall preserve in perpetuity at least 72.16 wetted acres of vernal pool crustacean habitat, including 61.81 acres of existing and 10.35 acres of created, vernal pool crustacean habitat. The preservation of vernal pool crustacean habitat will be accomplished through the acquisition of specified properties, such as Aitken Ranch and the Rockwell-Mariner property in Placer County. Additional preservation will occur through the purchase of equivalent vernal pool habitat preservation credits commensurate with acreage commitment at the Bryte Ranch Conservation Bank in Sacramento County. The creation of vernal pool crustacean habitat will occur on Aitken Ranch.

The other portions of the project description, status of the species, environmental baseline, effects analysis, incidental take statement, reasonable and prudent measures, terms and conditions, and conservation recommendations in the February 2, 2005, biological opinion remains the same.

This concludes formal consultation with the FHWA on the Proposed Route 65 Lincoln Bypass project. As provided in 50 CFR §402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

Please contact Mary Hammer or Holly Herod, Sacramento Valley Branch Chief, at (916) 414-6645 if you have questions regarding this amendment to the biological opinion for Route 65 Lincoln Bypass project.

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth Sanchez", written in a cursive style.

Kenneth Sanchez
Acting Field Supervisor

cc:

ARD-ES, Portland Oregon

Mr. Kent Smith, California Department of Fish and Game, Rancho Cordova, California

Mr. Tim Vendlinski, Environmental Protection Agency, San Francisco, California

Ms. Katrina Pierce, California Department of Transportation, Marysville, California

LITERATURE CITED

California Department of Transportation. 2003. Indirect and Cumulative Impact Analysis for Lincoln Bypass—Route 65, Placer County, California. May. 34 pp. + Attachments.

LSA Associates, Inc., 2004c. Draft Mitigation and Monitoring Proposal, Route 65 Lincoln Bypass, Placer County, California. November. Prepared for the U.S. Department of Transportation. 102 pp. + Appendices.

U. S. Fish and Wildlife Service. 2006. Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Portland, Oregon. xxii + 574 pages.



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In reply refer to:
1-1-07-F-0324

SEP 24 2007

Ms. Katrina C. Pierce
Chief, North Region Environmental Planning
California Department of Transportation
District 3
703 B Street
P.O. Box 911
Marysville, California 95901-0911

Subject: Second amendment to the Biological Opinion for the Lincoln Bypass Project, Placer County, California (Service File Number 1-1-04-F-0119).

Dear Ms. Pierce:

This is in response to an August 10, 2007, letter from the California Department of Transportation (CalTrans) to the U.S. Fish and Wildlife Service (Service), requesting reinitiation of formal consultation on the Lincoln Bypass Project (Service file number 1-1-04-F-0119). The original biological opinion was issued on February 2, 2005. A subsequent amendment to the formal consultation was issued on March 21, 2006 (Service file number 1-1-06-F-0071). At issue are the effects of the project on the federally threatened vernal pool fairy shrimp (*Branchinecta lynchii*), the endangered vernal pool tadpole shrimp (*Lepidurus packardii*) (collectively, vernal pool crustaceans), the endangered Conservancy fairy shrimp (*Branchinecta conservatio*), the threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), and proposed critical habitat for the vernal pool fairy shrimp. This letter revises the conservation measures for the vernal pool crustaceans, the status of the species for the vernal pool fairy shrimp critical habitat, the environmental baseline for the vernal pool fairy shrimp critical habitat, the effects of the proposed action on vernal pool crustaceans, the conclusion for vernal pool crustaceans, and the terms and conditions and amends these changes to the project's biological opinion, as appropriate. This amended biological opinion is issued under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

The findings and recommendations in this consultation are based on: (1) the February 2, 2005, biological opinion; (2) the March 21, 2006, amendment; (3) an April 17, 2007, letter from the Service to Caltrans requesting reinitiation on the project due to changes in the conservation measures; (4) a June 13, 2007, meeting between the Service and CalTrans to discuss these



changes; (5) the June 2007 Mitigation and Monitoring Proposal prepared by CalTrans; (6) the August 10, 2007, reinitiation request letter from CalTrans; and (7) other information available to the Service.

The Conservancy fairy shrimp was not addressed in the February 2, 2005, biological opinion or the March 21, 2006, first amendment because this species was not known to occur in the area at that time, and was not considered to be present. In March 2007, one individual adult Conservancy fairy shrimp was found at the Wildlands Mariner Conservation Bank in western Placer County. This species is typically found in vernal pools that are deeper, larger, colder, and more turbid than the vernal pools typically found in Placer County, and generally occupied pools will have tens or hundreds of individual Conservancy fairy shrimp. The closest occurrence of Conservancy fairy shrimp to the project site beyond the Mariner Conservation Bank is approximately 11 miles to the northwest of the northern terminus of the proposed project in Yuba County (CNDDDB 2007). This species usually does not co-occur in the same pools as vernal pool fairy shrimp or vernal pool tadpole shrimp, which are known to occur in and around the action area, but may occur sympatrically in different pools in the vicinity of these pools. The Service concurs that the proposed project may affect, but is not likely to adversely affect the Conservancy fairy shrimp because it is unlikely this species occupies the pools within the action area. CalTrans proposes to complete one dry season crustacean survey of a subset of the vernal pools, "that are similar in character to those known to support the endangered Conservancy fairy shrimp that has recently been documented in Placer County" that will be directly and indirectly affected by the proposed project, and will submit the results of this survey to the Service prior to groundbreaking within 250 feet of vernal pool features within that subset on the proposed project site.

The following changes are added to the Consultation History of the February 2, 2005, biological opinion:

December 21, 2005: CalTrans sent a letter to the Service outlining new information related to the amount of vernal pool crustacean habitat present on the Rockwell-Mariner property.

January 4, 2006: The Federal Highway Administration (FHWA) sent a letter to the Service requesting an amendment to the biological opinion.

March 21, 2006: The Service issued an amendment to the biological opinion.

April 17, 2007: The Service sent a letter outlining changes in the proposed conservation measures and requested FHWA reinstate formal consultation to address the changes in the proposed compensation.

June 13, 2007: The Service, FHWA, and CalTrans met to discuss changes to the project description and conservation measures.

August 10, 2007: The Service received the reinitiation request and supporting information from CalTrans.

The following changes amend the March 21, 2006, amendment:

Change Proposed Conservation Measures (Vernal Pool Crustacean Species) from:

Vernal Pool Crustacean Habitat

1. Habitat Preservation/Creation

Approximately 40.50 wetted acres of vernal pool crustacean habitat will be directly (26.94 wetted acres) and indirectly (13.56 wetted acres) affected by the proposed project (refer to Table 2). The project applicant has proposed to compensate for the loss of function and value of these vernal pool crustacean habitats through the preservation of vernal pool crustacean habitat, located primarily in Placer County. Direct affects will be compensated through a combination of creation and preservation of vernal pool crustacean habitat. Indirect affects will be compensated through the preservation of vernal pool crustacean habitat. Therefore, prior to ground-breaking, the applicant will preserve in perpetuity approximately 61.81 wetted acres of existing vernal pool crustacean habitat, including 11.06 wetted acres on Aitken Ranch, approximately 43.22 wetted acres on the Rockwell-Mariner property, and 7.53 wetted acres at the Bryte Ranch Conservation Bank. In addition, the applicant will create approximately 10.35 wetted acres of vernal pool crustacean habitat at Aitken Ranch, which will be protected in perpetuity. Vernal pool crustacean habitat preservation and creation will be accomplished through the acquisition of specified properties, such as Aitken Ranch and the Rockwell-Mariner property in Placer County, and the purchase of vernal pool crustacean habitat credits at Bryte Ranch Conservation Bank in Sacramento County (refer to Table 3).

Table 2: Proposed Compensation for Vernal Pool Crustacean Habitat for the Route 65 Lincoln Bypass Project, Placer County, California

	Acreage Affected	Acres of Preservation	Acres of Creation
Direct Total	26.94	48.25	10.35
Indirect Total	13.56	13.56	--
TOTAL	40.50	61.81	10.35

Table 3: Proposed Conservation Areas to Create and Preserve Vernal Pool Habitat in Perpetuity for the Route 65 Lincoln Bypass, Placer County

	Aitken Ranch (in acres)	Rockwell- Mariner (in acres)	Bryte Ranch (in acres)	TOTAL ACREAGE
Preservation	11.06	43.22	7.53	61.81
Creation	10.35	--	--	10.35
TOTAL	21.41	43.22	7.53	72.16

To:

Vernal Pool Crustacean Habitat

2. Habitat Preservation/Creation

Approximately 41.49 wetted acres of vernal pool crustacean habitat will be directly (26.80 wetted acres) and indirectly (14.69 wetted acres) affected by the proposed project (refer to Table 2). The project applicant has proposed to compensate for the loss of function and value of these vernal pool crustacean habitats through the preservation of vernal pool crustacean habitat, located entirely within Placer County. Direct affects will be compensated through a combination of creation and preservation of vernal pool crustacean habitat. Indirect effects will be compensated through the preservation of vernal pool crustacean habitat. Therefore, prior to ground-breaking, the applicant will preserve in perpetuity approximately 63.74 wetted acres of existing vernal pool crustacean habitat, including 11.06 wetted acres on Aitken Ranch, 7.53 wetted acres at the Orchard Creek Conservation Bank, 31.15 acres at Rockwell Ranch, and 14.0 acres at the Mariner Ranch Conservation Bank. In addition, the applicant will create approximately 10.72 wetted acres of vernal pool crustacean habitat at Aitken Ranch, which will be protected in perpetuity. Vernal pool crustacean habitat preservation and creation will be accomplished through the acquisition of land at Aitken Ranch and the Rockwell property, and the purchase of vernal pool crustacean habitat credits at the Orchard Creek and Mariner Ranch Conservation Banks (refer to Table 3).

Table 2: Proposed Compensation for Vernal Pool Crustacean Habitat for the Route 65 Lincoln Bypass Project, Placer County, California

	Acreage Affected	Acres of Preservation	Acres of Creation
Direct Total	26.80	63.74	10.72
Indirect Total	14.69		
TOTAL	41.49	63.74	10.72

Table 3: Proposed Conservation Areas to Create and Preserve Vernal Pool Habitat in Perpetuity for the Route 65 Lincoln Bypass, Placer County, California

	Aitken Ranch (in acres)	Rockwell Property (in acres)	Mariner Ranch (in acres)	Orchard Creek (in acres)	TOTAL ACREAGE
Preservation	11.06	31.15	14.0	7.53	63.74
Creation	10.72	--	--	--	10.72
TOTAL	21.78	31.15	14.0	7.53	74.46

Table 4: Final Compensation Totals for the Route 65 Lincoln Bypass, Placer County, California

Final Compensation	2005 Original Biological Opinion	2006 Amendment	2007 Amendment
Preservation	97.59	61.81	63.74
Creation	10.35	10.35	10.72
TOTAL	107.94	72.16	74.46

The following is added to the Status of the Species – Vernal Pool Fairy Shrimp Critical Habitat (between the first and second paragraph) of the February 2, 2005, biological opinion:

In 2005, upon reevaluation of economic exclusions to the original August 6, 2003 critical habitat rule, the Service revised this original designation to reduce the total of designated critical habitat to 858,846 acres (70 FR 46924). In 2006, the Service subsequently published a species-specific critical habitat rule, which designated 597,821 acres of vernal pool fairy shrimp critical habitat, of which 2,580 acres (Unit 12) are within Placer County (71 FR 7118).

Status of the Species – Vernal Pool Fairy Shrimp Critical Habitat: Change from:

The proposed project lies within the Western Placer County Unit (Unit 12) of critical habitat for the vernal pool fairy shrimp. This 32,134-acre critical habitat unit forms one of the remaining large vernal pool complex areas in the Southeastern Sacramento Valley Vernal Pool Region (Keller-Wold *et al.* 1998). This unit generally occurs in western Placer County, immediately north of the Sacramento County line, north of the City of Roseville, and northeast of the City of Rocklin (Service 2003). The northern boundary occurs just north of the City of Lincoln. This unit occurs mostly west of SR 65.

