Natural Environment Study

Cities of Modesto, Riverbank, and Oakdale

Stanislaus County, California

10-STA-108

SR 108 [PM 27.5/44.5], SR 219 [PM 3.7/4.8], SR 120 [PM 6.9-11.6]

Project ID. 1000000263

EA 10-0S8000

May 2017

CALIFORNIA DEPARTMENT OF TRANSPORTATION

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STATE OF CALIFORNIA
Department of Transportation
County of Stanislaus

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Summary

The California Department of Transportation (Caltrans), in cooperation with the North County Corridor Transportation Expressway Authority (NCCTEA), proposes to construct the North County Corridor New State Route 108 (NCC) in northern Stanislaus County, California. The project would relocate the existing State Route (SR)-108, which currently runs through the Cities of Riverbank, Oakdale, and Modesto to the south, and would increase roadway capacity to accommodate existing and future traffic volumes.

Project Purpose

The purpose of the project is to reduce existing and future traffic congestions in northern Stanislaus County, enhance traffic safety on existing SR-108, and support the efficient movement of goods as follows:

- Reduce existing and future traffic congestion on existing SR-108 and surrounding regional transportation network in northern Stanislaus County and the Cities of Modesto, Riverbank, and Oakdale by providing a new east-west transportation facility;
- Enhance traffic safety on existing SR-108 through the communities of Riverbank and Oakdale by reducing average daily traffic volumes (particularly truck traffic);
- Support efficient movement of goods by providing a new east-west transportation facility that will reduce the number of conflict areas with non-motorized traffic, increase the average operating speeds, and improve travel time reliability; and
- Improve interregional travel by reducing travel times for long distance commuters, recreational traffic, and interregional goods movement.

Project Need

The current action is needed because:

- Traffic congestion on existing SR-108 will continue to worsen due to projected traffic volume increases;
- Existing accident rates on existing SR-108 are well above the statewide averages for similar facilities;

- Traffic congestion on existing truck routes will continue to inhibit the efficient movement of goods; and
- Existing SR-108 is part of the interregional system and interregional circulation will become increasingly constrained as travel times on existing SR-108 increase substantially with planned residential and employment growth.

Project Description

The proposed project is located in Caltrans District 10 within portions of the Cities of Oakdale, Riverbank and Modesto. The NCC will connect SR-219, near Modesto, to SR-120, near Oakdale.

One no-build alternative and four build alternatives have been selected for this project. The western terminus of all alternatives is at the SR-219 (Kiernan Avenue)/Tully Road intersection. The eastern terminus of alternatives 1A and 2A end along SR-108/120 just east of the city of Oakdale. The eastern terminus of alternatives 2B and 2B end further east, along SR-108/120 in the vicinity of Lancaster Road.

The four alternatives consist of two to three 12-foot (ft) wide lanes with 5 to 10 ft wide shoulders in each direction. The proposed roadway would function as a freeway/expressway with controlled access, new and realigned local access roads are needed to provide continued access to existing properties. Elevated roadways, separated grade crossings, single point urban interchanges, signalized intersections, and roundabouts would be needed for each of the four alternatives.

The proposed project improvements include:

- At grade intersection improvements;
- Grade separation structures at major roadway and railway crossings;
- Structures at various waterway crossings, such as the Hetch Hetchy Aqueduct, Modesto Irrigation District and Oakdale Irrigation District canals; and,
- County roadway improvements at various intersections.

Biological Study Area

A Biological Study Area (BSA), totaling 5,434.69 acres (ac) consists mostly of developed and highly disturbed lands but also includes areas of natural vegetation. Surrounding lands are similar to the BSA, consisting of agricultural lands, rural residential, urban areas, and some natural habitat.

Vegetation Communities and Land Uses

Natural vegetation communities within the BSA consist of interior live oak woodland, blue oak savannah, annual grassland, Himalayan blackberry bramble, riparian scrub, perennial marsh, seasonal marsh and seasonal wetlands. Other vegetation communities present include ponds/basin, ruderal, agricultural, orchard, irrigated pasture, canal and ditch, dairy and poultry farms, landscaped, rural residential and urban. Vegetation communities and land uses are summarized in the table below.

Natural Communities and Land Uses in the BSA

Natural Communities	Acres
Interior live oak woodland	12.01
Blue oak savannah	5.08
Annual grassland	188.66
Himalayan blackberry bramble	7.06
Perennial marsh	14.14
Seasonal marsh	6.35
Riparian scrub	0.36
Seasonal wetland	10.23
Subtotal	***243.89***
Other Vegetation Communities/Land Uses	
Ruderal	184.73
Agricultural	894.98
Orchard	1,657.10
Irrigated pasture	1,301.81
Pond/basin	68.22
Canal	26.71
Ditch	12.07
Dairy and poultry farms	112.58
Landscaped	39.02
Rural residential	320.45
Urban	575.59
Subtotal	***5193.26***
Total	**5,437.15**

Aquatic Resources

Aquatic resources in the BSA that are potentially jurisdictional include seasonal wetlands, perennial marsh, ditches, ponds, canals and irrigated wetlands. The table below summarizes the potentially jurisdictional aquatic resources in the BSA.

Potentially Jurisdictional Aquatic Resources in the BSA (acres)

Feature Class	Wetlands	Non-Wetland Waters	Total
Seasonal Wetland	10.23	----	**10.23**
Perennial Marsh	14.14	----	**14.14**
Ditches	7.31	4.76	**12.07**
Ponds	10.12	5.83	**15.95**
Canals	----	26.71	**26.71**
Irrigated Wetlands	3.75	----	**3.75**
Total	**45.55**	**37.30**	**82.85**

Discussion of Impacts

Direct impacts, as discussed below, were calculated based on the footprint of each build alternative as determined by the limits of cut and fill, and include temporary impacts resulting from construction access and staging. Indirect impacts were calculated based on the proposed limits of right-of-way for each alternative minus the area of the footprint, and include changes to hydrology, sedimentation, shading, increased disturbance and noise, etc.

Natural Communities of Concern

Natural communities of concern in the BSA include interior live oak woodland, blue oak savannah, perennial marsh, seasonal marsh, riparian scrub, and seasonal wetlands. The table below provides a breakdown of impacts in acres to natural communities of concern by build alternative. Compensatory mitigation is proposed for loss of perennial marsh, seasonal marsh, riparian scrub, and seasonal wetland communities.

	Alternative 1A		Alternative 1B		Alternative 2A		Alternative 2B	
	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct	Indirect
Interior Live Oak Woodland	1.00	0.32	3.07	0.37	1.00	0.32	3.07	0.37
Blue Oak Savannah	0.0	0.0	0.23	0.77	0.0	0.0	0.23	0.77
Perennial Marsh	1.07	0.20	0.28	0.46	0.79	0.13	0.08	0.40
Seasonal Marsh	0.0	0.08	0.11	0.30	0.0	0.08	0.28	1.28
Riparian Scrub	0.13	0.35	0.13	0.35	0.13	0.35	0.13	0.35
Seasonal Wetland	0.36	0.07	0.27	0.15	0.74	0.49	0.66	0.90

Plant Species

No special status plant species were observed in the BSA. However, six vernal pool plant species, which are listed under the California Native Plant Society (CNPS), were unable to be excluded from potentially occurring in the BSA as a result of below average rainfall. Low rainfall levels may have precluded these species from blooming during their standard blooming period and, therefore, not observed during focused plant surveys. Special status plant species that may occur in the BSA, or vicinity include succulent owl's clover (*Castilleja campestris* ssp. *succulent*), Hoover's spurge (*Chamaesyce hooveri*), Dwarf downingia (*Downingia humilis*), legenere (*Legenere limosa*), Colusa grass (*Neostapfina colusana*), San Joaquin Valley orcutt grass (*Orcuttia inaequalis*), hairy orcutt grass (*Orcuttia pilosa*), and Greene's tructoria (*Tructoria greenei*). Preconstruction surveys would be required to determine presence or absence within the BSA. Potential impacts to vernal pool plant species would range from 0.04 ac of direct impacts and 2.11 ac of indirect impacts, if alternative 2B is selected, to 0.07 ac of direct impacts and 1.21 ac of indirect impacts if alternative 1B is selected. No vernal pool plant habitat would be impacted if either alternative 1A or 2A is selected.

Wildlife Species

Special status wildlife species that may occur in the BSA, or the vicinity, include several bat species (listed below), tricolored blackbird (*Agelaius tricolor*), western burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsoni*), northern harrier (*Circus cyaneus*), white tailed kite (*Elanus leucurus*), California horned lark (*Eremophila alpestris actia*), merlin (*Falco columbarius*), loggerhead shrike (*Lanius*

ludovicianus), Pacific pond turtle (*Emys marmorata*), California tiger salamander (CTS) (*Ambystoma californiense*), western spadefoot toad (*Spea hammondii*), vernal pool tadpole shrimp (VPTS) (*Lepidurus packardi*), California linderiella (CLFS) (*Linderiella occidentalis*), vernal pool fairy shrimp (VPFS) (*Branchinecta lynchi*), and valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimporphus*).

Bats. Several species of bat may be present in the BSA including the pallid bat (*Antrozous pallidus*), Townsend's big eared bat (*Corynorhinus townsendii*), greater western mastiff bat (*Eumops perotis californicus*), western red bat (*Lasiurus blossevilli*), hoary bat (*Lasiurus cinereus*), and Yuma myotis (*Myotis yumanensis*). A habitat assessment was conducted to determine potential bat roosting habitat in the BSA. Potential roost habitat was identified along many areas of the BSA and generally consisted of structures (buildings) or trees. The total impact from all roost types would range from 10 roosting sites if alternative 2B is selected, to 55 roosting sites if alternative 1A is selected. Detailed roost surveys would be conducted once the preferred alignment is selected. Compensatory mitigation is proposed if important as roost habitat would be affected.

Tricolored Blackbird. The BSA provides suitable habitat for tricolored blackbird and this species was observed foraging in the BSA. Impacts to tricolored blackbird nesting habitat would range from 0.82 ac of direct impacts if alternative 2B is selected to 2.51 ac of direct impacts if alternative 2A is selected. Impacts to tricolored blackbird foraging habitat would range from 330.04 ac of direct impacts if alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected.

Western Burrowing Owl. The BSA provides marginally suitable habitat for burrowing owl. A habitat assessment was completed to evaluate the potential for this species to occur in the BSA. Direct impacts to potential habitat for western burrowing owl (grasslands) range from 12.34 ac with alternative 1A to 41.66 ac with alternative 2B. Protocol surveys would be conducted once the preferred alignment is selected. Compensatory mitigation is proposed if burrowing owls are determined to occur in the project footprint.

Swainson's Hawk. The BSA provides suitable habitat for Swainson's hawk and four active Swainson's hawk nests were observed within or near the BSA. Impacts to Swainson's hawk foraging habitat would range from 330.04 ac of direct impacts if

alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected. Protocol surveys would be conducted once the preferred alignment is selected.

Northern Harrier. The BSA provides suitable habitat for northern harrier and there is moderate potential for this species to occur. No active northern harrier nests were identified during surveys. Impacts to northern harrier nesting habitat would range from 12.34 ac of direct impacts if alternative 1A is selected to 41.66 ac of direct impacts if alternative 2B is selected. Impacts to northern harrier foraging habitat would range from 330.04 ac of direct impacts if alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected.

White-tailed Kite. The BSA provides suitable habitat for white-tailed kite and there is moderate potential for this species to occur. No active white-tailed kite nest trees were identified during surveys. Impacts to white-tailed kite foraging habitat would range from 330.04 ac of direct impacts if alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected.

California Horned Lark. The BSA provides suitable habitat for California horned lark and there is moderate potential for this species to occur. No active California horned lark nests were identified during surveys. Impacts to California horned lark nesting habitat would range from 12.34 ac of direct impacts if alternative 1A is selected to 41.66 ac of direct impacts if alternative 2B is selected. Impacts to California horned lark foraging habitat would range from 330.04 ac of direct impacts if alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected.

Merlin. The BSA provides suitable wintering habitat for merlin and there is moderate potential for this species to occur. Impacts to merlin foraging habitat would range from 330.04 ac of direct impacts if alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected.

Loggerhead Shrike. The BSA provides suitable nesting and foraging habitat for loggerhead shrike and there is moderate potential for this species to occur. Impacts to loggerhead shrike nesting habitat would range from 1.00 ac of direct impacts if either alternative 1A or 2A is selected to 3.30 ac of direct impacts if either alternative 1B or 2B is selected. Impacts to loggerhead shrike foraging habitat would range from 330.04 ac of direct impacts if alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected.

Pacific Pond Turtle. The BSA provides suitable habitat for Pacific pond turtle and there is moderate potential for this species to occur. Impacts to Pacific pond turtle aquatic habitat would range from 0.29 ac of direct impacts if alternative 2A is selected to 8.42 ac of direct impacts if alternative 1A is selected.

California Tiger Salamander. The BSA provides potentially suitable CTS aquatic and upland habitat within the limits of the build alternatives;, however, based on the negative results of the 2014/2015 and 2015/2016 protocol surveys this species not anticipated to occupy these habitats. Compensatory mitigation is not proposed for loss of potentially suitable, but unoccupied habitat.

Western Spadefoot Toad. The BSA provides suitable habitat for western spadefoot toad. Impacts to western spadefoot toad aquatic habitat would range from 0.27 ac of direct impacts as a result of Alternative 1B, and 0.74 ac direct impacts as a result of Alternative 2A. Indirect impacts to vernal pool invertebrate habitat will vary from 0.07 ac if Alternative 1A is selected to 0.90 ac if Alternative 2B is selected. Compensatory mitigation is proposed to offset loss of suitable habitat for western spadefoot toad.

Vernal Pool Invertebrates. The BSA provides suitable habitat for VPFS, VPTS, and CLFS. VPFS were observed in several seasonal wetlands in the BSA during 2014 wet season surveys; although not observed, VPTS and CLFS are also presumed present. Impacts to vernal pool invertebrate habitat would range from 0.04 ac of direct impacts as a result of Alternative 2B to 0.07 ac direct impacts as a result of Alternative 1B. Indirect impacts to vernal pool invertebrate habitat will vary from 1.21 ac if Alternative 1B is selected to 2.11 ac if Alternative 2B is selected. No vernal pool habitat will be impacted if either Alternative 1A or 2A is selected. Compensatory mitigation is proposed for loss of habitat for vernal pool invertebrates.

Valley Elderberry Longhorn Beetle. Four blue elderberry (*Sambucus nigra* ssp. *caerulea*) shrubs were observed within or near the BSA. The four shrubs are located further than 100 ft from the project footprint and, therefore, will not be affected. Compensatory mitigation is not proposed for loss of habitat for VELB unless additional shrubs are identified.

The proposed project would include numerous measures to avoid and minimize potential impacts to special status species. Compensatory mitigation is proposed as noted above.

Federal Endangered Species Act

CTS, VPFS, VPTS, and VELB are federally listed species under the jurisdiction of the United States Fish and Wildlife Service (USFWS). All of the build alternatives may affect and are not likely to adversely affect CTS; all of the build alternative may affect, but are not likely to adversely affect, VELB; only alternative 1B and 2B are likely to adversely affect VPFS and VPTS. Caltrans, as the federal lead agency, would initiate consultation with the USFWS for these species pursuant to Section 7 of the Federal Endangered Species Act (FESA). It is likely that the USFWS would issue a Biological Opinion to authorize take of VPFS and VPTS; no take is anticipated for CTS and VELB.

California Endangered Species Act

Swainson's hawk, tricolored blackbird (emergency listing) and CTS are State listed species (or proposed for listing) under the jurisdiction of the California Department of Fish and Wildlife (CDFW).

All of the build alternatives may result in take of known Swainson's hawk nest trees; however, no take of an occupied, active Swainson's hawk nest (eggs or young) or Swainson's hawk individuals are anticipated. Should CDFW determine removal of a known Swainson's hawk nest tree would result in take or project activities occur too close to an occupied, active Swainson's hawk nest, an Incidental Take Permit pursuant to Section 2081 of the State Fish and Game Code would be required to authorize removal of the known nest trees or to authorize work within proximity to an active nest. Caltrans, as the local lead agency, would apply for the Incidental Take Permit.

Alternative 2B and alternative 2A would have impacts to tricolored blackbird nesting habitat, while alternative 2A and alternative 1B would impact tricolored blackbird foraging habitat; however, no take of an occupied, active tricolored blackbird nest (eggs or young) or tricolored blackbird individuals are anticipated. Should tricolored blackbird maintain its emergency listing status or otherwise be formally listed under CESA and project activities occur too close to an occupied, active tricolored blackbird nest, an Incidental Take Permit would be acquired to authorize work within proximity to an active nest. Caltrans, as the local lead agency, would apply for the Incidental Take Permit.

No CTS were observed during the 2014/2015 and 2015/2016 CTS protocol breeding surveys and the species is not anticipated to be present within the project area. The

surveys are determined to be valid based on average rainfall during the breeding season and the identification of multiple sightings within the Mckinley Avenue reference site. No take of CTS is anticipated; therefore an Incidental Take Permit would not be required.

Wetlands and Other Waters Coordination

Impacts to potential waters of the United States (U.S.) differ between build alternatives would range from 3.61 ac for Alternative 2A to 4.66 ac for Alternative 1B. The waters of the U.S. in the BSA that would be affected by the project are regulated by the United States Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA). An Individual 404 Permit (IP) would likely be required to authorize impacts to waters of the U.S. from the preferred alternative. A Water Quality Certification from the Regional Water Quality Control Board and a Streambed Alteration Agreement from CDFW would also be required.

Invasive Species

One notable invasive species, the yellow star thistle (*Centaurea solstitialis*), was observed in the grassland and ruderal communities in the BSA. Contract specifications would include numerous measures to avoid and minimize the introduction of invasive species into the BSA during project construction.

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List of Abbreviated Terms

°F	Degree Fahrenheit
ac	Acre
BSA	Biological Study Area
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEEA	Cumulative Effects Evaluation Area
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CLFS	California linderiella fairy shrimp
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CTS	California tiger salamander
CWA	Clean Water Act
Dokken	Dokken Engineering, Inc.
EFH	Essential fish habitat
EO	Executive Order
ESA	Environmentally Sensitive Area
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
ft	foot/feet
GGS	giant garter snake
GIS	geographic information system
ICF	ICF International
IP	Individual 404 Permit
LSA	LSA Associates, Inc.
MBTA	Migratory Bird Treaty Act
mi	mile(s)
MID	Modesto Irrigation District
MMP	Mitigation Monitoring Program
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NCC	North County Corridor
NCCTEA	North County Corridor Transportation Expressway Authority
NMFS	National Marine Fisheries Service
OID	Oakdale Irrigation District
OHWM	Ordinary high water mark
PCWQCA	Porter-Cologne Water Quality Control Act
RWQCB	Regional Water Quality Control Board
SHTAC	Swainson's Hawk Technical Advisory Committee

SJKF	San Joaquin kit fox
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
UPRR	Union Pacific Rail Road
U.S.	United States
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
VELB	Valley elderberry longhorn beetle
VPFS	Vernal pool fairy shrimp
VPTS	Vernal pool tadpole shrimp
WPCP	Water Pollution Control Plan
WRA	Wildlife Research Associates, Inc.

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Chapter 1. Introduction

The California Department of Transportation (Caltrans), in cooperation with the North County Corridor Transportation Expressway Authority (NCCTEA), proposes to construct the North County Corridor New State Route 108 (NCC) in northern Stanislaus County, California. The project would relocate the existing State Route (SR)-108, which currently runs through the Cities of Riverbank and Oakdale to the south, and would increase roadway capacity to accommodate existing and future traffic volumes.

The NCC is located within portions of both sectioned and unsectioned portions of Township 2 South Ranges 9, 10, and 11E and Township 3 South Ranges 9, 10, and 11E Mount Diablo Baseline and Meridian, on the Salida, California, Riverbank, California; Waterford, California; Oakdale, California; and Knights Ferry, California 7.5-minute series United States Geological Survey (USGS) topographic maps. The regional vicinity of the proposed project is illustrated in Figure 1. The project location is illustrated in Figure 2.

1.1. Project History

1.1.1. Project Purpose

The purpose of the project is to reduce existing and future traffic congestion in northern Stanislaus County, enhance traffic safety on existing SR-108, and support the efficient movement of goods as follows:

- Reduce existing and future traffic congestion on existing SR-108 and surrounding regional transportation network in northern Stanislaus County and the Cities of Modesto, Riverbank, and Oakdale by providing a new east-west transportation facility;
- Enhance traffic safety on existing SR-108 through the communities of Riverbank and Oakdale by reducing average daily traffic volumes (particularly truck traffic);
- Support efficient movement of goods by providing a new east-west transportation facility that will reduce the number of conflict areas with non-motorized traffic, increase the average operating speeds, and improve travel time reliability; and

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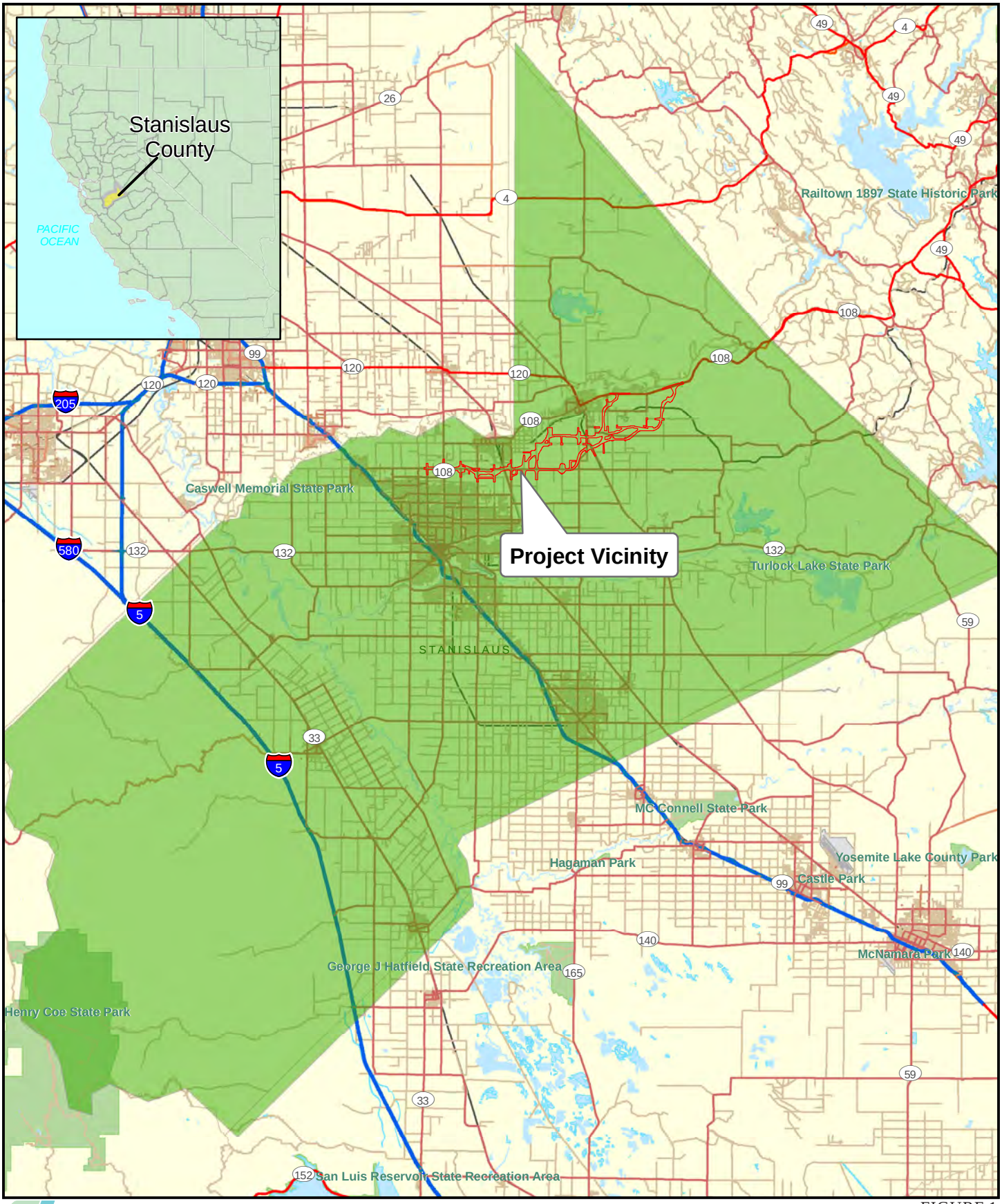

FIGURE 1

Caltrans

0 5 10
MILES

Project Vicinity

EA: 10-0S8000, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California

SOURCE: ESRI 2008; Dokken Engineering 5/8/2014.

I:\DHG1302\AI\Project Description\Figure 1.ai (5/1/15)

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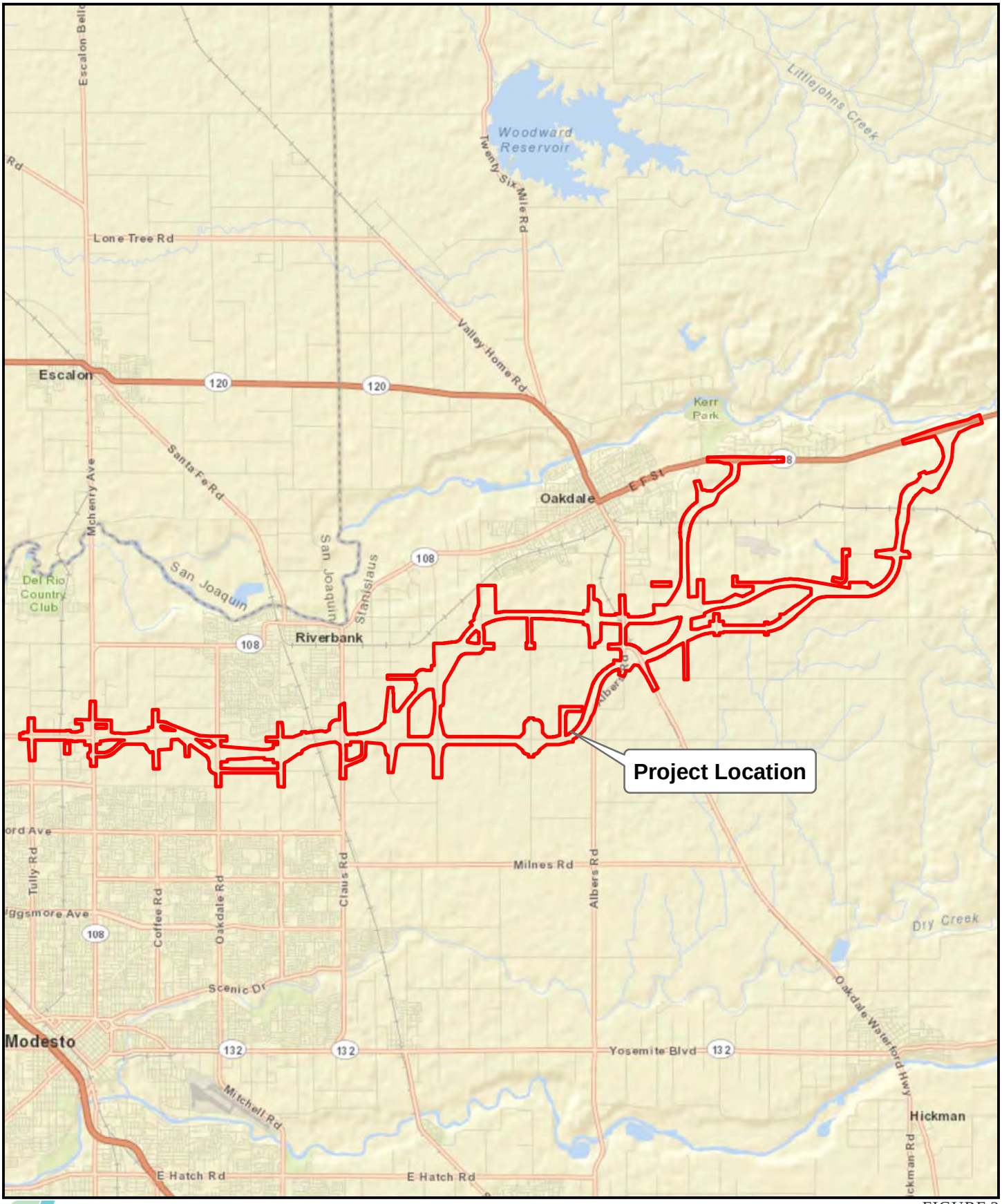

FIGURE 2

Caltrans

0 2.5 5
MILES

Project Location

EA: 10-0S8000, Project ID # 1000000263 North County Corridor State Route 108 Project
Stanislaus County, California

SOURCE: World Street Map; Dokken Engineering 5/8/2014.
I:\DHG1302\AI\Project Description\Figure 2.ai (5/1/15)

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- Improve interregional travel by reducing travel times for long distance commuters, recreational traffic, and interregional goods movement.

1.1.2. Project Need

The current action is needed because:

- Traffic congestion on existing SR-108 will continue to worsen due to projected traffic volume increases;
- Existing accident rates on existing SR-108 are well above the statewide averages for similar facilities;
- Traffic congestion on existing truck routes will continue to inhibit the efficient movement of goods; and
- Existing SR-108 is part of the interregional system and interregional circulation will become increasingly constrained as travel times on existing SR-108 increase substantially with planned residential and employment growth.

1.2. Project Description

The proposed project is located in Caltrans District 10 within portions of the Oakdale, Riverbank, and Modesto communities, Stanislaus County, California (see Figures 1 and 2). The NCC Project will connect SR-219 near Modesto, CA to SR-120 near Oakdale, CA. The proposed project consists of four Build Alternatives (1A, 1B, 2A, and 2B) and the No-Build Alternative (see Figure 3).

The western terminus of all alternatives is at the SR-219 (Kiernan Avenue)/Tully Road intersection. The alternatives proceed to the vicinity of the Claus Road/Claribel Road intersection, where Segment 2 begins and the alternatives separate into two different alignments (A and B). In Segment 2, Alternatives 1A and 1B veer northeast near the Claus Road/Claribel Road intersection and pass through the southern boundary of Oakdale, and Alternatives 2A and 2B continue easterly along Claribel Road and turn northeastward past the intersection of Claribel Road/Bentley Road. Each of the alternatives then breaks into two possible alignments to their eastern terminus in Segment 3, just past the Oakdale-Waterford Highway. The eastern terminus of Alternatives 1A and 2A end along SR-108/120 just east of the City

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Project Area
Road Outline (edge of pavement)
Bridge
Local Road Access
Railroad
Existing State Route

Page 2
Page 3
Page 4
Page 5
Page 6
Page 7
Page 8
Page 9
Page 10
Page 11
Page 12
Page 13
Page 14

1A, 1B, 2A, 2B
1A, 1B
1A, 2A
1B, 2B
1B
2B
2A, 2B

108
120

Tully Rd
McHenry Ave
Coffee Rd
Oakdale Rd
Roselle Ave
Terminal Ave
Claus Rd
Eleanor Ave
Langworth Rd
Bentley Rd
Albers Rd
Patterson Rd
Oakdale-Waterford Highway
S Stearns Rd
Warnerville Rd
Wamble Rd
Claribel Rd
Fogarty Rd
Lancaster Rd

Caltrans

0 1 2
Miles

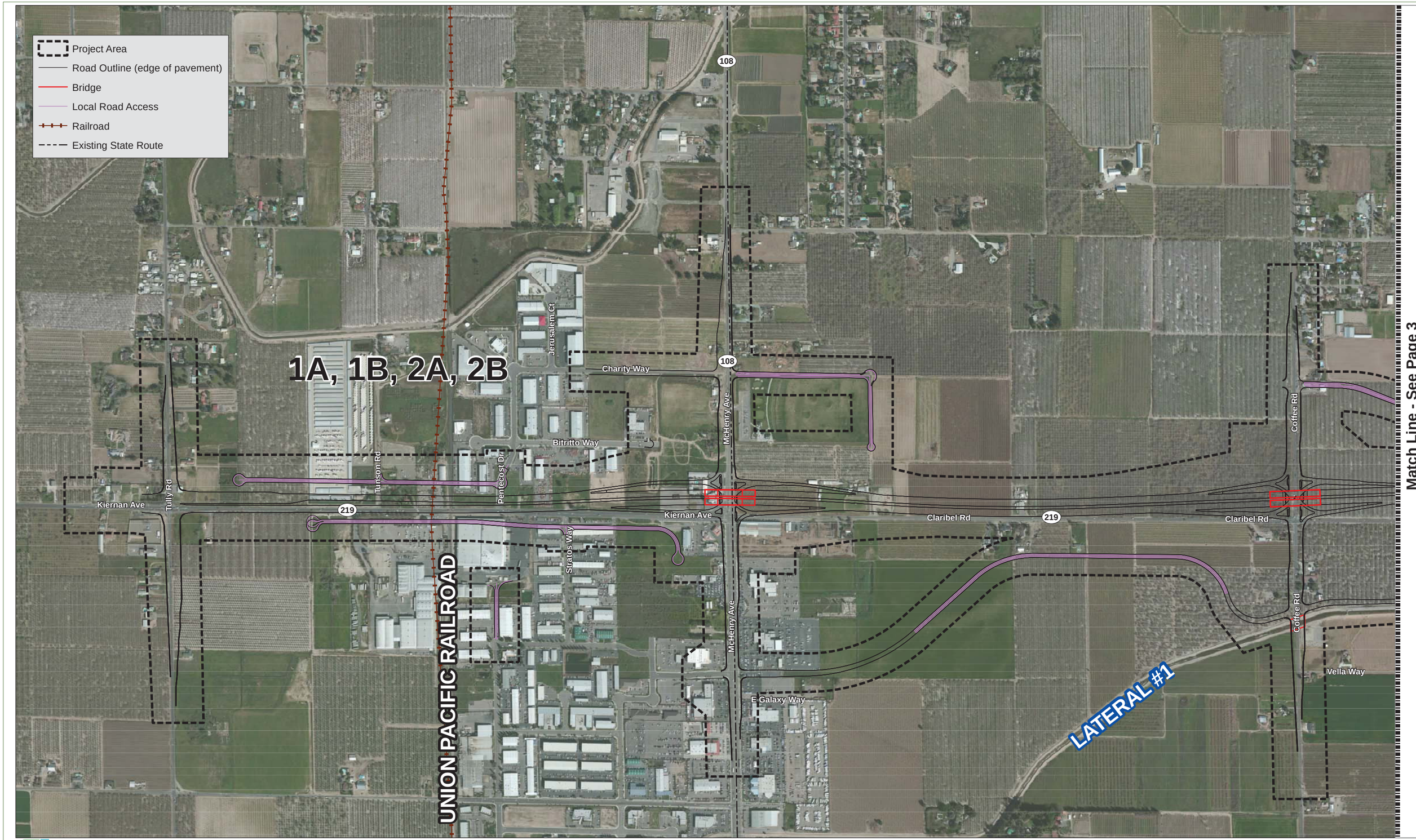
Segment 1 Segment 2 Segment 3

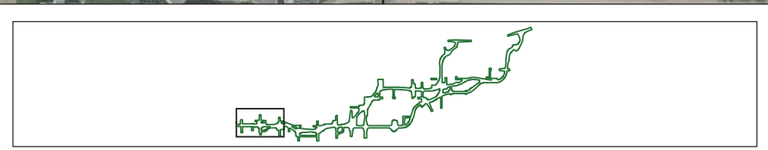
FIGURE 3

Build Alternatives
Page 1 of 14

EA: 10-0S8000, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California

SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.
I:DHG1302/AI/Project Description\Figure 3 (1 of 14).ai (5/1/15)





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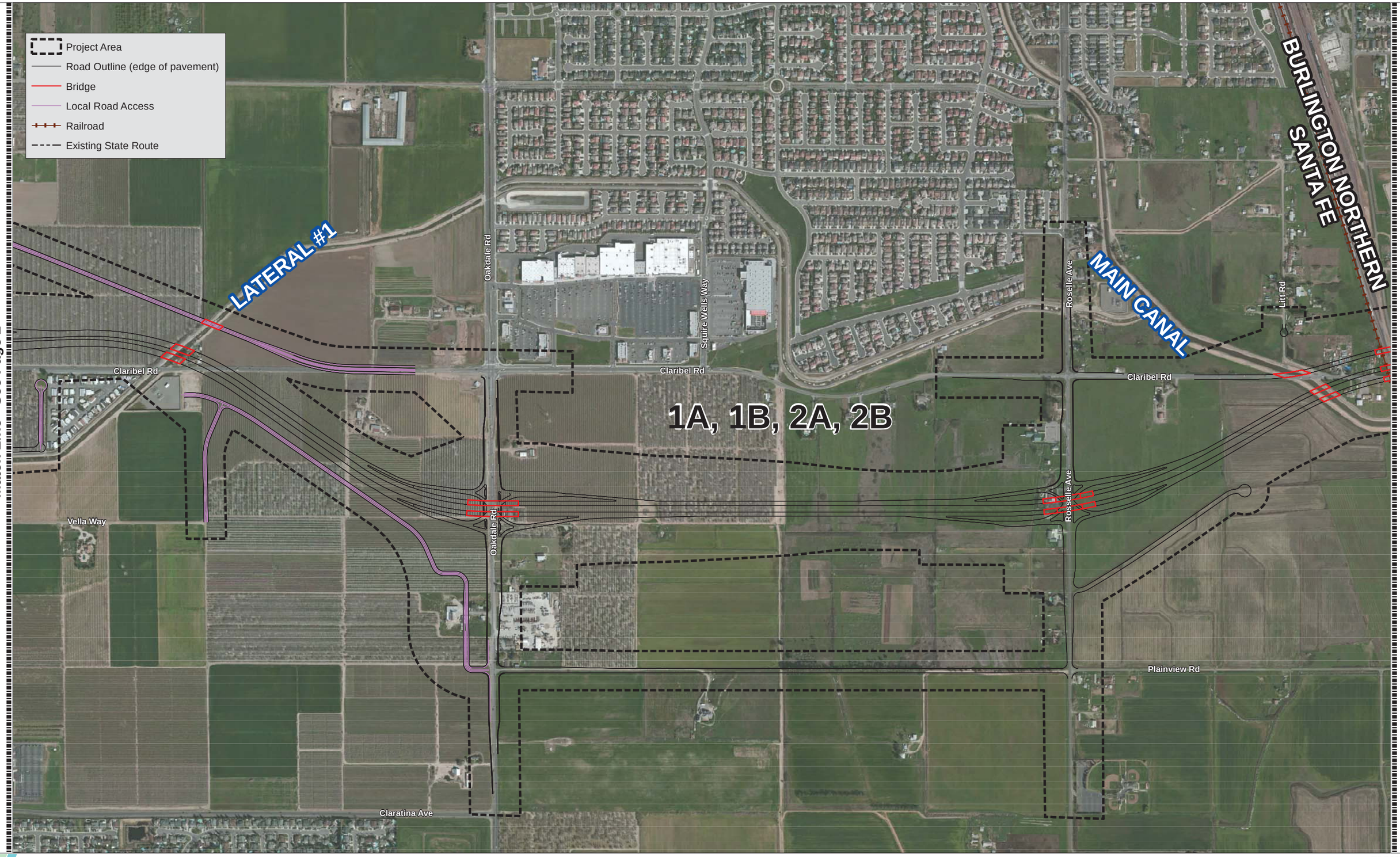
SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.
I:\DHG1302\AI\Project Description\Figure 3 (2 of 14).ai (5/1/15)

FIGURE 3

Build Alternatives
Page 2 of 14

EA: 10-0S8000, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California



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SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.