Unit 12 contains numerous occurrences of the vernal pool fairy shrimp (CNDDDB 2004) and is considered essential for the conservation of the species. Vernal pool fairy shrimp within this unit occur in both Northern Hardpan and Northern Volcanic Mudflow vernal pools as described by

Sawyer and Keeler-Wolfe (1995). Unit 12 also contains vernal pool fairy shrimp found in vernal pools on Exchequer soils on the Mehrten geologic formation, a rare type of Northern Volcanic Mudflow vernal pool which has been reduced to only a few acres within Placer County (Service 2003). These pools are generally short-lived and do not provide habitat for most other species of fairy shrimp (CNDDDB 2004).

This unit contains 70 percent of the remaining vernal pool habitats in Placer County. Furthermore, this unit includes a large number of conservation areas established specifically to contribute to the recovery of vernal pool fairy shrimp. These protected areas include the Ahart Preserve and the Orchard Creek Conservation Bank. The Ahart Preserve is one of the few remaining examples of Northern Volcanic Mudflow vernal pools in the region (criterion 2). The 632.2-acre Orchard Creek Conservation Bank contains approximately 43.14 wetted acres of vernal pool crustacean habitat. Additional smaller preserves that protect vernal pool habitat in and around the cities of Lincoln and Roseville have also been established within this unit. All in all, approximately 20 percent of all habitat compensation areas established for the long-term protection of the vernal pool fairy shrimp is found in this unit. In addition, Placer County is currently developing a Habitat Conservation Plan (HCP) for the conservation of vernal pool fairy shrimp in this area; a 157-acre WRP easement for the protection of wetland resources occurs in this area.

The proposed alignment of the SR 65 Bypass project is located within the northern third of Unit 12, generally skirting along the perimeter of large, contiguous blocks of critical habitat (LSA 2004b). The proposed project action area, consisting of the project footprint and 250 feet or greater on either side of the footprint, includes approximately 519 acres of designated critical habitat for the vernal pool fairy shrimp, or 1.6 percent of Unit 12 (LSA 2004b). Approximately 47 percent of the proposed project alignment extends through or abuts designated critical habitat for the vernal pool fairy shrimp (LSA 2004b). Furthermore, 31.8 percent of proposed project's study area, which comprises approximately 5,122 acres encompassing the areas of and around six proposed alignments including the preferred alternative, consists of upland grasslands interspersed with Northern Hardpan and Northern Volcanic Mudflow vernal pool complexes (LSA 2004a), including vernal pools situated on the rare Exchequer soils of the Exchequer-Rock Outcrop Complex and the Inks-Exchequer Complex (LSA 2004a). The portions of Unit 12 located within the proposed project action area contain all of the constituent elements of vernal pool fairy shrimp critical habitat.

To:

The proposed project lies within the Unit 12b of critical habitat for the vernal pool fairy shrimp. This 328-acre critical habitat unit is part of one of the remaining large vernal pool complex areas in the Southeastern Sacramento Valley Vernal Pool Region (Keller-Wold *et al.* 1998). Unit 12b is part of the Western Placer Core Area, as designated in the *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (Recovery Plan) (Service 2005). The Recovery Plan identifies several factors which should be taken into consideration when identifying areas for conservation of vernal pools species. These include: size, quality, connectivity with other preserved habitat, ease or feasibility of protection, ability to maintain and/or implement effective

management, and cost of protection and long-term management. The Recovery Plan describes core areas which are based on the known distribution of vernal pool species and habitats and include representative sites across a given species range, or support high species diversity. The Western Placer Core Area should be the initial focus of conservation efforts and where project impacts should be avoided if possible.

Vernal pool fairy shrimp within this core area occur in both Northern Hardpan and Northern Volcanic Mudflow vernal pools as described by Sawyer and Keeler-Wolfe (1995). This core area also contains vernal pool fairy shrimp found in vernal pools on Exchequer soils on the Mehrten geologic formation, a rare type of Northern Volcanic Mudflow vernal pool which has been reduced to only a few acres within Placer County (Service 2003). These pools are generally short-lived and do not provide habitat for most other species of fairy shrimp (CNDDDB 2007).

The proposed project action area, consisting of the project footprint and 250 feet or greater on either side of the footprint, includes approximately 65 acres of designated critical habitat for the vernal pool fairy shrimp, or about 20 percent of Unit 12b and about 2.5 percent of Units 12 a and b combined (LSA, *pers. comm.*, 2007).

The primary constituent elements for the vernal pool fairy shrimp are summarized as:

- 1) Topographic features in an upland matrix characteristic of supporting surface water flow to provide for dispersal of the species and hydroperiods of the pools;
- 2) Depressional features with the appropriate timing and duration of inundation necessary for this species to complete its life cycle;
- 3) A sufficient source of food, primarily detritus; and
- 4) Structure within the pools to support organic and inorganic materials typical of vernal pools.

The portion of Unit 12b located within the proposed project action area contains all of the primary constituent elements of vernal pool fairy shrimp critical habitat.

The following is added to the Environmental Baseline – Vernal Pool Tadpole Shrimp and Vernal Pool Fairy Shrimp (between the seventh and eighth paragraph) of the February 2, 2005, biological opinion:

Development projects completed within western Placer County include the Highland Reserve, Highland Reserve North, Sunset West, Stanford Ranch, Twelve Bridges, Sun City Lincoln Hills, and Stoneridge Specific Plan Area (*e.g.*, Olympus Oaks and Cavitt Ranch projects). General and Specific Plans for the western Placer County area are currently being prepared and/or evaluated, such as the proposed Placer Vineyards, Antonio Mountain Ranch, Three-D South, Whispering Springs, Placer Parkway, Placer Ranch, Lincoln Crossing, Aitken Ranch, Sundance, and the Nader property. The City of Roseville is currently processing Specific Plans for two projects, Sierra Vista and Creekview, and has been requested to consider a third specific plan, Brookfield, to the west of the current city limits. In addition, we are aware of other proposed housing,

industrial, infrastructure, energy facilities, universities, hospitals, and other development projects in and around the cities of Lincoln. Collectively, these projects if completed as proposed will result in the loss of thousands of acres of land, much of which is vernal pool wetted and upland habitat in western Placer County.

The City of Lincoln is currently undertaking an update to its general plan, which proposes that the Sphere of Influence be expanded primarily to the west of the current city limits. This expansion may result in the loss or conversion of approximately 8,000 acres of wetland habitat, including wetted vernal pools and the associated upland habitat.

Environmental Baseline – Vernal Pool Fairy Shrimp Critical Habitat: Change from:

Approximately 32,134 acres of the designated 32,230-acre critical habitat Unit 12 (for the vernal pool fairy shrimp) are located in Placer County (Service 2003). Unit 12 contains 70 percent of the remaining vernal pool habitat in Placer County (Service 2003). This unit has been identified as one of the outstanding vernal pool sites remaining in the Sacramento Valley (Service 2003). Vernal pool fairy shrimp within Unit 12 occur in both Northern Hardpan and Northern Volcanic Mudflow vernal pools (Service 2003; Sawyer and Keeler-Wolfe 1995), but also in vernal pools on Exchequer soils on the Mehrten geologic formation, a rare type of Northern Volcanic Mudflow vernal pool which has been reduced to only a few acres within Placer County (Service 2003). Unit 12 occurs mostly west of SR 65, and consists two primary portions: 1) a larger contiguous block extending southerly and southwesterly from the southern limits of the City of Lincoln to the Sacramento County border and 2) a smaller contiguous block extending northerly and northwesterly from the northeastern limits of the City of Lincoln to Coon Creek. The proposed project would bisect several distinct vernal pool complexes within the northern block of Unit 12.

A number of State, local, private, and unrelated Federal actions have occurred within the project area and adjacent region affecting the designated critical habitat of the vernal pool fairy shrimp. Some of these projects have been subject to prior section 7 consultation. The Service has issued five biological opinions to Federal agencies on proposed projects in California that have affected the critical habitat of the vernal pool fairy shrimp since it was designated in 2003. The Service is currently consulting on six additional proposed projects, including this one and another in Placer County, which may adversely modify designated critical habitat for the vernal pool fairy shrimp.

Development projects completed within western Placer County and critical habitat Unit 12 for the vernal pool fairy shrimp include the Highland Reserve, Highland Reserve North, Sunset West, Stanford Ranch, Twelve Bridges, Sun City Lincoln Hills, and Stoneridge Specific Plan Area (e.g., Olympus Oaks and Cavitt Ranch projects). General and Specific Plans for the western Placer County area are currently being prepared and/or evaluated, such as the proposed Placer Vineyards, Antonio Mountain Ranch, Three-D South, Whispering Springs,

Placer Parkway, Lincoln Crossing, Aitken Ranch, Sundance, and Nader property. In addition, we are aware of other proposed housing, industrial, infrastructure, energy facilities, universities, hospitals, and other development projects in and around the cities of Lincoln, Rocklin, Roseville and in Placer County.

Portions of Unit 12 include the City of Lincoln, which in recent years has experienced a rapid rate of growth, particular in the southern portion of the City. In the area south of Lincoln Airport, approximately 521 acres of designated critical habitat in Unit 12 has already been developed (LSA 2004b). The City of Lincoln is currently updating its General Plan. Three alternatives are being considered that propose varying degrees of additional growth around the current city limits. Depending on the alternative selected, between 2,200 and 3,700 acres of additional critical habitat in Unit 12 could be lost to development (LSA 2004b).

The southeastern boundary of Unit 12 abuts the western limit of the City of Roseville. The Service recently issued a biological opinion on the proposed 3,162-acre West Roseville Specific Plan that would allow for a mixed-use development consisting of residential, commercial, industrial, and open space uses to the west of the current city boundary; this area would be annexed into the City (LSA 2004b). The City is currently reviewing a separate but related Sphere of Influence adjustment that includes an additional 2,378 acres in this area. The total area of 5,540 acres is almost entirely within Unit 12 (LSA 2004b).

These completed and proposed projects have resulted in or will likely result in significant, unavoidable affects to biological communities. These effects include the elimination of vernal pools, intermittent drainages and other seasonal wetlands, the reduction of the number of vernal pool complexes within the area, all of which result in both direct and indirect effects to vernal pools, and contributes to the loss of vernal pool fairy shrimp and vernal pool tadpole shrimp occurrences. Despite these affects, we assume that city and county governments will continue to approve development projects within the area. According to one study, the combination of recent and proposed development in the cities of Lincoln and Roseville may eventually eliminate up to 9,768 acres, or approximately 31 percent, of the designated Critical Habitat Unit 12 for the vernal pool fairy shrimp (LSA 2004b). According to a Service analysis of various development scenarios proposed in General and Specific Plans for the western Placer County area, however, the loss of vernal pool grasslands in western Placer County and Critical Habitat Unit 12 could actually approach 70 percent (pers. comm., J. Wild, Sacramento Fish and Wildlife Office, 2005).

In summary, the condition of Critical Habitat Unit 12 retains the primary constituent elements that resulted in its designation. The high density and contiguous arrangement of vernal pool complexes within Unit 12 indicate the relatively high quality and functionality of vernal pool habitat within this unit. This condition of Unit 12, however, is threatened by habitat fragmentation and degradation resulting from ongoing development within Placer County. The proposed project will contribute towards this fragmentation and degradation of Unit 12.

The proposed project will affect approximately 40.713 wetted acres of vernal pool fairy shrimp Critical Habitat Unit 12, including approximately 23.589 wetted acres directly and 17.124 wetted acres indirectly. In addition, approximately 206 acres of contributing uplands associated with

vernal pools and vernal swales within critical habitat Unit 12 will be similarly affected (LSA 2004b). This accounts for 1.6 percent of the total Unit 12 acreage, as originally designated. If the loss of designated critical habitat resulting from the recent and projected growth of the cities of Lincoln and Roseville is evaluated, then the proposed project will affect approximately 2.3 percent of the remaining portion of designated Critical Habitat Unit 12 for the vernal pool fairy shrimp (LSA 2004b). The proposed project will effectively bisect several distinct vernal pool complexes within the northern block of Unit 12, contributing to the on-going fragmentation of Unit 12.