I:\DHG1302\AI\Project Description\Figure 3 (3 of 14).ai (5/1/15)

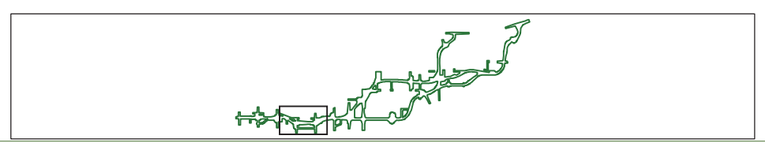


FIGURE 3

Build Alternatives

Page 3 of 14

EA: 10-0S8000, Project ID # 1000000263

North County Corridor State Route 108 Project

Stanislaus County, California

Match Line - See Page 10

Match Line - See Page 3

Match Line - See Page 45

Caltrans

0 1,000 2,000
Feet

SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.
I:\DHG1302\AI\Project Description\Figure 3 (3 of 14).ai (5/1/15)

FIGURE 3

Build Alternatives
Page 4 of 14

EA: 10-0S8000, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California

Match Line - See Page 4

Match Line - See Page 6

Caltrans

0 1,000 2,000
Feet

SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.

I:\DHG1302\AI\Project Description\Figure 3 (5 of 14).ai (5/1/15)

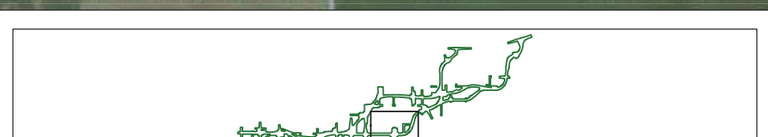


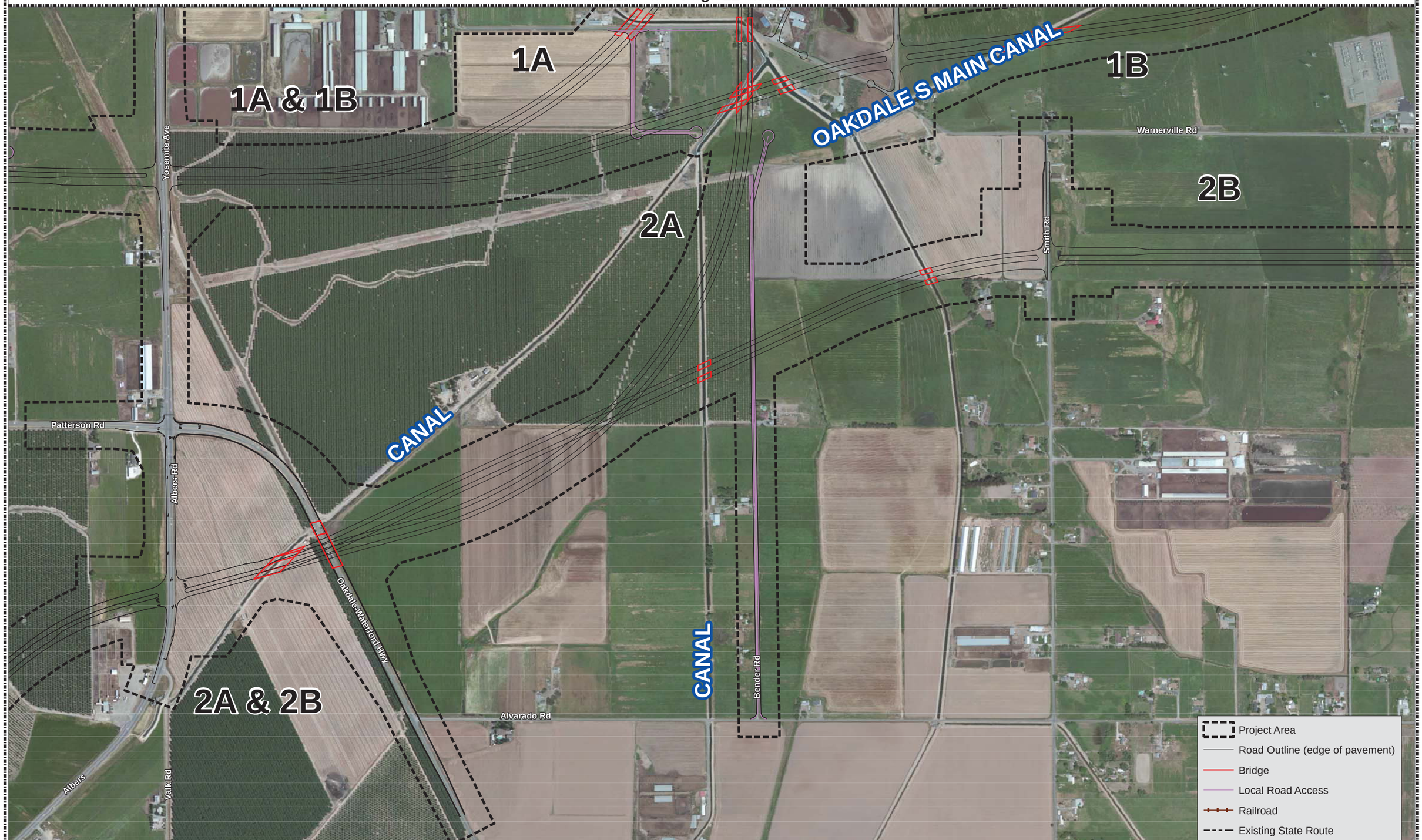
FIGURE 3

Build Alternatives
Page 5 of 14

EA: 10-0S8000, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California

Match Line - See Page 12 and 13

Match Line - See Page 5



Match Line - See Page 7

Caltrans

0 1,000 2,000
FEET

SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.

I:\DHG1302\AI\Project Description\Figure 3 (6 of 14).ai (5/1/15)

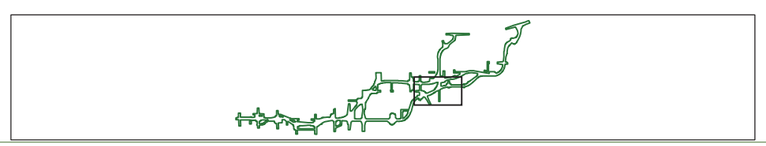
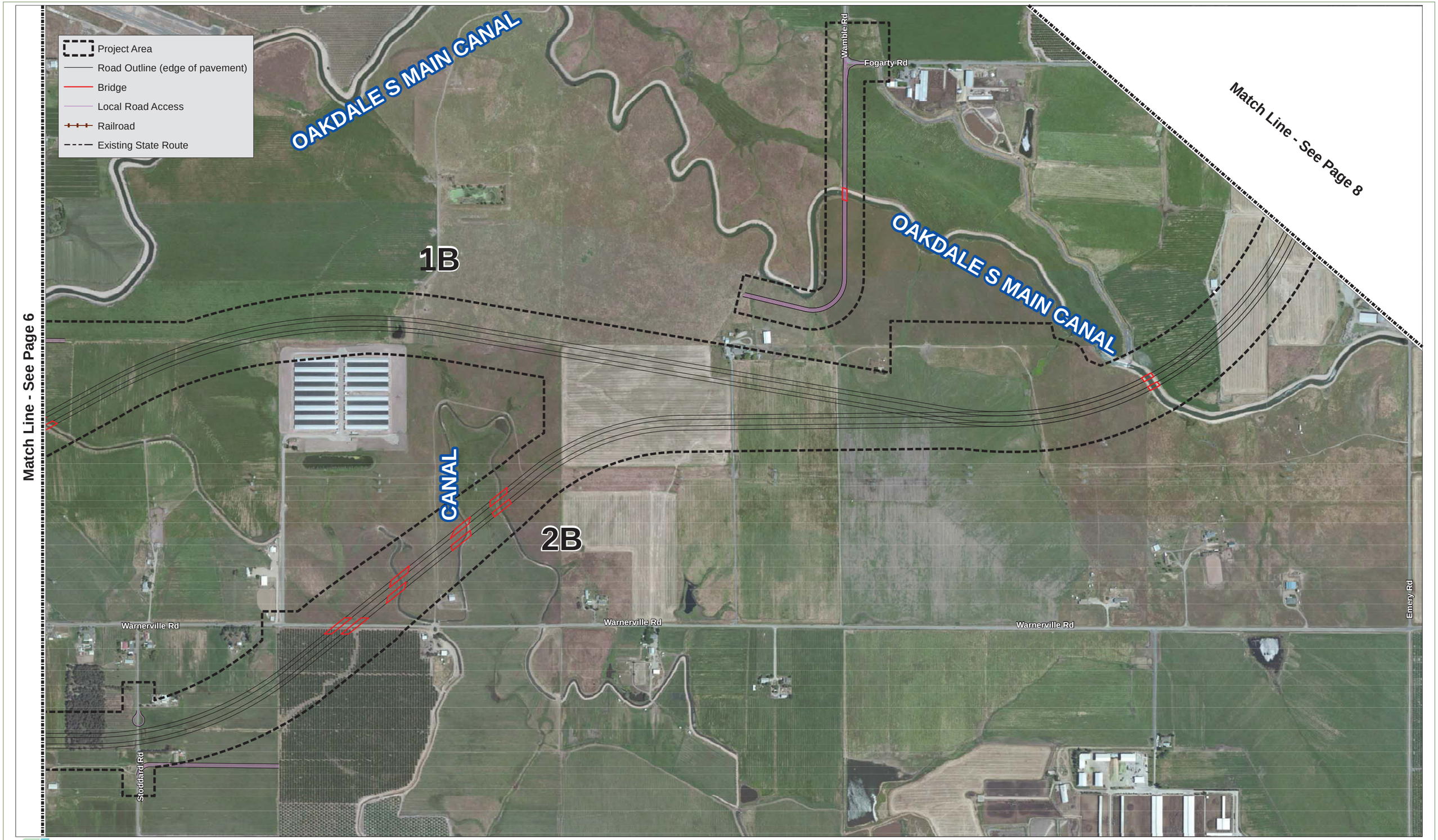


FIGURE 3

Build Alternatives

EA: 10-0S8000, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California



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SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.
I:\DHG1302\AI\Project Description\Figure 3 (7 of 14).ai (5/1/15)

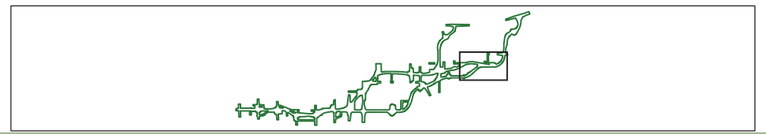

FIGURE 3

Build Alternatives
Page 7 of 14

EA: 10-0S8000, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California

Match Line - See Page 9

SIERRA RAILROAD

1B & 2B

OAKDALE S MAIN CANAL

Fogarty Rd

Emery Rd

Project Area
Road Outline (edge of pavement)
Bridge
Local Road Access
Railroad
Existing State Route

Caltrans

0 1,000 2,000
FEET

SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.
I:\DHG1302\AI\Project Description\Figure 3 (8 of 14).ai (5/1/15)

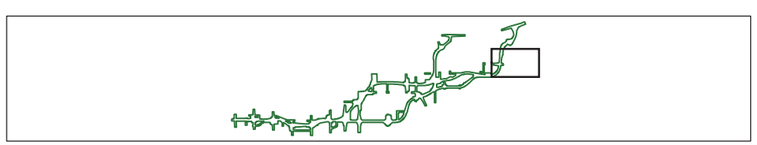

FIGURE 3

Build Alternatives
Page 8 of 14

EA: 10-0S8000, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California

Match Line - See Page 8

Caltrans

0 1,000 2,000

FEET

SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.

I:\DHG1302\AI\Project Description\Figure 3 (9 of 14).ai (5/1/15)

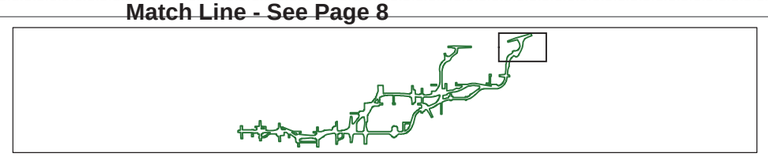

FIGURE 3

Build Alternatives

EA: 10-0S8000, Project ID # 1000000263

North County Corridor State Route 108 Project

Stanislaus County, California

Match Line - See Page 11

Match Line - See Page 12

Match Line - See Page 4

Caltrans

0 1,000 2,000
FEET

SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.
I:\DHG1302\AI\Project Description\Figure 3 (10 of 14).ai (5/1/15)

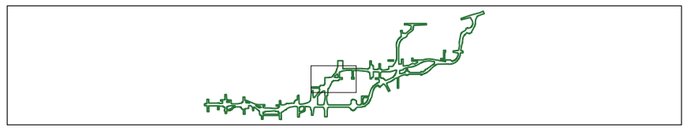

FIGURE 3

Build Alternatives
Page 10 of 14

EA: 10-0S8000, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California

Project Area
Road Outline (edge of pavement)
Bridge
Local Road Access
Railroad
Existing State Route

Crane Rd
Crane Rd
Crane Rd
Greger St
BURLINGTON NORTHERN SANTA FE
1A & 1B

Match Line - See Page 10

Caltrans

0 1,000 2,000
FEET

SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.
I:\DHG1302\A1\Project Description\Figure 3 (11 of 14).ai (5/1/15)

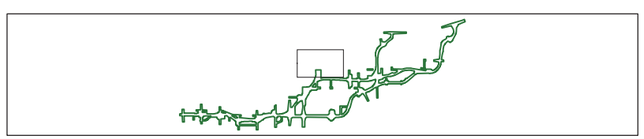

FIGURE 3

Build Alternatives

EA: 10-0S8000, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California

Caltrans

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SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.
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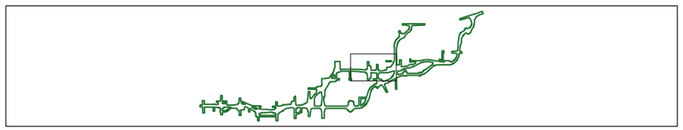

FIGURE 3

Build Alternatives
Page 12 of 14
EA: 10-0S8000, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California

Match Line - See Page 14

Match Line - See Page 12

Match Line - See Page 6

Match Line - See Page 7

Caltrans

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SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.

I:\DHG1302\AI\Project Description\Figure 3 (13 of 14).ai (5/1/15)

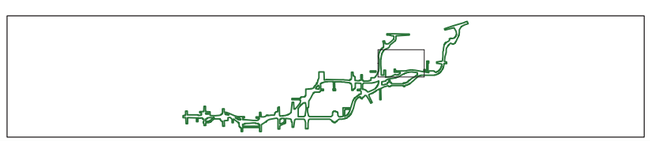


FIGURE 3

Build Alternatives

Page 13 of 14

EA: 10-0S8000, Project ID # 1000000263

North County Corridor State Route 108 Project

Stanislaus County, California

Project Area
Road Outline (edge of pavement)
Bridge
Local Road Access
Railroad
Existing State Route

Deo Gloria Dr
Claus Rd
108
108
1A & 2A
Stearns Rd
CANAL
SIERRA RAILROAD

Match Line - See Page 13

Caltrans

0 1,000 2,000
FEET

SOURCE: ESRI Maps Online March 2011; Dokken Engineering 5/8/2014.

I:\DHG1302\AI\Project Description\Figure 3 (14 of 14).ai (5/1/15)

FIGURE 3

Build Alternatives
Page 14 of 14

EA: 10-0S8000, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California

of Oakdale boundary. Alternatives 1B and 2B end farther east of the Alternatives 1A and 2A terminus, along SR-108/120 in the vicinity of Lancaster Road. The purpose of the project is to reduce existing and future traffic congestion in northern Stanislaus County, enhance traffic safety on existing SR-108, support the efficient movement of goods, and improve interregional travel.

The proposed project improvements include:

- At grade intersection improvements;
- Grade separation structures at major roadway and railway crossings;
- Structures at various waterway crossings, such as the Hetch Hetchy Aqueduct, Modesto Irrigation District (MID) and Oakdale Irrigation District (OID) canals;
- County roadway improvements at various intersections; and,
- New freeway/expressway controlled access travel lanes.

The four alternatives would consist of two to three 12-foot (ft)-wide through lanes with 5-ft to 10-ft-wide left and right shoulders in each direction. The eastbound and westbound alignments would be separated by a 46 to 70-ft-wide median, including the 5-foot to 19-ft-wide shoulders and 26-ft to 60-ft-wide graded, unpaved median area. Stormwater drainage swales would be located along either side of the new roadway.

As the proposed roadway would function as a freeway/expressway with controlled access, new and realigned local access roads are needed to provide continued access to existing properties. This would involve construction of a discontinuous local roadway system, which would provide a 12-ft-wide through lane and an 8-ft-wide shoulder, in each direction. Up to a 12-ft-wide area would be provided between the right-of-way limit and the edge of pavement to allow for drainage ditches. Where required, turn lanes would provide connections to cross roads. Each of the four build alternatives includes these proposed local access roads, which are delineated on Figure 3.

Elevated roadways, separated grade crossings, single point urban interchanges, signalized intersections, and roundabouts would be needed for each of the four alternatives. A Class 2 bike lane would also be constructed within the road shoulder from Claus Road to the eastern terminus at State-Route 108/120.

Various utilities exist throughout the project area that would need to be relocated. These include electric, telephone, water, sewer, and irrigation lines. At the time of this report, the exact locations to which the impacted utilities would be relocated are unknown, but relocation would take place within the currently defined project area.

Permanent right-of-way and temporary construction easements would also be required for the proposed project.

The project may be constructed in phases, (e.g., first constructing the central and eastern sections where there is less overlap with existing roadways) or construction could occur more or less continuously (e.g., starting from one end). Typical grading equipment will be used including scrapers, bulldozers, excavators, backhoes, loaders, dump trucks, cranes, etc.

Construction is expected to begin in 2018, and be completed by 2022.

Chapter 2. Study Methods

2.1. Regulatory Requirements

2.1.1. Special Status Species

Special status species include plants and animals that are: 1) listed as rare, threatened, or endangered by the United States Fish and Wildlife Service (USFWS) or California Department of Fish and Wildlife (CDFW) under State or federal endangered species acts; 2) on formal lists as candidates for listing as threatened or endangered; 3) on formal lists as species of concern; or 4) otherwise recognized at the State, federal, or local level as sensitive.

2.1.1.1. Federal and California Endangered Species Acts

Under the Federal Endangered Species Act (FESA), it is unlawful to "take any species listed as threatened or endangered". "Take" is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." An activity is defined as "take" even if it is unintentional or accidental. Take provisions under FESA apply only to listed fish and wildlife species under the jurisdiction of the USFWS and/or the National Oceanic & Atmospheric Administration, National Marine Fisheries Service (NMFS). Consultation with USFWS or NMFS is required if a project "may affect" a listed species.

When a species is listed, the USFWS and/or the NMFS, in most cases, must officially designate specific areas as critical habitat for the species. Consultation with the USFWS and/or the NMFS is required for projects that include a federal action or federal funding if the project may affect designated critical habitat.

Under the California Endangered Species Act (CESA), it is unlawful to "take" any species listed as rare, threatened, or endangered. Under CESA, "take" means to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill". CESA take provisions apply to fish, wildlife, and plant species. Take may result whenever activities occur in areas that support a listed species. Consultation with CDFW is required if a project will result in "take" of a listed species.

2.1.2. Waters of the U.S. and Other Jurisdictional Waters

2.1.2.1. United States Army Corps of Engineers

Under Section 404 of the Clean Water Act (CWA), the United States Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material into waters of the U.S. Waters of the U.S. are those waters that have a connection to interstate commerce, either direct via a tributary system or indirect through a nexus identified in the USACE regulations. In non-tidal waters, the lateral limit of jurisdiction under Section 404 extends to the ordinary high water mark (OHWM) of a waterbody or, where adjacent wetlands are present, beyond the OHWM to the limit of the wetlands. The OHWM is defined as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area" (33 CFR 328.3). In tidal waters, the lateral limit of jurisdiction extends to the high tide line or, where adjacent wetlands are present, to the limit of the wetlands.

Wetlands

Wetlands are defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for a life in saturated soil conditions".

Nonwetland Waters

Nonwetland waters essentially include any body of water, not otherwise exempted, that displays an OHWM.

2.1.2.2. Regional Water Quality Control Board

Under Section 401 of the CWA, the State Water Resources Control Board must certify all activities requiring a 404 permit. The Regional Water Quality Control Board (RWQCB) regulates these activities and issues water quality certifications for those activities requiring a 404 permit. In addition, the RWQCB has authority to regulate the discharge of "waste" into waters of the State pursuant to the Porter-Cologne Water Quality Control Act (PCWQCA). The PCWQCA legislation requires that "any person discharging waste, or proposed to discharge waste, within any region that could affect the waters of the State to file a report of discharge".

2.1.2.3. California Department of Fish and Wildlife

CDFW, through provisions of Section 1602 of the State Fish and Game Code, is empowered to issue agreements for any alteration of a river, stream, or lake where fish or wildlife resources may be substantially adversely affected. Streams (and rivers) are defined by the presence of a channel bed and banks, and at least an ephemeral or intermittent flow of water. The CDFW regulates wetland areas only to the extent that those wetlands are part of a river, stream, or lake as defined by CDFW.

CDFW generally includes, within the jurisdictional limits of streams and lakes, any riparian habitat present. Riparian habitat includes willows, cottonwoods, and other vegetation typically associated with the banks of a stream or lake shoreline. In most situations, wetlands associated with a stream or lake would fall within the limits of riparian habitat. Thus, defining the limits of CDFW jurisdiction based on riparian habitat will automatically include any wetland areas. Riparian communities may not fall under USACE jurisdiction unless they are below the OHWM or classified as wetlands.

2.1.2.4. Executive Order 11990: Protection of Wetlands

Executive Order (EO) 11990 mandates leadership on the part of federal agencies to reduce loss and degradation of wetlands and to preserve and enhance the beneficial values and functions of wetlands. Each federal agency "shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds that (1) there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use."

2.1.3. Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits actions that will result in "take" of migratory birds, their eggs, feathers, or nests. "Take" is defined in the MBTA as any means or any manner to hunt, pursue, wound, kill, possess, or transport, any migratory bird, nest, egg, or part thereof.

Migratory birds are also protected, as defined in the MBTA, under Section 3513 of the California Fish and Game Code.

2.1.4. California Fish and Game Code (Breeding Birds)

Section 3503 and 3503.3 of the California Fish and Game Code prohibits the take, possession, or needless destruction of the nest or eggs of any bird, except as otherwise

provided by the California Fish and Game Code or other regulation. In addition, Section 3513 prohibits take or possession of any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by the MBTA.

2.1.5. Executive Order 13112: Invasive Species

Under EO 13112, an invasive species is defined as "an alien species (a species not native to a particular ecosystem) whose introduction does or is likely to cause economic and environmental harm or harm to human health". Invasive species are determined by the Invasive Species Council.

In addition to other mandates, EO 13112 mandates federal agencies whose actions may affect the status of invasive species to "not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species".

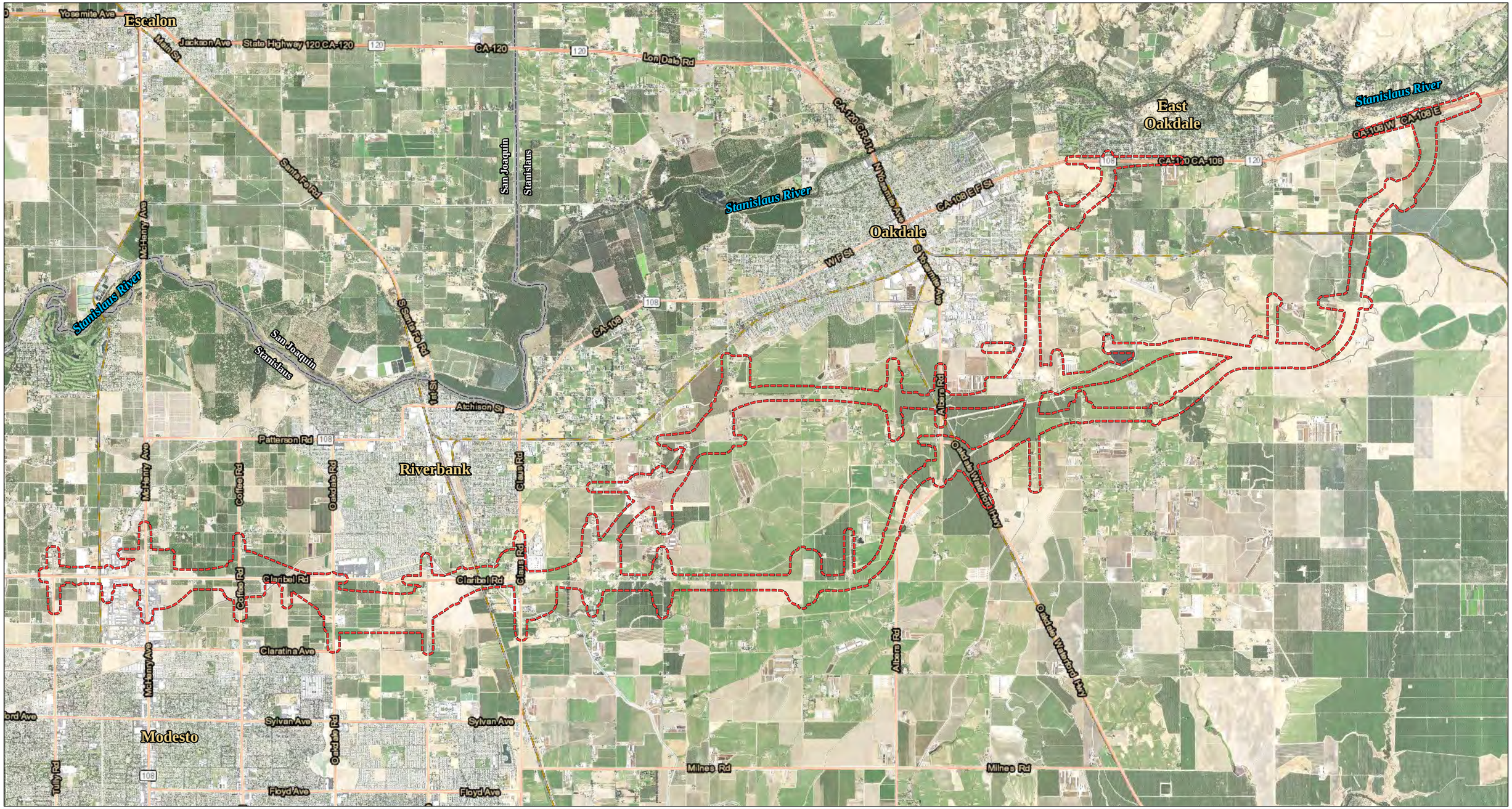
2.1.6. Executive Order 11988: Floodplain Management

EO 11989 mandates leadership on the part of federal agencies to minimize the adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of federal lands, and facilities; (2) providing federally undertaken, financed, or assisted construction and improvements; and (3) conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

2.2. Studies Required

Prior to conducting any field studies, the limits of the Biological Study Area (BSA) were established, as shown in Figure 4. The BSA consists of the proposed new right of way for the four build alternatives (1A, 1B, 2A, and 2B) plus an additional 250-foot buffer. The BSA was developed to capture direct and indirect impacts to the



LEGEND

Biological Study Area

0 0.5 1
MILES

SOURCE: NAIP (2014)

FIGURE 4

Biological Study Area

EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

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biological resources resulting from project implementation. It is expected that the BSA will accommodate the action area defined by the National Environmental Policy Act and the FESA action area. In some areas, the buffer was modified to include areas of land that were surrounded entirely or partially by areas within the BSA.

2.2.1. Literature Review

2.2.1.1. Agency Databases

A list of sensitive wildlife and plant species potentially occurring within the BSA and vicinity was compiled to evaluate potential impacts resulting from project construction. Sources used to compile the list include the California Natural Diversity Data Base (CNDDB), the USFWS online special status species list, and the California Native Plant Society (CNPS) Online Edition referencing the Stockton East, Manteca, Ripon, Westley, Peters, Avena, Salida, Brush Lake, Farmington, Escalon, Riverbank, Ceres, Bachelor Valley, Oakdale, Waterford, Denair, Knights Ferry, Paulsell, Montpelier, Cooperstown, and Turlock Lake USGS 7.5-minute quadrangles. All lists are included in Appendix A.

The special status species lists obtained from the CNDDB, CNPS, and USFWS were reviewed to determine which species could potentially occur within the vicinity of the BSA. The cumulative list (shown in Table 5, Section 3.2) includes numerous species representing a variety of habitat types. The list includes each species' protection status, habitat information, status in the BSA, and supporting comments as necessary.

The determination of whether a species could potentially occur within the BSA was based on the availability of suitable habitat within and adjacent to the BSA, as well as known occurrences of the species in or adjacent to the BSA according to the CNDDB. Species requiring specific habitat not present in the vicinity of the project (e.g., riparian forest) were eliminated as potentially occurring and are not discussed further. Those species that could potentially occur in the BSA from habitat suitability or from known occurrences in or within the vicinity of the BSA are discussed in Sections 4.2 and 4.3.

2.2.1.2. Previous Surveys

Portions of the BSA were previously surveyed by ICF International (ICF) in 2011 and 2012. Material available for review from this effort included various geographic information system (GIS) shapefiles depicting information from previous surveys, field maps, and data sheets. Documentation of the previous surveys was utilized during preparation of this document to the extent practicable.

2.2.2. Field Surveys

2.2.2.1. Vegetation Mapping

Vegetation mapping of the BSA was completed by ICF (2012) during a previous field effort. This mapping was updated by LSA Associates, Inc. (LSA) during the 2014 field effort to reflect current conditions in the BSA. In addition, subsequent to the initial mapping, the limits of the BSA changed as a result of changes to the design, resulting in substantial areas with no vegetation mapping. Using the existing mapping as a reference, LSA mapped the vegetation in the new areas of the BSA by utilizing color aerial imagery (April 2013) supplemented by 2014 field identification during other biological surveys.

2.2.2.2. Potential Jurisdictional Waters Delineation

Potential waters of the U.S. in the BSA were delineated in accordance with the 1987 USACE Wetland Delineation Manual (1987 Manual), the September 2008 Regional Supplement - Arid West Region, and the USACE Regulatory Guidance Letter 08-02 regarding Preliminary Jurisdictional Delineations (June 2008).

LSA biologists Mike Trueblood and Dayna Winchell conducted a preliminary jurisdictional delineation on March 12-14, April 15-16, and 22, 2014, and June 6, 2014. The field investigation was conducted in accordance with the USACE Routine Approach for small areas (i.e., equal to or less than 5 acres), as described in the 1987 Manual. The method for large areas (i.e., greater than 5 acres), consisting of establishment of a baseline and uniform transects, was initially considered. However, based on review of the aerial photos and reconnaissance field data, it was clear that the majority of potential waters of the U.S. in the BSA were located in the drainages and swales, or were randomly spread throughout the BSA. Consequently, use of the routine approach for large areas was not appropriate.

A total of 49 formal observation points were described in the field. Most data points were paired, with an upland point directly adjacent to a wetland point. At each point, a pit was dug (if necessary), and soils and hydrology examined. Soils were not examined in detail at every location, as sites dominated by wetland vegetation were occasionally inundated or saturated at the surface, supporting a conclusion of an aquic moisture regime. The Preliminary Jurisdictional Delineation is included in Appendix B.

Potential waters of the U.S. were mapped in the field using a Geographic Positioning System unit with submeter accuracy. All data was entered into a GIS database to calculate the extent of potential waters of the U.S. in the BSA and to produce the final

mapping. Final mapping was completed using a March 2011 color aerial photo at a scale of 1 inch = 500 ft.

2.2.2.3. Bat Habitat Assessment

The bat habitat assessment was prepared by Wildlife Research Associates, Inc. (WRA). The bat habitat assessment consisted of an aerial photo analysis and a field assessment. The field assessment was conducted on May 12-13, 2014. The bat habitat assessment is included in Appendix C.

2.2.2.4. Nest Surveys for Swainson's Hawk and Other Raptors

Nest surveys were conducted using a modified approach to the Recommended Timing and Methodology for Swainson's Hawk in California's Central Valley (Swainson's Hawk Technical Advisory Committee (SHTAC), dated May 31, 2000). Surveys were conducted on January 16 and February 7, 2014, early in the nesting season, to identify existing stick nests, and on April 21 and May 13-14, 2014 to identify active nests. All surveys were conducted by LSA biologist Dayna Winchell.

2.2.2.5. Western Burrowing Owl Habitat Assessment

A burrowing owl (*Athene cunicularia*) habitat assessment was prepared to evaluate the potential for this species to occur in the BSA. The assessment consisted of a combination of aerial photo review and field surveys. Field surveys were conducted by LSA biologist Dayna Winchell on March 3, March 5, and April 17, 2014. The site assessment is included in Appendix D.

2.2.2.6. Vernal Pool Invertebrate Survey

Surveys for vernal pool invertebrates included two dry season surveys (soil analysis) and two wet season surveys (dipnet sampling). Surveys were conducted in accordance with the *USFWS Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for Listed Vernal Pool Branchiopods*, dated April 19, 1996 (Appendix E).

Dry season surveys were conducted in 2012 and 2014. The 2012 dry season surveys were conducted by ICF biologist Jennifer Haire; the 2014 dry season surveys were conducted by LSA senior herpetologist David Muth. Soil samples, from both the 2012 and 2014 surveys, were processed by David Muth. The 2014 dry season surveys were conducted in late January/early February as a precaution, since there had been so little rainfall up to that point in the season it seemed unlikely that the area would receive sufficient rainfall to allow for wet season surveys. This precaution proved

unnecessary as the area did receive sufficient rainfall later in the winter to allow for wet season surveys.

Wet season surveys were conducted in 2012-2013 and 2014. The 2012-2013 wet season surveys were conducted by ICF biologists Jennifer Haire and John Howe. The 2014 wet season surveys were conducted by LSA senior biologist Laura Belt.

The aquatic features that were surveyed were located throughout the BSA but the majority of the features were concentrated in an area of annual grassland north of Warnerville Road near the eastern end of the BSA.

Survey reports for all of the survey efforts are included in Appendix F.

2.2.2.7. Focused Plant Surveys

LSA botanist, Tim Milliken, and biologist, Dayna Winchell, conducted focused plant surveys of the BSA on March 20, April 10, and July 23, 2014, generally consistent with the CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (November 2009). However, a reference population for the target species was not identified. Focused plant surveys were limited to natural communities within the BSA that supported potentially suitable habitat for the target species. The surveys were conducted during the normal blooming period of the special status plants that had potential to occur in the BSA, based on the habitat present. All plant species observed were identified to a sufficient taxonomic level to determine if it was the target species. A list of plant species observed and the CDFW Plant Survey Protocol (2009) is included in Appendix G.

2.2.2.1. California Tiger Salamander Protocol Breeding Surveys

LSA biologists, Laura Belt and Dayna Winchell, conducted CTS protocol breeding surveys within the BSA during the 2014/2015 survey season. LSA biologists, Laura Belt and Stefan de Barros, conducted CTS protocol breeding surveys during the 2015/2016 survey season. As a result of the initial site assessment surveys, LSA identified 12 aquatic features within the project area as potentially providing suitable aquatic habitat for CTS. In February 2015, during the course of the surveys, LSA identified two additional features as potentially providing suitable aquatic habitat. These two features were not originally identified on aerial imagery prior to fieldwork being conducted; during the initial habitat assessment they were not inundated with water. Per the USFWS survey requirements, all potentially suitable features should be surveyed. As a result, the two features were added to the list of potential CTS habitat.

Two types of surveys were conducted on the project site: early season habitat assessments/egg mass surveys and aquatic habitat surveys.

The purpose of the early season habitat assessment/egg mass surveys was to identify aquatic features that appeared to hold sufficient water to provide suitable aquatic habitat for CTS. Data collected for each feature included the approximate area and depth of ponding. In addition, these aquatic features were visually surveyed for the presence of CTS egg masses, which are more likely to be observed early in the season. See Table 1 for the early season habitat assessments/egg mass survey dates.

For the aquatic habitat surveys, survey and sampling methods used followed those outlined in the *USFWS Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander*, dated October 2013. Data sheets were completed for each feature that was surveyed. Surveys were conducted using a 10 foot by 4 foot nylon seine with one-eighth inch mesh. For each pull of the seine, the length of the pull, and the depth of the feature through which the seine was pulled was recorded. If CTS were captured, the number of individuals was recorded, in addition to any other amphibians or aquatic invertebrates that were captured in the seine, or were observed in the feature. If the feature was too shallow to adequately seine (i.e., less than 3 inches in depth), a dipnet was used to sample the feature. See Table 1 for the aquatic habitat survey dates.

In addition to the project site, LSA also visually surveyed a reference site known to provide suitable aquatic habitat for CTS, with attributes similar to some of the seasonally inundated features that occur at the project site. The reference site is located at the SR-120 McKinley Avenue Interchange Study Area, in southern San Joaquin County, California, located approximately 20 miles west of the project. The reference site is situated south of the City of Lathrop on the north and south side of SR-120. The suitable aquatic habitat for CTS within the reference site comprised of two depressional features located southwest of the McKinley Avenue overpass. The features are locally isolated, shallow depressions that abut the SR-120 fill slopes. The adjacent properties to the south are irrigated and non-irrigated pastureland that provides suitable upland habitat with aestivation sites for CTS. LSA wildlife biologists Laura Belt and Dayna Winchell visually surveyed known suitable CTS aquatic habitat at the reference site on January 29, and February 18, 2015. LSA wildlife biologists Laura Belt and Stefan de Barros visually surveyed known suitable CTS aquatic habitat at the reference site on January 21, February 11, April 13, and May 4, 2016.

Survey reports for all of the survey efforts are included in Appendix M.

2.3. Personnel and Survey Dates

Table 1 below provides a summary of the field surveys performed in the BSA[1]. Unless otherwise indicated, all personnel listed below are LSA staff.

Table 1: Survey Dates and Personnel

Date	Personnel	Task
September 26, 2012	Jennifer Haire (ICF)	Dry season vernal pool sampling
October 3 and 5, 2012	Jennifer Haire (ICF)	Dry season vernal pool sampling
December 11, 14, 28, and 29, 2012	Jennifer Haire and John Howe (ICF)	Wet season vernal pool sampling
January 9, 11, and 24, 2013	Jennifer Haire, John Howe (ICF)	Wet season vernal pool sampling
February 6 and 21, 2013	John Howe (ICF)	Wet season vernal pool sampling
March 8 and 22, 2013	John Howe (ICF)	Wet season vernal pool sampling
April 2, 3 and 18, 2013	Jennifer Haire, John Howe (ICF)	Wet season vernal pool sampling
December 12, 2013	Laura Belt	Early season raptor nest survey; hydrology observation
December 26, 2013	Dayna Winchell	Vegetation mapping
January 16, 2014	Dayna Winchell	Early season raptor nest survey
January 29, 2014	David Muth	Dry season vernal pool sampling
February 6, 2014	David Muth, Dayna Winchell, Angela Scudiere (Dokken), Sarah Soliman and Kristen Baker (Caltrans)	Dry season vernal pool sampling
February 7, 2014	Dayna Winchell	Early season raptor nest survey
February 13, 2014	Laura Belt	Wet season vernal pool sampling
March 3, 2014	Dayna Winchell	Burrowing owl habitat assessment, general wildlife survey
March 4, 2014	Laura Belt	Wet season vernal pool sampling
March 5, 2014	Dayna Winchell	Burrowing owl habitat assessment, general wildlife survey
March 6, 2014	Laura Belt	Hydrology observation

[1] The majority of the surveys included in Table 1 were completed in winter and spring 2014. Only surveys conducted prior to the current (i.e., 2014) survey season that were clearly documented and that were used to establish findings for special status species are included in Table 1.

Date	Personnel	Task
March 12-14, 2014	Mike Trueblood, Dayna Winchell	Jurisdictional delineation
March 14, 2014	Laura Belt	Wet season vernal pool sampling
March 20, 2014	Dayna Winchell, Tim Milliken	Focused plant surveys
March 26, 2014	Laura Belt	Wet season vernal pool sampling
April 8, 2014	Laura Belt	Wet season vernal pool sampling
April 10, 2014	Tim Milliken	Focused plant surveys
April 15, 2014	Dayna Winchell, Mike Trueblood	Jurisdictional delineation
April 16, 2014	Dayna Winchell	Jurisdictional delineation
April 17, 2014	Dayna Winchell	Burrowing owl habitat assessment
April 21, 2014	Dayna Winchell, Mike Trueblood	Swainson's hawk/raptor nesting survey
April 22, 2014	Dayna Winchell, Mike Trueblood	Jurisdictional delineation
April 24, 2014	Laura Belt	Wet season vernal pool sampling
May 12-13, 2014	Wildlife Research Assoc.	Bat habitat field assessment
May 13-14, 2014	Dayna Winchell	Swainson's hawk/raptor nesting survey
June 6, 2014	Mike Trueblood	Jurisdictional delineation
July 23, 2014	Tim Milliken	Focused plant surveys
December 17, 2014	Laura Belt, Dayna Winchell	CTS early season habitat assessments/egg mass surveys
January 15-16, 2015	Laura Belt, Dayna Winchell	CTS early season habitat assessments/egg mass surveys
January 29-30, 2015	Laura Belt, Dayna Winchell	CTS aquatic habitat surveys
February 17-18, 2015	Laura Belt, Dayna Winchell	CTS aquatic habitat surveys
March 11-12, 2015	Laura Belt, Dayna Winchell	CTS aquatic habitat surveys
April 6, 2015	Laura Belt, Dayna Winchell	CTS aquatic habitat surveys
January 15 and 22, 2016	Laura Belt, Stefan de Barros	CTS early season habitat assessments/egg mass surveys
February 10, 2016	Laura Belt, Stefan de Barros	CTS early season habitat assessments/egg mass surveys
March 15 - 16, 2016	Laura Belt, Stefan de Barros	CTS aquatic habitat surveys
April 13-15, 2016	Laura Belt, Stefan de Barros	CTS aquatic habitat surveys
May 18-19, 2016	Laura Belt, Stefan de Barros	CTS aquatic habitat surveys

LSA field staff qualifications are as follows:

Laura Belt, Senior Wildlife Biologist, has a diverse background as a wildlife field biologist, which includes 25 years of experience in conducting a variety of habitat and wildlife surveys throughout the State. Ms. Belt is responsible for a variety of tasks, which include biological surveys and construction monitoring of road, bridge, and various development projects, general and focused surveys for special status species, preparation of biological assessments involving plant and wildlife issues, preparation of 401, 404, and 1600 application material, mitigation plans, and other environmental documentation. Field and biological construction monitoring experience includes working with San Joaquin kit fox, Mojave ground squirrel, Swainson's hawk, western burrowing owl, California red-legged frog, California tiger salamander, desert tortoise, San Francisco garter snake, giant garter snake, listed tadpole and fairy shrimp, and valley elderberry longhorn beetle. Ms. Belt is also on the Fish and Wildlife Service List of Authorized Individuals to conduct activities with listed tadpole and fairy shrimp, and California tiger salamander, as per LSA's Recovery Permit.

Tim Milliken, Botanist/Certified Arborist (WE-5539A)/Bryologist/Lichenologist. Mr. Milliken conducts botanical surveys for rare and special-status plant species, noxious weeds, wetland plants, and trees as well as non-vascular plants (lichens and bryophytes) throughout the middle sections of California. His diverse training in arboriculture, botany, wetland delineation, and landscape architecture helps to assist clients through challenging development and restoration projects. Mr. Milliken has done botany work on a variety of projects including biological assessments, preconstruction surveys, construction monitoring, on and off site habitat mitigation banks, and wetland determinations. His botanical work includes planning and conducting rare plant surveys, mapping plant communities, and analyzing impacts to vegetation. Mr. Milliken also prepares vegetation sections for biological constraints analyses, habitat restoration plans, and monitoring reports.

David Muth, Senior Wildlife Biologist, has over 30 years professional experience and has served as a senior wildlife biologist for LSA's Natural Resource Division with their Point Richmond office for the last 21 years. During that time, he has managed and worked on numerous projects that entail a variety of biological resource disciplines (e.g., wildlife, botany, wetlands). Mr. Muth has extensive experience with endangered and threatened species particularly reptiles, amphibians and vernal pool invertebrates. In addition, his work includes wetland and terrestrial ecology, natural

resource management, and biological impact assessment and mitigation. Mr. Muth's responsibilities include development of study plans and budgets, report preparation, supervision of field staff, implementation of survey methods and gathering of field data, analysis of data, and assessment of impacts and development of mitigation measures. He also monitors construction projects for compliance with federal, state, and local regulatory requirements pertaining to resource protection measures.

Mike Trueblood, Senior Biologist, is a general biologist with over 14 years of experience with biological resources, restoration, wetland, and construction projects throughout the middle sections of California. Additionally, Mr. Trueblood is responsible for conducting biological studies and preparing technical reports, performing jurisdictional delineations, obtaining 401, 404, and 1602 permits, coordinating Section 7 consultations, providing GIS graphic support, and coordinating construction monitoring efforts. Mr. Trueblood has worked on numerous transportation projects and with the Local Assistance Program involving jurisdictional waters, special status species and has considerable experience facilitating environmental clearance for these types of projects.

Dayna Winchell, Biologist, is a general biologist with a variety of experience in the wildlife and environmental field. This experience includes conducting full ecological evaluations and assessment and animal behavior surveys. Additional experience includes coordinating special species trapping, surveying and relocation projects as well as studying long term human impacts on flora and fauna. Ms. Winchell has participated in multiple construction monitoring projects. Ms. Winchell is also skilled in writing scientific and technical reports for Site Rehabilitation and Revegetation, Fauna Management Plans, and Environmental Management Plans. Ms. Winchell is experienced in ensuring legislation compliance on the local, state and federal levels. Additional experience includes soil analysis, mitigation monitoring and auditing.

WRA field staff qualifications (from the website) are as follows:

Greg Tatarian, Biologist, is a bat specialist, but is also experienced with a wide range of taxa including raptors, amphibians and small mammals. He first began conducting nuisance wildlife control in 1991, with a special focus on humane solutions to problems with bats. Mr. Tatarian now provides bat surveys of: bridges, buildings, trees, other natural and man-made habitat, habitat assessments, mitigation plans, implementation and monitoring, mitigation roost designs, and habitat enhancement consulting for vineyard and orchard owners interested in incorporating natural

predators of agricultural pest species. Since 1993, Mr. Tatarian has designed, built and developed many artificial roost designs for bats, many of which have been used to provide mitigation habitat for projects both large and small. A holder of state permits for a wide range of species and a Memorandum of Understanding for bats. Mr. Tatarian has conducted bat surveys and research since 1995.

Patricia Tatarian, Ecologist, is experienced with a wide range of taxa, however with a longtime focus on amphibian telemetry research and surveys. She has conducted several multi-season research projects, and also prepares Biological Assessments, Site Assessments and conducts construction monitoring for a wide variety of species. Mrs. Tatarian possesses state and federal permits for surveys and research with California red-legged frogs, California tiger salamander, Pacific pond turtle, and other species. Mrs. Tatarian has worked in the biological consulting field since 1992.

2.4. Agency Coordination and Professional Contacts

On January 31, 2012, Jennifer Haire (ICF) contacted Eric Hansen, an independent consulting biologist, via electronic mail re: the potential for giant garter snake (*Thamnophis gigas*) (GGS) to occur in the project area. Mr. Hansen stated that, based on the results of several studies, GGS are not known to occur in Stanislaus County.

On April 10, 2012, a field meeting to discuss the approach to the jurisdictional delineation was held between staff from the USACE, EPA, Caltrans, and ICF. The USACE and EPA provided several recommendations (e.g., verification approach, mapping irrigated pasture wetlands).

On May 4, 2012, Rachel Kleinfelter (Caltrans) contacted Jen Schofield (USFWS) via electronic mail re: the potential for San Joaquin kit fox (*Vulpes macrotis mutica*) (SJKF) to occur in the project area. Ms. Schofield noted that, per a discussion with other USFWS staff knowledgeable about SJKF, this species is likely not an issue for the project; therefore, focused surveys for SJKF would not be necessary.

On January 23, 2014, a biological resources coordination meeting was held to discuss the approach to special status species. Attendees included staff from the USFWS, CDFW, Caltrans, Stanislaus County, Drake Haglan and Associates, Inc., LSA, and Dokken Engineering, Inc. (Dokken). Following a comprehensive discussion, concurrence was reached on the approach to all special status species. Subsequent to the meeting, additional coordination occurred between Caltrans (Dena Gonzalez) and

Dokken (Sarah Holm) re: the approach to bat surveys. The approaches to special status species agreed to during this meeting and subsequent coordination were implemented during the field investigation and data evaluation phases of the project.

Documentation of agency coordination and professional contacts is included in Appendix H.

On January 28, 2015 David Kelly (USFWS) authorized Laura Belt (LSA biologist) to conduct wet season surveys (2014/2015) for the federally-listed CTS (See Appendix M).

On December 23, 2015 Sarah Markegard (USFWS) authorized Laura Belt (LSA biologist) to conduct wet season surveys (2015/2016) for the federally-listed CTS (See Appendix M).

2.5. Limitations That May Influence Results

2.5.1. Low Rainfall Totals

Rainfall during the 2013-2014 winter/spring totaled approximately 6.86 inches compared to annual rainfall averaging 12.21 inches (Western Regional Climate Center, 2014). In addition, the majority of the rainfall (4.05 inches) occurred in February and March (i.e., late in the season).

The low rainfall during the 2013-2014 winter/spring was also a constraint for conducting protocol wet season dipnet surveys for vernal pool invertebrates. However, there was sufficient rainfall later in the season to adequately survey potential habitat and obtain valid results (see Section 4.3.13). Although the low (and late occurring) rainfall was a constraint for wet season surveys, it provided an opportunity to conduct dry season soil sampling for vernal pool invertebrates in late winter since the soil was dry (see Section 4.3.13). The USFWS concurred with this approach during the January 23, 2014 meeting (see Appendix H).

The amount of rainfall during the 2015-2016 rainy season was above average; the Oakdale/Modesto area received approximately 122 percent of the normal rainfall for the year. The amount of rainfall during the 2014-2015 rainy season was lower than average; the Oakdale/Modesto area received approximately 78 percent of the normal rainfall for the year. However, the timing and the amount of inundation of the features at the project were sufficient for a successful reproduction season for Pacific chorus

frogs and bull frogs which require approximately the same duration of inundation for successful breeding as CTS. Therefore, the heavy rains in early December 2014 would have provided enough water to fill the project features and, with the help of occasional subsequent rain events, maintain a sufficient amount of water in most of the features for a sufficient duration for CTS to successfully reproduce. In addition, anecdotal evidence from the reference site, where CTS were observed during the during January and February 2015 site visits, suggests that regional conditions were suitable for CTS reproduction. Therefore, the 2014/2015 CTS surveys are considered valid. The USFWS and CDFW concurred with this approach during the January 23, 2014 meeting (see Appendix H). The USFWS authorized the 2015 and 2016 CTS protocol breeding surveys (see Appendix M).

2.5.2. Property Access

Property access was a minor constraint for conducting field surveys. Access was granted for most properties that contained (or appeared to have contained – based on aerial photo review and reconnaissance surveys) sensitive biological resources. Assessment of properties where right of entry was not granted, and that supported potential sensitive biological resources, consisted of a combination of field level review from the public right of way (i.e., “looking over the fence”) and current and historic aerial photo review. However, this approach has some limitations. For example, elderberry shrubs were recorded when observed, but some areas of properties where access was not granted were not viewable from existing roadway. Therefore, the potential exists for additional elderberry shrubs to occur within the BSA.

In addition, due to property access issues, LSA was unable to survey feature 2 during the 2014/2015 surveys. For the 2015-2016 survey, access was granted to survey suitable sites that were previously identified during the 2014-2015 survey season but were not accessible.

Chapter 3. Results: Environmental Setting

3.1. Description of the Existing Biological and Physical Conditions

The BSA, totaling approximately 5,434.69 ac, is located in northern Stanislaus County in the San Joaquin Valley. The western end of the NCC begins approximately 4 miles (mi) east of SR-99 and approximately 0.75 mi north of Modesto. The NCC extends approximately 18 mi to the east and ends at SR-108 east of Oakdale.

The NCC is located within portions of Township 2 South Ranges 9, 10, and 11E and Township 3 South Ranges 9, 10, and 11E Mount Diablo Baseline and Meridian, on the Salida, California; Riverbank, California; Waterford, California; Oakdale, California; and Knights Ferry, California 7.5 minute series USGS topographic maps (Figure 5).

Land in the BSA consists of vegetation communities and developed areas. Vegetation communities and land uses are discussed below in the Section 3.1.2.1.

3.1.1. Physical Conditions

The BSA consists mostly of developed and agricultural lands (e.g., orchards, irrigated pasture) but also includes areas of natural vegetation.

3.1.1.1. Climate

The climate in the BSA is Mediterranean with cool, wet winters and hot, dry summers. The average total annual precipitation is approximately 12.21 inches (Western Regional Climate Center, 2014), most of which falls between November and April. There is normally less than 0.5 inch of rain between June and September. The average winter temperature is 47.5 Fahrenheit (ºF) and the average winter low temperature is 39.6 ºF. The average summer temperature is 75.1 ºF and the average summer high temperature is 91.6 ºF.

3.1.1.2. Topography

The western and central portions of the BSA are generally flat; the topography begins trending upward in the eastern portion of the BSA. The elevation within the BSA ranges from approximately 100 ft above sea level at the western end to approximately 250 ft above mean sea level at the eastern end.

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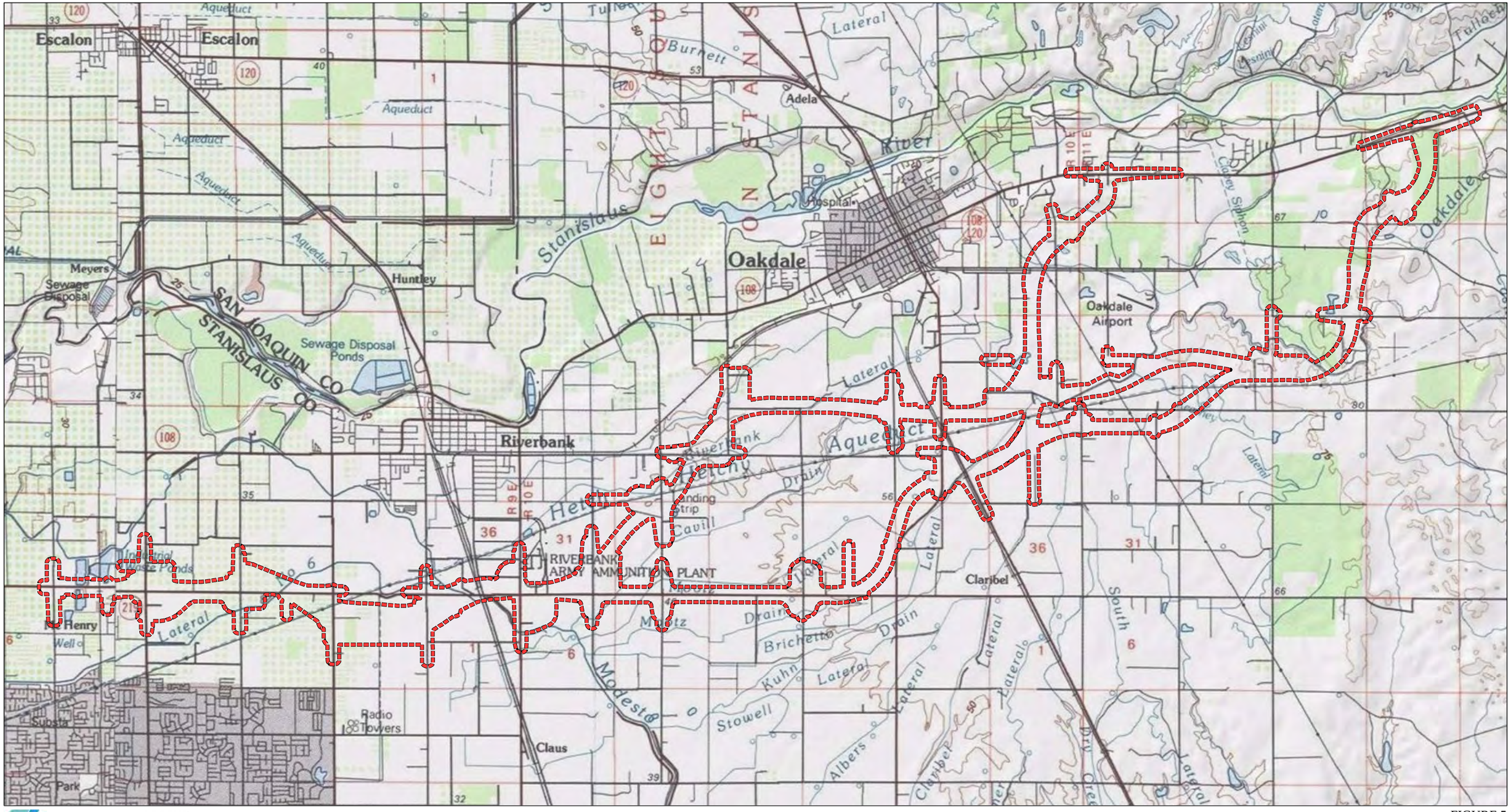

LEGEND

Biological Study Area

FIGURE 5

Caltrans

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0 0.5 1
MILES

SOURCE: USGS Topo Map (San Joaquin and Stanislaus Counties)

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Biological Study Area on Topographic Base

EA: 10-0S8000, Project ID # 1000000263

North County Corridor New State Route 108 Project

Stanislaus County, California

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3.1.1.3. Hydrology

The BSA is located within the Middle San Joaquin-Lower Merced-Lower Stan Watershed (Hydrologic Unit Code # 18040002) (U.S. Environmental Protection Agency 2012).

There are no substantial waterways in the BSA but several small waterways are present. Many of these waterways are very small and unnamed, with only seasonal water conveyance. The eastern portion of the study, generally north of Warnerville Road, drains to the north towards the Stanislaus River. The remainder of the BSA generally drains south or southwest towards Dry Creek, which is tributary to the Tuolumne River.

Several irrigation canals also occur within the BSA. These canals are part of either the MID (western part of the BSA) or the OID (eastern part of the BSA). The irrigation canals are generally concrete-lined and controlled with earthen levees.

3.1.1.4. Soils

According to the Soil Survey of the Eastern Stanislaus County Area (Arkley 1964), a total of 54 soil mapping units occur within the BSA. These units are summarized below in Table 2 and shown on Figures 6a and 6b.

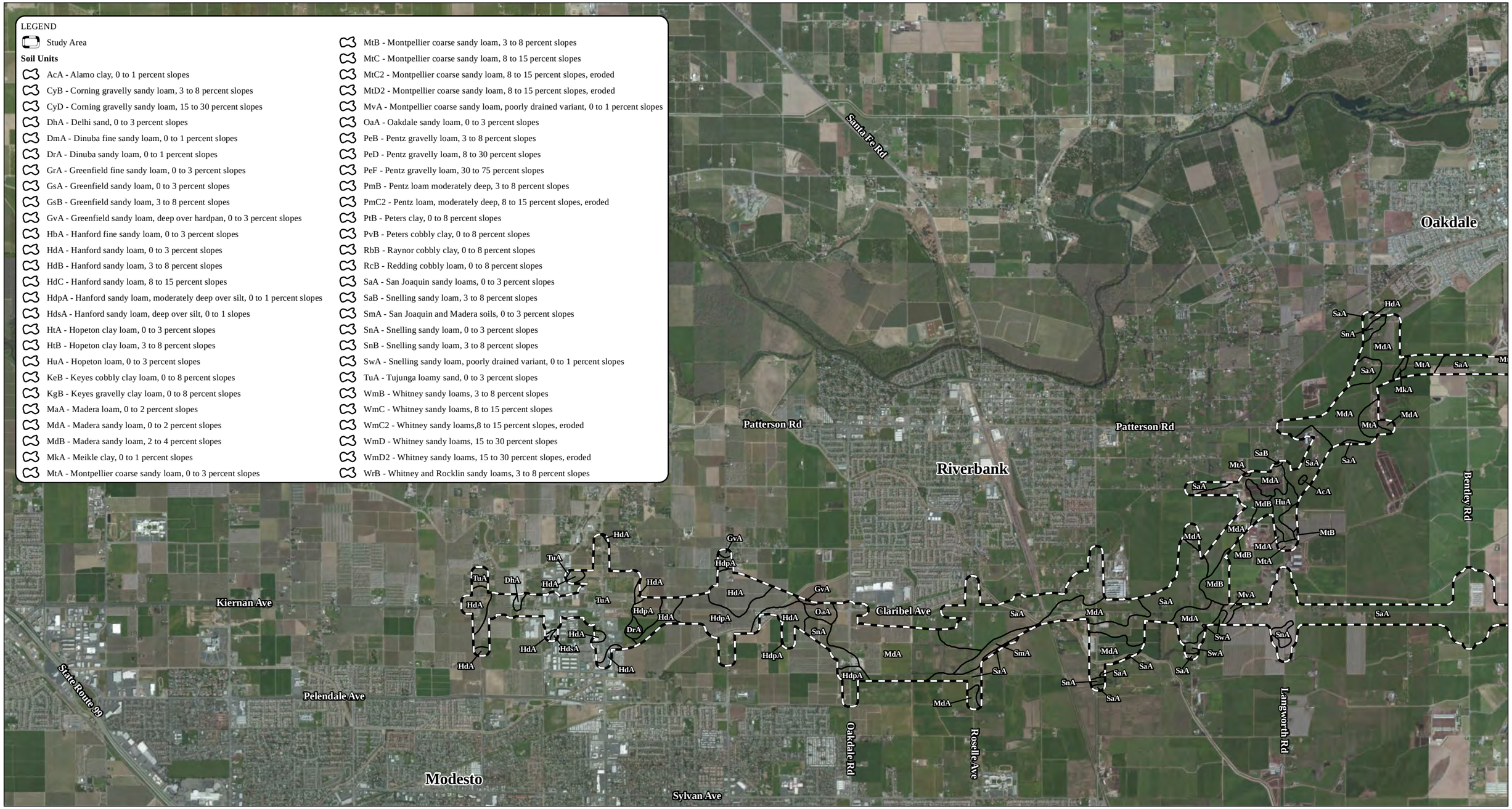
Table 2: Summary of Soil Units that Occur within the BSA

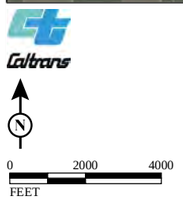
Map Unit	Soil Series	Location	Drainage Class	Permeability	Texture
AcA	Alamo clay, 0 to 1 percent slopes	Fan remnants	Poorly drained	Very slow, non through hardpan	Clay
CyB	Corning gravelly sandy loam, 3 to 8 percent slopes	Stream terraces	Moderately well drained	Slow	Sandy loam
CyD	Corning gravelly sandy loam, 15 to 30 percent slopes	Stream terraces	Moderately well drained	Slow	Sandy loam
DhA	Delhi sand, 0 to 3 percent slopes	Sand sheets	Somewhat excessively drained	Very rapid	Sand
DmA	Dinuba fine sandy loam, 0 to 1 percent slopes	Alluvial fans	Moderately well drained	Moderate	Fine sandy loam
DrA	Dinuba sandy loam, 0 to 1 percent slopes	Alluvial fans	Moderately well drained	Moderate	Sandy loam
GrA	Greenfield fine sandy loam, 0 to 3 percent slopes	Alluvial fans	Well drained	Moderate	Fine sandy loam

Map Unit	Soil Series	Location	Drainage Class	Permeability	Texture
GsA	Greenfield sandy loam, 0 to 3 percent slopes	Alluvial fans	Well drained	Moderately rapid	Sandy loam
GsB	Greenfield sandy loam, 3 to 8 percent slopes	Alluvial fans	Well drained	Moderately rapid	Sandy loam
GvA	Greenfield sandy loam, deep over hardpan, 0 to 3 percent slopes	Alluvial fans	Well drained	Moderately rapid	Sandy loam
HbA	Hanford fine sandy loam, 0 to 3 percent slopes	Alluvial fans	Well drained	Moderately rapid	Fine sandy loam
HdA	Hanford sandy loam, 0 to 3 percent slopes	Alluvial fans	Well drained	Rapid	Sandy loam
HdB	Hanford sandy loam, 3 to 8 percent slopes	Alluvial fans	Well drained	Rapid	Sandy loam
HdC	Hanford sandy loam, 8 to 15 percent slopes	Alluvial fans	Well drained	Rapid	Sandy loam
HdpA	Hanford sandy loam, moderately deep over silt, 0 to 1 percent slopes	Alluvial fans	Well drained	Rapid	Sandy loam
HdsA	Hanford sandy loam, deep over silt, 0 to 1 slopes	Alluvial fans	Well drained	Rapid	Sandy loam
HtA	Hopeton clay loam, 0 to 3 percent slopes	---	Moderately well drained	Slow	Clay loam
HtB	Hopeton clay loam, 3 to 8 percent slopes	---	Moderately well drained	Slow	Clay loam
HuA	Hopeton loam, 0 to 3 percent slopes	---	Moderately well drained	Slow	Clay loam
KeB	Keyes cobbly clay loam, 0 to 8 percent slopes	Fan remnants	Moderately well drained	Very slow	Clay loam
KgB	Keyes gravelly clay loam, 0 to 8 percent slopes	Fan remnants	Moderately well drained	Very slow	Clay loam
MaA	Madera loam, 0 to 2 percent slopes	Fan remnants	Moderately well drained	Very slow	Loam
MdA	Madera sandy loam, 0 to 2 percent slopes	Fan remnants	Moderately well drained	Very slow	Sandy loam
MdB	Madera sandy loam, 2 to 4 percent slopes	Fan remnants	Moderately well drained	Very slow	Sandy loam
MkA	Meikle clay, 0 to 1 percent slopes	Basin floor	Somewhat poorly drained	Very slow	Clay

Map Unit	Soil Series	Location	Drainage Class	Permeability	Texture
MtA	Montpellier coarse sandy loam, 0 to 3 percent slopes	Fan remnants	Well drained	Slow	Coarse sandy loam
MtB	Montpellier coarse sandy loam, 3 to 8 percent slopes	Fan remnants	Well drained	Slow	Coarse sandy loam
MtC	Montpellier coarse sandy loam, 8 to 15 percent slopes	Fan remnants	Well drained	Slow	Coarse sandy loam
MtC2	Montpellier coarse sandy loam, 8 to 15 percent slopes, eroded	Fan remnants	Well drained	Slow	Coarse sandy loam
MtD2	Montpellier coarse sandy loam, 15 to 30 percent slopes, eroded	Fan remnants	Well drained	Slow	Coarse sandy loam
MvA	Montpellier coarse sandy loam, poorly drained variant, 0 to 1 percent slopes	Drainageways	Poorly drained	Slow	Coarse sandy loam
OaA	Oakdale sandy loam, 0 to 3 percent slopes	Fan remnants	Well drained	Moderate	Sandy loam
PeB	Pentz gravelly loam, 3 to 8 percent slopes	Hillslopes	Well drained	Moderate	Gravelly loam
PeD	Pentz gravelly loam, 8 to 30 percent slopes	Hillslopes	Well drained	Moderate	Gravelly loam
PeF	Pentz gravelly loam, 30 to 75 percent slopes	Hillslopes	Well drained	Moderate	Gravelly loam
PmB	Pentz loam moderately deep, 3 to 8 percent slopes	Hillslopes	Well drained	Moderate	Loam
PmC2	Pentz loam, moderately deep, 8 to 15 percent slopes, eroded	Hillslopes	Well drained	Moderate	Loam
PtB	Peters clay, 0 to 8 percent slopes	Hillslopes	Well drained	Slow	Clay
PvB	Peters cobbly clay, 0 to 8 percent slopes	Hillslopes	Well drained	Slow	Cobbly clay
RbB	Raynor cobbly clay, 0 to 8 percent slopes	Terraces	Well drained	Slow	Cobbly clay
RcB	Redding cobbly loam, 0 to 8 percent slopes	Fan remnants	Moderately well drained	Very slow	Cobbly loam
SaA	San Joaquin sandy loams, 0 to 3 percent slopes	Fan remnants	Moderately well drained	Very slow	Sandy loam
SaB	Snelling sandy loam, 3 to 8 percent slopes	Fan remnants	Moderately well drained	Very slow	Sandy loam

Map Unit	Soil Series	Location	Drainage Class	Permeability	Texture
SmA	San Joaquin and Madera soils, 0 to 3 percent slopes	Fan remnants	Moderately well drained	Very slow	Sandy loam
SnA	Snelling sandy loam, 0 to 3 percent slopes	Fan remnants	Well drained	Moderately slow	Sandy loam
SnB	Snelling sandy loam, 3 to 8 percent slopes	Fan remnants	Well drained	Moderately slow	Sandy loam
SwA	Snelling sandy loam, poorly drained variant, 0 to 1 percent slopes	Depressions	Poorly drained	Moderately slow	Sandy loam
TuA	Tujunga loamy sand, 0 to 3 percent slopes	Alluvial fans	Somewhat excessively drained	Very rapid	Loamy sand
WmB	Whitney sandy loams, 3 to 8 percent slopes	Fan remnants	Well drained	Moderate	Sandy loam
WmC	Whitney sandy loams, 8 to 15 percent slopes	Fan remnants	Well drained	Moderate	Sandy loam
WmC2	Whitney sandy loams, 8 to 15 percent slopes, eroded	Fan remnants	Well drained	Moderate	Sandy loam
WmD	Whitney sandy loams, 15 to 30 percent slopes	Fan remnants	Well drained	Moderate	Sandy loam
WmD2	Whitney sandy loams, 15 to 30 percent slopes, eroded	Fan remnants	Well drained	Moderate	Sandy loam
WrB	Whitney and Rocklin sandy loams, 3 to 8 percent slopes	Backslope	Well drained	Moderate (Whitney); moderately slow (Rocklin)	Sandy loam





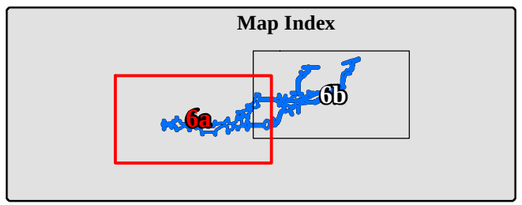


FIGURE 6a

Mapped Soil Units

EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - NRCS Eastern Stanislaus County Soil Survey (1964)

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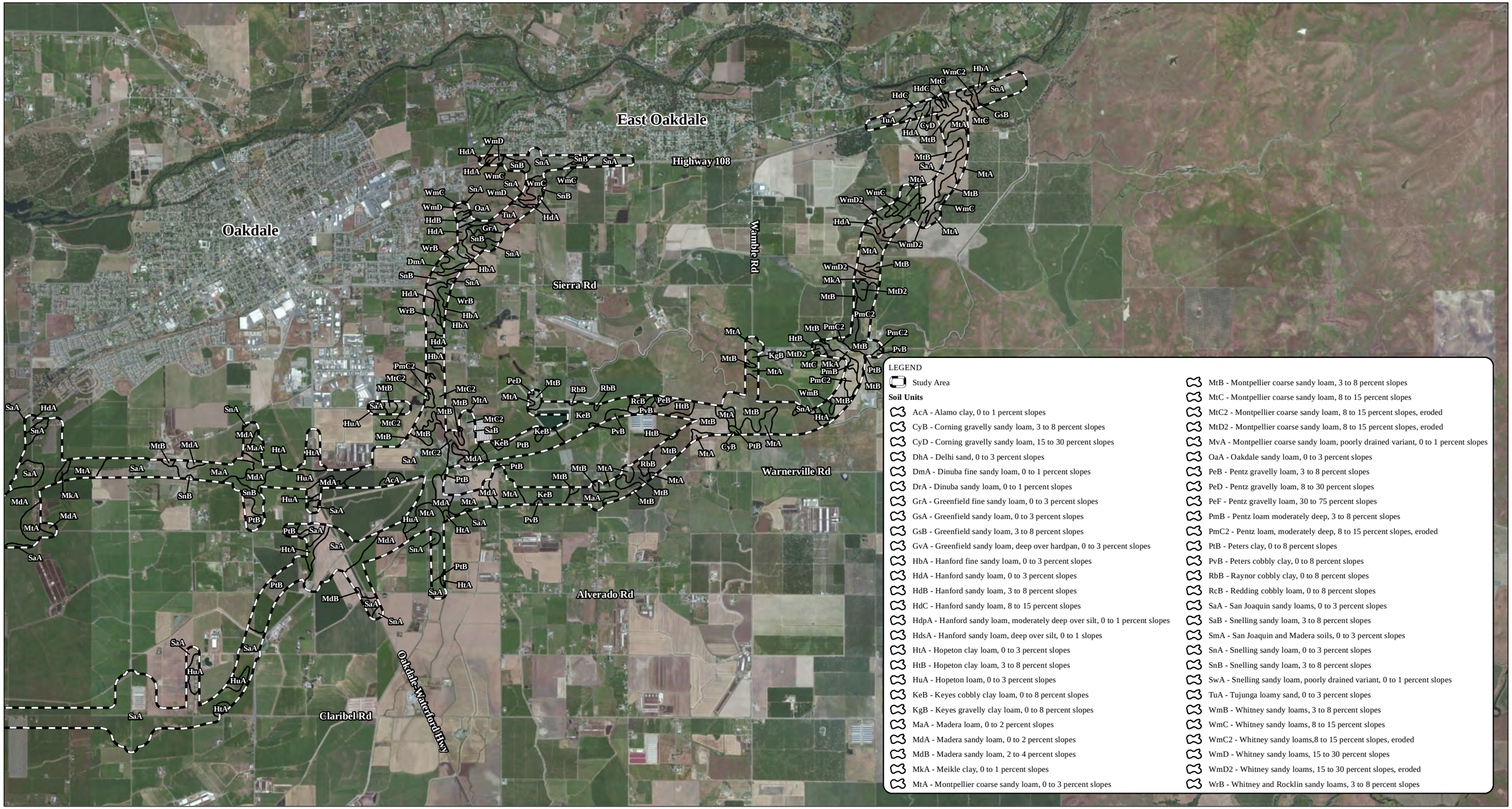

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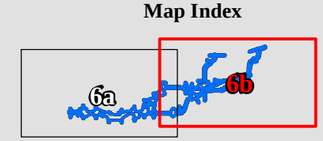

FIGURE 6b

Mapped Soil Units

EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - NRCS Eastern Stanislaus County Soil Survey (1964)
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3.1.2. Biological Conditions in the Biological Study Area

3.1.2.1. Vegetation Communities and Land Uses

Vegetation communities and land uses in the BSA are dominated by agricultural land uses, which comprise over 70 percent of the land within the BSA. Developed land uses are the next largest group, comprising over 15 percent of the land within the BSA. Natural communities are one of the smallest groups, comprising less than 5 percent of the land within the BSA.