To:

Approximately 2,580 acres of critical habitat (Unit 12 a and b) for the vernal pool fairy shrimp are located in Placer County (71 FR 7118). These units are part of a larger area that has been identified as one of the outstanding vernal pool sites remaining in the Sacramento Valley (Service 2003). Vernal pool fairy shrimp within Units 12 a and b occur in both Northern Hardpan and Northern Volcanic Mudflow vernal pools (Service 2003; Sawyer and Keeler-Wolfe 1995), but also in vernal pools on Exchequer soils on the Mehrten geologic formation, a rare type of Northern Volcanic Mudflow vernal pool which has been reduced to only a few acres within Placer County (Service 2003). The 2,252-acre Unit 12a occurs entirely east of SR 65, north of the City of Lincoln, mostly west of Gladding Road . The proposed project bisects the 328-acre Unit 12b, which lies south of Nicolaus Road and east of Nelson Lane.

A number of State, local, private, and unrelated Federal actions have occurred within the project area and adjacent region affecting the designated critical habitat of the vernal pool fairy shrimp. Conversion of vernal pool habitat for agricultural uses has and continues to threaten the species inhabiting the critical habitat in Placer County. Some of these projects have been subject to prior section 7 consultation. The Service issued five biological opinions to Federal agencies on proposed projects in California that have affected the critical habitat of the vernal pool fairy shrimp since it was designated in 2003 until 2005. The Service is aware of one additional proposed project in Placer County, Lincoln Village 3, which is located within critical habitat Unit 12a for the vernal pool fairy shrimp.

The City of Lincoln has experienced a rapid rate of growth in recent years, particular in the southern portion of the City. The City of Lincoln is currently updating its General Plan to expand the Sphere of Influence primarily to the west of the current city limits. Depending on the final area proposed for expansion, all of Unit 12b and approximately the southern half of Unit 12a could be proposed for development.

The proposed project, as well as development associated with the expansion of the City of Lincoln, are likely to result in significant, unavoidable effects to biological communities. These effects include the elimination of vernal pools, intermittent drainages and other seasonal wetlands, the reduction of the number of vernal pool complexes within the area, all of which result in both direct and indirect effects to vernal pools, and contributes to the loss of vernal pool fairy shrimp and vernal pool tadpole shrimp occurrences. Despite these effects, we assume that city and county governments will continue to approve development projects within the area.

In summary, the condition of critical habitat Unit 12 (a and b) retains the primary constituent elements that resulted in its designation. The high density and contiguous arrangement of vernal pool complexes within Unit 12 indicate the relatively high quality and functionality of vernal pool habitat within this unit. This condition of Unit 12, however, is threatened by habitat fragmentation and degradation resulting from ongoing development and agricultural conversion within Placer County. The proposed project will contribute towards this fragmentation and degradation of Unit 12b.

The proposed project will directly and indirectly affect approximately 65 acres critical habitat Unit 12b. This accounts for about 20 percent of the Unit 12b acreage, and about 2.5 percent of the total Unit 12 acreage. The proposed project will effectively bisect Unit 12b, which includes distinct vernal pool complexes, contributing to the on-going fragmentation of vernal pool habitat in western Placer County.

Effects of the Proposed Action: Change Direct Effects – Vernal Pool Fairy Shrimp Critical Habitat from:

The direct effects to the species, described above, similarly affect vernal pool fairy shrimp designated critical habitat and its primary constituent elements (*i.e.*, habitat components that are essential for the primary biological needs of the species). Of the 26.941 wetted acres of vernal pool crustacean habitat that would be directly affected by the proposed project, approximately 23.589 wetted acres of this is designated critical habitat for the vernal pool fairy shrimp (*i.e.*, Unit 12). Due to the nature of the proposed project, most of the direct affects to critical habitat are permanent and will occur at the time of project construction which will extend over a period of two to four years. Many of the vernal pools and vernal swales within the proposed project footprint will be graded and filled, others will be affected by the construction of drainage facilities, installation of fencing, and/or landscaping (LSA 2004b). Approximately 206 acres of contributing uplands associated with vernal pools and vernal swales within critical habitat Unit 12 will be similarly affected (LSA 2004b).

To:

The direct effects to the species, described above, similarly affect vernal pool fairy shrimp designated critical habitat and its primary constituent elements (*i.e.*, habitat components that are essential for the primary biological needs of the species). Of the 26.80 wetted acres of vernal pool crustacean habitat that would be directly affected by the proposed project, approximately 5.3 wetted acres of this is in designated critical habitat unit 12b for the vernal pool fairy shrimp. Due to the nature of the proposed project, most of the direct affects to critical habitat are permanent and will occur at the time of project construction which will extend over a period of two to four years. Many of the vernal pools and vernal swales within the proposed project footprint will be graded and filled, others will be affected by the construction of drainage facilities, installation of fencing, and/or landscaping (LSA 2004b).

Effects of the Proposed Action: Change Indirect Effects – Vernal Pool Fairy Shrimp Critical Habitat from:

The indirect effects to the species, described above, similarly affect designated critical habitat and constituent elements for vernal pool fairy shrimp. Indirect effects are more subtle and may occur over a long period of time. The intensity of indirect effects will vary depending on proximity to areas of direct effects, relative elevation, microtopography, and other factors. The habitats that are indirectly affected support habitat components that are essential for the primary biological needs of crustacean feeding, growth, breeding, reproduction, and dispersal, and plant germination, growth, reproduction, and dispersal. Of the 20.957 wetted acres of suitable vernal pool crustacean habitat that will be indirectly affected by the proposed project, approximately 17.124 wetted acres of this is designated critical habitat for the vernal pool fairy shrimp (*i.e.*, Unit 12). Approximately 17.124 wetted acres of designated critical habitat within Unit 12 will be indirectly affected by the proposed project.

Inclusive of the 23.589 wetted acres of direct effects and the 17.124 wetted acres of indirect effects, approximately 1.6 percent of designated critical habitat within Unit 12 will be directly and indirectly affected by the proposed project. This percentage may actually be higher and as much as 2.3 percent, however, if recent and projected development in the region is incorporated (LSA 2004b).

To:

The indirect effects to the species, described above, similarly affect designated critical habitat and constituent elements for vernal pool fairy shrimp. Indirect effects are more subtle and may occur over a long period of time. The intensity of indirect effects will vary depending on proximity to areas of direct effects, relative elevation, microtopography, and other factors. The habitats that are indirectly affected support habitat components that are essential for the primary biological needs of crustacean feeding, growth, breeding, reproduction, and dispersal, and plant germination, growth, reproduction, and dispersal. Of the 14.69 wetted acres of suitable vernal pool crustacean habitat that will be indirectly affected by the proposed project, approximately 5.07 wetted acres of this is in critical habitat Unit 12b. Approximately 53 acres of contributing uplands associated with vernal pools and vernal swales within critical habitat Unit 12b will be similarly affected.

Inclusive of the 5.3 wetted acres of direct effects and the 5.07 wetted acres of indirect effects, approximately 20 percent of designated critical habitat within Unit 12b will be directly and indirectly affected by the proposed project. This percentage may actually be higher and as much as 100 percent, however, if recent and projected development in the region is incorporated. There is a total of 597,821 acres of vernal pool fairy shrimp critical habitat, scattered in various units throughout the range of the species from southern California to southern Oregon. The project will directly and indirectly affect approximately 65 acres and wetted and upland vernal pool habitat, which is less than 0.01 percent of the total critical habitat of vernal pool fairy shrimp over the range of the species.

Effects of the Proposed Action: Change Habitat Preservation from:Habitat Preservation

To offset the permanent loss of habitat for listed vernal pool crustaceans, the applicant has proposed such conservation measures as the creation, acquisition, permanent preservation, and management of 72.16 wetted acres of vernal pool crustacean habitat. One of the proposed preservation areas includes the 317-acre Aitken Ranch. The 317-acre Aitken Ranch Mitigation Site was established by Wildlands, Inc., a private habitat development company, to preserve and create habitat to offset the habitat losses which result from development in Placer County. This property has approximately 21.16 wetted acres of created or preserved vernal pools and vernal swales, in addition to other habitat features, and vernal pool fairy shrimp are known to occur on this property. Caltrans purchased these habitat preservation and creation values in advance of environmental document approval to ensure that these resources are protected in perpetuity (Caltrans 2003).

The project proponent has also proposed to acquire the approximately 800-acre Rockwell-Mariner property, located south of Wise Road and west of Dowd Road, northwest of the City of Lincoln. This property has an estimated 43.22 wetted acres of vernal pool crustacean habitat. The presence of listed vernal pool crustaceans are inferred within suitable habitat along the proposed project alignment, including the Rockwell-Mariner property (LSA 2004c). In addition, the project proponent has further proposed to purchase the equivalent of 7.53 acres of vernal pool habitat preservation credits at Bryte Ranch Conservation Bank located in Sacramento County. Bryte Ranch and the proposed project site are located within the same Southeastern Sacramento Valley Vernal Pool Region, as defined in the Service's *Draft Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (2004). The vernal pool crustacean habitats found on the two sites, however, are not comparable in quality and characteristics. Vernal pool crustacean habitat located on Bryte Ranch is qualitatively different from that found on the proposed project site for several reasons, including: 1) Bryte Ranch is located outside of designated critical habitat for the vernal pool fairy shrimp; 2) the soil types found on Bryte Ranch are different from those found on the proposed project site (LSA 2004c); 3) Bryte Ranch is located on a different geo-morphological surface than the proposed project site; and 4) within this Vernal Pool Region, Bryte Ranch is located within the Mather Core Area and the proposed project site is located within the Western Placer County Core Area. According to the Draft Recovery Plan (Service 2004), these core areas were established based on the understanding that these support viable populations of vernal pool species and/or will contribute to the connectivity of habitat and, thus, the increase of dispersal opportunities between populations. The preservation and enhancement of each core area is important to maintain and possibly expand the distribution of vernal pool species range-wide (Service 2004).

Of the 72.16 wetted acres of vernal pool crustacean habitat that the project proponent has proposed to protect in perpetuity, approximately 61.81 acres of this is existing habitat in western Placer County. None of the existing habitat that is proposed for protection is located within designated critical habitat for the vernal pool fairy shrimp in western Placer County. The permanent protection of 54.28 acres of existing vernal pool crustacean habitat in western

Placer County will achieve approximately a 56 percent rate of vernal pool crustacean habitat preservation in western Placer County, and likewise, represent approximately a 44 percent rate of vernal pool crustacean habitat loss therein. The Service's *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon*. Portland, Oregon (2006), recommends a preservation rate of at least 85 percent in the western Placer County core area. The proposed project does not, on its own, achieve the recommended recovery goal for listed vernal pool species in the region. The Service is concerned that the recovery of the vernal pool fairy shrimp and vernal pool tadpole shrimp may not occur unless this rate of loss is addressed by other means.

To:

Habitat Preservation

To offset the permanent loss of habitat for listed vernal pool crustaceans, the applicant has proposed such conservation measures as the creation, acquisition, permanent preservation, and management of 74.46 wetted acres of vernal pool crustacean habitat. One of the proposed preservation areas is the 317-acre Aitken Ranch. The 317-acre Aitken Ranch Conservation Site was established by Wildlands, Inc., a private habitat development company, to preserve and create habitat to offset the habitat losses which result from development in Placer County. This property has approximately 21.78 wetted acres of created or preserved vernal pools and vernal swales, in addition to other habitat features, and vernal pool fairy shrimp are known to occur on this property. CalTrans purchased these habitat preservation and creation values in advance of environmental document approval to ensure that these resources are protected in perpetuity (CalTrans 2003).