Vegetation communities in the BSA include eight natural communities: interior live oak woodland, blue oak savannah, annual grassland, Himalayan blackberry bramble, perennial marsh, seasonal marsh, riparian scrub, and seasonal wetlands.

Eleven other vegetation communities and land uses not considered natural are also present: ponds/basin, ruderal, agricultural, orchard, irrigated pasture, canal, ditch, dairy and poultry farms, landscaped, rural residential and urban. Vegetation communities/land uses are shown in Figures 7a and 7b, and summarized in Table 3.

These classifications were identified and described by ICF (2012) during a previous mapping effort for the NCC. The classifications were updated by LSA during the 2014 field effort to reflect current conditions in the BSA and also account for changes to the project design (which resulted in changes to the BSA).

Interior Live Oak Woodland

The interior live oak woodland occurs in two locations at the east end of the BSA, and is also mapped in one location near the west end. This community is dominated by interior live oak (*Quercus wislizeni*), but Valley oaks (*Quercus lobata*) are found in a ditch that occurs where the woodland adjoins with the current SR-108. The understory is dominated by invasive grasses. Interior live oak woodland occurs on the east end of the BSA, where Alternatives 1B and 2B abut Highway 120. Interior live oak woodland also occurs approximately 1 mi south of where Alternatives 1B and 2B meet with Highway 120.

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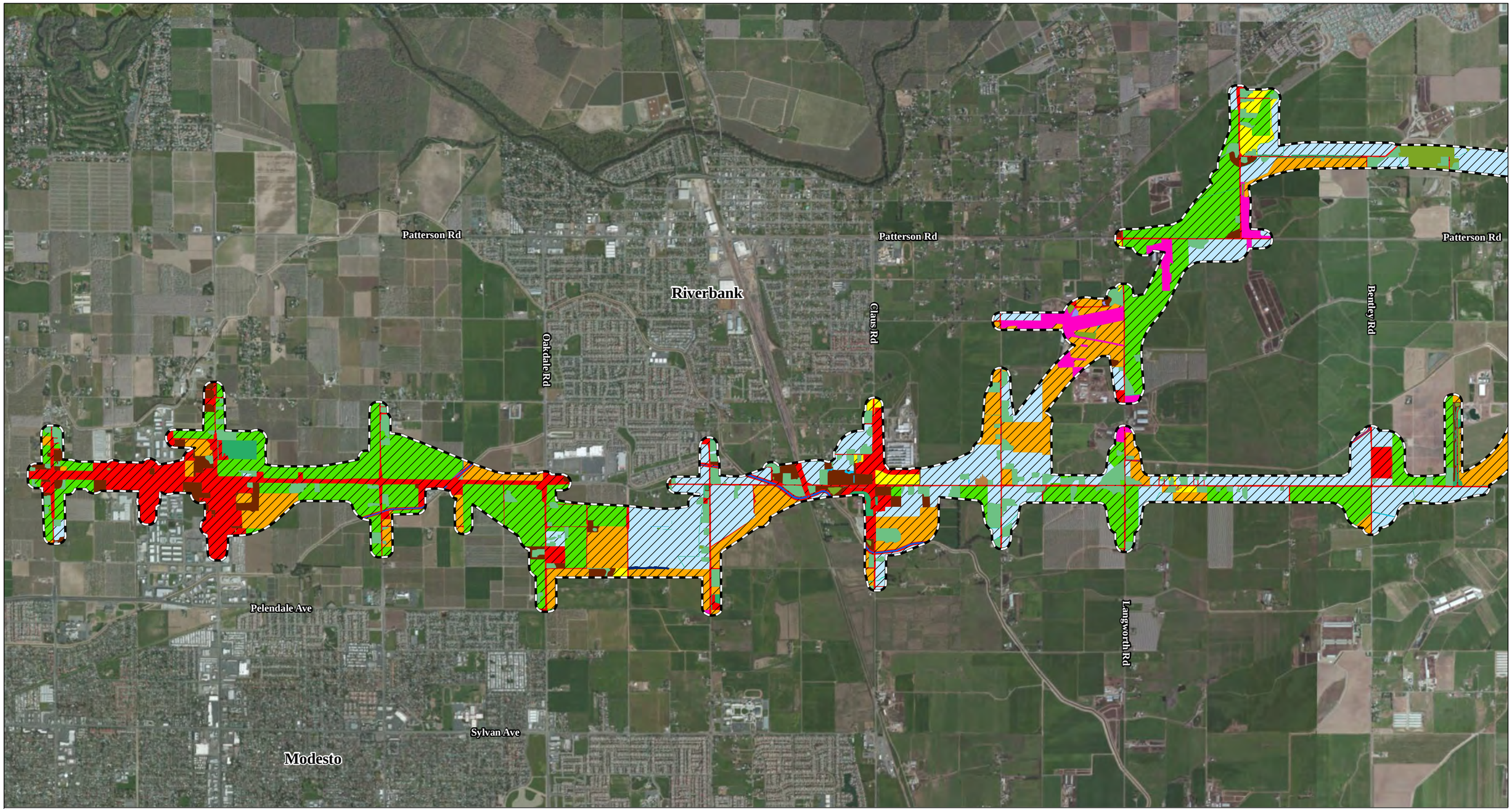

LEGEND

- Study Area

Vegetation Communities / Land Uses - (5,434.69 ac)

- Agricultural - (894.98 ac)
- Annual Grassland - (188.66 ac)
- Himalayan Blackberry Bramble - (7.06 ac)
- Blue Oak Savannah - (5.08 ac)
- Canal - (26.71 ac)
- Dairy and Poultry Farms - (112.58 ac)
- Ditch - (12.07 ac)
- Interior Live Oak Woodland - (12.01 ac)
- Irrigated Pasture - (1,301.81 ac)
- Landscaped - (39.02 ac)
- Perennial Marsh - (14.14 ac)
- Orchard - (1,657.10 ac)
- Pond/Basin - (68.22 ac)
- Riparian Scrub - (0.36 ac)
- Ruderal - (184.73 ac)
- Rural Residential - (320.45 ac)
- Seasonal Marsh - (6.35 ac)
- Seasonal Wetland - (10.23 ac)
- Urban - (575.59 ac)

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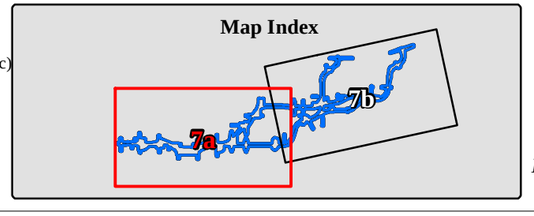

FIGURE 7a

Vegetation Communities and Land Use

EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - ICF (2011); LSA Associates, Inc. (2014)
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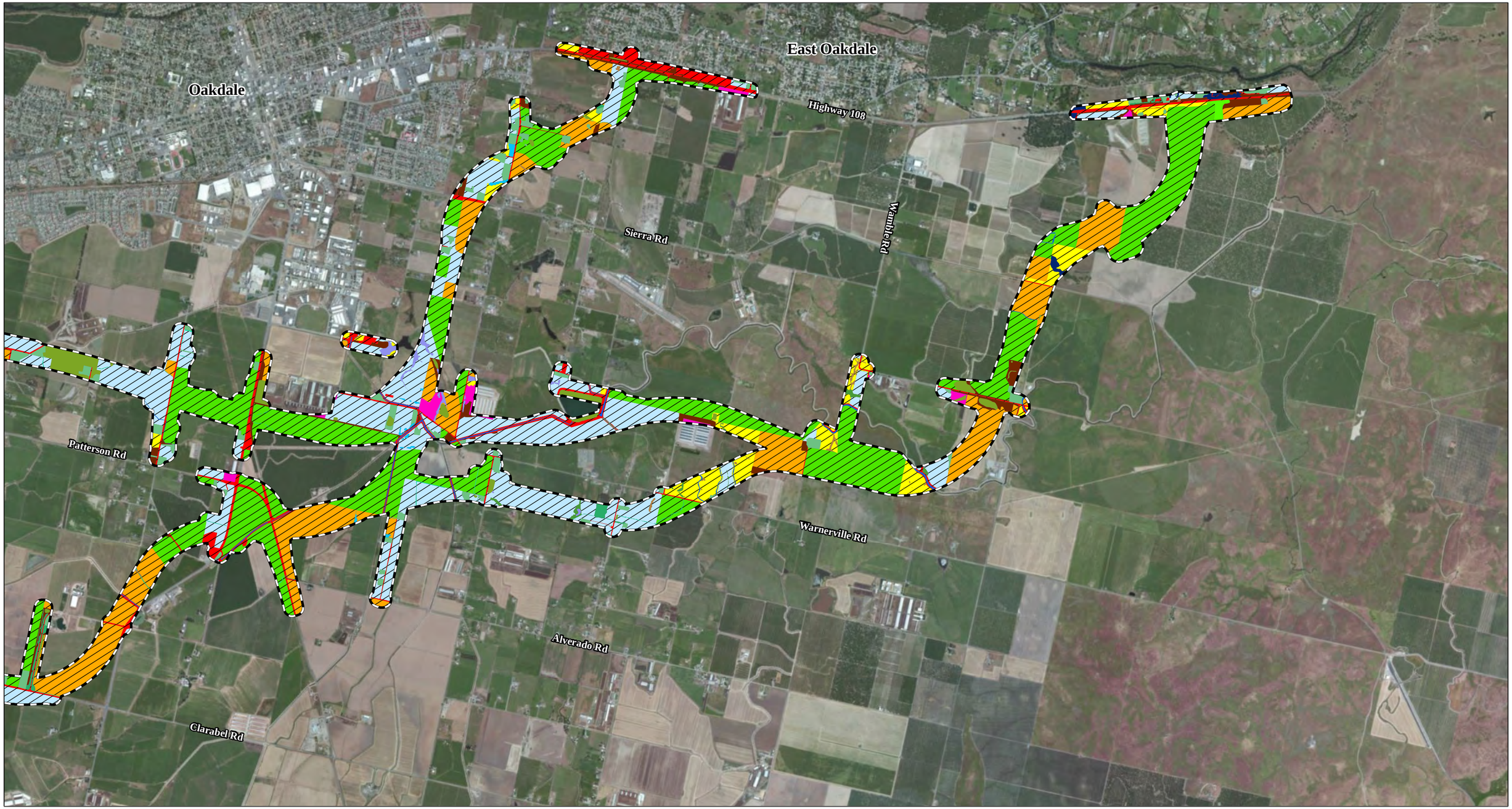

LEGEND

Study Area

Vegetation Communities / Land Uses - (5,434.69 ac)

- Agricultural - (894.98 ac)
- Annual Grassland - (188.66 ac)
- Himalayan Blackberry Bramble - (7.06 ac)
- Blue Oak Savannah - (5.08 ac)
- Canal - (26.71 ac)
- Dairy and Poultry Farms - (112.58 ac)
- Ditch - (12.07 ac)
- Interior Live Oak Woodland - (12.01 ac)
- Irrigated Pasture - (1,301.81 ac)
- Landscaped - (39.02 ac)
- Perennial Marsh - (14.14 ac)
- Orchard - (1,657.10 ac)
- Pond/Basin - (68.22 ac)
- Riparian Scrub - (0.36 ac)
- Ruderal - (184.73 ac)
- Rural Residential - (320.45 ac)
- Seasonal Marsh - (6.35 ac)
- Seasonal Wetland - (10.23 ac)
- Urban - (575.59 ac)

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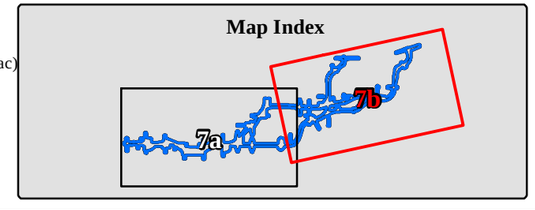

FIGURE 7b

Vegetation Communities and Land Use

EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - ICF (2011); LSA Associates, Inc. (2014)
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Table 3: Natural Communities and Land Uses in the BSA

Natural Communities	Acres
Interior live oak woodland	12.01
Blue oak savannah	5.08
Annual grassland	188.66
Himalayan blackberry bramble	7.06
Perennial marsh	14.14
Seasonal marsh	6.35
Riparian scrub	0.36
Seasonal wetland	10.23
Subtotal	***243.89***
Other Vegetation Communities/Land Uses	
Ruderal	184.73
Agricultural	894.98
Orchard	1,657.10
Irrigated pasture	1,301.81
Pond/basin	68.22
Canal	26.71
Ditch	12.07
Dairy and poultry farms	112.58
Landscaped	39.02
Rural residential	320.45
Urban	575.59
Subtotal	***5193.26***
Total	**5,437.15**

Interior live oak woodland provides suitable nesting habitat for the white tailed kite (*Elanus leucurus*), Swainson's hawk (*Buteo swainsoni*), red-tailed hawk (*Buteo jamaicensis*), and other birds. Oak trees may be used by the pallid bat *(Antrozous pallidus*), western red bat (*Lasiurus blossevillii*), hoary bat (*Lasiurus cinereus*), and the western mastiff bat (*Eumops perotis*). Mammals such as coyote (*Canis latrans*) and the red fox (*Vulpes vulpes*) may also be observed in this community.

Blue Oak Savannah

Blue oak savannah occurs at one location at the east end of the BSA, where Alternatives 1B and 2B abut Highway 120. The dominant overstory species is blue oak (*Quercus douglasii*). The understory is dominated by native saxifrage

(*Lithophragma affine*), elegant clarkia (*Clarkia unguiliculata*), and other annual forbs and grasses.

Blue oak savannah habitat value is similar to the interior live oak woodland community in the BSA.

Annual Grassland

Annual grasslands occur throughout much of the BSA, but are found in larger areas in the eastern third of the BSA. This community includes annual brome grassland, wild oat grassland and perennial rye grass fields. Dominant species include wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), Italian rye grass (*Festuca perenne*), foxtail barley (*Hordeum murinum*), and rattail sixweeks grass (*Festuca myuros*). Common fiddleneck (*Amsinckia menziesii*), Italian thistle (*Carduus pycnocephalus*), field chickweed (*Cerastium arvense*), cutleaf geranium (*Geranium dissectum*), and milk thistle (*Silybum marianum*) also occur in this community.

Annual grasslands can provide suitable habitat for western burrowing owl, if suitable burrows are present. Several bird species may forage in the annual grasslands including Swainson's hawk and other raptors. If suitable aquatic habitat is nearby, Pacific pond turtles (*Emys marmorata*) may use annual grasslands as upland habitat.

Himalayan Blackberry Bramble

Himalayan blackberry bramble occurs in many areas of the BSA, often associated with irrigated pasture. Large patches of Himalayan blackberry (*Rubus armeniacus*) bramble occur adjacent west of Stearns Road and north of Sierra Road. Himalayan blackberry is the dominant species in this community.

Large areas of blackberry bramble provide suitable nesting habitat for tricolored blackbirds (*Agelaius tricolor*).

Perennial Marsh

Perennial marsh occurs primarily in the central and eastern half of the BSA. Dominant species include low manna grass (*Glyceria declinata*), soft rush (*Juncus effusus*), knotweed (*Polygonum* sp.), Himalayan blackberry, curly dock (*Rumex crispus*), common tule (*Schoenoplectus acutus occidentalis*), narrow-leaved cattail (*Typha angustifolia*), and broad-leaved cattail (*Typha latifolia*).

Perennial marsh habitat, with sufficient open water, may provide suitable habitat for CTS, western spadefoot toad (*Spea hammondii*), and Pacific pond turtle. Western yellow billed cuckoo (*Coccyzus americanus occidentalis*) and other bird species may forage in the perennial marsh habitat.

Seasonal Marsh

Seasonal marsh occurs in the western and central section of the BSA, adjacent to the irrigated pastures and annual grasslands. Dominant species include amaranth (*Amaranthus* sp.), nutsedge (*Cyperus eragrostis*), soft rush, sprangletop (*Leptochloa* sp.), water primrose (*Ludwigia peploides*), dallis grass (*Paspalum dilatatum*), knotweed, Himalayan blackberry, and broad-leaved cattail.

Seasonal marshes provide cover and foraging habitat for many small birds and mammals. They may also provide suitable habitat for vernal pool invertebrates, including vernal pool tadpole shrimp (*Lepidurus packardi*) and vernal pool fairy shrimp (*Branchinecta lynchi*).

Riparian Scrub

Riparian scrub occurs in three small areas in the central part of the BSA, west of South Stearns Road and north of Sierra Road, and in one location along a concrete canal, adjacent to orchards, near the west end of the BSA. This community consists entirely of narrow-leaved willow (*Salix exigua*).

The small amount of riparian scrub provides suitable upland habitat for Pacific pond turtle. It also provides suitable nesting habitat for white tailed kite and other nesting birds. Cavities and foliage may also provide suitable roosting habitat for multiple bat species.

Seasonal Wetland

Seasonal wetlands typically occur in topographically low-lying areas within annual grasslands and ditches and occur throughout the BSA. Dominant species observed were water starwort (*Callitriche* sp.), nutsedge, three-spiked goose grass (*Eleusine tristachya*), creeping spikerush (*Eleocharis macrostachya*), coyote thistle (*Eryngium* sp.), low manna grass, and velvet grass (*Holcus lanatus*). Additional species include Italian rye grass, water primrose, hyssop loosestrife (*Lythrum hyssopifolia*), annual blue grass, rabbitsfoot grass (*Polypogon monspeliensis*), buttercup (*Ranunculus* sp.), Himalayan blackberry, and fiddle dock (*Rumex pulcher*). Seasonal wetlands do not remain inundated for extended periods during the growing season.

Some seasonal wetlands are characteristic of vernal pools and may provide suitable habitat for vernal pool invertebrates. Larger features may provide suitable habitat for CTS and western spadefoot toad, depending on the duration of inundation.

Ruderal

Ruderal vegetation occurs throughout the BSA, typically areas along roadsides and buildings and along dirt roads. Ruderal plants are those that colonize and quickly establish in poor soils and disturbed or waste areas. They generally have fast growing roots, low nutritional needs, and produce massive amounts of seeds. Dominant species include invasive annual grasses and weedy forbs.

If suitable burrows are present, ruderal sites may provide suitable habitat for western burrowing owl. Many species of birds may use ruderal vegetation for foraging, including Swainson's hawk, red-tailed hawk, red-winged blackbirds (*Agelaius phoeniceus*), and tricolored black birds.

Agricultural

Agricultural fields occur throughout the BSA and include row crops, alfalfa, rice fields and grains. Agricultural field may be disked or left fallow for part of the year. Ruderal and invasive species occur along the edges and in open areas that have not been plowed.

Agricultural fields provide suitable foraging habitat for Swainson's hawks, white tailed kites and other bird species.

Orchard

Orchards occur throughout the BSA and are comprised of monotypic and tree dominated habitats, although some areas contain vineyards. Generally this community is sprinkler irrigated and intensively managed. The understory is either bare ground or annual grasses and forbs.

Orchards may provide suitable foraging habitat for Swainson's hawks and other raptors. Western red bats and hoary bats may also utilize orchards as roosting sites.

Irrigated Pasture

Irrigated pastures occur throughout the BSA and are grassland areas that receive irrigated water to support pastures for livestock. Dominant plants include Bermuda grass (*Cynodon dactylon*), tall fescue (*Festuca arundinacea*), English plantain (*Plantago lanceolata*), annual blue grass, knotroot bristle grass (*Setaria parviflora*)

and subterranean clover (*Trifolium subterraneum*). Potential wetlands are present within this community and are discussed as irrigated wetlands in Section 3.1.2.4.

This community is not considered suitable for fossorial mammals or other species that utilize burrows due to the flooding that occurs from early spring through fall. However, several bird species may forage in irrigated pasture, including Swainson's hawks, red-tailed hawks, and great horned owls (*Bubo virginianus*).

Pond and Basin

This community consists of natural and created ponds or basins that occur throughout the BSA. Most of the ponds are utilized as detention basins; however some are dairy, catfish, or other fish-rearing ponds. Dominant vegetation consists of Bermuda grass, Italian rye grass and knotweed.

Some ponds within the BSA may provide suitable habitat for CTS and Pacific pond turtles. If fish are present, osprey (*Pandion haliaetus*) may be observed foraging in this community.

Canal

Canals consist of all manmade linear water conveyance features that are contained within levees. Canals are generally much larger than features identified as ditches. Canals are located throughout the study area and generally provide little value as wildlife habitat; however, Pacific pond turtles and other aquatic species could utilize the canals.

Ditch

Ditches consist of all non-leveed water conveyance channels and include roadside, agricultural, and natural drainage features. Several of these ditches support wetland vegetation that may vary from perennial to seasonal. These ditches occur throughout the study area, but are more heavily concentrated in the central portion. Similar to canals, ditches generally provide little value as wildlife habitat but could be used by Pacific pond turtles and other aquatic species.

Dairy and Poultry Farms

This land use includes structures and disturbed areas associated with dairy and poultry farms. This area supports little to no vegetation, however some ruderal species were observed.

Landscaped

Landscaped areas contain ornamental trees, shrubs and forbs. This community occurs throughout the BSA and is interspersed with residential and commercial areas. Eucalyptus (*Eucalyptus* sp.) and cottonwood (*Populus* sp.) rows are included in this community.

Landscaped vegetation provides suitable nesting habitat for various bird species including yellow warbler (*Setophaga petechia*) and Swainson's hawk. Some ornamental trees may provide roosting habitat for the western red bat and hoary bat.

Rural Residential

This land use includes ranches or houses that are surrounded by large undeveloped areas. Rural residences occur throughout the BSA and contain primarily landscaped and ruderal vegetation.

Blue elderberry (*Sambucus nigra* ssp. *caerulea*) shrubs, habitat for the valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimporphus*), were observed around rural residences.

Urban

This community includes dense housing, industrial, and commercial buildings, and paved and dirt roads within urban areas. Any vegetation in this land use is ruderal or landscaped.

Urban development is not considered to be suitable habitat for wildlife species.

3.1.2.2. Description of Common Animal Species

The sections below discuss animal species observed and/or likely to occur within the BSA. A complete list of species observed can be found in Appendix I. Section 3.1.2.1. Vegetation Communities and Land Uses includes additional discussion of animal species potentially occurring in the BSA.

Mammals

Common species observed or likely to occur in the BSA include coyote, California ground squirrels (*Otospermophilus beecheyi*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), and mule deer (*Odocoileus hemionus*).

Birds

Common bird species observed or likely to occur in the BSA include red-shouldered hawk (*Buteo lineatus*), red tailed hawk, rock dove (*Columba livia*), American crow (*Corvus brachyrhynchos*), Brewer's blackbird (*Euphagus cyancophalus*), northern mockingbird (*Mimus polyglottos*), European starling (*Sturnus vulgaris*), American robin (*Turdus migratorius*), mourning dove (*Zenaida macroura*), and western meadowlark (*Sturnella neglecta*).

Amphibians and Reptiles

Common amphibian species observed or likely to occur in the BSA include Pacific chorus frog (*Pseudacris sierra*) and California toad (*Anazyrus boreas halophilus*). Reptile species likely to occur in the BSA include western terrestrial garter snake (*Thamnophis elegans*), western rattlesnake (*Crotalus oreganus*), common gopher snake (*Pituophis catenifer*), and western fence lizard (*Sceloporus occidentalis*).

3.1.2.3. Migration Corridors

Wildlife movement corridors are linear habitats that function to connect two or more areas of significant wildlife habitat. These corridors may function on a local level as links between small habitat patches (e.g., streams in urban settings) or may provide critical connections between regionally significant habitats (e.g., deer movement corridors). Wildlife corridors typically include vegetation and topography that facilitate the movements of wild animals from one area of suitable habitat to another in order to fulfill foraging, breeding, and territorial needs. These corridors often provide cover and protection from predators that may be lacking in surrounding habitats. Wildlife corridors generally include riparian zones and similar linear expanses of contiguous habitat.

No established migration corridors or other movement areas were identified within the BSA. Prior to development of the Oakdale and Riverbank communities, it is likely that local wildlife movements trended in a general north-south direction in order to access the Stanislaus River. However, urban development has largely eliminated potential migration routes to the river from the south (i.e., in the vicinity of the BSA). In addition, although the eastern portion of the BSA is less developed than the western and central portions, existing SR-108 and the adjacent residential development to the north prohibit substantial wildlife movements in this area.

Local wildlife movement within and adjacent to the BSA likely occurs along the irrigation canals, but this is not considered a substantial movement area due to the relatively low habitat value associated with the canals.

3.1.2.4. Aquatic Resources

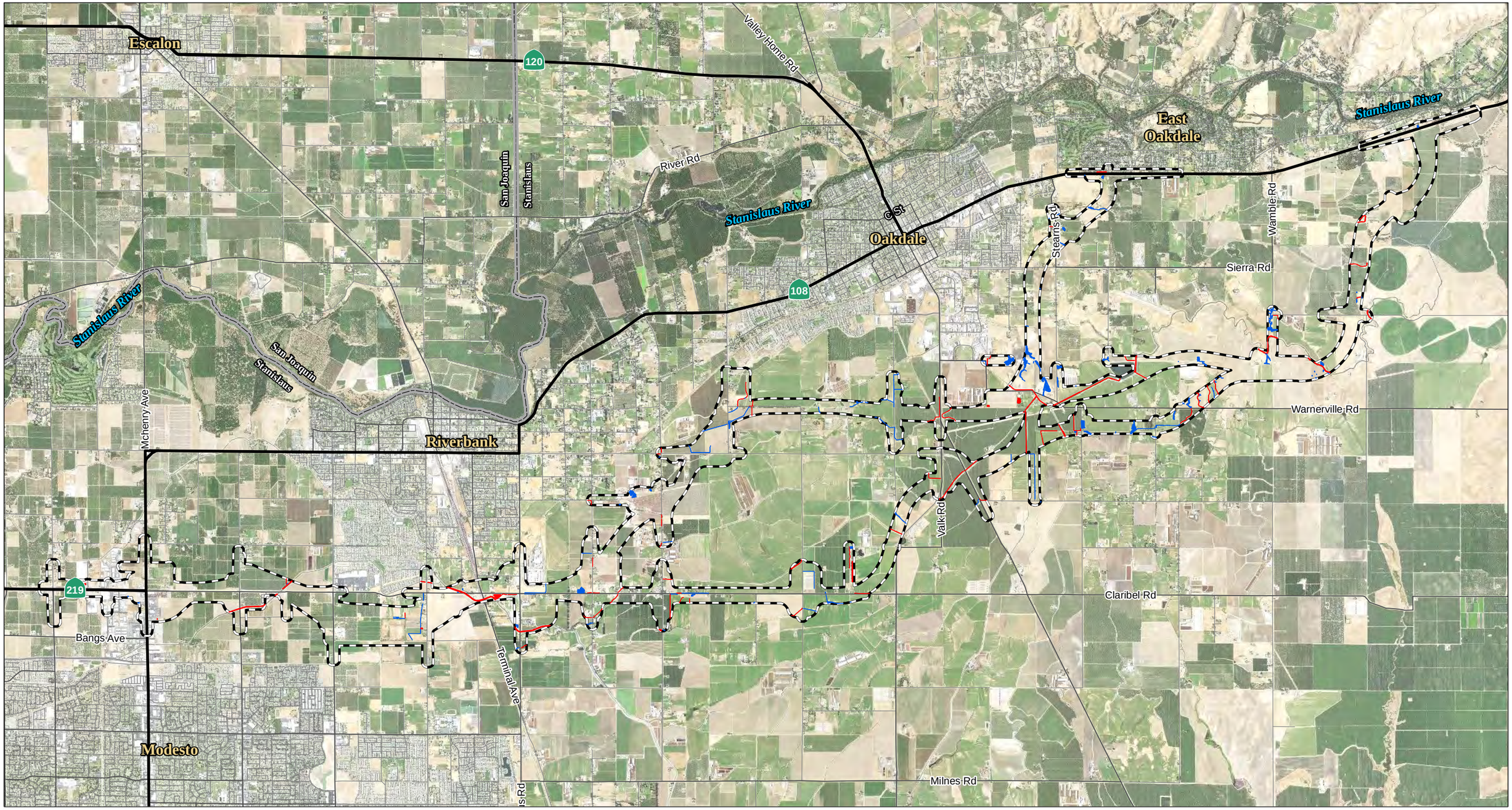
A preliminary jurisdictional delineation was prepared for the NCC and is included in Appendix B. As discussed in the preliminary jurisdictional delineation, aquatic resources in the BSA include seasonal wetlands, perennial marsh, ditches, ponds, canals, and irrigated wetlands. Potentially jurisdictional aquatic resources in the BSA, totaling 82.85 ac, are shown in Figure 8 and summarized below in Table 4. These resources potentially meet USACE criteria for wetlands or other waters of the U.S. Additional information about these resources is included in Appendix B. Also, refer to Section 3.1.1.3 Hydrology and Section 3.1.2.1 Vegetation Communities and Land Uses.

Table 4: Potentially Jurisdictional Aquatic Resources in the BSA (acres)

Feature Class	Wetlands	Non-Wetland Waters	Total
Seasonal Wetland	10.23	----	**10.23**
Perennial Marsh	14.14	----	**14.14**
Ditches	7.31	4.76	**12.07**
Ponds	10.12	5.83	**15.95**
Canals	----	26.71	**26.71**
Irrigated Wetlands	3.75	----	**3.75**
Total	**45.55**	**37.30**	**82.85**

Seasonal Wetlands

This feature class occurs throughout the BSA but is more prevalent in the eastern portion. In general, common hydrophytes identified in the seasonal wetlands include low manna grass, knotweed, buttercup, needle spikerush (*Eleocharis acicularis*), rayless goldfields (*Lasthenia glabirrima*), curly dock, and hyssop loosestrife, which are all known to occur in seasonal wetland conditions. Soils in these features contained noticeably reduced chroma and consistently supported redoxomorphic concentrations in the matrix. Hydrology indicators were generally identified by either inundation/saturation on aerial imagery or by matted vegetation and drainage patterns. For purposes of the preliminary jurisdictional delineation, areas of the seasonal marsh community described in Section 3.1.2.1 that meet USACE criteria for wetlands were included in the seasonal wetlands feature class.



LEGEND

Biological Study Area

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

Wetlands - (45.55 ac)

Non-Wetland Waters - (37.30 ac)

0 0.5 1
MILES

SOURCE: NAIP (2014); Mapping - LSA Associates, Inc. (2014); ICF (2011)

I:\Dhg1302\GIS\Reports\NES\Nes_fig8_delin_area.mxd (5/1/2015)

FIGURE 8

Preliminary Jurisdictional Delineation Overview

EA: 10-0S8000, Project ID # 1000000263

North County Corridor New State Route 108 Project

Stanislaus County, California

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Perennial Marsh

The majority of this feature class occurs along Stearns Road north of Warnerville Road in wide marshy areas dominated by broad-leafed cattail and common tule. The fringes of this community are often dominated by narrow-leaved willow. Perennial marsh also occurs in a few other isolated locations to the east and west of Stearns Road. Perennial marsh was typically inundated or saturated to the surface.

Ditches

Ditches consist of all non-leveed water conveyance channels and include roadside, agricultural, and natural drainage features. Several of these ditches support wetland vegetation that may vary from perennial (i.e., cattail marsh) to seasonal (i.e., rushes, nutsedges, knotweed, and a mix of annual grasses). These ditches occur throughout the BSA, but are more heavily concentrated in the central portions. Soils in these ditches tend to be consistent with seasonally wet soils (i.e., redoximorphic concentrations in the matrix). However, a few were deeply inundated at the time of the surveys and soils were too wet to identify any color variations in the soil.

Ponds

The pond feature class consists of manmade ponds, most of which support wetlands. Several large ponds associated with dairy and poultry farms, and ponds associated with the irrigation districts, are not included in the mapping. The ponds that support wetlands tend to be perennial in nature and are generally associated with irrigation and/or stock ponds for cattle. Similar to the ditch feature class, ponds can be found throughout the BSA but are more concentrated in the central portions.

Canals

Canals consist of all manmade linear water conveyance features that are contained within levees. Canals are generally much larger than features identified as ditches. None of the canal features in the study area support wetlands. Canals are located throughout the BSA.

Irrigated Wetlands

Irrigated wetlands consist of features located within irrigated pasture that meet USACE wetlands criteria.

3.1.2.5. Invasive Species

Many non-native species have been part of the California landscape for the past 150 years. Some of these introduced species such as oats, barley, and rye are present in vegetation communities in the BSA (e.g., annual grassland, ruderal). These species,

while considered invasive, are primarily annual or biennial and are at most moderately invasive. A few notable invasive species, yellow star thistle (*Centaurea solstitialis*), Himalayan blackberry, and water primrose were observed in the BSA. All three of these species have an invasive rating of high, per the California Invasive Plant Council Invasive Plant Inventory Online Database (http://www.cal-ipc.org/paf/).

3.2. Regional Species and Habitats of Concern

Table 5 provides a list of special status species that could potentially occur in the region, and therefore in the BSA; this list was compiled as described in Section 2.2.1. A review was conducted of the specific habitats required by each species listed in Table 5, and the specific habitats and habitat conditions present in the BSA. Based on this evaluation, it was determined whether the species listed in Table 5 had potential to occur in the BSA. Special status species that were observed, or determined to potentially occur in the BSA based on availability of suitable habitat or other factors such as plucking posts, scat, nests, dens, etc., are discussed more fully in Sections 4.2 and 4.3 of this report. Species determined unlikely to occur in the BSA based on these same factors are documented accordingly in the table and not discussed further in this report. In addition, although not included on any of the species lists noted above, northern harrier (*Circus cyaneus*), white tailed kite, and loggerhead shrike (*Lanius ludovicianus*) were included in Table 5 due to the presence of suitable habitat.

Table 5: Special Status Species Potentially Occurring in the Biological Study Area

Scientific Name	Common Name	Status	Habitat Requirements	Habitat Present/ Absent	Rationale
Mammals					
Antrozous pallidus	Pallid Bat	CSC	Found in a variety of habitats, including grassland, chaparral, woodland and forest. Most common in open, dry habitats with rocky areas for roosting. Roosts in caves, crevices, mines, hollow trees and buildings.	HP	The live oak woodland, barns, and other urban structures provide potential roosting habitat for this species. Irrigated pastures and annual grasslands provides suitable foraging habitat. See discussion in Section 4.3.1.
Corynorhinus townsendii	Townsend's big-eared bat	CSC	Occurs in a variety of habitats including valley oak savannah, riparian forest, and prairie. Roosts in caves, tunnels, buildings, mines, or other human-made structures, such as bridges. Requires roosting, maternity sites free from human disturbance.	HP	The live oak woodland provides suitable foraging and roosting habitat. This species may also roost in barns and other man-made structures. See discussion in Section 4.3.1.
Dipodomys nitratoides exilis	Fresno kangaroo rat	FE	Endemic to alkali sink shrubland, seasonally flooded wetlands, and uncultivated, native grasslands of Fresno County.	A	Suitable habitat is not present; there are no alkali sink shrublands in the BSA.
Eumops perotis californicus	Greater western mastiff bat	CSC	Found in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	HP	This species may roost in riparian, oak woodlands, or other areas with suitable trees. Suitable habitat may also be found in barns and other structures within the BSA. See discussion in Section 4.3.1.
Lasioncycteris noctivagans	Silver-haired bat	CA SA	Primarily a coastal and montane forest dweller. Foraging habitat includes streams, ponds, and open brushy areas. Roosts in tree hollows such as tree bark cracks, woodpecker holes and other openings.	A	Suitable habitat is not present; there are no coastal or montane forests in or near the BSA.
Lasiurus blossevilli	Western red bat	CSC	Roosts primarily in trees, 2–40 ft. above the ground. Feeds over a wide variety of habitats including grasslands, shrub land, open woodland, and croplands.	HP	The live oak woodland, barns, and other urban structures provide potential roosting habitat for this species. Irrigated pastures and annual grasslands provides suitable foraging habitat. See discussion in Section 4.3.1.

Scientific Name	Common Name	Status	Habitat Requirements	Habitat Present/ Absent	Rationale
Lasiurus cinereus	Hoary bat	CA SA	Found in open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees.	HP	The live oak woodland and areas of dense landscape trees provide potential roosting habitat for this species. Irrigated pastures and annual grasslands provides suitable foraging habitat. See discussion in Section 4.3.1.
Myotis yumanensis	Yuma myotis	CA SA	Found in a variety of habitats, especially open forests and woodlands, near permanent sources of water. Roosts in bridges, buildings, cliff crevices, caves, mines, and trees.	HP	The live oak woodland, barns, and other urban structures provide potential roosting habitat for this species. See discussion in Section 4.3.1.
Neotoma fuscipes riparia	Riparian (San Joaquin Valley) woodrat	FE	Generally found in riparian areas with dense cover, often in willow thickets with oak, preferably in moist habitats. Food sources include plant parts and fungus.	A	Suitable habitat is not present; no dense riparian habitat is present within the BSA.
Sylvilagus bachmani riparius	Riparian brush rabbit	FE; SE	This species inhabits dense areas of Valley riparian forests with thickets of rose and blackberry. Grazing includes grasses and forbs, always near cover. The only remaining population occurs in the Caswell Memorial State Park along the Stanislaus River at the San Joaquin/Stanislaus Counties border.	A	No suitable habitat is present, no dense riparian habitat is present within the BSA
Vulpes macrotis mutica	San Joaquin kit fox	FE; ST	Annual grasslands or grassy open stages with scattered vegetation; need loose-textured soils for burrowing, and a suitable prey base.	A	Although there is one CNDDB record in the search area, located approximately 19 mi west, the BSA is outside the range of this species. Refer to discussion in Section 2.4 Agency Coordination and Agency Contacts.
Birds					
Agelaius tricolor	Tricolored blackbird	SE (nesting colony, emergency listing)	Nests in freshwater marshes with tules or cattails, or in other dense vegetation such as thistle, blackberry thickets, etc. in close proximity to open water. Forages in a variety of habitats including pastures, agricultural fields, rice fields, and feedlots within a mile or two of nesting area.	HP	Suitable nesting habitat for this species may be found in in blackberry bramble. Suitable foraging habitat is found in annual grasslands, irrigated pastures, and other agricultural areas. See discussion in 4.3.2.

Scientific Name	Common Name	Status	Habitat Requirements	Habitat Present/ Absent	Rationale
Ardea herodias	Great blue heron	CA SA (nesting colony)	Colonial nester in large trees, cliffsides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	HP	While this species may forage in the marshes and wetlands in the BSA, no potential rookery sites were observed. Since protection is only afforded to nesting colonies, no further discussion is required.
Athene cunicularia	Western burrowing owl	CSC	Burrow sites in open, dry, annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, California ground squirrel.	HP	Suitable burrows were observed along irrigated pastures and annual grasslands in the eastern portion of the BSA. See discussion in Section 4.3.3.
Buteo swainsoni	Swainson's hawk	ST	Breeds in stands with few trees in juniper-sage flats, riparian areas, and oak savannahs. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	HP	Swainson's hawk was observed nesting and foraging in the BSA. See discussion in Section 4.3.4.
Charadrius montanus	Mountain plover	CSC	Winters in California, prefers akali flats and native grasslands. If native habitat is not available they use agricultural fields, primarily alfalfa.	A	Although the grasslands provide suitable habitat, the BSA is outside the range for this species.
Circus cyaneus	Northern harrier	CSC	Frequently in meadows, grasslands, open areas, desert sinks, and wetlands. Occurs from sea level to alpine habitats.	HP	Suitable nesting and foraging habitat is present in the grasslands, irrigated pastures, and wetlands. This species was observed foraging in the BSA. See discussion in Section 4.3.5.
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	FT; SE	Nests in shallow platform of twigs, lined with dried leaves or bark. Preferred habitats include moist thickets, willows, overgrown pastures and orchards.	A	Suitable habitat is not present; the BSA is outside the current range of this species.
Egretta thula	Snowy egret	CA SA (nesting colony)	Locally common in the Central Valley all year. Feeds in shallow water or along shores of wetlands or aquatic habitats. Nests in protected beds of dense tules.	HP	While this species may forage in the marshes and wetlands in the BSA, no potential rookery sites were observed. Since protection is only afforded to nesting colonies, no further discussion is required.
Elanus leucurus	White-tailed kite	SFP	Found in savannah, open woodlands, grasslands, cleared lands and agriculture fields. Nests in shallow bowls in trees that are in isolation or within a forest	HP	Suitable habitat is present in annual grasslands, irrigated pastures and other communities within the BSA. This species was observed foraging in the BSA. See discussion in Section 4.3.6

Scientific Name	Common Name	Status	Habitat Requirements	Habitat Present/ Absent	Rationale
Eremophila alpestris actia	California horned lark	SWL	Coastal regions and in the main part of the San Joaquin Valley and east to the foothills. Found in open habitats, usually where trees and large shrubs are absent: short-grass prairie, bald hills, mountain meadows, open coastal plains, fallow grain fields, and alkali flats.	HP	This species may be observed in the annual grasslands, ruderal areas and agricultural fields within the BSA. See discussion in Section 4.3.7.
Falco columbarius	Merlin	SWL (Wintering)	An uncommon winter migrant that frequents coastlines, open grasslands, woodlands, wetlands and savannahs.	HP	This species only winters in California, however the grasslands, woodlands and pasture provides suitable wintering habitat. This species may occur within the BSA. See discussion in 4.3.8.
Haliaeetus leucocephalus	Bald eagle	SE	Requires large bodies of water; occurs near ocean shore, lakes, reservoirs, and rivers. Usually nests within 1 mile of water, in large, dominant trees with open branches	A	There is no large body of water in or adjacent to the BSA. The closest potential habitat for this species is the Stanislaus River located approximately 1 mile north of the BSA (at the furthest extent north, near SR-108) It is unlikely that this species will occur within the BSA.
Icteria virens	Yellow-breasted chat	CSC	Preferred habitats include dense thickets and brush, often with thorns, streamside tangles, and dry brushy hillsides.	A	Suitable habitat is not present. Additionally, this BSA is outside the range for this species.
Lanius ludovicianus	Loggerhead shrike	CSC	Found in open country with short vegetation and well spaces trees. Frequently observed in agricultural fields, pastures, orchards and riparian areas.	HP	Suitable habitat is present in the annual grasslands, irrigated pastures, orchards, and other vegetation communities. See discussion in Section 4.3.9.
Melospiza melodia	Song sparrow (Modesto population)	CSC	Occurs in the northern Central Valley, high populations near the Butte sink area and Sacramento-San Joaquin river delta. Found frequently along riparian corridors, particularly the Stanislaus and Cosumnes Rivers. Sometimes observed near vegetated irrigation canals and levees. In the winter, this species may be found far from water, in open habitats with shrubs or tall herbs.	A	The BSA is not located with the normal range of this population. A song sparrow was observed in the BSA but considered the common subspecies *M. heermanni*.

Scientific Name	Common Name	Status	Habitat Requirements	Habitat Present/ Absent	Rationale
Vireo bellii pusillus	Least Bell's vireo	FE	Summer resident (nesting) of California in low riparian habitat, or in dry river bottoms; below elevations of 2,000 ft. Needs structurally diverse canopy for foraging and dense shrub cover for nesting, often in the active floodplain of a waterway.	A	Suitable habitat is not present for this species.
Reptiles					
Emys marmorata	Pacific pond turtle	CSC	Occurs in permanent or nearly permanent water sources, ponds, marshes, rivers, streams and irrigation ditches with emergent vegetation and basking sites. Lay eggs in upland habitat consisting of sandy banks or grassy, open fields.	HP	The marshes, ponds, and irrigation ditches in the BSA provide suitable habitat for this species. See discussion in Section 4.3.10.
Gambelia silus	Blunt-nosed leopard lizard	FE	Current habitat includes undeveloped land in the San Joaquin Valley and foothills of the Coast Range; most frequently found in Valley sink scrub.	A	Suitable habitat is not preset; there is no Valley sink scrub in the BSA.
Thamnophis gigas	Giant garter snake	FT; ST	Streams and sloughs, usually with mud bottom. One of the most aquatic of garter snakes; usually in areas of freshwater marsh and low-gradient streams with emergent vegetation, also drainage canals, irrigation ditches, ponds, and small lakes.	A	This species is believed to be extirpated from Stanislaus County. It is not expected to occur in the BSA. Refer to discussion in Section 2.4 Agency Coordination and Agency Contacts.
Amphibians					
Ambystoma californiense	California tiger salamander	FT; ST	Most commonly found in annual grassland habitat, but also occurs in grassy understory of valley-foothill hardwood habitats, and uncommonly along stream courses in valley-foothill riparian habitats. Requires vernal pools or other seasonal water bodies for breeding. Needs underground refuges, especially ground squirrel burrows.	HP	Some seasonal wetlands and ponds in the BSA provide suitable aquatic habitat for CTS, and adjacent vegetation communities provide potential upland habitat. See discussion in Section 4.3.11. However, based on the protocol California tiger salamander breeding surveys, habitats within the BSA are likely unoccupied and the species is not anticipated to occur.
Rana draytonii	California red-legged frog	FT, CSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	A	This species is believed to be extirpated from the valley floor. This species is not expected to occur within the BSA.

Scientific Name	Common Name	Status	Habitat Requirements	Habitat Present/ Absent	Rationale
Spea hammondii	Western spadefoot toad	CSC	Occurs primarily in grassland habitats but also found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	HP	Some seasonal wetlands and ponds in the BSA provide suitable aquatic habitat for this species, and adjacent vegetation communities provide potential upland habitat. See discussion in Section 4.3.12.
Fish					
Acipenser medirostris	Green sturgeon	FT	Most often in marine waters; estuaries, lower reaches of large river, salt or brackish water off river mouths.	A	Suitable habitat is not present; no rivers or streams occur in the BSA.
Hypomesus transpacificus	Delta smelt	FT	With the exception of spawning season, delta smelt generally inhabits the freshwater-saltwater mixing zone of an estuary. Spawning occurs in river channels upstream from the mixing zone.	A	Suitable habitat is not present; no rivers or streams occur in the BSA.
Mylopharadon conocephalus	Hardhead	CSC	Low to mid-elevation streams in the Sacramento-San Joaquin drainage. Found in clear deep pools with sand/gravel/boulder bottoms and slow water velocity.	A	Suitable habitat is not present; no rivers or streams occur in the BSA.
Oncorhynchus mykiss	Central Valley steelhead	FT	Populations occur and spawn in the Sacramento and San Joaquin rivers and their tributaries.	A	Suitable habitat is not present; no rivers or streams occur in the BSA.
Oncohynchus tshawystscha	Central Valley spring-run Chinook salmon	FT	Sacramento and San Joaquin Rivers and tributaries. Primarily found in Butte, Big Chico, Deer and Mill creeks. Adult numbers depend on pool depth and volume, amount of clover, and proximity to gravel.	A	Suitable habitat is not present; no rivers or streams occur in the BSA.
Invertebrates					
Branchinecta conservatio	Conservancy fairy shrimp	FE	Endemic to California and is known to occur in several disjunct populations ranging from Tehama to Ventura counties. The conservancy fairy shrimp occurs in vernal pools found on several different landforms, geologic formations and soil types. They have been observed in vernal pools ranging in size from 323 to 3,834,675 square ft. Observations suggest this species is often found in pools that are relatively large and turbid.	A	The seasonal wetlands in the BSA are generally small, which is atypical of the pool characteristics where this species typically occurs. In addition, this species was not observed during focused wet season surveys in 2012-2013 and 2014. Consequently, this species is not expected to occur in the BSA.

Scientific Name	Common Name	Status	Habitat Requirements	Habitat Present/ Absent	Rationale
Branchinecta lynchi	Vernal pool fairy shrimp	FT	Endemic to the grasslands of the Central Valley, Central Coast Mountains and South Coast Mountains. Typically associated with small, shallow vernal pools with relatively short periods of inundation. Found in larger pools in southern extent of range.	HP	This species was observed in several seasonal wetlands within the BSA during wet season surveys in 2014. See discussion in Section 4.3.13.
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	FT	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus nigra* ssp. *caerulea*). Prefers branches greater than 1 inch in diameter.	HP	Several blue elderberry shrubs were observed within the BSA. See discussion in Section 4.3.14.
Linderiella occidentalis	California linderiella	CA SA	Occurs in seasonal pools (e.g., vernal pools) in unplowed grasslands with old alluvial soils underlain by hardpan or heavy clay or in sandstone depressions. Tolerant of wide temperature range and pool size.	HP	This species was observed in several seasonal wetlands within the BSA during wet season surveys in 2014. See discussion in Section 4.3.13.
Lepidurus packardi	Vernal pool tadpole shrimp	FE	Found in a variety of natural, and artificial, seasonally ponded habitat types including: vernal pools, swales, ephemeral drainages, stock ponds, reservoirs, ditches, backhoe pits, and ruts caused by vehicular activities. Within the Sacramento Valley.	HP	This species was not observed during wet season surveys in 2014 but could potentially occur in the BSA. See discussion in Section 4.3.13.
Plants					
Atriplex cordulata var *cordulata*	Heartscale	List 1B.2	Chenopod scrub, valley grassland, wetland-riparian, likely to occur in wetlands or non-wetlands (0-1,000ft). Blooms April – October.	A	Potential habitat is present for this species, however, this species was not observed during focused surveys in April or July 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Atriplex coronata var. *coronata*	Crownscale	List 4.2	Chenopod scrub, valley and foothill grassland, vernal pools, alkaline, often clay (0 – 56 ft). Blooms March – October.	A	Suitable habitat is not present; BSA is outside the range of this species.

Scientific Name	Common Name	Status	Habitat Requirements	Habitat Present/ Absent	Rationale
Atriplex minuscula	Lesser saltscale	List 1B.1	Alkali sink, chenopod scrub, valley and foothill grassland, alkaline soils (49 – 325 ft). Blooms May – October.	A	Potential habitat is present for this species, however, this species was not observed during focused surveys in July 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Atriplex subtilis	Subtle orache	List 1B.2	Valley and foothill grasslands, saline depressions (0 – 230 ft). Blooms June – September.	A	Suitable habitat is not present; saline soils not known from the BSA.
Blepharizonia plumosa	Big tarplant	List 1B.1	Valley and foothill grasslands, often on dry hills and plains, clay to clay loam soils (0 – 650 ft) Blooms July – October.	A	Potential habitat is present for this species, however, this species was not observed during focused surveys in July 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Brodiaea pallida	Chinese Camp brodiaea	FT; List 1B.1	Intermittent streams, serpentine or not (525 – 1,280 ft.). Blooms May – July.	A	Suitable habitat is not present; there are no intermittent streams in the BSA.
California macrophylla	Round-leaved filaree	List 1B.1	Open areas, grasslands, scrub, (50 – 4,000 ft). Blooms Mar – May.	A	Potential habitat is present for this species, however, this species was not observed during focused surveys in March or April 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Calycadenia hooveri	Hoover's calycadenia	List 1B.3	Cismontane woodland, valley and foothill grassland; exposed rock (210 – 1080 ft.). Blooms July – September.	A	Potential habitat is present for this species, however, this species was not observed during focused surveys in July 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Castilleja campestris var. succulanta	Succulent owl's-clover	FT, SE, List 1B.2	Vernal pools and swales within grasslands (80 – 2,460 ft) Blooms April – May.	HP	Potential habitat is present for this species, however, this species was not observed during focused surveys in April 2014 within the normal blooming period of this species. However, due to below average rainfall this species may not have bloomed and is unable to be eliminated from potentially occurring in the BSA. See discussion in Section 4.2.1.

Scientific Name	Common Name	Status	Habitat Requirements	Habitat Present/ Absent	Rationale
Caulanthus lemmonii	Lemmon's jewel-flower	List 1B.2	Valley and foothill grassland, pinyon and juniper woodland, chapparal and scrub in southwest San Joaquin Valley (270 – 4,000 ft). Blooms March – May.	A	The BSA is not within the elevation or geographic range for this species.
Centromadia parryi ssp. *rudis*	Parry's rough tarplant	List 4.2	Valley grasslands, vernal pools, edge of marshes and wetland-riparian (20 – 4,800 ft). Blooms May – October.	A	Potential habitat is present for this species, however, this species was not observed during focused surveys in July 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Clarkia rostrata	Beaked clarkia	List 1B.3	Annual grassland; dry slopes of valley and foothill woodland (213 – 1,640 ft). Blooms April – May.	A	Potential habitat is present for this species, however, this species was not observed during focused surveys in April 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Chamaesyce hooveri	Hoover's spurge	FT, List 1B.2	Vernal pools (65 – 885 ft). Blooms July – September.	HP	Potential habitat is present for this species, however, this species was not observed during focused surveys in April 2014 within the normal blooming period of this species. However, due to below average rainfall this species may not have bloomed and is unable to be eliminated from potentially occurring in the BSA. See discussion in Section 4.2.1.
Cordylanthus palmatus	Palmate-Bracted bird's beak	FE; SE	Saline-alkaline soils in seasonally-flooded lowland plains and basins (0-500 ft).	A	Potential habitat is present for this species, however, this species was not observed during focused surveys in April 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Cryptantha hooveri	Hoover's cryptantha	List 1A	Dry, coarse sand, flat and hills, valley grasslands and inland dunes (0 – 260 ft). Blooms April – May.	A	Habitat not present, no sandy habitat or sand dunes occur within the BSA.

Scientific Name	Common Name	Status	Habitat Requirements	Habitat Present/ Absent	Rationale
Delphinium recurvatum	Recurved larkspur	List 1B.2	Poorly drained alkaline soils in grasslands, shadscale and chenopod scrub, generally in wetlands (98 – 1,960 ft). Blooms March – June).	A	Marginal habitat is present for this species, however, this species was not observed during focused surveys in March or April 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Downingia pusilla	Dwarf downingia	List 2B.2	Vernal pools, freshwater wetlands, valley grasslands and riparian areas (0 – 1,082 ft). Blooms March – May.	HP	Potential habitat is present for this species, however, this species was not observed during focused surveys in April 2014 within the normal blooming period of this species. However, due to below average rainfall this species may not have bloomed and is unable to be eliminated from potentially occurring in the BSA. See discussion in Section 4.2.1.
Eryngium racemosum	Delta-button celery	SE, List 1B.1	Riparian scrub, seasonally inundated floodplain on clay soils (9 – 245 ft). Blooms June – October.	A	The riparian scrub community in the BSA is associated with an agricultural ditch and does not support the natural floodplain characteristics required for this species. Consequently, this species is presumed absent from the BSA.
Eschscholzia rhombipetala	Diamond petaled California poppy	List 1B.1	Fallow fields and open spaces, valley and foothill grasslands with alkali and clay (0 – 984 ft). Blooms March – April.	A	Potential habitat is present for this species, however, this species was not observed during focused surveys in March or April 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Fritillaria agrestis	Stinkbells	List 4.2	Foothill woodland, valley grasslands, chaparral and wetland-riparian; sometimes serpentinite (0 – 1,640 ft). Blooms March- June.	A	Potential habitat is present for this species, however, this species was not observed during focused surveys in March or April 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Juncus nodosus	Knotted rush	List 2B.3	Streambanks, lakeshores and meadow edges, marshes and swamps (2,230 – 5,510 ft) Blooms July – September.	A	The BSA is not within the elevation range for this species.

Scientific Name	Common Name	Status	Habitat Requirements	Habitat Present/ Absent	Rationale
Lagophylla dichotoma	Forked hare-leaf	List 1B.1	Grassland and open woodlands, cismontane woodlands, sometimes clay (65 – 3,150 ft). Blooms April – July.	A	Potential habitat is present for this species, however, this species was not observed during focused surveys in April or July 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Legenere limosa	Legenere	List 1B.1	Vernal pools (3 – 2,887 ft). Blooms April – June.	HP	Potential habitat is present for this species, however, this species was not observed during focused surveys in April 2014 within the normal blooming period of this species. However, due to below average rainfall this species may not have bloomed and is unable to be eliminated from potentially occurring in the BSA. See discussion in Section 4.2.1.
Monardella leucocephala	Merced monardella	List 1A	Sandy soil in grassland and interior dunes (130 – 330 ft). Blooms May – August.	A	Habitat not present, no sandy soils or dunes occur within the BSA.
Neostapfia colusana	Colusa grass	FT, SE, List 1B.1	Vernal pools (16 – 360 ft). Blooms May – August.	HP	Potential habitat is present for this species, however, this species was not observed during focused surveys in April 2014 within the normal blooming period of this species. However, due to below average rainfall this species may not have bloomed and is unable to be eliminated from potentially occurring in the BSA. See discussion in Section 4.2.1.
Orcuttia inaequalis	San Joaquin Valley orcutt grass	FT, SE, List 1B.1	Vernal pools, acidic souls with clay to sandy loam texture (32 – 2,477 ft). Blooms April – September.	A	This species is considered to be extirpated from Stanislaus County.
Orcuttia pilosa	Hairy orcutt grass	FE, SE, List 1B.1	Vernal pools (147 – 3510 ft). Blooms May – September.	HP	Potential habitat is present for this species, however, this species was not observed during focused surveys in April or July 2014 within the normal blooming period of this species. However, due to below average rainfall this species is unable to be eliminated from potentially occurring in the BSA. See discussion in Section 4.2.1.

Scientific Name	Common Name	Status	Habitat Requirements	Habitat Present/ Absent	Rationale
Pseudobahia bahiifolia	Hartweg's golden sunburst	FE, SE, List 1B.1	Cismontane woodland, valley and foothill grassland, predominately on bare rock and along shady creeks; clay soils (98 – 1148 ft). Blooms March – April.	A	Marginal habitat is present for this species, however, this species was not observed during focused surveys in March or April 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Senecio layneae	Layne's butterweed	FT	Open, rocky areas within the chaparral and woodland habitats on gabbro and serpentine soils in western El Dorado County, in the Red Hills in Tuolumne County, and in Yuba County near Brownsville.	A	Habitat not present, no gabbro or serpentine soils occur within the BSA.
Sidalcea keckii	Keck's checker-mallow	FE; List 1B.1	Grassy slopes (245 – 2,130 ft.). Blooms April – May.	A	Potential habitat is present for this species, however, this species was not observed during focused surveys in April or May 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Sphenopholis obtusata	Prairie wedge grass	List 2B.2	Wetland riparian habitat within cismontane foothill woodland (984 – 6,500 ft). Blooms April – June.	A	The BSA is not within the elevation range for this species.
Symphyotrichum lentum	Suisun Marsh aster	List 1B.2	Brackish and freshwater marshes and swamps (<985 ft). Blooms May – November.	A	Marginal habitat is present for this species, however, this species was not observed during focused surveys in July 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.
Tuctoria greenei	Greene's tructoria	FE, List 1B.1	Vernal pools in valley and foothill grasslands (98 – 3510 ft). Blooms May – July.	HP	Potential habitat is present for this species, however, this species was not observed during focused surveys in April 2014 within the normal blooming period of this species. However, due to below average rainfall this species may not have bloomed and is unable to be eliminated from potentially occurring in the BSA. See discussion in Section 4.2.1.

Scientific Name	Common Name	Status	Habitat Requirements	Habitat Present/ Absent	Rationale
Verbena californica	Red Hills vervain	FT; List 1B.1	Wet places, seeps, generally serpentine soils (985 – 1,300 ft.). Blooms May – September.	A	Potential habitat is present for this species, however, this species was not observed during focused surveys in July 2014 within the normal blooming period of this species. Consequently, this species is presumed absent from the BSA.

Federal
FE: Federally listed; Endangered
FT: Federally listed, Threatened
FPE: Federally Proposed for Listing as Endangered
FPT: Federally Proposed for Listing as Threatened
FC: Federal Candidate
NMFS SC: National Marine Fisheries Service Species of Concern

California Native Plant Society designations:
List 1A: Plants presumed extinct in California.
List 1B: Plants rare and endangered in California and throughout their range.
List 3: Plants about which we need more information; a review list.
List 4: Plants of limited distribution; a watch list

State
ST: State listed; Threatened
SE: State listed; Endangered
SFP: State Fully Protected
SPT: State Proposed for Listing as Threatened
SPE: State Proposed for Listing as Endangered
SWL: State Watch List
SC: State Candidate
CSC: California Species of Special Concern
CA SA: Special Animal: General term that refers to taxa that the CNDDB is interested in tracking regardless of legal or protection status: Includes the following categories in addition to those listed above:

- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act Guidelines.
- Taxa that are biologically rare, very restricted in distribution, declining throughout their range, or have a critical, vulnerable stage in their life cycle that warrants monitoring.
- Populations in California that may be on the periphery of a taxon's range, but are threatened with extirpation in California.
- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands, vernal pools, etc.)
- Taxa designated as a special status, sensitive, or declining species by other state or federal agencies, or non-governmental organization (NGO).

Habitat Presence:
HP: Habitat is, or may be present
SP: Species is present
A: No habitat present and no further work needed
CH: Project footprint is located within a designated critical habitat unit.

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Chapter 4. Results: Biological Resources, Discussion of Impacts and Mitigation

Direct impacts, as discussed below, were calculated based on the footprint of each build alternative as determined by the limits of cut and fill. Direct impacts include the permanent removal of vegetation and associated wildlife within the project footprint, as well as temporary impacts resulting from construction access and staging. Indirect impacts were calculated based on the proposed limits of right-of-way for each alternative minus the area of the footprint. Indirect impacts include changes to hydrology, sedimentation, shading, increased disturbance and noise, etc. that could occur at some time after the project is constructed.

4.1. Natural Communities of Special Concern

The BSA includes six natural communities of special concern: interior live oak woodland, blue oak savannah, perennial marsh, seasonal marsh, riparian scrub, and seasonal wetland. Oak woodland/savannah and riparian communities are considered sensitive under CEQA, and riparian communities may also be regulated by CDFW pursuant to Section 1602 of the California Fish and Game Code, as described in Section 2.1.2.3. Riparian communities may also be regulated by the USACE and/or RWQCB if the community is determined to be waters of the U.S. or waters of the State as described in Section 2.1.2.1 and 2.1.2.2. Potential permitting requirements for impacts to these resources are discussed in Section 5.4.

Table 6 below provides a breakdown of direct and indirect impacts to natural communities of special concern by build alternative.

Table 6: Summary of Impacts to Natural Communities of Special Concern (acres)

	Alternative 1A		Alternative 1B		Alternative 2A		Alternative 2B	
	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct	Indirect
Interior Live Oak Woodland	1.00	0.32	3.07	0.37	1.00	0.32	3.07	0.37
Blue Oak Savannah	0.0	0.0	0.23	0.77	0.0	0.0	0.23	0.77
Perennial Marsh	1.07	0.20	0.28	0.46	0.79	0.13	0.08	0.40
Seasonal Marsh	0.0	0.08	0.11	0.30	0.0	0.08	0.28	1.28
Riparian Scrub	0.13	0.35	0.13	0.35	0.13	0.35	0.13	0.35
Seasonal Wetland	0.36	0.07	0.27	0.15	0.74	0.49	0.66	0.90

4.1.1. Interior Live Oak Woodland

4.1.1.1. Survey Results

The interior live oak woodland occurs in two locations at the east end of the BSA and is also mapped in one location near the west end.

4.1.1.2. Avoidance and Minimization Efforts

1. To the extent practicable, the preferred build alternative shall include design features such as retaining walls, non-standard slope gradients, etc. to avoid and minimize impacts to interior live oak woodland.

2. Any areas of interior live oak woodland adjacent to the project footprint shall be designated as an Environmentally Sensitive Area (ESA) and protected during construction utilizing brightly colored fencing. ESA fencing shall be placed along the limits of work and maintained in good condition for the duration of construction activities.

3. Staging areas, access routes, and construction areas shall be located outside of areas of interior live oak woodland.

4. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. This training instructs workers about the purpose of ESA fencing and the resources being protected.

4.1.1.3. Project Impacts

Impacts to interior live oak woodland would range from 1.00 ac of direct impacts and 0.32 ac of indirect impacts if either alternative 1A or 2A is selected to 3.07 ac of direct impacts and 0.37 ac of indirect impacts if either Alternative 1B or 2B is selected. Table 7 below provides a breakdown of impacts to interior live oak woodland by build alternative.

Table 7: Summary of Impacts to Interior Live Oak Woodland (acres)

	Alternative 1A		Alternative 1B		Alternative 2A		Alternative 2B	
	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct	Indirect
Interior Live Oak Woodland	1.00	0.32	3.07	0.37	1.00	0.32	3.07	0.37

4.1.1.4. Compensatory Mitigation

No compensatory mitigation is proposed with implementation of the measures in section 4.1.1.2.

4.1.1.5. Cumulative Impacts

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the relatively small impact to interior live oak woodland from the proposed project and the measures proposed to avoid and minimize impacts to this community, it is not expected that the NCC project would substantially contribute to cumulative effects to interior live oak woodland.

The CEEA is shown in Figure 9.

4.1.2. Blue Oak Savannah

4.1.2.1. Survey Results

As discussed in Section 3.1.2.1, blue oak savannah occurs in one location at the east end of the BSA near SR-120.

4.1.2.2. Avoidance and Minimization Efforts

1. To the extent practicable, the preferred build alternative shall include design features such as retaining walls, non-standard slope gradients, etc. to avoid and minimize impacts to blue oak savannah.

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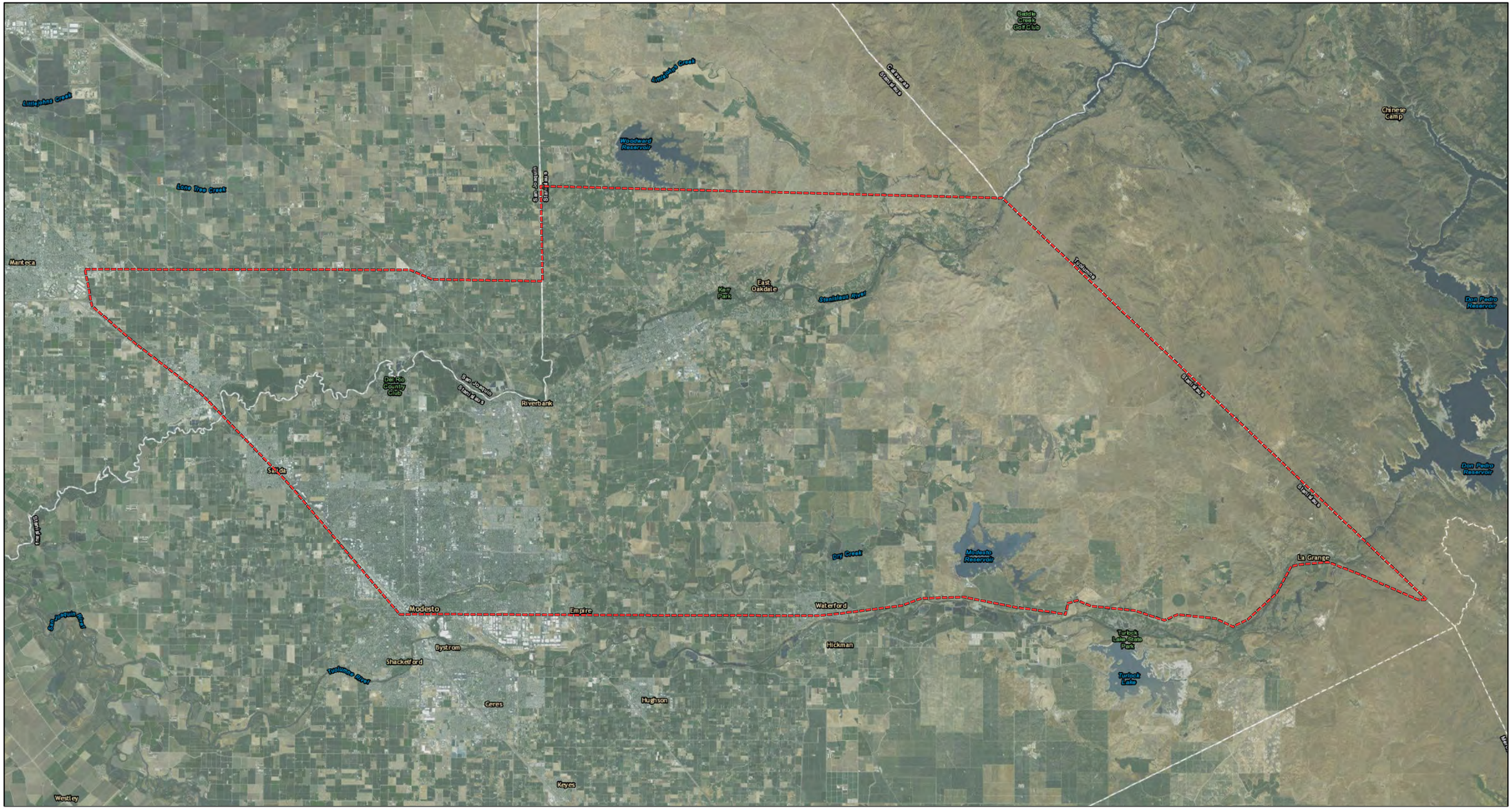

LEGEND

Cumulative Effects Evaluation Area

FIGURE 9

Caltrans

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MILES

SOURCE:ESRI Aerial Imagery (5/2010)

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Cumulative Effects Evaluation Area

EA: 10-0S8000, Project ID: 1000000263

North County Corridor New State Route 108

Stanislaus County, California

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2. Any areas of blue oak savannah adjacent to the project footprint shall be designated as an ESA and protected during construction utilizing brightly colored fencing. ESA fencing shall be placed along the limits of work and maintained in good condition for the duration of construction activities.

3. Staging areas, access routes, and construction areas shall be located outside of areas of blue oak savannah.

4. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. This training instructs workers about the purpose of ESA fencing and the resources being protected.

4.1.2.3. Project Impacts

Impacts to blue oak savannah would consist of 0.23 ac of direct impacts and 0.77 ac of indirect impacts if either alternative 1B or 2B is selected. No impacts would occur to blue oak savannah if either alternative 1A or 2A is selected. Table 8 below provides a breakdown of impacts to blue oak savannah by build alternative.

Table 8: Summary of Impacts to Blue Oak Savannah (acres)

	Alternative 1A		**Alternative 1B**		**Alternative 2A**		**Alternative 2B**	
	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct	Indirect
Blue Oak Savannah	0.0	0.0	0.23	0.77	0.0	0.0	0.23	0.77

4.1.2.4. Compensatory Mitigation

No compensatory mitigation is proposed with implementation of the measures in section 4.1.2.2.