The project proponent has also proposed to acquire the approximately 350 acres of the Rockwell property, located south of Wise Road and west of Dowd Road, northwest of the City of Lincoln. This property has an estimated 31.15 wetted acres of vernal pool crustacean habitat. The presence of listed vernal pool crustaceans are inferred within suitable habitat along the proposed project alignment, and presence of both vernal pool fairy shrimp and vernal pool tadpole shrimp has been confirmed on the Rockwell property (LSA 2007). An additional approximately 180 acres on the Rockwell property will be preserved for the purposes of avoiding impacts to waters of the United States to meet Clean Water Act (CWA) regulatory requirements of the U.S. Army Corps of Engineers and the Environmental Protection Agency. This 180 acres is divided into three parcels interspersed within the 350-acre piece for vernal pool crustacean habitat preservation and is separate and distinct from CWA mitigation and species compensation.

The project proponent purchased the equivalent of 14.0 acres of vernal pool habitat preservation credits at the Mariner Conservation Bank, managed by Westerveldt Ecological Services. Mariner is directly adjacent to the south of the Rockwell property. In addition, the project proponent has proposed to purchase the equivalent of 7.53 acres of vernal pool habitat preservation credits at Orchard Creek Conservation Bank located in Placer County.

The proposed project will directly and indirectly affect 41.49 acres of wetted vernal pool crustacean habitat in Placer County. Of the 74.46 wetted acres of vernal pool crustacean habitat that the project proponent has proposed to protect in perpetuity, approximately 63.74 acres of this is existing wetted habitat (i.e. preservation) in western Placer County. None of the existing habitat that is proposed for protection is located within designated critical habitat for the vernal pool fairy shrimp in western Placer County. The permanent protection of 63.74 acres of existing vernal pool crustacean habitat in western Placer County will achieve approximately a 60 percent rate of vernal pool crustacean wetted habitat preservation in western Placer County, and likewise, represent approximately a 40 percent rate of vernal pool crustacean wetted habitat loss therein.

The Recovery Plan recommends a preservation rate of at least 85 percent in the Western Placer Core Area. The Recovery Plan specifies this percentage of protection of known occurrences and protection of a given percentage of suitable habitat is “essential for recovery” of vernal pool species. The total area of the Western Placer Core Area is 37,555 acres. The proposed project will affect directly and indirectly a total of approximately 524.2 acres, or about 1.4 percent, of wetted *and* upland vernal pool habitat within this core area.

CalTrans proposes to purchase credits equal to 14.0 acres at the Mariner Conservation Bank and 7.53 acres at the Orchard Creek Conservation Bank of wetted vernal pool preservation only. A total of 25.63 acres, or about 16 percent, of the 160-acre Mariner Conservation Bank, is wetted vernal pools. Protection of 14.0 wetted acres extrapolates to protection of approximately 87 acres of wetted and upland vernal pool habitat at the Mariner Conservation Bank. A total of approximately 43.14 acres, or about 7 percent, of the 632.2-acre Orchard Creek Conservation Bank, is wetted vernal pools. Protection of 7.53 wetted acres extrapolates to protection of approximately 107 acres wetted and upland vernal pool habitat at the Orchard Creek Conservation Bank.

Approximately 99 acres of the 317-acre Aitken Ranch are within the Western Placer Core Area. Approximately 298 acres of the 350-acre Rockwell property are within this core area. Approximately 146 acres of the 160-acre Mariner Conservation Bank (91 percent) are within this core area. CalTrans has proposed to protect 87 acres at Mariner, which extrapolates to about 79 acres within the core area. Approximately 618 acres of the 632.2-acre Orchard Creek Conservation Bank are within this core area. CalTrans has proposed to protect 107 acres at Orchard Creek, which extrapolates to about 104 acres within the core area.

Table 5: Compensation within the Western Placer Core Area for the Route 65 Lincoln Bypass, Placer County, California

	Aitken Ranch	Rockwell	Mariner	Orchard Creek	Total:
Acres preserved within the core area	99	298	79	104	580

The permanent protection of 580 acres of wetted and upland vernal pool habitat within the Western Placer Core Area will achieve approximately a 53 percent rate of preservation of land in this core area, and likewise, represent approximately a 47 percent rate of land loss in this core area. The proposed project does not, on its own, achieve the recommended recovery goal for listed vernal pool species in the region. The Service is concerned that the recovery of the vernal pool fairy shrimp and vernal pool tadpole shrimp may not occur unless this rate of loss is addressed by other means. None of the proposed habitat protection lies within designated critical habitat for the vernal pool fairy shrimp.

Cumulative Effects: Change Vernal Pool Fairy Shrimp Critical Habitat from:

Recent and projected development in western Placer County and in the vicinity of the proposed project is expected to result in the continued degradation and fragmentation of designated critical habitat for the vernal pool fairy shrimp, specifically Unit 12. Already, approximately 521 acres of designated critical habitat in Unit 12 has already been developed around the city of Lincoln (LSA 2004b). Depending on the alternative selected for the City of Lincoln's General Plan, between 2,200 and 3,700 acres of additional critical habitat in Unit 12 could be lost to development (LSA 2004b). The City of Roseville has proposed the development of approximately 5,540 acres of Critical Habitat Unit 12 (LSA 2004b). The combination of recent and proposed development in the cities of Lincoln and Roseville may eventually eliminate up to 9,768 acres, of approximately 31 percent, of the designated Critical Habitat Unit 12 for the vernal pool fairy shrimp.

To:

Recent and projected development in western Placer County and in the vicinity of the proposed project is expected to result in the continued degradation and fragmentation of designated critical habitat for the vernal pool fairy shrimp, specifically Unit 12. Depending on the alternative selected for the updated City of Lincoln's General Plan, it is possible that all of Unit 12b and the southern half of Unit 12a could be lost to development.

Change Conclusion (Paragraphs 1 and 2) from:

After reviewing the current status of the beetle, vernal pool fairy shrimp, and vernal pool tadpole shrimp, the environmental baselines for the area covered by this biological opinion, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that Route 65 Lincoln Bypass project, as proposed, is not likely to jeopardize the continued existence of these species. Although the proposed project is likely to affect designated critical habitat for the vernal pool fairy shrimp, the conservation measures that have been proposed by the project proponent are sufficient to offset the loss of designated critical habitat for the vernal pool fairy shrimp.

We base this determination for the vernal pool crustaceans on the understanding that the acquisition and conservation of at least 72.16 wetted acres of suitable vernal pool crustacean habitat, including 61.81 acres of existing vernal pool crustacean habitat and 10.35 acres of created vernal pool crustacean habitat, should offset the direct and indirect effects of the proposed action, though not at the preservation ratios suggested in the Service's *Draft Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (2004).

To:

After reviewing the current status of the beetle, vernal pool fairy shrimp, and vernal pool tadpole shrimp, the environmental baselines for the area covered by this biological opinion, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that Route 65 Lincoln Bypass project, as proposed, is not likely to jeopardize the continued existence of these species. Although the proposed project is likely to affect designated critical habitat for the vernal pool fairy shrimp, the conservation measures that have been proposed by the project proponent are sufficient to offset the loss of designated critical habitat for the vernal pool fairy shrimp.

We base this determination for the vernal pool crustaceans on the understanding that the acquisition and conservation of 580 acres of habitat within the Western Placer Core Area including at least 74.46 wetted acres of suitable vernal pool crustacean habitat, consisting of 63.74 acres of existing vernal pool crustacean habitat and 10.37 acres of created vernal pool crustacean habitat, should offset the direct and indirect effects of the proposed action, though not at the preservation ratios suggested in the Service's Recovery Plan for these species.

Terms and Conditions: Change Vernal Pool Crustaceans (i) from:

- i. The project proponent has proposed to offset direct and indirect effects of vernal pool crustacean habitat loss through a combination of habitat preservation and creation offsite. Therefore, prior to ground-breaking, the applicant shall preserve in perpetuity at least 72.16 wetted acres of vernal pool crustacean habitat, including 61.81 acres of existing and 10.35 acres of created, vernal pool crustacean habitat. The preservation of vernal pool crustacean habitat will be accomplished through the acquisition of specified properties, such as Aitken Ranch and the Rockwell-Mariner property in Placer County. Additional preservation will occur through the purchase of equivalent vernal pool habitat preservation credits commensurate with acreage commitment at the Bryte Ranch Conservation Bank in Sacramento County. The creation of vernal pool crustacean habitat will occur on Aitken Ranch.
- ii. At least 120 days prior to construction, the applicant shall submit documentation of the preservation habitat including conservation easements, management plans, funding instruments, easement holders, etc. for Service approval. Prior to groundbreaking, the project proponent shall provide documentation to the Service demonstrating the

dedication of remaining credits commensurate with acreage commitment at the Bryte Ranch Conservation Bank.

To:

- i. The project proponent has proposed to offset direct and indirect effects of vernal pool crustacean habitat loss through a combination of habitat preservation and creation offsite. Therefore, prior to ground-breaking, the applicant shall preserve in perpetuity at least 74.46 wetted acres of vernal pool crustacean habitat, including 63.74 acres of existing and 10.37 acres of created, vernal pool crustacean habitat. The preservation of vernal pool crustacean habitat will be accomplished through the acquisition of specified properties, such as Aitken Ranch and the Rockwell property in Placer County. Additional preservation will occur through the purchase of equivalent vernal pool habitat preservation credits commensurate with acreage commitment at both the Orchard Creek and Mariner Conservation Banks. The creation of vernal pool crustacean habitat will occur on Aitken Ranch.
- ii. At least 120 days prior to start of construction on the proposed project, the applicant shall submit documentation of the preservation habitat at Aitken Ranch and the Rockwell properties, including conservation easements, management plans, funding instruments, easement holders, etc. for Service approval. Prior to groundbreaking, the project proponent shall provide documentation to the Service demonstrating the dedication of remaining credits commensurate with acreage commitment at the Mariner and Orchard Creek Conservation Banks. All conservation easements must follow the Service's template (contact this office for the current easement language) and be approved by the Service prior to recordation. The conservation easement shall include the right of entry by the Service, its designated agent, and/or the California Department of Fish and Game (CDFG) to undertake any actions deemed necessary to ensure the conservation of the vernal pool crustacean species or other wildlife of plant species of concern to the Service or the CDFG. CalTrans shall provide the Service with a true copy of the recorded conservation easements within 30 days of their recordation.

The conservation easement shall include a list of prohibited activities including, but not limited to:

- i. leveling, grading landscaping, cultivation, or any other alterations of existing topography for any purposes, including the exploration for, or development of, mineral resources;
- ii. placement of any new structures on the preserve, including buildings and billboards;
- iii. discharge, dumping, burning, or storing of rubbish, garbage, grass clippings, dredge material, household chemicals, or any other wastes or fill materials within the preserve;
- iv. building of any roads or trails within the preserve areas;

- v. killing, removal, alteration, or replacement of any existing native vegetation except in Service-approved prescribed burning situations, or as otherwise authorized in writing by the Service;
- vi. activities that may alter the hydrology of the preserve and the associated watersheds, including but not limited to: excessive pumping of groundwater, manipulation or blockage of natural drainages, inappropriate water application or placement of storm water drains, etc. unless authorized in writing by the Service;
- vii. incompatible fire protection activities;
- viii. use of pesticides, herbicides, or rodenticides on the preserve or within the watershed that can contaminate the preserve except as authorized in writing by the Service; and
- xi. introduction of any exotic species or species not native to the area, including aquatic species.

Enclosure A includes review criteria for conservation easements. The applicant must assure that all criteria are met before the conservation easement will be approved by the Service.

- iii. Within 120 days prior to start of construction of the proposed project, CalTrans shall endow a Service-approved fund for monitoring, management, and maintenance for the conservation easement. The endowment must generate sufficient revenue to cover the costs of ongoing operations and management actions as outlined in the Service-approved management plan and this biological opinion. The applicant shall utilize a Service-approved third party to determine what amount of money is necessary for an endowment fund to adequately finance the monitoring, management, and maintenance of the conservation easement. The applicant shall empower the Service to access and expend funds to implement Service-approved remedial measures in the event the responsible Preserve Managers fail to adequately implement the Service-approved management plan. Before ground breaking on the proposed project project, the applicant shall provide the Service with documentation that: (1) funds for the perpetual management and maintenance of the conservation easement has been transferred to an appropriate third party approved by the Service; (2) the third party has accepted the funds and considers them adequate; and (3) that these funds have been deposited in an endowment that will provide adequate financing for monitoring, management, and maintenance of the conservation easement.