4.1.2.5. Cumulative Impacts

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the relatively small impact to blue oak savannah from the proposed project and the measures proposed to avoid and minimize impacts to this community, it is not expected that the NCC project would substantially contribute to cumulative effects to blue oak savannah.

4.1.3. Perennial Marsh

4.1.3.1. Survey Results

As discussed in Section 3.1.2.1, perennial marshes occur primarily in the central and eastern half of the BSA.

4.1.3.2. Avoidance and Minimization Efforts

1. To the extent practicable, the preferred build alternative shall include design features such as retaining walls, non-standard slope gradients, etc. to avoid and minimize impacts to perennial marsh.

2. Areas of perennial marsh adjacent to the project footprint and designated staging areas shall be designated as an ESA and protected during construction utilizing brightly colored fencing. ESA fencing shall be placed along the limits of work and maintained in good condition for the duration of construction activities.

3. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. The training shall instruct workers about the purpose of ESA fencing and the resources being protected.

4. Measures consistent with the current Caltrans' Construction Site Best Management Practices (BMP) Manual (including the Storm Water Pollution Prevention Plan [SWPPP] and Water Pollution Control Plan [WPCP] Manuals) shall be implemented to minimize effects to aquatic habitats resulting from erosion, siltation, etc. during construction.

5. Following completion of construction, all graded slopes, temporary impact and/or otherwise disturbed areas shall be restored to preconstruction contours (if necessary) and revegetated with the standard Caltrans native seed mix.

4.1.3.3. Project Impacts

Impacts to perennial marsh would range from 0.08 ac of direct impacts and 0.40 ac of indirect impacts if alternative 2B is selected to 1.07 ac of direct impacts and 0.20 ac of indirect impacts if alternative 1A is selected. Table 9 below provides a breakdown of impacts to perennial marsh by build alternative.

Table 9: Summary of Impacts to Perennial Marsh (acres)

	Alternative 1A		Alternative 1B		Alternative 2A		Alternative 2B	
	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct	Indirect
Perennial Marsh	1.07	0.20	0.28	0.46	0.79	0.13	0.08	0.40

4.1.3.4. Compensatory Mitigation

Following selection of the preferred build alternative, a qualified biologist shall perform a final delineation of waters of the U.S. within the project impact area. The final delineation shall be submitted to the USACE for verification and a request for an Approved Jurisdictional Determination.

Impact to waters of the U.S. shall be accomplished using one of the following methods, or by using a combination of the methods. Appropriate mitigation ratio shall be established to ensure no net loss of waters of the U.S. acreage or value.

1. Preservation, creation, and/or restoration in accordance with the USACE Mitigation Monitoring Program (MMP) Guidelines, dated December 30, 2004. The MMP shall address, at minimum, the following:

    a. Project Site Impact Assessment;

    b. Compensatory Mitigation Site Selection;

    c. Compensatory Mitigation Site Design;

    d. Compensatory Mitigation Site Construction;

    e. Long-Term Compensatory Mitigation Site Maintenance and Monitoring; and

    f. Long-Term Site Management.

2. Purchase of credits at an approved mitigation bank.

3. Payment of in-lieu fees pursuant to an approved in-lieu fees program.

4.1.3.5. Cumulative Impacts

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the relatively small impact to perennial marsh from the proposed project, the measures proposed to avoid and minimize impacts to this community, and the

proposed compensatory mitigation, it is not expected that the NCC project would substantially contribute to cumulative effects for perennial marsh.

4.1.4. Seasonal Marsh

4.1.4.1. Survey Results

As discussed in Section 3.1.2.1, seasonal marsh occurs in the western and central section of the BSA, adjacent to the irrigated pastures and annual grasslands.

4.1.4.2. Avoidance and Minimization Efforts

Avoidance and minimization efforts for seasonal marsh are that same as those listed in Section 4.1.3.2. for perennial marsh.

4.1.4.3. Project Impacts

Impacts to seasonal marsh would range from 0.0 ac of direct impacts and 0.08 ac of indirect impacts if either alternative 1A or 2A is selected to 0.28 ac of direct impacts and 1.28 ac of indirect impacts if 2B is selected. Table 10 below provides a breakdown of impacts to seasonal marsh by build alternative.

Table 10: Summary of Impacts to Seasonal Marsh (acres)

	Alternative 1A		**Alternative 1B**		**Alternative 2A**		**Alternative 2B**	
	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct	Indirect
Seasonal Marsh	0.0	0.08	0.11	0.30	0.0	0.08	0.28	1.28

4.1.4.4. Compensatory Mitigation

Compensatory mitigation for seasonal marsh would be the same as that listed in Section 4.1.3.4. for perennial marsh.

4.1.4.5. Cumulative Impacts

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the relatively small impact to seasonal marsh from the proposed project, the measures proposed to avoid and minimize impacts to this community, and the proposed compensatory mitigation, it is not expected that the NCC project would substantially contribute to cumulative effects for seasonal marsh.

4.1.5. Riparian Scrub

4.1.5.1. Survey Results

As discussed in Section 3.1.2.1, Riparian scrub occurs in one location along a concrete canal near the west end of the BSA.

4.1.5.2. Avoidance and Minimization Efforts

Avoidance and minimization efforts for riparian scrub are that same as those listed in Section 4.1.3.2. for perennial marsh.

4.1.5.3. Project Impacts

Impacts to riparian scrub would be the same for all four alternatives: 0.13 ac of direct impacts and 0.35 ac of indirect impacts. Table 11 below provides a breakdown of impacts to riparian scrub by build alternative.

Table 11: Summary of Impacts to Riparian Scrub (acres)

	Alternative 1A		Alternative 1B		Alternative 2A		Alternative 2B	
	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct	Indirect
Riparian Scrub	0.13	0.35	0.13	0.35	0.13	0.35	0.13	0.35

4.1.5.4. Compensatory Mitigation

Compensatory mitigation for seasonal marsh would be the same as that listed in Section 4.1.3.4. for perennial marsh.

4.1.5.5. Cumulative Impacts

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the relatively small impact to riparian scrub from the proposed project, the measures proposed to avoid and minimize impacts to this community, and the proposed compensatory mitigation, it is not expected that the NCC project would substantially contribute to cumulative effects for riparian scrub.

4.1.6. Seasonal Wetland

4.1.6.1. Survey Results

As discussed in Section 3.1.2.1, within the BSA, seasonal wetlands typically occur in topographical depressions within annual grasslands and occasionally in shallow ditches.

4.1.6.2. Avoidance and Minimization Efforts

Avoidance and minimization efforts for seasonal wetland are that same as those listed in Section 4.1.3.2. for perennial marsh.

4.1.6.3. Project Impacts

Impacts to seasonal wetland would range from 0.27 ac of direct impacts and 0.15 ac of indirect impacts if alternative 1B is selected to 0.74 ac of direct impacts and 0.49 ac of indirect impacts if alternative 2A is selected. Table 12 below provides a breakdown of impacts to seasonal wetland by build alternative.

Table 12: Summary of Impacts to Seasonal Wetlands (acres)

	Alternative 1A		Alternative 1B		Alternative 2A		Alternative 2B	
	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct	Indirect
Seasonal Wetland	0.36	0.07	0.27	0.15	0.74	0.49	0.66	0.90

4.1.6.4. Compensatory Mitigation

Compensatory mitigation for seasonal wetland would be the same as that listed in Section 4.1.3.4. for perennial marsh.

4.1.6.5. Cumulative Impacts

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the relatively small impact to seasonal wetlands from the proposed project, the measures proposed to avoid and minimize impacts to this community, and the proposed compensatory mitigation, it is not expected that the NCC project would substantially contribute to cumulative effects for seasonal wetlands.

4.2. Special Status Plant Species

After evaluation of the special status wildlife species potentially occurring in the BSA, as shown in Table 5, the following plant species were determined to have a slight potential to occur in the BSA.

4.2.1. Vernal Pool Plants

Succulent owl's clover (*Castilleja campestris* ssp. *succulent*) is a federally threatened and state endangered species which is listed as 1B.2 on the CNPS list. This species is found in vernal pools and other moist habitats within valley grasslands, foothill

woodlands, and freshwater wetlands. This species is found only in southern Sierra Nevada Foothills, southeast Sacramento Valley, and eastern San Joaquin Valley with an elevation between 80 and 2,460 ft.

Hoover's spurge (*Chamaesyce hooveri*) is a federally threatened species that is listed as 1B.2 on the CNPS list. This species is found in vernal pools and wetlands within valley grasslands and wetland-riparian habitat. This species' population is limited to Butte, Colusa, Glenn, Merced, Stanislaus, Tehama, and Tulare counties where elevation is between 65 and 885 ft.

Dwarf downingia (*Downingia humilis*) is a species listed as 2B.2 on the CNPS list. This species is found in vernal pools and roadside ditches in valley and foothill grasslands. This species is limited to the North Coast Ranges, Sacramento Valley, San Joaquin Valley, and north San Francisco Bay area where elevation is between sea level and 1,082 ft.

Legenere (*Legenere limosa*) is a species listed at 1B.1 on the CNPS list. This species is found in vernal pools, wet areas, and ponds; generally in valley grasslands. This species is found areas of the southern North Coast Ranges, southern Sacramento Valley, northern San Joaquin Valley, and San Francisco Bay area with elevation ranging from 3 to 2,887 ft.

Colusa grass (*Neostapfia colusana*) is a federally threatened and state endangered species that is listed at 1B.1 on the CNPS list. This species is found in vernal pools in Valley grasslands and riparian habitat. This species is limited to Colusa, Merced, Solano and Stanislaus counties; with elevation ranging between 16 and 360 ft.

Hairy orcutt grass (*Orcuttia pilosa*) is a state and federally endangered species and is listed as 1B.1 on the CNPS list. This species is found in vernal pools and wetlands in Valley grasslands. This species population is limited to Madera, Merced, Stanislaus, and Tehama Counties; with elevation ranging from 147 to 3,510 ft.

Greene's tructoria (*Tuctoria greenei*) is a federally endangered species and is listed as 1B.1 on the CNPS list. This species is found in vernal pools and wetlands in Valley grasslands. This species is limited to the Great Central Valley and the Modoc Plateau; with elevation ranging from 98 to 3,510 ft.

4.2.2. Survey Results

There are five CNDDB occurrences for succulent owl's-clover in the search area; all of which are located over 10 mi east of the BSA. There have been no records of this species since 1978 within the search area.

There are two CNDDB occurrences for Hoover's spurge within the search area. The closest location, dated 1974, is located approximately 12.5 mi southeast. Additional surveys were conducted in 1986, where very few to no plants were observed in various pools, and in 2011, where no Hoover's spurge was in any of the pools in the vicinity. The other occurrence was observed in 1986; however; it was noted the majority of the pools were being converted to agriculture. Therefore, it is likely that this habitat is extirpated.

There are 11 CNDDB occurrences for dwarf downingia in the search area. Ten of these records are located over 10 miles southeast of the BSA and are dated before 1978. The closest occurrence, dated 1937, is located approximately 5.5 mi east of the BSA.

There is only one CNDDB occurrence for legenere within the search area. The occurrence, dated 1936, is located approximately 6 mi north of the BSA. Follow up surveys, conducted in 1986, show that the land was converted and there were no vernal pools within 5 mi of the record. This species is considered to be extirpated from the area.

There are six CNDDB occurrences for hairy orcutt grass in the search area. The habitat at five of the locations has been altered and the species is considered extirpated from the vicinity. The only location that has not been altered, as of 2010, is located over 15 mi southwest of the BSA.

There are seven CNDDB occurrences for Greene's tructoria in the search area. The closest and most recent record, dated 1980, is located approximately 4.5 mi east of the BSA. However according to the CNDDB, this site was planted to barley and worked by tillage tool and no habitat remains. The next closest record, dated 1973, is located approximately 5.5 mi southeast of the BSA. Follow-up surveys were conducted in 1986, 1987, and 2011; all of which were negative for this species. Due to conversion to agriculture and negative follow-up surveys; this plant has been considered extirpated from the remaining five occurrence locations in the search area.

Although potentially suitable habitat for these plants species exists within the seasonal wetlands in the BSA, due to lack of recent or nearby occurrences and the negative results from 2014 surveys, this species is presumed absent from the BSA. However, due to the below average rainfall during the winter of 2013-2014, these species may not have bloomed and is unable to be definitely eliminated from potentially occurring in the BSA.

4.2.3. Avoidance and Minimization Efforts

1. Following selection of a preferred build alternative a qualified biologist or botanist shall conduct focused surveys for vernal pool plants listed above. The surveys shall be conducted in accordance with the CDFW Plant Survey Protocol (2009) or the current accepted guidance. The surveys will be conducted no more than 1 year prior to onset of construction at the appropriate time of year necessary to identify the target species.

2. If any of the target species are identified during the surveys, a plan shall be prepared to address potential impacts the identified plant species. The plan shall include measures to account for the type of impact to the species, potentially ranging from establishment of ESAs and protective fencing if the target plant were to be located near the project footprint but would not be directly impacted, to a comprehensive salvage and replacement program if target plant would be removed during project construction.

4.2.4. Project Impacts

Impacts to vernal pool plant habitat (seasonal wetlands), if identified in the BSA, would range from 0.04 ac of direct impacts and 2.11 ac of indirect impacts if alternative 2B is selected to 0.07 ac of direct impacts and 1.21 ac of indirect impacts if alternative 1B is selected. No vernal pool plant habitat would be impacted if either alternative 1A or 2A is selected. Table 13 provides a breakdown of impacts to vernal pool plant habitat by build alternative.

Table 13: Summary of Impacts to Habitat for Vernal Pool Plants (acres)

	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
Direct Impacts	0.0	0.07	0.0	0.04
Indirect Impacts	0.0	1.21	0.0	2.11
Total	0.00	1.28	0.00	2.15

4.2.5. Compensatory Mitigation

Compensatory mitigation would be required if any of the vernal pool plants described above would be removed during project construction. Compensation shall consist one of the following two options, or combination of the two.

1. Preservation of suitable habitat at an off-site location (enhancement of the habitat at the off-site location may also be a component of the compensation). The compensation habitat shall be of commensurate or higher ecological value than the habitat that would be removed. The compensation area shall be protected in perpetuity by a conservation easement or equivalent means.

2. Credits shall be purchased at a mitigation bank approved by USFWS and/or CDFW, as appropriate based on the species in question, to compensate for the loss of habitat as a result of project implementation.

4.2.6. Cumulative Impacts

A comprehensive cumulative effects discussion is included in Section 4.4. As discussed therein, impacts to natural communities from projects identified within the cumulative CEEA would be relatively small. Considering the potential impacts to vernal pool plant habitat from the proposed project, the measures proposed to avoid and minimize impacts to vernal pool plant species, and the proposed compensatory mitigation (if necessary), it is not expected that the NCC project would substantially contribute to cumulative effects for vernal pool plant species.

4.3. Special Status Animal Species Occurrences

After evaluation of the special status wildlife species potentially occurring in the BSA, as shown in Table 5, the following wildlife species were determined to have a reasonable likelihood of occurring in the BSA and may be affected by the project.

4.3.1. Bats

Literature search resulted in six species of bats with special status that could occur in the BSA; the pallid bat, the greater Western mastiff bat, Townsend's big-eared bat and the Western red bat, which are all listed as State species of concern. The hoary bat and Yuma myotis, both State special species may also occur in the BSA. None of these species have any formal federal status. In addition, colonial roosting bats (including species with and/or without special status) can form significant local breeding populations in roosts of sufficient size.

The pallid bat is a locally common species of low elevations, and is a yearlong resident through most of its range. It uses a wide variety of habitats from sea level up through mixed conifer forests, but is most common in open, dry habitats with rocky areas for roosting. This bat forages among trees and shrubs and over open ground, and often takes prey on the ground. Its diet is a variety of insects and spiders, including large, hard-shelled prey, which is often carried to a perch or night roost for consumption. Caves, crevices, and sometimes hollow trees and buildings are used for day roosts. Roosts must protect bats from high temperatures. Night roosts may be in more open sites, such as porches and open buildings. Pallid bats are social, and most roost in groups of 20 or more. Maternity colonies form in early April, and may have 10 to 100 individuals. Males may roost separately or in the nursery colony.

Townsend's big-eared bat is widely distributed in North America and occurs in a variety of habitats from sea level to about 10,000 feet elevation. This species is found throughout California but specific details of its distribution are not well known, however it is most abundant in mesic habitat. It roosts in colonies and prefers cave-like habitat but has also been reported to utilize buildings, bridges, rock crevices and man-made structures as roost sites. Foraging habitat includes edges along streams adjacent to and within a variety of wooded habitats, in addition to open areas such as pastures. Small moths and beetles are primary food sources. Echolocation is generally used to capture prey while in flight.

The western mastiff bat is the largest species of bat in North America It roosts predominantly in building, crevices and vertical cliffs. The species feeds predominantly on insects, with moths accounting for 80% of their diet. This species is an aerial predator, soaring at great lengths all night in order to forage over wide areas. Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban.

The western red bat is a common species in the Central Valley Basin and ranges up into the lower reaches of the Sierra Nevada Mountains. Forests and woodlands, especially on the edge of streams, fields or urban areas provide potential roosting habitat. This species roosts manly in trees, but occasionally utilizes shrubs as well. It is mostly a solitary species and roosts predominantly in trees at the edge of streams, fields, or urban areas. This species is an aerial predator, foraging on a variety of insects over open terrain.

Hoary bats are one of America's largest bats. Hoary bats are not attracted to houses or other human structures, and they stay well-hidden in foliage throughout the day. They typically roost individually, 10-15 ft up in trees along forest borders. In the summer, hoary bats do not emerge to feed until after dark, but during migration, they may be seen soon after sundown. Hoary bats forage on flying insects that are caught along woodland openings and riparian corridors. These bats sometimes make round trips of up to 24 mi on the first foraging flight of the night, and then make several shorter trips, returning to the day roost about an hour before sunrise. Between late summer and early fall they migrate south to subtropical and tropical areas to spend the winter.

The Yuma myotis bat is common and widespread in California. They are usually associated with permanent sources of water, typically rivers and streams. Optimal foraging habitat for this species generally consists of open forest or woodland areas near a water source. They primarily feed on insects close to the water surface. They can be found roosting in a variety of areas including the underside of bridges, caves, mines, and other man-made structures. This species hibernates in winter and may make short elevational migrations according to the season. Yuma myotis roost in large groups, and may roost with other bat species.

Seasonality of Roost Usage

As discussed in the bat habitat assessment prepared by WRA (included in Appendix C), use of roosts by bats varies temporally and spatially throughout annual cycles as well as shorter seasonal and daily cycles. Roost types are generally referred to as day roosts (used during breeding season by males and/or non-reproductive females), day maternity roosts (used for pup-rearing by females), night roosts (used by all volant bats during seasonal periods of bat activity, e.g. when foraging), dispersal roosts (where breeding occurs, or en route to winter roosts), and winter roosts (used either for hibernation or torpor).

Bats in this region of California are not active year-round. During the maternity season, non-volant young of colonial bats remain in the roost until late summer (end of August), after which they may disperse from the natal roost or remain into or throughout the winter. During winter months, roosting bats typically enter torpor, rousing only occasionally to drink water or opportunistically feed on insects. The onset of torpor is dependent upon environmental conditions, primarily temperature and rainfall.

4.3.1.1. Survey Results

The CNDDB lists multiple records for the pallid bat, Townsend's big eared bat, greater western mastiff bat, western red bat, hoary bat and Yuma myotis within the search area. All CNDDB records for these species occur northeast of the BSA. Additionally, all records for each species, with the exception of the pallid bat, occur within approximately 8 mi of the BSA.

The closest CNDDB record for the pallid bat and greater western mastiff bat is located approximately 2.5 mi northeast of the BSA, both recorded in 2001. The closest CNDDB record for the Townsend's big-eared bat, dated 2001, is located approximately 4.5 mi northeast of the BSA. The closest record for the western red bat and Yuma myotis, both dated 1999, is located on SR-108, in between the two northern points of the BSA. In addition, the Western red bat, hoary bat and Yuma myotis have also been recorded as occurring approximately 0.5 mi north of the BSA.

WRA conducted a bat habitat assessment that consisted of an aerial photo analysis and a field assessment (conducted on May 12-13, 2014). The following discussion of potential bat habitat in the BSA is based on the results of WRA's assessment. Figures 10a and 10b illustrate the potential bat roosting habitat in the BSA.

Potentially suitable roost habitat was present along in many areas of the BSA and generally consisted of the structures (buildings) or trees.

Structures that provided potential roost habitat were of suitable construction and condition to permit access by bats into suitable roost cavities, crevices in walls, roof areas, or other suitable locations.

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Patterson Rd
Patterson Rd
Patterson Rd
Riverbank
Oakdale Rd
Claus Rd
Bentley Rd
Pelendale Ave
Langworth Rd
Sylvan Ave
Modesto

LEGEND

- Biological Study Area
- Suitable Burrowing Owl Burrows
- Elderberry Shrubs

Active Nests

- Swainson's Hawk
- Red-Tailed Hawk
- Red-Shouldered Hawk
- Unidentified Hawk
- Great Horned Owl

Potential Bat Roosting Habitat

- Potential Tree Habitat
- Potential Building Habitat

0 1500 3000
FEET

Map Index

10a
10b

FIGURE 10a

Special Status Species Mapping
(Burrowing Owl, Elderberry Shrub,
Raptor Nests, and Bat Roosting Habitat)

EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014)
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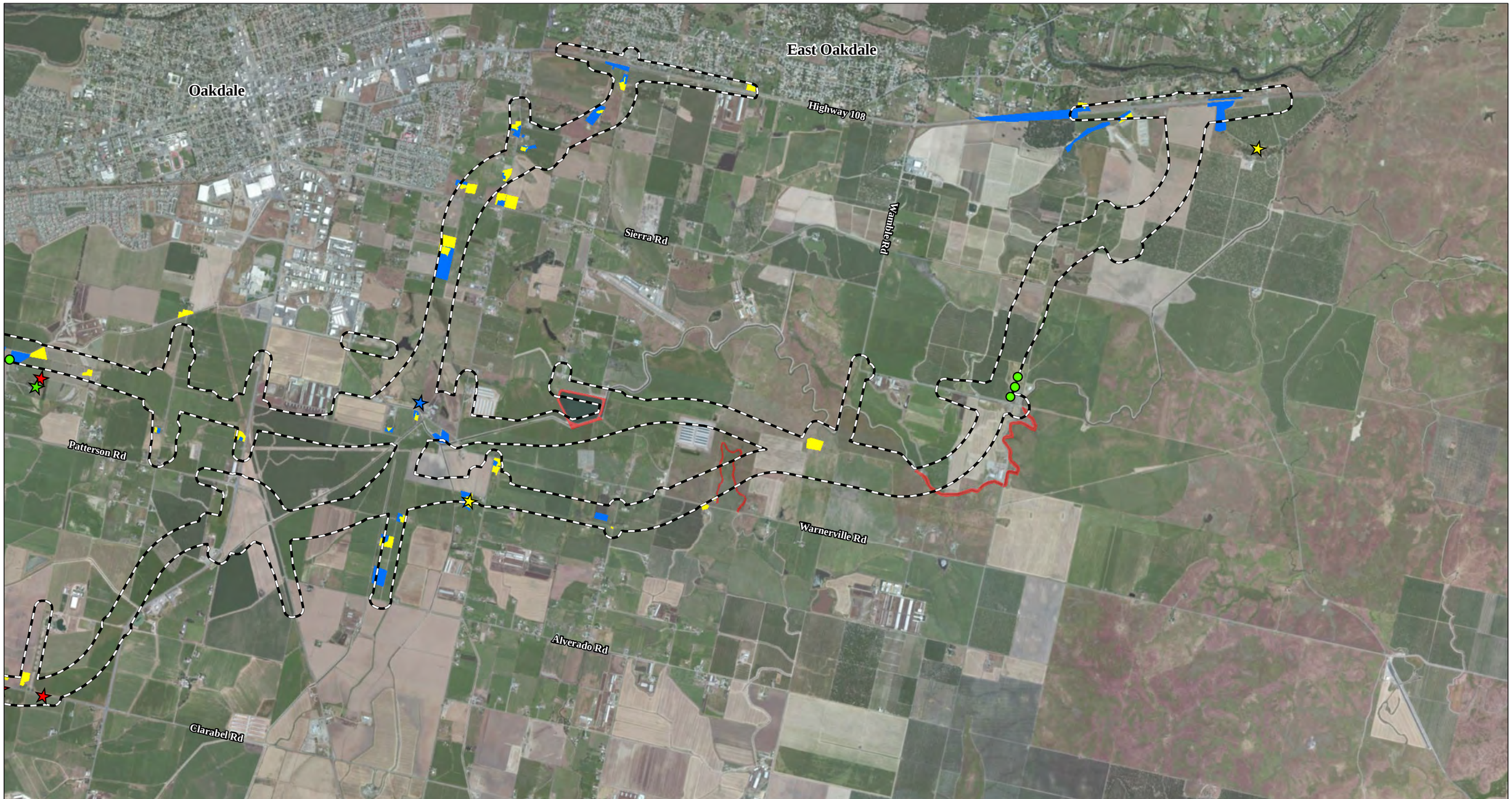

LEGEND

- Biological Study Area
- Suitable Burrowing Owl Burrows
- Elderberry Shrubs

Active Nests

- Swainson's Hawk
- Red-Tailed Hawk
- Red-Shouldered Hawk
- Unidentified Hawk
- Great Horned Owl

Potential Bat Roosting Habitat

- Potential Tree Habitat
- Potential Building Habitat

0 1500 3000
FEET

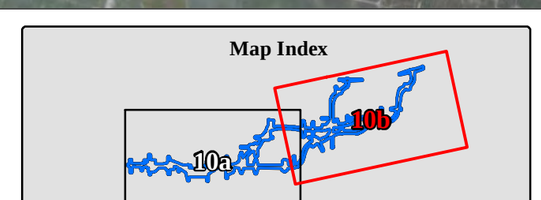

FIGURE 10b

Special Status Species Mapping
(Burrowing Owl, Elderberry Shrub,
Raptor Nests, and Bat Roosting Habitat)

EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014)
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Trees that could potentially support colonial bats had cavities, deep crevices, large patches of exfoliating bark, dense, down-facing palm fronds. Trees that could potentially support solitary tree-roosting bats included any trees with sufficiently dense foliage such as palms, some oaks, cottonwoods, and dense orchard tree canopy.

In general, potentially suitable bat roosting habitat was most densely distributed in the western portion of the BSA and consisted mostly of potentially suitable buildings with some orchards and/or individual trees. The central portion of the BSA also provided substantial density and distribution of potentially suitable tree and building roost habitat. The north-central portion of the BSA, along the 1A and 2A alternatives, supported potential roost habitat similar to the central portion of the BSA. However, potential roost habitat decreased in density in the eastern portion of the BSA along 1B and 2B alternatives.

4.3.1.2. Avoidance and Minimization Efforts

The following measures shall be implemented following selection of a preferred build alternative.

1. A qualified bat biologist shall conduct a detailed survey of all structures that would be removed during construction and that could provide potential roost habitat for bats. If any structure exhibits signs of bat use, the structure shall not be demolished until bats can be humanely evicted as described below.

    a. Structure Option 1. All potential, but currently unused entry points into the structure are sealed. The active entry points are fitted with one-way exits, which are left in place 7-10 days to allow all bats to emerge normally during nightly feeding flights. The one-way exits are then removed and the remaining openings sealed until demolition if it will occur more than 30 days after demolition. If the interval between successful eviction and demolition will be short (less than 4 weeks), the one-way exits may often be left in place until demolition. This work shall be conducted by a biologist or other individual qualified in humane bat eviction methods and materials, or be conducted under the supervision a biologist or other individual with these qualifications.

    b. Structure Option 2. In some cases, the physical condition of the structure is so poor that humane eviction as described above is not possible. If that occurs, the building shall be carefully and selectively dismantled in such a way that the internal environment is altered to a degree sufficient to cause

bats to abandon the roost and not return. Dismantling shall occur under the guidance of a biologist or other individual qualified in partial dismantling of structures for bat eviction.

2. A qualified bat biologist shall conduct a detailed survey of all trees that would be removed during construction and that could provide potential roost habitat for bats. Following the survey, any trees that can be determined unsuitable for bats roosts (e.g., shallow crevices in bark or wood) or the absence of bats can be determined through visual inspection of the roost features (e.g., accessible by boom truck, man lift, a visual inspection using fiber optic or video probes), shall not be subject to further restrictions for removal. If any tree exhibits signs of bat use or cannot be visually inspected, the following two-step method shall be followed to remove the tree.

    a. On the first day, all non-habitat branches and limbs shall be cut from habitat trees using chainsaws only (no excavators or other heavy machinery). This activity shall be supervised by a biologist or other individual qualified in two-step tree removal of potential bat roost trees for sufficient length of time to train all tree cutters. The noise and vibration disturbance, together with the visible alteration of the tree, is very effective in causing bats that emerge nightly to feed, to not return to the roost that night. On the second day, the remainder of the tree is removed. Supervision by a qualified biologist or other qualified individual shall not be required on the second day unless a very large cavity is present and a large colony is suspected.

3. The bat eviction methods described above in measures 1.a., 1.b., and 2.a. shall only be conducted during seasonal periods of bat activity (see below), but shall avoid the period of April 16 to August 31 when non-volant young could be present. In this region, the two primary active periods are from March 1 to April 15 (or after evening temperatures rise above 45 ºF and/or no more than 0.5 in of rainfall within 24 hours occurs), or between September 1 and October 15 (or before evening temperatures fall below 45 ºF and/or more than 0.5 in of rainfall within 24 hours occurs).

4. If, during the detailed roost surveys, it is determined that a bat Species of Special Concern is likely to occur at a given roost, the qualified bat biologist shall

coordinate with CDFW regarding specific measures for assessing the potential for the species to occur and the methods for estimating population size.

5. If determined necessary by a qualified bat biologist, acoustical sampling and/or emergence surveys shall be conducted to provide an index of the bat species and relative abundance for a specific potential roost. The methodology for the acoustical sampling and emergence surveys (i.e., location, frequency, duration, etc.) shall be developed by a qualified bat biologist in coordination with CDFW.

6. To the extent practicable, the preferred build alternative shall be designed to avoid and minimize impacts to potential day or maternity bat roost habitat.

   If a significant maternity roost site is identified within the project footprint and cannot be avoided, replacement roost habitat shall be required via an artificial bat roost (e.g., bat house). The design, siting, and placement of replacement roost habitat shall be implemented by, or under the supervision of, a qualified bat biologist possessing a Memorandum of Understanding with the California Department of Fish and Wildlife.

   Replacement roost habitat shall be monitored annually for 3 consecutive years following installation. The survey protocol shall be determined by a qualified bat biologist based on the target roost type for the replacement roost (e.g., day maternity roost).

4.3.1.3. Project Impacts

Impacts to bat roost habitat are divided by the type of potential roost habitat (tree, and building) as identified in Tables 2 and 3 of the bat habitat assessment prepared by WRA (Appendix C)[1]. Impacts to potential tree roost habitat would range from 10.36 ac if alternative 2B is selected to 25.58 ac if alternative 1A is selected. Impacts to potential building roost habitat would range from 19.95 ac if alternative 1B is selected to 32.97 ac if alternative 2A were selected. The total impact from all roost types would range from 37.42 ac if alternative 2B is selected to 50.36 ac if alternative 1A is selected. Table 14 provides a breakdown of impacts to potential bat roost habitat by build alternative. Impacts to potential bat roost habitat are also shown in Figures 10a and 10b.

[1] In addition to separate categories for tree and building habitats, WRA also includes a combined category for tree and building habitat; however, for purposes of more accurately assessing potential impacts, the combined category has been separated into tree or building habitat.

Table 14: Summary of Impacts to Potential Bat Roost Habitat (acres)

	Alternative 1A		Alternative 1B		Alternative 2A		Alternative 2B	
	Tree	**Building**	**Tree**	**Building**	**Tree**	**Building**	**Tree**	**Building**
Direct Impacts	23.07	20.55	17.28	16.49	13.34	28.61	8.33	23.56
Indirect Impacts	2.51	4.23	2.45	3.50	2.61	4.36	2.03	3.50
Total	25.58	24.78	19.73	19.95	15.95	32.97	10.36	27.06

Loss of bat roost habitat could directly affect individual bats or colonies of bats if they are present in tree or building roosts during construction. Impacts would vary depending on the type of roost (i.e., day roosts, day maternity roosts, night roosts, dispersal, or winter roosts).

4.3.1.4. Compensatory Mitigation

If an important roost site is identified within the project footprint and cannot be avoided, replacement roost habitat shall be required via an artificial bat roost (e.g., bat house). The design, siting, and placement of replacement roost habitat shall be implemented by, or under the supervision of, a qualified bat biologist possessing a Memorandum of Understanding with the CDFW.

Replacement roost habitat shall be monitored annually for 3 consecutive years following installation. The survey protocol shall be determined by a qualified bat biologist based on the target roost type for the replacement roost (e.g., day maternity roost).

4.3.1.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the potential impacts to bat roost habitat from the proposed project, the measures proposed to avoid and minimize impacts to bats, and the proposed compensatory mitigation (if necessary), it is not expected that the NCC project would substantially contribute to cumulative effects for bats.

4.3.2. Tricolored Blackbird

The tricolored blackbird is a State endangered species. The endangered status is the result of an emergency listing that was enacted on December 3, 2014 and is in effect for 180 days. This species is also a USFWS Migratory Non-game Bird of Management Concern.

Tricolored blackbirds are highly colonial, gregarious in all seasons, and nomadic in fall. They are largely endemic to the lowlands of California, and prefer to nest in freshwater marshes with dense growths of herbaceous vegetation, such as mustard, blackberry, and thistle. Willow and cottonwood riparian areas are also used for nesting. A nesting area must be large enough to support a minimum colony of about 50 pairs. They feed in flocks even when breeding; foraging in grassy fields, crops, flooded areas and edges of ponds, and eating insects, seeds, and cultivated grains.

4.3.2.1. Survey Results

There are 16 CNDDB records for tricolored blackbird within the search area. The closest record is located within 0.15 mi of the BSA, dated 1980. The Himalayan blackberry bramble and tules associated with marshes and ponds provide suitable nesting habitat for this species while the grasslands and open agriculture fields provide suitable foraging habitat.

Focused surveys were not conducted for tricolored blackbirds in the BSA but suitable habitat for this species was observed during other site surveys. Foraging tricolored blackbirds were observed in the eastern portion of the BSA during several site visits; however, no sign of nesting tricolored birds were observed in the BSA.

4.3.2.2. Avoidance and Minimization Efforts

The following avoidance and minimization measures would be implemented to reduce potential impacts to tricolored blackbirds:

1. If construction begins during the nesting season (February 15 to September 1), a survey for nesting tricolored blackbirds shall be conducted within the project footprint and within a 100-ft radius by a qualified biologist. The survey shall be conducted a maximum of 14 days prior to the start of construction.

2. If nesting tricolored blackbirds are found within 100 ft of the project footprint during the survey, an initial setback of 100 ft from the edge of the nest colony shall be established and protected with ESA fencing. ESA fencing shall consist of brightly colored fencing and shall be maintained in good condition during the nesting season until construction is complete or the young have fledged, as determined by a qualified biologist.

3. A qualified biologist shall evaluate the potential for the proposed work to disturb nesting activities considering the 100-ft setback. The evaluation criteria shall include, but are not limited to, the location/orientation of the nest colony, the

distance of the nest colony to the work limits, the line of sight between the nest colony and the work limits, and the description of the proposed work.

4. If the qualified biologist determines that the setback can be reduced, initial construction activities in the vicinity of the nest shall be monitored by a qualified biologist. If the biologist determines nesting is not affected by construction activities with the reduced setback, work can proceed. If it is determined that construction activities are adversely affecting the nesting birds with the reduced setback, all construction within 100 ft of a nest colony shall be halted until the biologist can establish an appropriate setback.

5. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. The training shall instruct workers about the purpose of ESA fencing and the resources being protected.

4.3.2.3. Project Impacts

Impacts to tricolored blackbird nesting habitat (Himalayan blackberry bramble and perennial marsh) range from 0.82 ac of direct impacts with alternative 2B, 1.54 ac with alternative 1B, 1.98 ac with alternative 1A, and 2.51 ac with alternative 2A.

Impacts to tricolored blackbird foraging habitat (grassland, irrigated pasture, agricultural) would range from 330.04 ac of direct impacts if alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected. Table 15 below provides a breakdown of impacts to tricolored blackbird foraging habitat by build alternative.

Table 15: Impacts to Tricolored Blackbird Foraging Habitat by Alternative (acres)

	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
Foraging Habitat (Grassland, Irrigated Pasture, Agriculture)	335.96	409.29	330.04	405.43

The project could also directly affect nesting tricolored blackbirds if individuals are nesting within or near the project footprint during construction. However, no take of an occupied, active tricolored blackbird nest (eggs or young) or tricolored blackbird individuals are anticipated.

4.3.2.4. Compensatory Mitigation

The emergency listing for tricolored blackbird did not include compensation measures for loss of habitat. Therefore, no mitigation is proposed with implementation of avoidance and minimization measures in Section 4.3.2.2. However, if a formal status for tricolored blackbird is established after the emergency listing expires, the project proponent shall coordinate with CDFW to determine if compensation is required for loss of habitat.

4.3.2.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the relatively small impacts to tricolored blackbird habitat from the proposed project and the measures proposed to avoid and minimize impacts to this species, it is not expected that the NCC project would substantially contribute to cumulative effects for tricolored blackbird.

4.3.3. Western Burrowing Owl

The western burrowing owl is a California species of concern, and is protected under the Migratory Bird Treaty Act. It has no federal status. Burrowing owls occur in warmer valleys, open, dry grasslands, deserts, and scrublands associated with agriculture and urban areas that support populations of California ground squirrels. Burrowing owls nest below ground, in areas with short grass. Western burrowing owls are dependent on the presence of fossorial (most commonly ground squirrel) in order to use their abandoned burrows. Burrowing owls feed on insects and small mammals in grassland, pastures, fallow fields, and cropland. This species will occasionally forage in areas with taller vegetation than is suitable for nesting habitat.

4.3.3.1. Survey Results

The following is based on the Habitat Assessment for Western Burrowing Owl (2014) prepared by LSA and included in Appendix D.

The CNDDB record search contains 13 records within the search area. The closest documented record, dated 1994, is located approximately 0.5 mi north of the BSA. The record is located in the west side of the BSA, between Terminal Avenue and Oakdale Road. Previous surveys, conducted by ICF in 2012, resulted in positive sign of burrowing owl presence (e.g., whitewash, pellet casting, prey remains) at two locations in the BSA. One observation was located in annual grassland at the northeast corner of Claribel Road and Claus Road; the second location was in an agricultural field near the eastern end of the BSA.

The annual grassland at the corner of Claribel Road and Claus Road was surveyed multiple times in spring 2014 but no burrowing owl or sign of burrowing owl were observed. The vegetation in the annual grassland was not managed and, therefore, was taller (at least 3 ft) than areas where burrowing owl typically occur. Because of the tall vegetation, this annual grassland did not provide suitable nesting habitat for burrowing owl. The agricultural field near the eastern end of the BSA, where burrowing owl sign was observed during previous surveys, has been converted to orchards and burrows are no longer present on the property.

During spring 2014, ruderal areas, annual grasslands, canal levees, and irrigated pastures were surveyed for suitable habitat and sign of burrowing owl presence. The surveys of the canal levees were limited to areas adjacent to suitable foraging habitat (i.e., annual grasslands and ruderal areas). Canals adjacent to orchards and vineyards were not surveyed since these areas do not provide a suitable prey base for the owls, thus making the adjacent levees unsuitable. In addition, crop-dusting was observed over many of the canals; this practice would also reduce the prey base for burrowing owls, further reducing the value of levees as habitat. Canals and levees that contain suitable burrows and adjacent foraging habitat were surveyed for burrowing owl and evidence of burrowing owls; no sign of burrowing owl presence was observed.

LSA surveyed numerous irrigated pastures containing burrows of suitable size for burrowing owl. Per discussion with several local ranchers, the standard irrigation practice involves flooding the fields beginning in March and ending in September or October (weather depending). The local water district allocates 50 hours of water every 10 days. Although the frequency and length of watering depends on the hydrology of the pasture, the fields generally remain flooded for multiple days at a time. As a result, any suitable sized burrows would be flooded and unusable for most of the year. In addition, flooded fields do not provide suitable habitat for burrowing owl prey. The lack of prey base in irrigated pastures decreases the likelihood of burrowing owl utilizing burrows in irrigated pastures.

Some irrigated pastures throughout the project area contain elevated embankments or levees, generally in the back of the pasture. Some of these embankments, which are elevated above the flooded pastures, contain burrows suitable for burrowing owls. However, due to the regular flooding of the irrigated pastures, it is unlikely that there is sufficient prey base for the owls. No burrowing owls or sign of burrowing owls were observed in irrigated pastures within BSA.

Overall, the BSA provides marginally suitable habitat for burrowing owls due to the irrigation and agricultural practices described above. There are, however, small areas of ruderal vegetation and annual grasslands that provide suitable habitat for this species; consequently, there is moderate potential for this species to occur in the BSA. Potentially suitable burrowing owl habitat is shown in Figures 10a and 10b.

4.3.3.2. Avoidance and Minimization Efforts

1. Following selection of a preferred build alternative breeding and non-breeding season surveys shall be conducted for western burrowing owl by a qualified biologist in all suitable habitat within the BSA in accordance with Appendix D of the CDFW Staff Report on Burrowing Owl Mitigation (2012) (included in Appendix J). In general, Appendix D of the CDFW Staff Report (2012) requires four surveys during the breeding season (February 15-July 15) and four surveys during the non-breeding season (December 1 – January 31).

2. If surveys indicate occupied burrows occur within the project footprint, measures to avoid, minimize, and /or mitigate impacts to burrowing owl shall be implemented in accordance with the Mitigation Methods section of the CDFW Staff Report (2012).

3. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. The training shall instruct workers about the purpose of ESA fencing and the resources being protected.

4.3.3.3. Project Impacts

Direct impacts to potential habitat for western burrowing owl (grasslands) range from 12.34 ac with Alternative 1A, 13.44 ac with alternative 2A, 31.45 ac with alternative 1B, and 41.66 ac with alternative 2B. Impacts to potential burrowing owl habitat are also shown in Figures 10a and 10b. Table 16 below provides a breakdown of impacts to tricolored blackbird foraging habitat by build alternative.

Table 16: Impacts to Western Burrowing Owl Suitable Habitat by Alternative (acres)

	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
Suitable Habitat (Grasslands with burrows)	12.34	31.45	13.44	41.66

The project could also directly affect nesting western burrowing owl if individuals are nesting within or near the project footprint during construction.

4.3.3.4. Compensatory Mitigation

If no occupied burrows are identified after implementation of the measures included in Section 4.3.3.2., no compensatory mitigation is proposed.

Compensatory mitigation would only occur if avoidance and minimization effort #2 is triggered (e.g., occupied burrows are identified). Mitigation would be consistent with the Mitigation Methods section of the CDFW Staff Report (2012).

4.3.3.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the potential impacts to burrowing owl habitat from the proposed project, the measures proposed to avoid and minimize impacts to this species, and the proposed compensatory mitigation (if necessary), it is not expected that the NCC project would substantially contribute to cumulative effects for western burrowing owl.

4.3.4. Swainson's Hawk

The Swainson's hawk is a State threatened species and has no formal federal status. Swainson's hawks are long distance migrants, wintering primarily in South America, and returning north to breed. In California, Swainson's hawks occur in the northeastern portion of the state, in the Great Basin Province, and in the Central Valley. They return to the Central Valley in mid-March to nest, and begin migrating south in August. Nests are built in the tops of large trees, often those associated with riparian habitats. They are known to forage up to 10 mi from their nest sites.

Swainson's hawks are very social raptors and are generally found in large groups with other species. During the breeding season, Swainson's hawks generally feed on rodents, rabbits, and reptiles. However, when not breeding, their diet tends to consist mostly of insects.

4.3.4.1. Survey Results

There are 78 CNDDB records for Swainson's hawk within the search area. The closest record, from 2011, is located within 0.5 mi of the southeast boundary of the BSA. Trees within the landscaped areas and oak woodland communities provide suitable nesting habitat. Suitable foraging habitat is located throughout the BSA, in the irrigated pasture, ruderal, and agricultural communities.

Multiple Swainson's hawks were observed foraging and nesting in the BSA. A total of four active Swainson's hawk nests were identified within or near the BSA; three of the nests were located in the central portion of the BSA and one nest was located outside of the BSA, near the eastern end. Figures 10a and 10b show the location of active Swainson's hawk nests.

4.3.4.2. Avoidance and Minimization Efforts

1. Following selection of a preferred build alternative, nesting surveys shall be conducted for Swainson's hawk by a qualified biologist in accordance with the Recommended Timing and Methodology for Swainson's Hawk in California's Central Valley (SHTAC 2000) (Appendix K).

2. If surveys indicate active Swainson's hawk nests are located within 0.5 mi of the project footprint, an initial setback of 600 ft[1] from nesting areas shall be established and protected with ESA. ESA fencing shall consist of brightly colored fencing and shall be maintained in good condition during the nesting season until construction is complete or the young have fledged, as determined by a qualified biologist.

3. A qualified biologist shall evaluate the potential for the proposed work to disturb nesting activities considering the 600-ft setback. The evaluation criteria shall include, but are not limited to, the location/orientation of the nest in the nest tree, the distance of the nest to the work limits, the line of sight between the nest and the work limits, and the description of the proposed work. The attachment to the Recommended Timing and Methodology for Swainson's Hawk in California's Central Valley (SHTAC 2000) titled "Determining a Project's Potential For Impacting Swainson's Hawks" shall also be consulted. Following the initial evaluation, the qualified biologist shall coordinate with CDFW to discuss the results and the proposed setback.

4. If the qualified biologist, through coordination with CDFW, determines that the setback can be reduced, initial construction activities in the vicinity of the nest shall be monitored by a qualified biologist. If the biologist determines nesting is not affected by construction activities with the reduced setback, work can proceed with the continued presence of a qualified biologist. If it is determined that construction activities are adversely affecting the nesting birds with the reduced

setback, all construction within 600 ft of a nest shall be halted until the biologist can establish an appropriate setback. All work within 600 ft of a Swainson's hawk nest requires a biological monitor.

5. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. The training shall instruct workers about the purpose of ESA fencing and the resources being protected.

4.3.4.3. Project Impacts

All of the build alternatives would remove a maximum of two known Swainson's hawk nest trees (one known Swainson's hawk nest tree and one unidentified raptor nest tree). In addition, suitable raptor nest trees that were not active or observed active during surveys in 2014 but could support future nesting, occur in all of the build alternatives and could be removed during construction. Known Swainson's hawk and other raptor nest trees in the project footprints and the immediate vicinity are shown in Figures 10a and 10b.

Impacts to Swainson's hawk foraging habitat (grassland, irrigated pasture, agricultural) would range from 330.04 ac of direct impacts if alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected. Table 17 below provides a breakdown of impacts to Swainson's hawk foraging habitat for each alternative.

Table 17: Impacts to Swainson's Hawk Foraging Habitat by Alternative (acres)

	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
Foraging Habitat (Grassland, Irrigated Pasture, Agriculture)	335.96	409.29	330.04	405.43

The project could also directly affect nesting Swainson's hawks if individuals are nesting within or near the project footprint during construction. However, no take of an occupied, active Swainson's hawk nest (eggs or young) or Swainson's hawk individuals are anticipated.

[1] Per the Recommended Timing and Methodology for Swainson's Hawk in California's Central Valley (SHTAC 2000) (Appendix J), the risk of disturbing nesting Swainson's hawks is lowest when all project activities are located 200 yards (600 ft) or further from the nest.

4.3.4.4. Compensatory Mitigation

No compensatory mitigation is proposed for foraging habitat. The following measure will be implemented the reduce impacts to foraging habitat. The project will avoid and minimize potential impacts to suitable foraging habitat to the greatest extent practicable.

4.3.4.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. As discussed therein, impacts to natural communities from projects identified within the cumulative CEEA would be relatively small. Considering the potential impacts to Swainson's hawk habitat from the proposed project, the measures proposed to avoid and minimize impacts to this species. It is not expected that the NCC project would substantially contribute to cumulative effects for Swainson's hawk.

4.3.5. Northern Harrier

The northern harrier is a State species of concern, it has no federal status. This species breeds in wide-open habitats that range from Arctic to grasslands to marshes. Nests are placed on the ground, usually in a dense clump of vegetation such as willows, grasses, sedges, and cattails. This species is most commonly found in large, undisturbed areas of wetlands and grasslands. Flying low over the ground, harriers eat small mammals, reptile, birds, and amphibians.

4.3.5.1. Survey Results

There are no CNDDB records of this species in the search area; however, the BSA provides suitable foraging and nesting habitat for the northern harrier. Suitable nesting habitat may be present in the grasslands in the BSA. The annual grasslands, ruderal vegetation, marshes, and agricultural fields provide suitable foraging habitat. Focused surveys were not conducted for northern harrier in the BSA but suitable habitat for this species was observed during other site surveys and it is expected that active nests or individuals would have been identified during surveys for Swainson's hawk or other species. No northern harriers were observed in the BSA during site surveys in 2014 but there is moderate potential for this species to occur in the BSA due to the presence of suitable habitat.

4.3.5.2. Avoidance and Minimization Efforts

The following avoidance and minimization measures would be implemented to reduce potential impacts to northern harrier:

1. If construction begins during the nesting season (February 15 to September 15), a survey for nesting northern harriers shall be conducted within the project footprint and within a 100-ft radius by a qualified biologist. The survey shall be conducted a maximum of 14 days prior to the start of construction.

2. If nesting northern harriers are found within 100 ft of the project footprint during the survey, an initial setback of 100 ft from nesting areas shall be established and protected with ESA fencing. ESA fencing shall consist of brightly colored fencing and shall be maintained in good condition during the nesting season until construction is complete or the young have fledged, as determined by a qualified biologist.

3. A qualified biologist shall evaluate the potential for the proposed work to disturb nesting activities considering the 100-ft setback. The evaluation criteria shall include, but are not limited to, the location/orientation of the nest in the nest tree, the distance of the nest to the work limits, the line of sight between the nest and the work limits, and the description of the proposed work.

4. If the qualified biologist determines that the setback can be reduced, initial construction activities in the vicinity of the nest shall be monitored by a qualified biologist. If the biologist determines nesting is not affected by construction activities with the reduced setback, work can proceed. If it is determined that construction activities are adversely affecting the nesting birds with the reduced setback, all construction within 100 ft of a nest shall be halted until the biologist can establish an appropriate setback.

5. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. The training shall instruct workers about the purpose of ESA fencing and the resources being protected.

4.3.5.3. Project Impacts

Direct impacts to potential nesting habitat for northern harrier (grasslands) range from 12.34 ac with Alternative 1A, 13.44 ac with alternative 2A, 31.45 ac with alternative 1B, and 41.66 ac with alternative 2B.

Impacts to northern harrier foraging habitat (grassland, irrigated pasture, agricultural) would range from 330.04 ac of direct impacts if alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected. Table 18 below provides a

breakdown of impacts to northern harrier nesting and foraging habitat for each alternative.

Table 18: Impacts to Northern Harrier Nesting and Foraging Habitat by Alternative (acres)

	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
Nesting Habitat (Grassland)	12.34	31.45	13.44	41.66
Foraging Habitat (Grassland, Irrigated Pasture, Agriculture)	335.96	409.29	330.04	405.43

The project could also directly affect nesting northern harriers if individuals are nesting within or near the project footprint during construction.

4.3.5.4. Compensatory Mitigation

No compensatory mitigation is proposed with implementation of avoidance and minimization efforts listed in Section 4.3.5.2.

4.3.5.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the relatively small impacts to white-tailed kite habitat from the proposed project and the measures proposed to avoid and minimize impacts to this species, it is not expected that the NCC project would substantially contribute to cumulative effects for northern harrier.

4.3.6. White-tailed Kite

The white-tailed kite is a California fully protected species; it has no Federal listing. This species is known to occur in open country and farmlands with scattered trees in California, Arizona, and Texas. During breeding season, they nest in a small nest in the upper canopy of large trees. During nonbreeding season will roost communally, with up to 100 individuals at a roost. This species generally feeds on small mammals, as well as some birds, lizards and insects.

4.3.6.1. Survey Results

There are no CNDDB occurrences within the search area, however, the BSA provides suitable habitat for this species. The live oak woodlands, landscape vegetation, and trees around rural residences provide suitable nesting habitat for the white tailed kite.

Suitable foraging habitat can be found in annual grasslands, ruderal vegetation, irrigated pastures, and perennial and seasonal marshes.

Focused surveys were not conducted for white-tailed kite in the BSA but suitable habitat for this species was observed during other site surveys and it is expected that active nests or individuals would have been identified during surveys for Swainson's hawk. No white-tailed kites were observed in the BSA during site surveys in 2014 but there is moderate potential for this species to occur in the BSA due to the presence of suitable habitat.

4.3.6.2. Avoidance and Minimization Efforts

The following avoidance and minimization measures would be implemented to reduce potential impacts to white-tailed kites:

1. If construction begins during the nesting season (February 15 to September 15), a survey for nesting white-tailed kites shall be conducted within the project footprint and within a 600-ft radius by a qualified biologist. The survey shall be conducted a maximum of 14 days prior to the start of construction.

2. If nesting white-tailed kites are found within 600 ft of the project footprint during the survey, an initial setback of 600 ft from nesting areas shall be established and protected with ESA fencing. ESA fencing shall consist of brightly colored fencing and shall be maintained in good condition during the nesting season until construction is complete or the young have fledged, as determined by a qualified biologist.

3. A qualified biologist shall evaluate the potential for the proposed work to disturb nesting activities considering the 600-ft setback. The evaluation criteria shall include, but are not limited to, the location/orientation of the nest in the nest tree, the distance of the nest to the work limits, the line of sight between the nest and the work limits, and the description of the proposed work.

4. If the qualified biologist determines that the setback can be reduced, initial construction activities in the vicinity of the nest shall be monitored by a qualified biologist. If the biologist determines nesting is not affected by construction activities with the reduced setback, work can proceed. If it is determined that construction activities are adversely affecting the nesting birds with the reduced setback, all construction within 600 ft of a nest shall be halted until the biologist can establish an appropriate setback.

5. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. The training shall instruct workers about the purpose of ESA fencing and the resources being protected.

4.3.6.3. Project Impacts

No active white-tailed kite nest trees were identified during surveys. However, suitable raptor nest trees that were not active or observed active during surveys in 2014, but could support future nesting, occur in all of the build alternatives and could be removed during construction.

Impacts to white-tailed kite foraging habitat (grassland, irrigated pasture, agricultural) would range from 330.04 ac of direct impacts if alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected. Table 19 below provides a breakdown of impacts to white-tailed kite foraging habitat for each alternative.

Table 19: Impacts to White-Tailed Kite Foraging Habitat by Alternative (acres)

	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
Foraging Habitat (Grassland, Irrigated Pasture, Agriculture)	335.96	409.29	330.04	405.43

The project could also directly affect nesting white-tailed kite if individuals are nesting within or near the project footprint during construction.

4.3.6.4. Compensatory Mitigation

No compensatory mitigation is proposed with implementation of avoidance and minimization efforts listed in Section 4.3.6.2.

4.3.6.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the relatively small impacts to white-tailed kite habitat from the proposed project and the measures proposed to avoid and minimize impacts to this species, it is not expected that the NCC project would substantially contribute to cumulative effects for white-tailed kite.

4.3.7. California Horned Lark

The California horned lark (*Eremiphila alpestris actia*) is on the State watch list. This species is known from coastal regions and the San Joaquin Valley, inhabiting short-grass prairie, bald hills, and fields where trees and shrubs are present. California horned lark is less common in mountains regions and coniferous or chaparral habitats. They nest on the ground grass-lines cup-shaped depressions in open grassy areas. During breeding season, this species feed primarily on insects, snails, and spiders but will add plant matter and forbs to their diet during the rest of the year.

4.3.7.1. Survey Results

There is only one CNDDB records for this species in the search area, located approximately 8.5 mi east of the BSA. The annual grasslands provide suitable nesting and foraging habitat; irrigated pasture and agriculture lands provide foraging habitat. Focused surveys were not conducted for California horned lark in the BSA but suitable habitat for this species was observed during other site surveys. No California horned larks were observed in the BSA during site surveys in 2014 but there is moderate potential for this species to occur in the BSA due to the presence of suitable habitat.

4.3.7.2. Avoidance and Minimization Efforts

The following avoidance and minimization measures would be implemented to reduce potential impacts to California horned larks:

1. If construction begins during the nesting season (February 15 to September 1), a survey for nesting California horned larks shall be conducted within the project footprint and within a 100-ft radius by a qualified biologist. The survey shall be conducted a maximum of 14 days prior to the start of construction.

2. If nesting California horned larks are found within 100 ft of the project footprint during the survey, an initial setback of 100 ft from nesting areas shall be established and protected with ESA fencing. ESA fencing shall consist of brightly colored fencing and shall be maintained in good condition during the nesting season until construction is complete or the young have fledged, as determined by a qualified biologist.

3. A qualified biologist shall evaluate the potential for the proposed work to disturb nesting activities considering the 100-ft setback. The evaluation criteria shall include, but are not limited to, the location/orientation of the nest in the nest tree,

the distance of the nest to the work limits, the line of sight between the nest and the work limits, and the description of the proposed work.

4. If the qualified biologist determines that the setback can be reduced, initial construction activities in the vicinity of the nest shall be monitored by a qualified biologist. If the biologist determines nesting is not affected by construction activities with the reduced setback, work can proceed. If it is determined that construction activities are adversely affecting the nesting birds with the reduced setback, all construction within 100 ft of a nest shall be halted until the biologist can establish an appropriate setback.

5. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. The training shall instruct workers about the purpose of ESA fencing and the resources being protected.

4.3.7.3. Project Impacts

Direct impacts to potential nesting habitat for California horned lark (grasslands) range from 12.34 ac with Alternative 1A, 13.44 ac with alternative 2A, 31.45 ac with alternative 1B, and 41.66 ac with alternative 2B Impacts to California horned lark foraging habitat (grassland, irrigated pasture, agricultural) would range from 330.04 ac of direct impacts if alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected. Table 20 below provides a breakdown of impacts to California horned lark nesting and foraging habitat for each alternative.

Table 20: Impacts to California Horned Lark Nesting and Foraging Habitat by Alternative (acres)

	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
Nesting Habitat (Grassland)	12.34	31.45	13.44	41.66
Foraging Habitat (Grassland, Irrigated Pasture, Agriculture)	335.96	409.29	330.04	405.43

The project could also directly affect nesting California horned larks if individuals are nesting within or near the project footprint during construction.

4.3.7.4. Compensatory Mitigation

No compensatory mitigation is proposed with implementation of avoidance and minimization efforts in Section 4.3.7.2.

4.3.7.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the relatively small impacts to California horned lark habitat from the proposed project and the measures proposed to avoid and minimize impacts to this species, it is not expected that the NCC project would substantially contribute to cumulative effects for California horned lark.

4.3.8. Merlin (Wintering)

The merlin (*Falco columbarius*) is on the CDFW Watch List, it has no federal status. Merlins range from annual grasslands to ponderosa pine and montane hardwood conifer habitats. This species breeds in Canada and Alaska and migrates south to winter in southern U.S. Eating mostly birds, merlins will forage in grasslands and open forests.

4.3.8.1. Survey Results

There is only one CNDDB record in the search area. This occurrence, dated 1991, is located approximately 12.5 mi west of the BSA. The male bird was observed wintering at the confluence of the San Joaquin and Stanislaus Rivers. Suitable wintering habitat is located throughout the open agricultural fields, irrigated pasture, and grasslands in the BSA. Focused surveys were not conducted for merlin in the BSA but suitable wintering habitat for this species was observed during other site surveys (as noted above, this species breeds in Canada and Alaska). No merlins were observed in the BSA during site surveys in 2014 but there is moderate potential for this species to occur in the BSA due to the presence of suitable habitat.

4.3.8.2. Avoidance and Minimization Efforts

Since the merlin would not occur in the BSA during the nesting season, no avoidance and minimization efforts are proposed.

4.3.8.3. Project Impacts

Impacts to merlin wintering habitat (grassland, irrigated pasture, and agricultural) would range from 330.04 ac of direct impacts if alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected. Table 21 below provides a breakdown of impacts to merlin foraging habitat for each alternative.

Table 21: Impacts to Merlin Foraging Habitat by Alternative (acres)

	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
Foraging Habitat (Grassland, Irrigated Pasture, Agriculture)	335.96	409.29	330.04	405.43

No impacts would occur to merlin nesting activities or nesting habitat as a result of the project since merlin would not nest in the BSA.

4.3.8.4. Compensatory Mitigation

No mitigation is proposed.

4.3.8.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the relatively small impacts to merlin wintering habitat from the proposed project, it is not expected that the NCC project would substantially contribute to cumulative effects for merlin.

4.3.9. Loggerhead Shrike

The loggerhead shrike is a State species of concern, it has no federal status. This species is generally found in open areas with scattered shrubs and trees; particularly with vegetation that has spines and thorns. They frequently hunt in agricultural fields, scrublands, savannas, golf courses and cemeteries. This species feeds on small reptiles, amphibians and reptiles.

4.3.9.1. Survey Results

There are no CNDDB records for this species in the search area; however suitable habitat is present in the BSA. The interior live oak woodland and blue oak savannah provide suitable nesting habitat for this species and the ruderal vegetation, annual grasslands, and irrigated pastures provide suitable foraging habitat. Focused surveys were not conducted for loggerhead shrike in the BSA but suitable habitat for this species was observed during other site surveys. No loggerhead shrikes were observed in the BSA during site surveys in 2014 but there is moderate potential for this species to occur in the BSA due to the presence of suitable habitat.

4.3.9.2. Avoidance and Minimization Efforts

The following avoidance and minimization measures would be implemented to reduce potential impacts to loggerhead shrikes:

1. If construction begins during the nesting season (February 15 to September 15), a survey for nesting loggerhead shrikes shall be conducted within the project footprint and within a 100-ft radius by a qualified biologist. The survey shall be conducted a maximum of 14 days prior to the start of construction.

2. If nesting loggerhead shrikes are found within 100 ft of the project footprint during the survey, an initial setback of 100 ft from nesting areas shall be established and protected with ESA fencing. ESA fencing shall consist of brightly colored fencing and shall be maintained in good condition during the nesting season until construction is complete or the young have fledged, as determined by a qualified biologist.

3. A qualified biologist shall evaluate the potential for the proposed work to disturb nesting activities considering the 100-ft setback. The evaluation criteria shall include, but are not limited to, the location/orientation of the nest in the nest tree, the distance of the nest to the work limits, the line of sight between the nest and the work limits, and the description of the proposed work.

4. If the qualified biologist determines that the setback can be reduced, initial construction activities in the vicinity of the nest shall be monitored by a qualified biologist. If the biologist determines nesting is not affected by construction activities with the reduced setback, work can proceed. If it is determined that construction activities are adversely affecting the nesting birds with the reduced setback, all construction within 100 ft of a nest shall be halted until the biologist can establish an appropriate setback.

5. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. The training shall instruct workers about the purpose of ESA fencing and the resources being protected.

4.3.9.3. Project Impacts

Impacts to loggerhead shrike nesting habitat (interior live oak woodland, blue oak woodland) would range from 1.00 ac of direct impacts if either alternative 1A or 2A is selected to 3.30 ac of direct impacts if either alternative 1B or 2B is selected.

Impacts to loggerhead shrike foraging habitat (grassland, irrigated pasture, and agricultural) would range from 330.04 ac of direct impacts if alternative 2A is selected to 409.29 ac of direct impacts if alternative 1B is selected. Table 22 below provides a breakdown of impacts to loggerhead shrike nesting and foraging habitat for each alternative.

Table 22: Impacts to Loggerhead Shrike Nesting and Foraging Habitat by Alternative (acres)

	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
Nesting Habitat (Interior Live Oak Woodland, Blue Oak Savannah)	1.00	3.30	1.00	3.30
Foraging Habitat (Grassland, Irrigated Pasture, Agriculture)	335.96	409.29	330.04	405.43

The project could also directly affect nesting loggerhead shrikes if individuals are nesting within or near the project footprint during construction.

4.3.9.4. Compensatory Mitigation

No compensatory mitigation is proposed with the implementation of the avoidance and minimization efforts listed in Section 4.3.9.2.

4.3.9.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the relatively small impacts to loggerhead shrike habitat from the proposed project and the measures proposed to avoid and minimize impacts to this species, it is not expected that the NCC project would substantially contribute to cumulative effects for loggerhead shrike.

4.3.10. Pacific Pond Turtle

The Pacific pond turtle is a State species of concern; it has no federal status. The Pacific pond turtle ranges from western Washington State south to northwestern Baja California. Two subspecies occur in California: the north Pacific pond turtle (*E.m. marmorata*); and the south Pacific pond turtle (*E.m. pallida*). The pond turtle is a highly aquatic species, found in ponds, marshes, rivers, streams, and irrigation ditches that typically have rocky or muddy bottoms and support aquatic vegetation. Eggs are laid at upland sites, away from the water, from April through August.

4.3.10.1. Survey Results

There are three CNDDB records of the Pacific pond turtle in the search area. Two of the records are approximately 2 mi north of the BSA. The ponds, marshes, and canals in the BSA that are perennially inundated provide suitable habitat for this species. Focused surveys were not conducted for Pacific pond turtle in the BSA but suitable aquatic habitat for this species was observed during other site surveys. No pond turtles were observed in the BSA during site surveys in 2014 but this species is likely to occur in the BSA due to the presence of suitable habitat.

4.3.10.2. Avoidance and Minimization Efforts

1. Prior to the start of construction activities that would affect ponds, canals, or other perennial water features, a qualified biologist shall survey the subject water feature for the presence of Pacific pond turtles. If any Pacific pond turtles are observed in the work area, they shall be allowed to leave on their own. If any pond turtles still remain in the work area after 24 hours, they shall be relocated outside of the work area by a qualified biologist in coordination with CDFW.

2. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. The training shall instruct workers about the purpose of ESA fencing and the resources being protected.

3. Measures consistent with the current Caltrans' BMP Manual (including the SWPPP and WPCP Manuals shall be implemented to minimize effects to aquatic habitats resulting from erosion, siltation, etc. during construction.

4. Following completion of construction, all graded slopes, temporary impact and/or otherwise disturbed areas shall be restored to preconstruction contours (if necessary) and revegetated with the standard Caltrans native seed mix.

4.3.10.3. Project Impacts

Direct impacts to Pacific pond turtle aquatic habitat (some ponds) range from 0.29 ac with alternative 2A, 8.42 ac with alternative 1A, 5.82 ac with alternative 2B, and 0.86 with alternative 1B. Table 23 below provides a breakdown of impacts to Pacific pond turtle aquatic habitat for each alternative.

Table 23: Impacts to Pacific Pond Turtle Aquatic Habitat by Alternative (acres)

	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
Aquatic Habitat (Ponds)	8.42	0.86	0.29	5.82

The project could also directly affect Pacific pond turtles if individuals are present in the project footprint during construction.

4.3.10.4. Compensatory Mitigation

No compensatory mitigation is proposed with implementation of the measures in Section 4.3.10.2.

4.3.10.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the relatively small impacts to Pacific pond turtle habitat from the proposed project and the measures proposed to avoid and minimize impacts to this species, it is not expected that the NCC project would substantially contribute to cumulative effects for Pacific pond turtle.

4.3.11. California Tiger Salamander

CTS is both State and federally listed as a threatened species. Critical habitat has been designated for CTS but the BSA is not located within designated critical habitat. The closest CTS critical habitat is Unit cv_7, which is located approximately 1.7 mi north of the BSA, and Unit cv_6, which is located approximately 11 mi north of the BSA, on the border of San Joaquin and Stanislaus Counties.

CTS are large, terrestrial salamanders and are most commonly found in annual grassland habitat. They may also occur in the grassy understory of valley-foothill hardwood habitats, and uncommonly along stream courses in valley-foothill riparian habitats. They range from Sonoma, Colusa, and Yolo Counties south through the Central Valley to Tulare County, and through the Coast Range into Santa Barbara County. An isolated population also occurs in Butte County.

CTS are typically associated with vernal pools or similar habitats consisting of seasonal pools or ponds (including man-made ponds, etc., that dry out in summer) surrounded by grasslands. Adult CTS spend most of their lives underground in small mammal burrows, which are a required habitat element. CTS are relatively poor burrowers and require refuges provided by ground squirrels and other burrowing mammals. CTS estivate in burrows during the dry months. After the onset of winter rains, adult salamanders move to larger, longer lasting vernal pools and other seasonal pools to breed. Breeding season is November through February; timing is dependent on rainfall. The larval stage of CTS usually lasts 3 to 6 months. Following

metamorphosis, juveniles migrate at night from drying breeding sites up to 1 mi to refuge sites.

4.3.11.1. Survey Results

There are 22 CNDDB records for CTS within the search area; 5 of these records are located within 5 mi of the northeast corner of the BSA. The closest documented occurrence (#175) from April 1993 is located on the south side of SR-120, approximately 8 miles east of Oakdale, and approximately 2 miles northeast of the project. The occurrence included the observation of an unknown number of CTS larvae in two small temporary ponds surrounded by grazed annual grasslands.

Depressional aquatic features in the BSA that support seasonal inundation including seasonal wetlands, ponds, and basins provide potential aquatic habitat for CTS. Surrounding undeveloped uplands (within approximately 1 mi of aquatic habitat), including some agricultural lands, provide potential upland habitat. Irrigated pastures are generally not considered suitable upland habitat for CTS due to the regular flooding that occurs in these areas starting in March and ending in September or October.

No CTS, CTS larvae, or CTS eggs were observed during the 2014/2015 and 2015/2016 breeding season surveys within the BSA. At the reference site, multiple CTS eggs, emergent larvae and larvae that measured up to 1.5 inches in length were observed during the 2014/2015 and 2015/2016 site visits. Based on the results of the 2014/2015 and 2015/2016 protocol breeding surveys, the sufficient inundation of features and the anecdotal evidence from the reference site, where CTS were observed, the negative CTS survey results are valid. Therefore, the potentially suitable aquatic and upland habitat within the BSA is likely unoccupied by CTS and the species is anticipated to be absent from the BSA.

4.3.11.2. Avoidance and Minimization Efforts

The following avoidance and minimization measures would be implemented to reduce potential impacts to CTS:

1. To the extent practicable, the preferred build alternative shall include design features such as retaining walls, non-standard slope gradients, etc. to avoid and minimize impacts to depressional aquatic features and undeveloped uplands (within approximately 1 mi of aquatic habitat).

2. Depressional aquatic features and undeveloped uplands (within approximately 1 mi of aquatic habitat) adjacent to the project footprint shall be designated as an ESA and protected with ESA fencing during construction. ESA fencing shall consist of brightly colored fencing and shall be maintained in good condition until construction is complete.

3. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. The training shall instruct workers about the purpose of ESA fencing and the resources being protected.

4. CTS are not anticipated to occur within the project footprint. If CTS are found during construction, work will stop in the immediate vicinity and the USFWS and CDFW shall be immediately notified.

5. Following completion of construction, all graded slopes, temporary impact and/or otherwise disturbed areas shall be restored to preconstruction contours (if necessary) and revegetated with the standard Caltrans native seed mix.

4.3.11.3. Project Impacts

Based on the negative results from the 2014/2015 and 2015/2016 protocol breeding surveys, CTS are not anticipated to be present within the project area. The surveys are determined valid based on average rainfall during the breeding season and the identification of multiple sightings within the Mckinley Avenue reference site. None of the Build Alternatives are anticipated to have direct affects to CTS individuals. Locations of the potentially suitable, but likely unoccupied CTS habitat are shown in Figures 11a and 11b.

4.3.11.4. Compensatory Mitigation

Based on the negative results of the 2014/2015 and 2015/2016 protocol breeding surveys, CTS is not anticipated to occur within the project area. Compensatory mitigation is not proposed for loss of potentially suitable, but unoccupied habitat.