The remaining portions of the project description, status of the species, environmental baseline, effects analysis, incidental take statement, reasonable and prudent measures, terms and conditions, and conservation recommendations in the February 2, 2005, biological opinion remain the same.

This concludes formal consultation with CalTrans on the Proposed Route 65 Lincoln Bypass project. As provided in 50 CFR §402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is

authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

Please contact myself or Jana Milliken, Acting Sacramento Valley Branch Chief, at (916) 414-6561 if you have questions regarding this amendment to the biological opinion for Route 65 Lincoln Bypass project.

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth Sanchez". The signature is written in a cursive, flowing style.

Kenneth Sanchez
Assistant Field Supervisor

cc:

ARD-ES, Portland Oregon

Mr. Kent Smith and Mr. Jeff Finn, California Department of Fish and Game, Rancho Cordova, California

Ms. Laura Whitney-Tedrick, U.S. Army Corps of Engineers, Sacramento, California

Ms. Erin Foresman, Environmental Protection Agency, San Francisco, California

Mr. Chris Collison, California Department of Transportation, Sacramento, California

LITERATURE CITED

California Department of Transportation. 2003. Indirect and Cumulative Impact Analysis for Lincoln Bypass—Route 65, Placer County, California. May. 34 pp. + Attachments.

California Department of Fish and Game. 2007. California Natural Diversity Database Species Occurrences for Conservancy fairy shrimp (*Branchinecta conservatio*). Natural Heritage Division, Sacramento, California.

LSA Associates, Inc., 2004c. Draft Mitigation and Monitoring Proposal, Route 65 Lincoln Bypass, Placer County, California. June 2007. Prepared for the U.S. Department of Transportation. 102 pp. + Appendices.

LSA Associates, Inc., 2007. 2006-2007 Wet Season Vernal Pool Crustacean Survey, Rockwell Ranch Property, Placer County, California. 11 pp. + Appendix.

U. S. Fish and Wildlife Service. 2005. Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Portland, Oregon. xxvi + 606 pages.

Personal Communications:

Harlacher, R. 2007. LSA Associates, Sacramento, California. E-mail to Jana Milliken, U.S. Fish and Wildlife Service, Sacramento, California, on September 7. Subject: Lincoln bypass critical habitat.

Enclosure A

**Selected Review Criteria for
Conservation Banks and Section 7 Off Site Compensation**
Rev. April 11, 2006

This list is not a comprehensive list, but gives a substantial number of the basic considerations and requirements necessary to establish protection for properties designated as compensation for project impacts.

In many instances, 'Service-approval,' as stated below, may be replaced with 'Agency-approval,' where other government agencies are involved, such as in Conservation Banking (eg. USACE, CDFG, EPA).

Property Assurances and Conservation Easement**Title Report** (Preliminary at proposal, and Final Title Insurance at recordation)

1. Who holds fee title to property? Should be Bank Owner/Project Applicant. If not, there may be liability and contracting issues.
2. Are there any liens or encumbrances (existing debts or easements) on the property?
 - a. Review necessary supporting instruments to evaluate liens and encumbrances. Property owner should submit a "Property Assessment and Warranty" which discusses each and every exception listed on the Preliminary and Final Title Insurance Policies, evaluating any potential impacts to the conservation values that could result from the exceptions (see below).
3. Could any of these liens or encumbrances potentially interfere with either biological/habitat values or ownership? If existing easements can potentially interfere with the conservation values/habitat of the property, those portions of the land should be removed from the Conservation Easement (CE), and deducted from the total number of credits or acres attributed to the site.
4. A Subordination Agreement is necessary if there is any outstanding debt on the property. Review Subordination Agreement for adequacy – the lending bank or other lien holder must agree to fully subordinate to each lien or encumbrance.

Legal Description and Parcel Map

1. Ensure accuracy of map, location and acreage protected under CE.
2. Both the map and the legal description should explain the boundaries of the Bank and/or boundaries of each individual Bank phase or individual project compensation sites. Individual project compensation sites should *not* have "leftover" areas for later use.

Conservation Easement

1. Should use current USFWS CE template;
2. Who will hold the easement?
 - a. Must have third-party oversight by a qualified non-profit or government agency. Qualifications include:
 - i. Organized under IRC 501(c)(3),

- ii. Qualified under CA Civil Code § 815
 - iii. Bylaws, Articles of Incorporation, and biographies of Board of Directors on file at, and approved by, USFWS
 1. Must meet requirements of USFWS, including 51% disinterested parties on the Board of Directors
3. If not using the USFWS template, applicant should specify objections they have to the template as provided, and may substantially delay processing as they will require Solicitor review. Alternate CE's must be approved by the USFWS prior to recording.
4. Other (non-template) CE's should include, at a minimum, language to:
 - a. **USFWS *must be third-party beneficiary*** or add language throughout the document in all appropriate places that will assure USFWS the right to enforce, inspect, and approve any and all uses and/or changes under the CE prior to occurrence (including land use, biological management or ownership). The alternative of adding language is difficult because we are not signatories to the CE, so you should make sure it is done through the Solicitor's Office.
 - b. Reserve all mineral, air and water rights under CE as necessary to maintain and operate the Bank in perpetuity [USFWS § 2(D)]
 - c. Ensure all future development rights are forfeited.
 - d. Ensure all prohibited uses contained in USFWS CE template are addressed.
 - e. Link the CE, the Management Plan, and the Endowment Trust fund within the document (e.g. note that each exists to support the others, and where each of the documents can be located if a copy is required).
5. There are probably many more specific concerns – should compare the content of each of the sections of the current USFWS CE to see where discrepancies lie, and to insert necessary language, particularly, but not exclusively, per:
 - a. Rights of Grantee
 - b. Remedies
 - c. Injunctive Relief
 - d. Enforcement Discretion
 - e. Costs and Liabilities
 - f. Taxes
 - g. Hold Harmless
 - h. No Hazardous Materials Liability
 - i. Assignment and Transfer
 - j. Amendment
 - k. Funding
 - l. Warranty
 - m. Additional Interests

Property Assessment and Warranty

1. A summary and full explanation of all exceptions remaining on the title must be included, with a statement that the owner/Grantor accepts responsibility for all lands being placed under this CE as available for the primary purposes of the easement, as stated in the easement, and assures that these lands have a free and clear title and are available to be placed under the CE.

Environmental Site Assessment – Phase I

1. Check for clear report
2. If there are issues – a proposal to address the issues should be included; remediation may be necessary

Service Area

1. Service Area for a Conservation Bank is based upon biological criteria, and must be approved by USFWS.
2. Documents should then include a map designating the proposed/approved Service Area, and a text description of the same area.

Restoration or Development Plan

1. Full plans for any habitat construction *must* be USFWS-*approved*, and all permits in place, *prior* to the start of construction of the habitat

Management Plan

1. Must be reviewed and approved by the USFWS for each individual Bank, or individual mitigation project, for target species baseline, adequacy of management and monitoring, and reporting requirements and schedules in perpetuity, etc.
2. Management Plan should also describe funding mechanisms, schedule, and reporting for the long term funding of the property
3. Appendices should include biological surveys, wetland delineation and USACE verification letter, and any required permitting information
4. A copy of the final Management Plan must be either recorded with the CE, or the CE must state in its body that the current management plan can be obtained upon request from any signatory wildlife agency.

Economic Analysis

1. Must be based upon the *final, approved* management plan.
2. Must include provision to adjust for CPI annually.
3. Must be based on appropriate, attainable, long-term interest rate.
4. Must address/account for all of the required funds (as below).

Performance Security, Contingency Security and Endowment Fund

All funds must be held, managed, accessed, expended and released according to agency-approved methods and procedures. There are a variety of requirements for each fund.

Following is a general overview:

1. All funds must be held by qualified, Service-approved, non-profit organization or government agency [see requirements under CE, §2(a), above]
2. A full description of the trust account and investment methods must be agency-approved. All funds must be held according to minimum standards for assuring maximum success in earning potential, and with assurances for no loss of principal
3. Disbursements or releases from each of the funds must be for documented expenditures, as they occur

4. A full economic analysis must be included to demonstrate how each of the required funding amounts was determined. This analysis must be approved by the agencies as being full, complete and adequate
5. A schedule and plan (including target date and full amount on that date) for funding each of the accounts must be submitted for approval

Agreement Contract

This would include a “Conservation Bank Agreement,” “Bank Enabling Instrument,” or other consolidating agreement that ties all of the associated documents together. Some general, basic (certainly not all-inclusive) concerns to include are:

1. Conservation Easement must be approved by any agencies involved prior to recording, and a recorded copy must be submitted to the agencies prior to the compensation taking effect in any way.
2. For an individual site, each of the primary documents – the CE, management plan and endowment trust – must reference the other two documents to link them together to fully address the compensation.
3. If not a Conservation Bank, individual project compensation should be addressed fully (within or by each document) as individual projects.
4. Responsible party (property owner) must be identified (and a valid party to the contract) as responsible for all funding, management, monitoring, and reporting of Bank or Compensation Site, in perpetuity.
5. Transfer and Assignment of property should be according to §9.0 of USFWS Bank Agreement template, or approved by USFWS
6. Any agreement must include remedies for any disputes per §10.0 of the USFWS Conservation Bank Agreement.
7. Applications for individual compensation sites must not include any “leftover” pre-approved acreages for future projects. Any future projects must be addressed individually.



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

REPLY TO
ATTENTION OF

October 19, 2007

Regulatory Branch: SPK-1995-363-CT (199500363)

Jess Avila, Project Manager, California Department of Transportation, District 2, 2389 Gateway Oaks Drive, Suite 100, Sacramento, California 95833

Dear Mr. Avila:

We are enclosing your copy of Department of the Army Permit SPK-1995-363-CT (199500363). Please note you are only authorized to complete the work described in the permit.

If you sell the property associated with this permit, the terms and conditions of this permit will continue to be binding on the new owner. To validate the transfer of this permit, have the succeeding party sign the permit transfer section at the end of the permit and forward a copy to this office, along with their printed name, address, telephone number, and other contact information.

The time limit for completing the work is specified in General Condition 1. If the work will not be completed prior to that date, you may request a time extension. Your request for an extension must be received by this office for consideration at least 30 days before the time limit date.

We appreciate your feedback. At your earliest convenience, please complete our customer survey at http://www.spk.usace.army.mil/customer_survey.html. Your passcode is "yastrzemski".

Please refer to identification number SPK-1995-363-CT (199500363) in any correspondence concerning this project. If you have any questions, please contact Laura Whitney-Tedrick at our Sacramento Valley Office, 1325 J Street, Room 1480, email Laura.A.Whitney-Tedrick@usace.army.mil, or telephone 916.557.7455. You may also use our website: www.spk.usace.army.mil/regulatory.html.

Sincerely,

A handwritten signature in black ink, appearing to read "M. Jewell", written over a white background.

Michael S. Jewell
Chief, Regulatory Branch

Enclosures

DEPARTMENT OF THE ARMY PERMIT

Permittee: Jess Avila
Project Manager
Department of Transportation
District 3
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Permit Number: SPK-1995-363-CT (199500363)

Issuing Office: U.S. Army Engineer District, Sacramento
Corps of Engineers
1325 "J" Street
Sacramento, California 95814-2922

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below. A notice of appeal options is enclosed.

Project Description:

The Lincoln Bypass project involves construction of a 12.8-mile, four-lane bypass with a 78 foot median and a minimum right of way width of 300 feet, on a raised roadway prism created with approximately 3.5 million cubic yards of imported fill. The project includes 14 bridges, some of which will require piers/bents within jurisdictional waters. In addition, frontage roads and an overcrossing will provide access to properties that would otherwise be landlocked and construction of the bypass requires that in-ground and overhead utilities be relocated at various locations throughout the project area. Construction activities include associated utility work includes trenching and boring for in ground utilities, and excavation to remove and replace power poles for overhead utilities.

The overall project footprint is approximately 860-acres. The project permanently impacts **30.14-acres** of waters of the United States, including wetlands, in or adjacent to North and South Ingram Slough, Auburn Ravine, Markham Ravine, Airport Creek, Coon Creek, and three forks of Yankee Slough. Except for Yankee Slough, which is tributary to the Bear River, these drainages are all intercepted by the Eastside Canal, which drains to the Cross Canal and ultimately to the Sacramento River. Indirect impacts to approximately **31.10-acres** of waters of the United States, including wetlands are also authorized for the proposed project.

Additionally, 180-acres of the 514-acres on the Rockwell property will be protected with a conservation easement that meets the criteria identified in the LEDPA, D13 North Modified with Conservation Easements. The sections of the Rockwell Property being used to fulfill the LEDPA conservation easement condition are "separate and distinct" from the other areas on the property, which are being used as compensatory vernal pool-wetland mitigation for the project's compliance with the Endangered Species Act.

All work is to be completed in accordance with the attached plans.

Project Location:

The project is located about 40.3 km (25 miles) north of Sacramento, in western Placer County. The proposed modification of existing Route 65 entails construction of a four-lane bypass on a new alignment around (to the west of) the City of Lincoln. The project begins approximately 0.3-miles south of the intersection of existing State Route 65 and Industrial Avenue. The alignment proceeds in a westerly direction crossing over Industrial Ave and the Union Pacific Transportation Company's tracks. The alignment then bisects Moore Road and intersects Nelson Lane before turning to the north crossing Nicolaus Road, which is west of the Lincoln Airport. The alignment continues in a northerly direction for approximately 3.5 miles and parallels Dowd Road before swinging in the northwest direction crossing Dowd Road approximately 300-feet north of Dalby Road. The alignment continues in a northwest direction, the alignment intersects Riosa Road and rejoins the existing State Route 65 at Post Mile R12.0 just south of Bear River at Post Mile R23.8.

The project area includes all or portions of Township 13N, Range 5E, Sections 10, 11, 13, 14, 15, 23, 24, 25, 26, 35, and 36; Township 13N, Range 6E, Section 31; Township 12N, Range 5E, Sections 1, 12, and 13; and Township 12N, Range 6E, Sections 4, 5, 6, 7, 8, 9, 16, 17, 18, 19, 20, 21, 27, and 28, MDB&M, near the City of Lincoln, in Placer County, California.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **October 1, 2012**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The document entitled, "Mitigation and Monitoring Proposal, Route 65 Lincoln Bypass, Placer County, California", dated June 2007, is incorporated by reference as a condition of this authorization except as modified by the following special conditions:
2. This Corps permit does not authorize you to take an endangered species, in particular Vernal Pool Fairy Shrimp (*Branchinecta lynchi*), Conservancy Fairy Shrimp (*Branchinecta conservatio*), Vernal Pool Tadpole Shrimp (*Lepidurus packardii*), Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*), Central Valley Steelhead (*Oncorhynchus mykiss*) or designated critical habitat. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (e.g., an Endangered Species Act Section 10 permit, or a Biological Opinion under Endangered Species Act Section 7, with "incidental take" provisions with which you must comply). The enclosed Fish and Wildlife Service Biological Opinion (1-1-07-F-0324), dated September 24, 2007, and the National Marine Fisheries Service Concurrence Letter (2007/00585), dated February 20, 2007, contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the Biological Opinion. Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with "incidental take" of the attached Biological Opinion, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the Biological Opinion, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your

Corps permit. To insure your project complies with the Magnuson-Stevens Fishery and Consultation Act, you must implement all of the mitigating measures and Essential Fish Habitat Recommendations identified in the above National Marine Fisheries document, including those ascribed to the Corps therein. Both the Fish and Wildlife Service and National Marine Fisheries Service are the appropriate authorities to determine compliance with the terms and conditions of its Biological Opinion and the Letter of Concurrence, and with the Endangered Species Act. The permittee must comply with all conditions of this Biological Opinion and the Letter of Concurrence, including those ascribed to the Corps.

3. To mitigate for the loss of **30.14-acres** of waters of the United States and indirect effects to **31.10-acres** of waters of the United States, you shall, prior to May 31, 2008:

- a. Purchase 7.53 credits of from the Orchard Creek Conservation Bank;
- b. Purchase 14.00 credits of vernal pool preservation from the Mariner Ranch Conservation Bank;
- c. Preserve 31.15-acres of vernal pools at the Rockwell Mitigation Site;
- d. Preserve 11.06-acres of vernal pools at the Aitken Ranch Mitigation Site;
- e. Construct 10.72-acres of vernal pools at the Aitken Ranch Mitigation Site;
- f. Purchase 10.85 credits of constructed seasonal marsh at Beach Lake mitigation bank;
- g. Construct 4.95 acres of freshwater marsh at the Aiken Ranch mitigation site; and
- h. Preserve 1.80 acres of Auburn Ravine at Aiken Ranch;

4. Prior to September 30, 2011, you shall restore approximately 2.86-acres of waters of the United States at the site of approved crossings within approved project site, which include Sough Ingram Slough, North Ingram Slough, Auburn Ravine, Markam Ravine, Airport Creek, Coon Creek, Big Yankee Creek. In addition, you shall restore approximately 2.06-acres of mixed riparian forest habitat at Auburn Ravine and Coon Creek.

a. You shall develop a final comprehensive mitigation and monitoring plan for the restoration of this approximately 2.86-acres of waters of the United States, which must be approved by the Army Corps of Engineers, by May 31, 2008. The plan shall include mitigation location and design drawings, vegetation plans, including target species to be planted, and final success criteria, presented in the format of the Sacramento District's Habitat Mitigation and Monitoring Proposal Guidelines, dated December 30, 2004.

5. You shall establish and maintain, in perpetuity, a 317-acre preserve at Aitken Ranch and a 514-acre preserve at the Rockwell site containing in total, 57.88 acres of created, avoided, and preserved waters of the United States. The purpose of these preserves is to insure that functions and values of the aquatic environment are protected.

6. To insure that the preserve is properly managed, you shall develop specific and detailed preserve management plans for the on-site and off-site mitigation, preservation, and avoidance areas. These plans shall be submitted to and specifically approved, in writing, by the Corps of Engineers prior to May 31, 2008. This plan shall describe in detail any activities that are proposed within the preserve area(s) and the long term funding and maintenance of each of the preserve areas.

7. To protect the integrity of the preserves and avoid unanticipated future impacts, no roads, utility lines, trails, benches, equipment or fuel storage, grading, firebreaks, mowing, grazing, planting, discing, pesticide use, burning, or other structures or activities shall be constructed or occur within the on-site and off-site mitigation, preservation, and avoidance areas without specific, advance written approval from the Corps of Engineers.

8. In no case shall initiation of the construction of compensatory mitigation be delayed beyond May 31, 2011. Construction of compensatory mitigation shall be completed no later than September 30, 2011.

9. To insure that mitigation is completed as required, you shall notify the District Engineer of the start date and the completion date of the mitigation construction, in writing and no later than ten (10) calendar days after each date.
10. To provide a permanent record of the completed mitigation work, you shall provide two complete sets of as built of the completed work for all off-site mitigation and preservation areas to the Corps of Engineers. The as built shall indicate changes made from the original plans in indelible red ink. These as built shall be provided to this office no later than 60 days after the completion of construction of the mitigation area wetlands.
11. To assure success of the preserved and created waters of the United States, you shall monitor compensatory mitigation, avoidance, and preservation areas for five years or until the success criteria described in the approved mitigation plan are met, whichever is greater. This period shall commence upon completion of the construction of the mitigation wetlands. Additionally, continued success of the mitigation wetlands, without human intervention, must be demonstrated for three consecutive years, once the success criteria have been met. The mitigation plan will not be deemed successful until this criterion has been met.
12. You shall submit monitoring reports to this office for each year of the five-year monitoring period, and for each additional year, if remediation is required, by October 1 of each year. You shall submit an additional monitoring report at the end of the three-year period demonstrating continued success of the mitigation program without human intervention.
13. Prior to May 31, 2008, you shall, to insure long-term viability of mitigation, preservation, and avoidance areas:
 - a. Establish fully-funded endowments to provide for maintenance and monitoring of on-site and off-site mitigation, preservation, and avoidance areas.
 - b. Designate an appropriate conservation-oriented third part entity to function as preserve manager and to hold the required conservation easements.
 - c. Record permanent conservation easements maintaining all mitigation, preservation, and avoidance areas as wetland preserve and wildlife habitat in perpetuity. Copies of the proposed conservation easement language shall be provided to the Corps of Engineers for approval prior to recordation.
 - d. Provide copies of the recorded documents to the Corps of Engineers prior to May 31, 2008.
14. All terms and conditions of the May 9, 2007 Section 401 Water Quality Certification are expressly incorporated as conditions of this permit.
15. You shall design and construct all crossings of waters of the United States to retain a natural substrate where appropriate, and to accommodate all reasonably foreseeable expected high flows. Specific detailed plans for these crossings shall be submitted to and approved by the Corps of Engineers prior to implementation.
16. You must allow representatives from the Corps of Engineers to inspect the authorized activity and any mitigation, preservation, or avoidance areas at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.
17. Your responsibility to complete the required compensatory mitigation as set forth in **Special Conditions 3 and 4** will not be considered fulfilled until you have demonstrated mitigation success and have received written verification from the U.S. Army Corps of Engineers.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
 - () Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
 - (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

() Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

- a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
- b. This permit does not grant any property rights or exclusive privileges.
- c. This permit does not authorize any injury to the property or rights of others.
- d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
- b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
- c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
- d. Design or construction deficiencies associated with the permitted work.
- e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant.

Circumstances that could require a reevaluation include, but are not limited to, the following:

- a. You fail to comply with the terms and conditions of this permit.
- b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).
- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

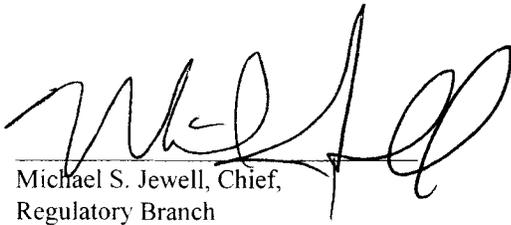
6. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.


Permittee

10-18-2007
Date

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.


Michael S. Jewell, Chief,
Regulatory Branch

10/19/2007
Date

(For the District Engineer)

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

Transferee

Date

AGREEMENT REGARDING PROPOSED STREAM ALTERATION

THIS AGREEMENT, entered into between the State of California, Department of Fish and Game, hereinafter called the Department, and California Department of Transportation (Caltrans) of Sacramento, State of California, hereafter called CALTRANS, is as follows:

WHEREAS, pursuant to California Fish and Game Code, Section 1602, CALTRANS, on June 13, 2007, notified the Department that it intends to substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of, or use material from the streambed of, the following water: South Ingram Slough, North Ingram Slough, Auburn Ravine, Markham Ravine, Airport Creek, Coon Creek, South Yankee Slough, North Yankee Slough, and Big Yankee Slough, in the County of Placer.

WHEREAS, the Department, represented by Gary Hobgood, has determined that such operations may substantially adversely affect existing fish and wildlife resources including: valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*); Swainson's hawk (*Buteo swainsoni*); fall-run Chinook salmon (*O. tshawytscha*); Central Valley steelhead (*O. mykiss*); warm water fish species, amphibians, and other aquatic and terrestrial plant and wildlife species.

THEREFORE, the Department hereby proposes measures to protect fish and wildlife during CALTRANS's work. CALTRANS hereby agrees to accept the following recommendations as part of his work:

Project Description: Route 65 Lincoln Bypass Project includes right-of-way for a four-lane freeway with two interchanges. The ultimate freeway will have a 78 ft median and minimum right-of-way width of 300 ft. Initial stages of construction will include grading and placement of embankment for the ultimate freeway design. The project includes construction of fourteen bridges, ten of which span natural watercourses. These watercourses, from south to north, are: South Ingram Slough, North Ingram Slough, Auburn Ravine, Markham Ravine, Airport Creek, Coon Creek, South Yankee Slough, North Yankee Slough, and Big Yankee Slough. The bridges will be a cast-in-place box girder design. The bridges will generally be the same width as the roadway, plus additional width for barriers. The length of the bridges will vary from 100 feet to 400 feet. The clearance above the water will vary from approximately 2 ft to 20 ft above the 100-year flood elevation. Bridges may be designed with several spans dependent on the length of the bridge.

In addition to the Route 65 Lincoln Bypass Project, Caltrans proposes to complete the following associated activities: Existing Dowd Road Bridge Removal (No. 19C-223) and Bank Restoration Work at Big Yankee Slough; Scheiber Property Water Pump Relocation at Auburn Ravine; and the Relocation of Storm Drain Outfall at Auburn Ravine. These three project activities were identified in a submittal labeled "Supplemental Information for State Route 65 Lincoln Bypass Draft Streambed Alteration Agreement (Notification No. 1600-2007-0209-R2)" dated August 24, 2007.

Stream Zone Defined: The stream zone is that portion of the stream channel that restricts lateral movement of water. The stream zone is delineated at the top of the bank or the outer edge of any riparian vegetation, whichever is more landward.

1. The notification, together with all supporting documents submitted with the notification, including the set of 5 binders containing the Permit Applications; Wetland Delineation and Updates; Biological Assessment and Biological Opinions, Environmental Impact Report; and the Habitat Mitigation Monitoring Plan and the Supplemental Information for State Route 65

Lincoln Bypass Draft Streambed Alteration Agreement (Notification No. 1600-2007-0209-R2)” dated August 24, 2007, are hereby incorporated into this agreement to describe the location and features of the proposed project. CALTRANS submitted conceptual construction plans with the notification. CALTRANS shall provide the Department final construction plans for those portions of the Route 65 Lincoln Bypass project that impact the stream zones of South Ingram Slough, North Ingram Slough, Auburn Ravine, Markham Ravine, Airport Creek, Coon Creek, South Yankee Slough, North Yankee Slough, and Big Yankee Slough. The Department reserves the right to modify the terms on this agreement upon review of the final construction plans. CALTRANS agrees that all work shall be done as described in the notification and supporting documents, incorporating all project modifications, wildlife resource protection features, mitigation measures, and provisions as described in this agreement. Where apparent conflicts exist between the notification and the provisions listed in this agreement, CALTRANS shall comply with the provisions listed in this agreement. CALTRANS further agrees to notify the Department of any modifications made to the project plans submitted to the Department. At the discretion of the Department, this agreement will be amended to accommodate modifications to the project plans and/or new project activities submitted to the Department. Please see the current fee schedule to determine the appropriate amendment fee.

2. Documents, plans, surveys, notifications, and requests pertaining to this project or required by this agreement may be sent via email to Gary Hobgood at ghobgood@dfg.ca.gov or delivered to the Department of Fish and Game at 1701 Nimbus Road, Suite A, Rancho Cordova, CA 95670. Refer to Notification Number 1600-2007-0209-R2 when submitting documents to the Department.
3. The time period for completing the work within the stream zone of Auburn Ravine and Coon Creek shall be restricted to periods of low stream flow and dry weather and shall be confined to the period of June 1 to October 31. The time period for completing the work within the stream zone of South Ingram Slough, North Ingram Slough, Markham Ravine, Airport Creek, South Yankee Slough, North Yankee Slough, and Big Yankee Slough shall be restricted to periods of low stream flow and dry weather and shall be confined to the period of April 15 to October 31. Construction activities shall be timed with awareness of precipitation forecasts and likely increases in stream flow. Construction activities shall cease until all reasonable erosion control measures have been implemented prior to all storm events. No ground disturbing work will occur within the stream zone during wet weather. Wet Weather is defined as when there has been ¼ inch of rain in a 24-hour period. In addition, no work will occur during a dry out period of 24 hours after the above referenced wet weather. Revegetation, restoration and erosion control work is not confined to this time period.
4. If CALTRANS finds more time is needed to complete the authorized activity, CALTRANS shall submit a written request for a work period time extension to the Department. The work period extension request shall provide the following information: 1) Describe the extent of work already completed; 2) Provide specific detail of the activities that remain to be completed within the stream zone; and 3) Detail the actual time required to complete each of the remaining activities within the stream zone. The work period extension request should consider the effects of increased stream conditions, rain delays, increased erosion control measures, limited access due to saturated soil conditions, and limited growth of erosion control grasses due to cool weather. Time extensions are issued at the discretion of the Department. The Department will review the written request to work beyond the established

work period. The Department will have ten calendar days to approve the proposed work period extension. The Department reserves the right to require additional measures designed to protect natural resources.

5. CALTRANS is responsible for obtaining all required permits and authorizations from local, state and federal agencies. CALTRANS shall notify the Department where conflicts exist between the provisions of this agreement and those imposed by other regulatory agencies. Unless otherwise notified, CALTRANS shall comply with the provision that offers the greatest protection to water quality, species of special concern and/or critical habitat.
6. A copy of this agreement shall be provided to the Contractor(s) who works within the stream zone of this project. A copy of this agreement and a copy of the project description, as submitted to the Department, must be available upon request at the work site. The Contractor(s) shall sign this agreement prior to working within the stream zone. The Contractor(s) or a designated crew supervisor(s) shall be on site the entire time a work crew is working near the stream zone. The supervisor(s) shall be completely familiar with the terms and conditions of this agreement and shall ensure compliance with all terms and conditions. The Department reserves the right to enter the project site at any time to ensure that there is compliance with the terms/conditions of this Agreement.
7. CALTRANS shall provide the Department detailed construction schedule. The schedule shall identify the approximate beginning and completion date for each activity within the stream zone. Updated schedules shall be provided as necessary to keep the Department informed of the status of the project. The schedule shall be submitted to the Department as instructed in item number 2 above.
8. It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird except as otherwise provided by the Fish and Game Code. No trees that contain active nests of birds shall be disturbed until all eggs have hatched and young birds have fledged without prior consultation and approval of a Department representative. It is recommended that the trees that are identified for removal, be removed during the non-nesting period of August 15 to February 15. If tree removal must occur during the period of February 16 and August 14, a qualified biologist shall conduct a pre-construction survey for bird nests or nesting activity in the project area. If any active nests or nesting behaviors are found, the Department must be notified prior to further action. The survey results shall be provided to the Department prior to removing any trees. The survey shall be submitted to the Department as instructed in item number 2 above.
9. Except for site preparation for the placement of dewatering structures, no excavation in the live stream (flowing water) is allowed. Contractor must submit a detailed water diversion/dewatering plan to the Department. Dewatering structures may include the use of sand bag, Port-a-dams, water bladder dams, K-rails or driven sheet metal coffer dams. Temporary culvert(s) must be sized to handle high flows of from unanticipated storm events. The water diversion plan must include provisions for fish passage. The Department will review the proposed water diversion method. The Department will have 10 calendar days to approve the plan or provide the requirements for that approval. If the Department does not respond within 10 days, the plan shall be automatically approved. All water dewatering structures shall be removed from the stream zone by October 31.

10. When temporary stream crossing roads and/or workpads are necessary to complete operations across any waterway, they shall be constructed in the following manner: A temporary culvert(s) of sufficient size to handle anticipated storm events shall be placed on the stream bottom. A layer of washed round river cobble (0.5 to 3 inch diameter in size) shall be placed around the culvert from bank to bank. A layer of clean "washed" crushed gravel may be placed on the layer of river cobbles. The top layer may be fill material found at the work site or imported from off site. Fill material shall not extend beyond the layer of river cobble. Upon completion of the project, the fill material and most of the crushed gravel shall be removed from the stream bottom. The river cobble may remain in the stream. The temporary culvert crossing shall be removed prior to storm events that are likely to wash out the crossing. The crossing shall be removed upon completion of the project.
11. Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. Other than those trees previously identified for removal in this agreement's notification package, no native trees with a trunk diameter at breast height (DBH) in excess of four (4) inches shall be removed or damaged without prior consultation and approval of a Department representative. Using hand tools (clippers, chain saw, etc.), trees may be trimmed to the extent necessary to gain access to the work sites. All cleared material/vegetation shall be removed out of the riparian/stream zone.
12. Precautions to minimize turbidity/siltation shall be taken into account during project planning and implementation. This may require the placement of silt fencing, coir logs, coir rolls, straw bale dikes, or other siltation barriers so that silt and/or other deleterious materials are not allowed to pass to downstream reaches. Passage of sediment beyond the sediment barrier(s) is prohibited. If any sediment barrier fails to retain sediment, corrective measures shall be taken. The sediment barrier(s) shall be maintained in good operating condition throughout the construction period and the following rainy season. Maintenance includes, but is not limited to, removal of accumulated silt and/or replacement of damaged silt fencing, coir logs, coir rolls, and/or straw bale dikes. CALTRANS is responsible for the removal of non-biodegradable silt barriers (such as plastic silt fencing) after the disturbed areas have been stabilized with erosion control vegetation (usually after the first growing season). Upon Department determination that turbidity/siltation levels resulting from project related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation shall be halted until effective Department approved control devices are installed or abatement procedures are initiated.
13. 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 CALTRANS or any party working under contract or with the permission of CALTRANS, shall be removed immediately. The Department shall be notified immediately by CALTRANS of any spills and shall be consulted regarding clean-up procedures.
14. During construction, the contractor shall not dump any litter or construction debris within the stream zone. All construction debris and associated materials shall be removed from the work site upon completion of this project.
15. All exposed/disturbed areas and access points within the stream zone left barren of vegetation

as a result of the construction activities shall be restored using locally native grass seeds, locally native grass plugs and/or a mix of quick growing sterile non-native grass with locally native grass seeds. Seeded areas shall be covered with broadcast straw and/or jut netted (monofilament erosion blankets are not authorized).

16. This agreement is not valid and work may not begin until the agreement is signed by a representative of the Department of Fish & Game. Stream alteration work authorized by this agreement expires on December 31, 2011. This agreement shall remain in effect for that time necessary to satisfy all required mitigation and monitoring measures.
17. Requests for Extensions (agreement renewal), Minor Amendments, and Major Amendments must be submitted in writing prior to expiration of the agreement or commencement of work on modified project plans. Extensions and Amendments are issued at the discretion of the Department. Please see the current fee schedule to determine the appropriate fee.
18. The Department may take enforcement action and reserves the right to suspend and/or revoke this agreement if the Department determines that the circumstances warrant. The circumstances that could require these Department actions include, but are not limited to, the following: A) Failure to comply with the terms/conditions of this agreement. B) The information provided by CALTRANS in support of the agreement/notification is determined by the Department to be incomplete, or inaccurate. C) When new information becomes available to the Department representative(s) that was not known when preparing the original terms/conditions of this agreement. D) The project as described in the notification, agreement, or amendment has changed, or conditions affecting fish and wildlife resources change.
19. If, in the opinion of the Department, conditions arise or change in such a manner as to be considered deleterious to aquatic life, operations shall cease until corrective measures are taken.
20. It is understood that the Department enters into this agreement for purposes of establishing protective features for fish and wildlife, in the event that a project is implemented. The decision to proceed with the project is the sole responsibility of CALTRANS, and is not required by this agreement. It is agreed that all liability and/or incurred costs related to or arising out of CALTRANS's project and the fish and wildlife protective conditions of this agreement, remain the sole responsibility of CALTRANS. CALTRANS agrees to hold harmless and defend the State of California and the Department of Fish and Game against any related claim made by any party or parties for personal injury or other damage.

SIGNATURE PAGE

CALTRANS, as designated by the signature on this agreement, shall be responsible for the execution of all elements of this agreement. A copy of this agreement must be provided to contractor and subcontractors and must be in their possession at the work site.

Failure to comply with the provisions of this agreement and with other pertinent Code Sections, including but not limited to Fish and Game Code Sections 5650, 5652 and 5948, may result in prosecution.

Nothing in this agreement authorizes CALTRANS to trespass on any land or property, nor does it relieve CALTRANS of responsibility for compliance with applicable federal, state, or local laws or ordinances.

This agreement is not valid and work may not begin until the agreement is signed by a representative of the Department of Fish & Game.

CALTRANS Representative: Jess Avila Date 9-4-07
Print & Sign Name

Title: Project Manager

Contractor: _____ Date _____

Title: _____

Company: _____

Department Representative: Sandra Morey Date 9/13/07
for Sandra Morey, Regional Manager

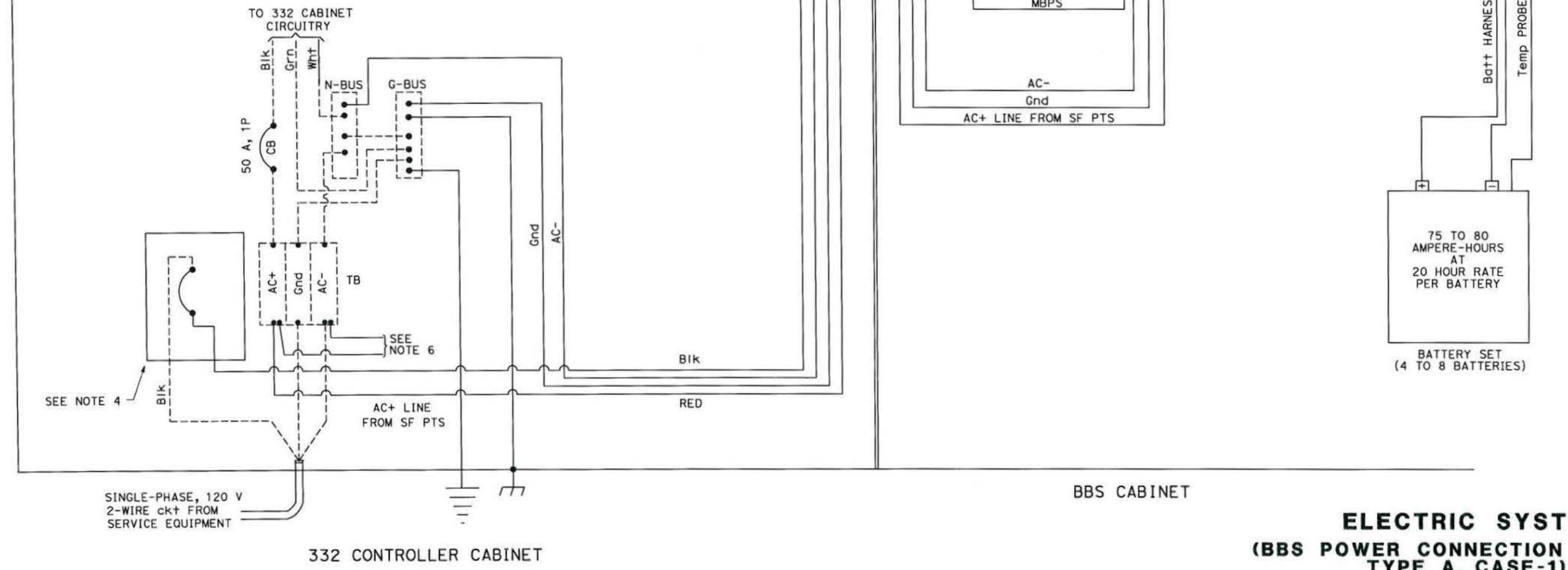
DIST	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
<i>Theresa Gabriel</i> REGISTERED CIVIL ENGINEER			12-20-07	DATE Theresa A. Gabriel No. E15129 Exp 6-30-10 ELECT STATE OF CALIFORNIA	
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

LEGEND: (THIS SHEET ONLY)

- PTS = POWER TRANSFER SWITCH
- UPS = UNINTERRUPTIBLE POWER SUPPLY
- UPSC = UNINTERRUPTIBLE POWER SUPPLY CONTROLLER
- UPSM = UPS MODE
- BP = BYPASS
- MBPS = MANUAL BYPASS SWITCH
- AC+ = UNGROUNDED CONDUCTOR
- AC- = GROUNDED CONDUCTOR
- C = COMMON
- Grn = GREEN
- Blk = BLACK
- Wht = WHITE
- SF = STATE-FURNISHED
- TB = TERMINAL BOARD
- Cntl = CONTROL
- Gnd = GROUND
- Temp = TEMPERATURE
- Batt = BATTERY

NOTES: (THIS SHEET ONLY)

1. TYPE A REFERS TO THE BBS EQUIPMENT FROM MANUFACTURER A.
2. CASE-1 REFERS TO THE SITUATION WHEN THE ENTIRE BBS EQUIPMENT INCLUDING THE BATTERIES ARE INSTALLED IN THE BBS CABINET.
3. THE LOCATION OF THE 2" C NIPPLE WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL A NEMA-1 ENCLOSURE WITH 30 A, 1P, 120/240 VOLTS RATED CIRCUIT BREAKER MANUFACTURED PER UL STANDARD 489.
5. A TEMPERATURE PROBE SHALL BE ATTACHED TO THE BATTERY BY TAPE OR ATTACHED TO THE NEGATIVE TERMINAL OF THE BATTERY.
6. THE ELECTRICAL POWER FOR THE COOLING FAN FOR THE BBS CABINET SHALL BE TAPPED FROM THE BOTTOM OF THE TB IN THE 332 CABINET.
7. THE CONTRACTOR SHALL PROVIDE A 9-WIRE WIRING HARNESS OR BUNDLED 9 MULTICOLOR CONDUCTORS, #18 AWG WIRES FROM THE RELAY ON THE INVERTER/CHARGER UNIT TO THE CONTROLLER. THE ENDS OF THE CONDUCTORS SHALL BE INSULATED WITH TAPE AND A SIX-FOOT COIL ON EACH END.



**ELECTRIC SYSTEM
(BBS POWER CONNECTION DIAGRAM, TYPE A, CASE-1)**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 St. Gobans
 FUNCTIONAL SUPERVISOR
 CALCULATED-DESIGNED BY
 CHECKED BY
 REVISIONS: (None shown)
 REVISIONS: (None shown)
 REVISIONS: (None shown)

LAST REVISION: 3-11-09
 DATE PLOTTED => 26-SEP-2011
 TIME PLOTTED => 14:21

DIST	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER	DATE	12-20-07
Theresa Gabriel No. E15129 Exp. 6-30-10 ELECT		
PLANS APPROVAL DATE		

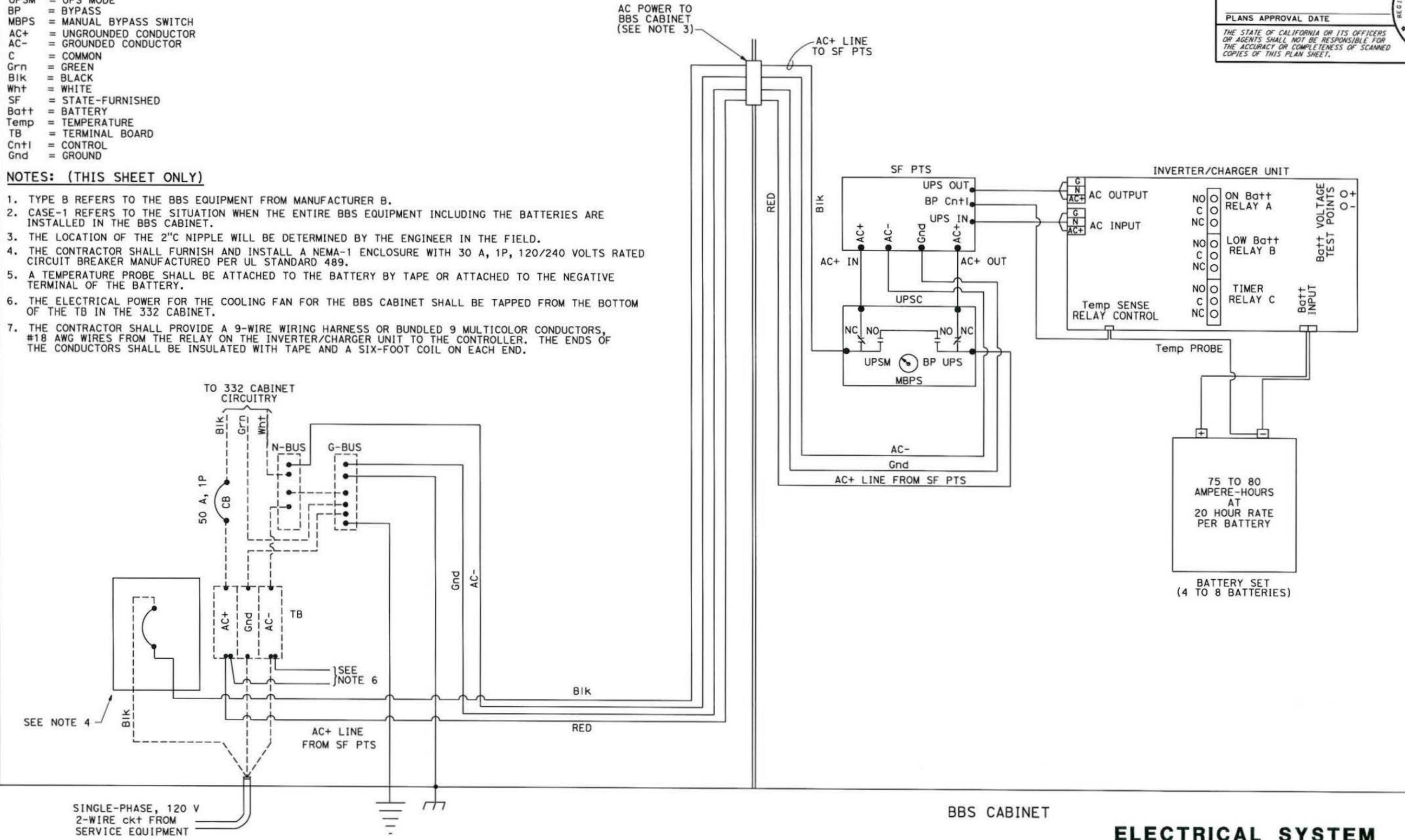
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- Wht = WHITE
- SF = STATE-FURNISHED
- Batt = BATTERY
- Temp = TEMPERATURE
- TB = TERMINAL BOARD
- Cntl = CONTROL
- Gnd = GROUND

NOTES: (THIS SHEET ONLY)

1. TYPE B REFERS TO THE BBS EQUIPMENT FROM MANUFACTURER B.
2. CASE-1 REFERS TO THE SITUATION WHEN THE ENTIRE BBS EQUIPMENT INCLUDING THE BATTERIES ARE INSTALLED IN THE BBS CABINET.
3. THE LOCATION OF THE 2" C NIPPLE WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL A NEMA-1 ENCLOSURE WITH 30 A, 1P, 120/240 VOLTS RATED CIRCUIT BREAKER MANUFACTURED PER UL STANDARD 489.
5. A TEMPERATURE PROBE SHALL BE ATTACHED TO THE BATTERY BY TAPE OR ATTACHED TO THE NEGATIVE TERMINAL OF THE BATTERY.
6. THE ELECTRICAL POWER FOR THE COOLING FAN FOR THE BBS CABINET SHALL BE TAPPED FROM THE BOTTOM OF THE TB IN THE 332 CABINET.
7. THE CONTRACTOR SHALL PROVIDE A 9-WIRE WIRING HARNESS OR BUNDLED 9 MULTICOLOR CONDUCTORS, #18 AWG WIRES FROM THE RELAY ON THE INVERTER/CHARGER UNIT TO THE CONTROLLER. THE ENDS OF THE CONDUCTORS SHALL BE INSULATED WITH TAPE AND A SIX-FOOT COIL ON EACH END.



**ELECTRICAL SYSTEM
(BBS POWER CONNECTION DIAGRAM,
TYPE B, CASE-1)**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 St. Gobans
 REVISIONS: x
 CALCULATED/DESIGNED BY
 CHECKED BY
 FUNCTIONAL SUPERVISOR
 REVISIONS: x
 REVISIONS: x
 REVISIONS: x