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Patterson Rd
Patterson Rd
Patterson Rd
Riverbank
Oakdale Rd
Claus Rd
Bentley Rd
Pelendale Ave
Langworth Rd
Sylvan Ave
Modesto

LEGEND

- Biological Study Area
- Potential Branchiopod Habitat
- Potential CTS Aquatic Habitat
- Potential CTS Upland Habitat

0 1500 3000
FEET

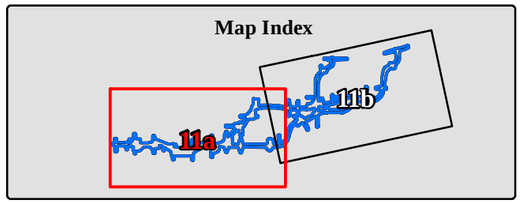

FIGURE 11a

Potential Branchiopod and CTS Habitat

EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014)
I:\Dhg1302\GIS\Reports\NES\Nes_fig11_cts_vp_hab.mxd (5/1/2015)

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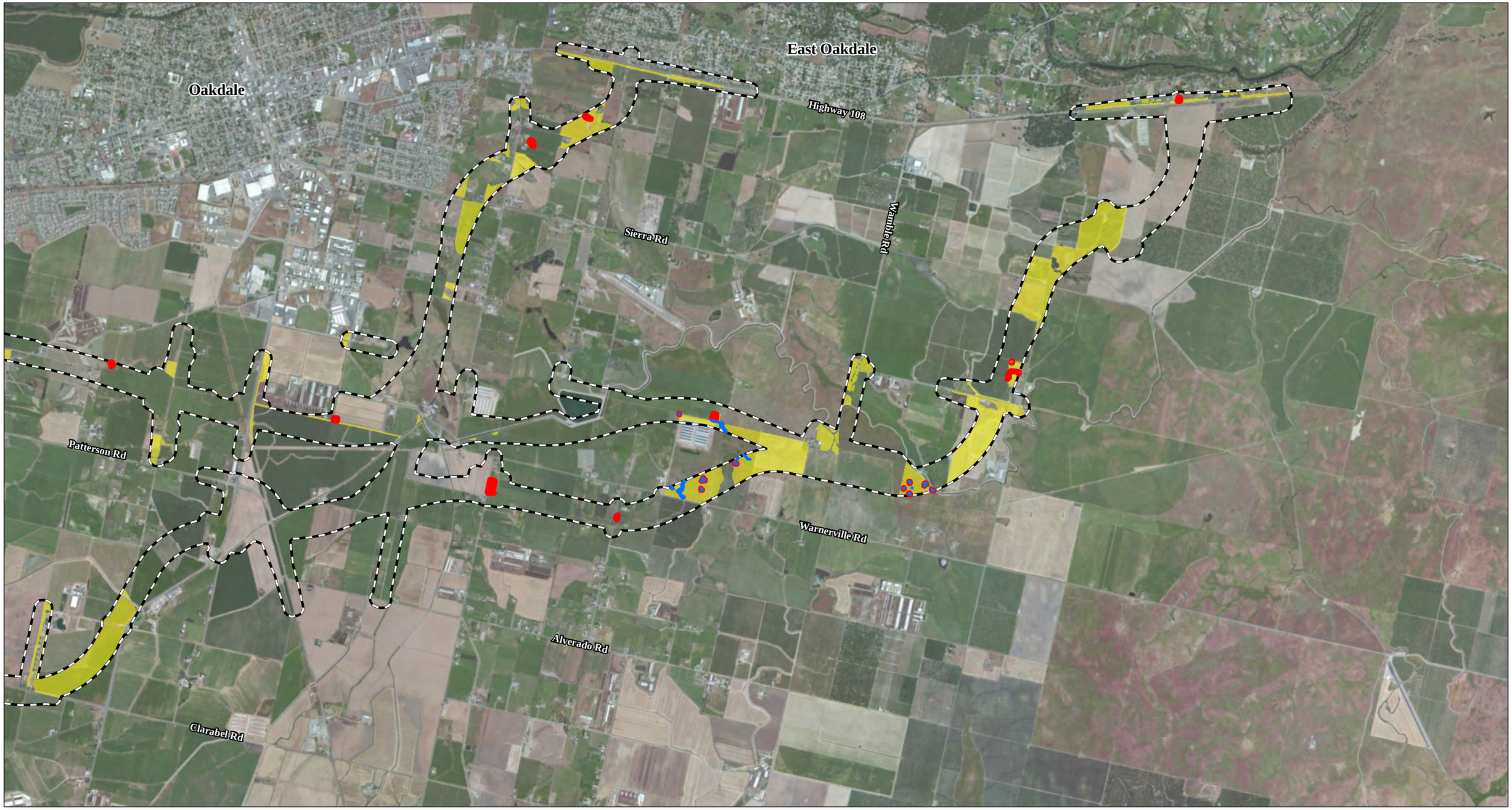

LEGEND

- Biological Study Area
- Potential Branchiopod Habitat
- Potential CTS Aquatic Habitat
- Potential CTS Upland Habitat

0 1500 3000
FEET

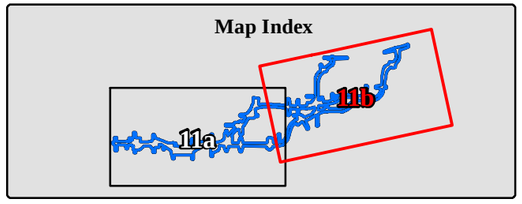

FIGURE 11b

Potential Branchiopod and CTS Habitat

EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014)
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4.3.11.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the upland and aquatic habitat within proposed project are likely unoccupied (based on the negative 2014/2015 and 2015/2016 CTS protocol breeding survey results), the measures proposed to avoid and minimize impacts to this species and that the project is not anticipated to have direct impacts to CTS, it is not expected that the NCC project would substantially contribute to cumulative effects for CTS.

4.3.12. Western Spadefoot Toad

The western spadefoot toad is a State species of concern; it has no federal status. Historically, the western spadefoot toad ranged from Redding to northwest Baja California. In California this species was found throughout the Central Valley and in the Coast Ranges from San Francisco to Mexico. Breeding habitat for this species includes temporary pools or ephemeral drainages; breeding occurs from January to May. Water temperatures within these pools must stay between 48° F and 86° F, and be inundated for greater than 3 weeks in order to serve as suitable breeding habitat. Eggs are deposited on emergent vegetation of detritus. Once pools begin to dry, western spadefoot toads use “spades” on their hind feet to burrow into the ground. Once fully concealed, these toads enter a period of subterranean hibernation until the following wet season, often 8 to 9 months.

Western spadefoot toads eat a variety of beetles, moths, crickets, and flies. This species likely consumes enough food within several weeks to survive a long dormancy period.

4.3.12.1. Survey Results

There are nine CNDDB records for the western spadefoot toad within the search area. The closest record to the BSA is located approximately 2 mi east of the BSA. Seasonal wetlands in the BSA provide potential habitat for this species. However, similar to CTS, due to the low rainfall totals during the 2013-2014 winter season, most potential aquatic habitat for western spadefoot toad did not remain inundated for a sufficient duration (greater than 3 weeks) to support reproduction. Consequently, aquatic surveys were determined infeasible and western spadefoot toad is presumed present in potential habitat within the BSA.

4.3.12.2. Avoidance and Minimization Efforts

The following avoidance and minimization measures would be implemented to reduce potential impacts to western spadefoot toad:

1. To the extent practicable, the preferred build alternative shall include design features such as retaining walls, non-standard slope gradients, etc. to avoid and minimize impacts to western spadefoot toad habitat.

2. Western spadefoot toad habitat adjacent to the project footprint shall be designated as an ESA and protected with ESA fencing. ESA fencing shall consist of brightly colored fencing and shall be maintained in good condition until construction is complete.

3. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. The training shall instruct workers about the purpose of ESA fencing and the resources being protected.

4. A biological monitor approved by the CDFW shall be present during initial ground disturbing activities within western spadefoot toad upland habitat that is located within 0.5 mile of western spadefoot toad aquatic habitat.

5. If western spadefoot toads are found during construction, the individual(s) shall be relocated to suitable habitat outside the project footprint, in coordination with CDFW.

6. All work in western spadefoot toad aquatic habitat shall be conducted during the dry season (June 1 through October 31) when western spadefoot toads are estivating and unlikely to enter the work area.

7. Between November 1 and May 31, no construction activities shall occur in western spadefoot toad upland habitat, within 0.5 mile of western spadefoot toad aquatic habitat and within 24 hours following a rain event. Prior to resuming construction, any active work areas within western spadefoot toad upland habitat and within 0.5 mile of western spadefoot toad aquatic habitat shall be visually surveyed by the approved biological monitor prior to the start of construction to avoid affecting western spadefoot toad that may be present in upland habitat.

8. Provided sufficient rainfall occurs, larval surveys will be conducted in potential western spadefoot toad aquatic habitat, in 2015 and 2016, by qualified biologist approved by CDFW. If approved by CDFW, larval surveys may begin as early as January in low rainfall years in order to detect juvenile western spadefoot toad that may not persist if the water features dry out due to lack of rainfall.

9. If western spadefoot toads are not detected in potential aquatic habitat after two seasons of larval surveys, items #4, #6, #7, and #10 would not apply.

10. Between June 1 and October 31, if a substantial rain event (i.e., at least 0.25 inches) occurs during construction, any active work areas within western spadefoot toad habitat shall be visually surveyed by the approved biological monitor prior to the start of construction to avoid affecting western spadefoot toad that may have emerged from their burrows and relocated in the work area (e.g., under equipment).

11. Measures consistent with the current Caltrans' BMP Manual (including the SWPPP and WPCP Manuals) shall be implemented to minimize effects to aquatic habitats resulting from erosion, siltation, etc. during construction.

12. Following completion of construction, all graded slopes, temporary impact and/or otherwise disturbed areas shall be restored to preconstruction contours (if necessary) and revegetated with the standard Caltrans native seed mix.

4.3.12.3. Project Impacts

Direct impacts to western spadefoot toad aquatic habitat (seasonal wetlands) would range from 0.27 ac with alternative 1B, 0.36 ac with alternative 1A, 0.66 ac with alternative 2B, and 0.74 ac with alternative 2A.

Indirect impacts to spadefoot toad aquatic habitat would range from 0.07 with alternative 1A, 0.15 ac from alternative 1B, 0.49 ac from alternative 2A, and 0.90 ac as a result of alternative 2B. Table 24 below provides a breakdown of direct and indirect impacts to western spadefoot toad aquatic habitat for each build alternative.

Table 24: Impacts to Western Spadefoot Toad Aquatic Habitat by Alternative (acres)

	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
Direct Impacts (Seasonal Wetlands)	0.36	0.27	0.74	0.66
Indirect Impacts (Seasonal Wetlands)	0.07	0.15	0.49	0.90

The project could also directly affect western spadefoot toad if individuals are present in the project footprint during construction.

4.3.12.4. Compensatory Mitigation

Compensatory mitigation for loss of western spadefoot toad habitat would be fulfilled with implementation of the measures listed in Section 4.3.11.4 for CTS.

4.3.12.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the potential impacts to western spadefoot toad habitat from the proposed project, the measures proposed to avoid and minimize impacts to this species, and the proposed compensatory mitigation (if necessary), it is not expected that the NCC project would substantially contribute to cumulative effects for western spadefoot toad.

4.3.13. Vernal Pool Invertebrates

The vernal pool tadpole shrimp (VPTS) is federally listed as endangered, the vernal pool fairy shrimp (VPFS) is federally listed as threatened, and the California linderiella fairy shrimp (CLFS) (*Linderiella occidentalis*) is designated as a California "Special Animal"; none of these species have formal State status.

Vernal pool crustaceans are dependent on the seasonal nature of their habitat, which consists of depressions that become inundated during winter rains and dry up completely by summer. These crustaceans generally have an accelerated life cycle timed to the duration of ponding. They hatch, mature, and reproduce in a matter of weeks, producing specialized eggs that mature as cysts. The cysts lie dormant during the dry season and are able to withstand heat, cold, and desiccation. When the depressions become inundated the following season, some of the cysts hatch and some continue to lie dormant in the dry pool sediments; the cycle begins again. Most rely on passive means of dispersal (e.g., transport from to a new pool via waterfowl or large scale flooding). Fragmentation and isolation of their habitat negatively affects their populations by reducing dispersal and genetic diversity.

VPTS inhabit vernal pools containing clear to highly turbid water, ranging in size from less than 10 ft across to the 89 ac Olcott Lake at Jepson Prairie. The VPTS has a patchy distribution across the Central Valley of California, from Shasta County southward to northwestern Tulare County, with isolated occurrences in Alameda and Contra Costa Counties. Although spread over a wide geographic range, their habitat is highly fragmented and they are uncommon where they are found. VPTS requires a minimum of 25 days to mature; the average age of first reproduction is close to 8 weeks. Sexually mature adults have been observed in vernal pools 3 to 4 weeks after

the pools had been filled. Hatching and maturation rates are somewhat temperature dependent; pools in which this species is found range in temperature from 50°F to 84 F. There are three designated critical habitats for VPTS, VERTS 13A, VERTS 13B, and VERTS 13C, that are located with 6 mi southeast of the BSA.

The VPFS is endemic to vernal pools and similar ephemeral freshwater habitats and ranges in the Central Valley from Shasta County to Merced County and northern Fresno County. VPFS are known to occur in disjunct populations within various sized vernal pools and swales throughout most of the length of the Central Valley. VPFS typically inhabit vernal pools with clear to tea-colored water, most commonly in grass- or mud-bottomed swales, or basalt flow depressions; they are also found in other seasonally ponded areas. These areas can be road-side tire tracks in soft dirt shoulders, livestock ponds, road-side puddles, or other artificially created areas that hold water. This species can mature in 3 to 4 weeks, and is tolerant of variation in water temperature. These characteristics allow populations to persist in short-lived, shallow pools; VPFS will also persist later into the spring where pools are longer lasting. VPFS appear to have a sporadic distribution within vernal pool complexes, often only inhabiting a few pools.

The CLFS is the most widely distributed fairy shrimp in California. It is endemic to vernal pools and similar ephemeral freshwater habitats and ranges throughout the Central Valley and the Coast ranges of California. This species has been documented on most landforms, geologic formations, and soil types supporting vernal pools in California. CLFS have been found in vernal pools that vary widely in size, though they tend to be in deeper pools. They are tolerant of a wide range of water temperatures, turbidity, and duration of inundation, and mature quickly (4-5 weeks).

4.3.13.1. Survey Results

There are eight CNDDB records for VPTS and six records for VPFS within the search area. The closest record for both of these species is located approximately 0.5 mi south of the BSA, in a seasonal wetland along the railroad tracks near Plainview Road. There are four CNDDB records for CLFS in the search area, with the closest record located approximately 2.5 mi southeast of the BSA. Seasonal wetlands in the BSA provide potential habitat for these three invertebrate species.

The 2012-2013 wet season surveys were negative for VPFS and VPTS, but LSA did identify CLFS in two features. The 2014 wet season surveys resulted in positive findings for VPFS in three seasonal wetlands located in the annual grassland area north of Warnerville Road mentioned. Figures 11a and 11b shows the location of

VPFS and CLFS identified in the BSA. Although not observed, VPTS could also occur in these features.

4.3.13.2. Avoidance and Minimization Efforts

The following avoidance and minimization measures would be implemented to reduce potential impacts to vernal pool invertebrates:

1. To the extent practicable, the preferred build alternative shall include design features such as retaining walls, non-standard slope gradients, etc. to avoid and minimize impacts to habitat for vernal pool invertebrates.

2. Habitat for vernal pool invertebrates adjacent to the project footprint shall be designated as an ESA and protected with ESA fencing. ESA fencing shall consist of brightly colored fencing and shall be maintained in good condition until construction is complete.

3. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. The training shall instruct workers about the purpose of ESA fencing and the resources being protected.

4. A biological monitor approved by the USFWS shall be present during initial ground disturbing activities within habitat for vernal pool invertebrates.

5. Measures consistent with the current Caltrans' BMP Manual (including the SWPPP and WPCP Manuals) shall be implemented to minimize effects to aquatic habitats resulting from erosion, siltation, etc. during construction.

6. Following completion of construction, all graded slopes, temporary impact and/or otherwise disturbed areas shall be restored to preconstruction contours (if necessary) and revegetated with the standard Caltrans native seed mix.

4.3.13.3. Project Impacts

Impacts to vernal pool invertebrate habitat (seasonal wetlands) would range from 0.04 ac of direct impacts and 2.11 ac of indirect impacts if alternative 2B is selected to 0.07 ac of direct impacts and 1.21 ac of indirect impacts if alternative 1B is selected. No vernal pool habitat would be impacted if either alternative 1A or 2A is selected. Table 25 provides a breakdown of impacts to vernal pool invertebrate habitat by build alternative. Impacts to vernal pool invertebrate habitat are also shown in Figures 11a and 11b.

Table 25: Summary of Impacts to Habitat for Vernal Pool Invertebrates (acres)

	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
Direct Impacts	0.0	0.07	0.0	0.04
Indirect Impacts	0.0	1.21	0.0	2.11
Total	0.00	1.28	0.00	2.15

USFWS considers any direct effects to a seasonal wetland feature that is suitable habitat for vernal pool invertebrates as a direct effect to the entire feature. As a result, although alternative 1B would only result in direct impacts to 0.06 ac of seasonal wetlands that are suitable vernal pool invertebrate habitat; direct impacts were calculated for the entirety of the wetland features that would be directly impacted, totaling 0.07 ac. Alternative 2B would directly impact entire features, totaling 0.04 ac, so no adjustments were necessary. Indirect impacts include all habitat for vernal pool invertebrates within 250 ft of ground disturbance.

4.3.13.4. Compensatory Mitigation

Compensation is proposed consistent with the USACE Programmatic Formal Endangered Species Act Consultation on Issuance of 404 Permits for Projects With Relatively Small Effects on Listed Vernal Pool Crustaceans Within the Jurisdiction of the Sacramento Field Office, dated February 28, 1996. The Programmatic Biological Opinion includes both preservation and creation components.

The preservation component is generally required at a ratio of 2 ac of pools preserved for every acre directly and indirectly impacted (i.e., 2:1 ratio). The creation component is generally required at a ratio of 1 ac of pools created for every acre directly impacted (i.e., 1:1 ratio). Table 26 summarizes the compensation requirements for vernal pool invertebrates if either alternative 1A or 1B is selected.

Table 26: Summary of Compensation Requirements for Vernal Pool Invertebrates Habitat (acres)

Impact Type	Impact	Mitigation	
		Creation (1:1)	Preservation (2:1)
Alternative 1B			
Direct	0.04	0.04	0.08
Indirect	2.11	----	4.22
Total		**0.04**	**4.30**
Alternative 2B			
Direct	0.07	0.07	0.14
Indirect	1.21	----	2.42
Total		**0.07**	**2.56**

Sufficient creation and preservation credits shall be purchased at a conservation bank(s) approved by USFWS to sell vernal pool habitat credits.

4.3.13.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the potential impacts to habitat for vernal pool invertebrates from the proposed project, the measures proposed to avoid and minimize impacts to these species, and the proposed compensatory mitigation, it is not expected that the NCC project would substantially contribute to cumulative effects for vernal pool invertebrates.

4.3.14. Valley Elderberry Longhorn Beetle

The Valley elderberry longhorn beetle (VELB) is federally listed as threatened. This species ranges from Redding to Fresno, into the western foothills of the Sierra Nevada, and into the eastern foothills of the Coast Range. The range of this species was recently reduced; Kern, Kings, and Tulare Counties are no longer considered within the range of this species (USFWS 2014). Critical habitat was designated for VELB in Sacramento County; essential habitat for the recovery of the species also

exists in Solano County. The VELB is typically found in mature riparian vegetation associated with large river systems, but its range extends from the valley floor to 3,000 ft elevation.

The beetle is dependent on its host plant, blue elderberry, which is a common component of Central Valley riparian forests. VELB larvae feed and mature within elderberry stems 1 inch or larger in diameter, and exit prior to metamorphosing to the pupal stage. The life cycle takes 1 to 2 years to complete. The beetle spends most of its life in the larval stage, living within the stems of an elderberry plant. Adults emerge from late March through June, about the same time the elderberry produces flowers. The larval beetles cannot be detected within the stems, and the adult stage is short-lived; generally the only evidence of beetle use is the exit holes in the stems created by the emerging larvae. Consequently, VELB are presumed to be present within stems of sufficient size anywhere within the beetle's known range.

The BSA is not located within critical habitat for VELB. The two areas of designated critical habitat for the VELB are both in Sacramento County.

4.3.14.1. Survey Results

There are nine CNDDB records for VELB within the search area; three records occur within 5 mi of the BSA. Focused surveys were not conducted for VELB in the BSA but elderberry shrubs were observed during other site surveys. At total of four elderberry shrubs were observed throughout the BSA.

One shrub is located in the central portion of the BSA along the west side of Bentley Road, approximately 0.05 mi south of Lexington Road. The other three shrubs are all located north of Fogarty Road approximately 0.06 mi west of the intersection with Emery Road, in the eastern portion of the BSA. Figures 10a and 10b show the location of the elderberry shrubs.

4.3.14.2. Avoidance and Minimization Efforts

If any elderberry shrubs are identified within 100 ft of the project footprints, the following avoidance and minimization measures should reduce potential impacts to VELB, in accordance with the USFWS Conservation Guidelines for the Valley Elderberry Longhorn Beetle (VELB Guidelines), dated July 1999 (Appendix L).

1. Following selection of a preferred build alternative, a qualified biologist shall survey for elderberry shrubs within 100 ft of the project footprint. Data to be collected shall include the number of stems 1 inch or greater (measured at ground

level), signs of VELB exit holes, type of habitat where the shrub is located, and associated native species.

2. Any elderberry shrubs that identified within the survey area that can be avoided (i.e., are not located within the project footprint) shall be protected with ESA fencing using the maximum setback practicable. ESA fencing shall consist of brightly colored fencing and shall be maintained in good condition for the duration of construction activities.

3. Signs shall be erected every 50 ft along the edge of the avoidance area with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs shall be clearly readable from a distance of 20 ft, and shall be maintained for the duration of construction.

4. A qualified biologist shall periodically inspect the construction area to assure that the project is not affecting any elderberry plants.

5. No insecticides, herbicides, fertilizers, or other chemicals that might harm the VELB or elderberry plants shall be used within 100 ft of any elderberry plant with stems measuring greater than 1-inch in diameter.

6. Any damage occurring within the elderberry buffer areas (within 100 ft of the elderberry plants) shall be restored and revegetated with appropriate native species at the completion of construction.

7. Worker environmental awareness training shall be conducted by a qualified biologist for all construction personnel. This training instructs workers about the purpose of ESA fencing and the resources being protected.

4.3.14.3. Project Impacts

All four identified shrubs are located at the edge of the BSA and further than 100 ft from the current project footprints for all four alternatives; therefore, these shrubs would not be affected by construction.

However, right-of-entry was not available for several properties within the BSA during other site surveys. These properties were surveyed from existing roads to the extent possible, but elderberry shrubs could potentially occur on properties that could not be accessed during site surveys.

4.3.14.4. Compensatory Mitigation

Any elderberry shrubs located within the project footprint that would need to be removed or that are located within 20 ft of the project footprint shall require compensation in accordance with the USFWS Conservation Guidelines for the Valley Elderberry Longhorn Beetle (VELB Guidelines), dated July 1999 (Appendix L). No elderberry shrubs have been identified within 20 ft of the project footprint of all four build alternatives; therefore, no compensation would be required unless additional shrubs are identified within 20 ft of the project footprint.

4.3.14.5. Cumulative Effects

A comprehensive cumulative effects discussion is included in Section 4.4. Considering the potential impacts to VELB from the proposed project, the measures proposed to avoid and minimize impacts to this species, and the proposed compensatory mitigation (if necessary), it is not expected that the NCC project would substantially contribute to cumulative effects for VELB.

4.4. Summary of Cumulative Effects

This section provides an analysis of potential cumulative effects resulting from the proposed NCC project and other present and reasonably foreseeable future projects on biological resources.

4.4.1. Biological Resources to be Considered

Biological resources considered in this cumulative effects analysis include wetlands (comprised of perennial marsh, seasonal marsh, and seasonal wetland) and species listed under the CESA or FESA including vernal pool plants, Swainson's hawk, CTS, VPFS, and VPTS.

4.4.2. Cumulative Effects Evaluation Area

The CEEA was selected to include similar natural environments to those occurring in the BSA within a reasonable vicinity of the project. The CEEA, illustrated in Figure 9, is generally bounded by SR- 99 to the west, SR-132 to the south and the Stanislaus County line to the east. The north boundary begins in the vicinity of the SR-99 and Yosemite Ave/SR-120 intersection and extends east before heading north east past the census-designated area of Valley Home and continues traveling east before intersecting with the Calaveras and Tuolumne County line. The CEEA encompasses portions of Stanislaus and San Joaquin counties and comprises an area of approximately 250,000 ac.

The western approximately 70 percent of the CEEA is in agricultural production (e.g., orchards, row crops, irrigated pastures); a relatively small portion of this area is comprised of development centered on existing cities (e.g., Modesto, Oakdale, Riverbank). The eastern approximately 30 percent of the CEEA is mostly undeveloped grassland and other open habitats. Undeveloped lands are uncommon in the western portion of the CEEA.

The CEEA is sufficient to accommodate an evaluation of cumulative effects pursuant to Section 7 of the FESA (i.e., those effects of future State or private activities not involving Federal activities that are reasonably certain to occur within the action area that is subject to consultation with USFWS) and of NEPA (i.e., the effect on the environment which results from the incremental effects of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person who undertakes such other actions. Cumulative effects can result from individually minor, yet collectively significant actions, taking place over a period of time.) Cumulative effects may include the effects of natural processes and events.

4.4.3. Status of Resources to be Considered

Prior to the large scale mining, flood control (e.g., levees, dams), and agricultural conversion from the late 1800's to the mid 1900's, wetlands occurred throughout much of the Central Valley. Currently, it is estimated that less than 10 percent of historic wetlands persist. In the CEEA, wetlands in the western portion are typically associated with agricultural practices and are often channelized or otherwise modified to accommodate agricultural or urban land uses. Wetlands in the eastern portion of the CEEA are typically in a more natural state, though wetlands in and around rivers and streams may still be subject to flood control activities.

Agricultural conversion eliminated extensive areas of grassland that provided suitable foraging habitat for Swainson's hawk. This species has adapted somewhat to human presence and will utilize certain crops as foraging habitat. Swainson's hawks occur in the CEEA in relatively low numbers, primarily along the Stanislaus and Tuolumne Rivers.

The loss of grassland through agricultural conversion had also reduced the area of vernal pools and other seasonal wetlands that could support listed vernal pool plants, VPFS and VPTS, and provide CTS aquatic habitat. In addition, CTS utilize the upland areas of the grasslands for aestivation. Within the CEEA, suitable habitat and

extant records for these species are limited primarily to the eastern portion. The exception is VPFS, which is also known from two locations from the central portion of the CEEA.

4.4.4. Project Effects to Resources

The NCC project would result in direct and indirect effects to wetlands (comprised of perennial marsh, seasonal marsh, and seasonal wetland). Direct effects range from 0.66 ac if alternative 1B is selected to 1.53 ac if alternative 2A is selected; indirect effects range from 0.35 ac of alternative 1A is selected to 2.58 ac if alternative 2A is selected.

If identified in the BSA, the NCC project would result in direct and indirect effects to habitat for listed vernal pool plants (seasonal wetlands). Effects would range from 0.04 ac of direct effects and 2.11 ac of indirect effects if alternative 2B is selected to 0.07 ac of direct effects and 1.21 ac of indirect effects if alternative 1B is selected. No vernal pool plant habitat would be impacted if either alternative 1A or 2A is selected.

The NCC project would result in direct and indirect effects to Swainson's hawk foraging habitat (grassland, irrigated pasture, agricultural) ranging from 330.04 ac of direct effects if alternative 2A is selected to 409.29 ac of direct effects if alternative 1B is selected.

The NCC project would result in direct and indirect effects to vernal pool invertebrate habitat (seasonal wetlands) ranging from 0.04 ac of direct effects and 2.11 ac of indirect effects if alternative 2B is selected to 0.07 ac of direct effects and 1.21 ac of indirect effects if alternative 1B is selected. No vernal pool habitat would be impacted if either alternative 1A or 2A is selected.

Future Project Effects to Resources

This section discusses the potential future projects in the CEEA, as defined above, based on relevant agency planning documents and referencing the NCC Community Impact Assessment (Dokken 2015). Potential future projects considered in this analysis are listed in Table 27. Probable future impacts are largely based on buildout consistent with approved land use plans of the local jurisdictions and are generally centered on existing urban centers.

Potential impacts to vegetation communities from each project are also identified in Table 27, when applicable. Relatedly, potential impacts to resources considered in

this analysis are also identified. Several future projects are proposed in urban or otherwise developed settings and would not result in impacts to vegetation communities. A qualitative approach, based on review of aerial photography, was used to assess the impacts identified in Table 27.

Table 27: Potential Future Projects in the CEEA

Project Name/ Jurisdiction	Proposed Uses	Potential Vegetation Impacts	Potential Resource Impacts
SR 219 (Kiernan Avenue)/Stanislaus County, City of Modesto	This project is a 4-lane divided highway with right-of-way for eventual expansion to 6-lanes to accommodate future needs.	Orchard, irrigated pasture, ditches	Swainson's hawk foraging habitat, wetlands
Woodglen Specific Plan/ City of Modesto	The Woodglen Specific Plan provides for the development of 180 Multi-Family Residential units and 353 Low Density Residential units for a total of 533 units. An open space area with a stormwater infiltration basin and active and passive recreation areas would occupy the central portion of the proposed project site.	Orchard, agricultural (row crops)	Swainson's hawk foraging habitat
The Market Place Shopping Center/ City of Modesto	The project will be located on southwest corner of Oakdale Road and Sylvan Avenue, and will be 18 acres in size. It will have a total of 170,000 square feet of retail space. A 51,730 square-foot grocery store is proposed to anchor the center.	None	None
Tivoli Specific Plan/City of Modesto	The project is a blueprint for future residential and non-residential development proposed to occur in a currently unincorporated area of Stanislaus County, adjacent to the north-eastern boundary of the City of Modesto. The project is expected to develop between 1,900 and 3,200 housing units and 1,025,000 square feet of non-residential land uses on approximately 345 acres. It includes mix density housing.	Irrigated pasture, agricultural (row crops)	Swainson's hawk foraging habitat
Pirron Road and Sisk Road Salida Sidewalk Project Phase I-Safety/ Stanislaus County	The project will improve sidewalks on Pirrone Road and Sisk Road.	None	None

Project Name/ Jurisdiction	Proposed Uses	Potential Vegetation Impacts	Potential Resource Impacts
SR 132 West/ Stanislaus County	This project will construct a 4-lane freeway/expressway to reroute SR 132 away from downtown. Project will improve connectivity for SR 132 and SR 99 through the congested downtown area of the City of Modesto.	Orchard, annual grassland, irrigated pasture	Swainson's hawk foraging habitat, CTS upland habitat
Video Visitation Facility/ Stanislaus County	This project will provide for a physical location to accommodate video visitation equipment, monitoring, scheduling, and control.	None	None
Re-entry Alternatives to Custody and Transition (REACT) (SB 1022)/ Stanislaus County	This project will develop a center with transitional programs, alternatives to custody, and up to 288 beds of detention/return-to-custody housing and services.	None	None
Stanislaus County Veterans Center/ Stanislaus County	This project will develop a Veteran's Center for consolidation of services to Stanislaus County veterans, including counseling, medical referrals, transportation, social, educational, VA and Cal Vet benefits coordination.	None	None
Sierra Pointe Specific Plan/ City of Oakdale	This specific plan for the future development of approximately 297 acres of land on the southeastern edge of the City of Oakdale into residential neighborhoods, parks & open space, and mixed use corridor.	Irrigated pasture, orchard, annual grassland, ditchess	Swainson's hawk foraging habitat, CTS upland habitat, wetlands
South Oakdale Industrial Specific Plan/City of Oakdale	This specific plan is for the future development of approximately 500 acres of land in the southern most region of the City of Oakdale to expand the City's existing industrial center.	Orchard, irrigated pasture, ditches	Swainson's hawk foraging habitat, wetlands
East F Street Corridor Specific Plan/City of Oakdale	This specific plan will provide a mix of residential and commercial land uses along current SR-108/SR-120 (East F Street) on about 187 acres.	Orchard, agricultural (row crops), ruderal	Swainson's hawk foraging habitat

Project Name/ Jurisdiction	Proposed Uses	Potential Vegetation Impacts	Potential Resource Impacts
Crane Crossing Specific Plan/ City of Oakdale	This specific plan is for the future development of approximately 262 acres of land alone the northwestern edge of the City of Oakdale into residential neighborhoods, parks & open space, and mixed use corridor.	Orchard	None
Riverbank Industrial Complex (formerly the Riverbank Army Ammunition Plant)/City of Riverbank	100 acres of undeveloped land and a 74-acre industrial and manufacturing center with 700,000 square feet of industrial building space.	None	None

Potential impacts to vegetation communities from the future projects include orchard, agricultural (row crops), irrigated pasture, annual grassland, ruderal, and ditches. Consequently, potential effects to resources considered in this analysis include Swainson's hawk foraging habitat, CTS upland habitat, and wetlands. None of the annual grassland identified as being impacted by future projects considered in this analysis appeared to support vernal pools or similar seasonal wetlands; therefore, no impacts to listed vernal pool plants, potentially suitable CTS aquatic habitat, VPFS, or VPTS are expected from these projects.

4.4.6. Assessment of Potential Cumulative Effects

As described in Section 4.4.2, the NCC project will result in direct and indirect effects to wetlands (comprised of perennial marsh, seasonal marsh, and seasonal wetlands), listed vernal pool plants, Swainson's hawk, VPFS, and VPTS. The effects vary between the different alignments for each resource.

Considering the size of the project, effects are relatively minor for wetlands, listed vernal pool plants, VPFS, and VPTS. However, project effects for Swainson's hawk foraging habitat are more substantial. It is worth noting that impacts to irrigated pasture and agricultural lands constitute the majority of the effects related to both of these resources.

As described in Section 4.4.3, expected future project impacts to vegetation communities associated with the resources considered in this analysis include irrigated pasture, agricultural lands, annual grassland, and ditches. As a result, future projects would affect wetlands, Swainson's foraging habitat, and potentially suitable CTS upland habitat. As noted above, none of the annual grassland identified as being impacted by future projects appeared to support vernal pools or similar seasonal wetlands; therefore, no effects to listed vernal pool plants, potentially suitable CTS aquatic habitat, VPFS, or VPTS are expected from these projects.

4.4.7. Results of Cumulative Effects Assessment

Although the NCC project will result in direct and indirect effects to listed vernal pool plants, VPFS, and VPTS, the future projects identified in this analysis are not expected to result in effects to these resources. Based on the negative protocol breeding survey results, no direct effects to CTS are anticipated. Consequently, the NCC project is not expected to substantially contribute to cumulative effects for listed vernal pool plants, CTS, VPFS, and VPTS.

Direct and indirect NCC project effects to wetlands will be relatively minor. Considering the measures proposed to avoid and minimize impacts to wetlands (Sections 4.1.3.2, 4.1.4.2, and 4.1.6.2), the proposed compensatory mitigation (Sections 4.1.3.4, 4.1.4.4, and 4.1.6.4), and considering that only 3 of 14 future projects considered in this analysis would likely effect wetlands, it is not expected that the NCC project will substantially contribute to cumulative effects for wetlands.

The NCC project will result in direct and indirect effects to Swainson's hawk foraging habitat, primarily as a result of impacts to irrigated pasture and agricultural lands, and 7 of 14 future projects considered in this analysis would likely affect Swainson's hawk foraging habitat. However, considering that the abundance of agricultural lands in the CEEA, the measures proposed to avoid and minimize impacts to these species (Sections 4.3.4.2 and 4.3.11.2, respectively), it is not expected that the NCC project would substantially contribute to cumulative effects for Swainson's hawk upland habitat.

Chapter 5. Results: Permits and Technical Studies for Special Laws or Conditions

5.1. Federal Endangered Species Act Consultation Summary

Three federally listed species under the jurisdiction of the USFWS occur or are presumed to occur in the BSA: VPFS, VPTS, and VELB. CTS are not anticipated to be present within the project area. All of the build alternatives may affect and are likely to adversely affect VPFS and VPTS; may affect, but are not likely to adversely affect, VELB and CTS, as described below.

- Based on the negative results from the 2014/2015 and 2015/2016 protocol breeding surveys, CTS are not anticipated to be present within the project area. The surveys are determined valid based on average rainfall during the breeding season and the identification of multiple sightings within the Mckinley Avenue reference site. No direct affects to CTS individuals are anticipated.

- The 1B and 2B build alternatives would remove between 0.4 ac and 0.07 ac, respectively, of suitable habitat for VPFS and VPTS. The 1A and 2A build alternatives would not remove any habitat for VPFS and VPTS.

- There are no elderberry shrubs within 100 ft; therefore, there will be no impacts to VELB habitat.

Caltrans, as the federal lead agency, would initiate consultation with USFWS for these species pursuant to Section 7 of the FESA. It is likely that the USFWS would issue a Biological Opinion to authorize take of VPFS, and VPTS no take is anticipated for CTS and VELB.

Table 28 below, summarized the effects to federally listed species that appeared on the USFWS species list.

Table 28: Summary of Determination for Federally Listed Species

Species Name	Status	Determination
Fresno kangaroo rat	FE	No effect
Riparian woodrat	FE	No effect
Riparian brush rabbit	FE	No effect
San Joaquin kit fox	FE	No effect
Yellow-billed cuckoo	FT	No effect
Least Bell's Vireo	FE	No effect
Blunt-nosed leopard lizard	FE	No effect
Giant garter snake	FT	No effect
California tiger salamander	FT	May affect, but is not likely to adversely affect
California red-legged frog	FT	No effect
Delta smelt	FT	No effect
Central Valley steelhead	FT	No effect
Conservancy fairy shrimp	FE	No effect
Vernal pool fairy shrimp	FT	May affect, and is likely to adversely affect.
Vernal pool tadpole shrimp	FE	May affect, and is likely to adversely affect.
Valley elderberry longhorn beetle	FT	May affect, but is not likely to adversely affect
Chinese Camp brodiaea	FT	No effect
Fleshy owl's-clover	FT	May affect, but is not likely to adversely affect
Greene's tructoria	FE	No effect
Colusa grass	FT	May affect, but is not likely to adversely affect
Hairy orcutt grass	FE	May affect, but is not likely to adversely affect
Hoover's spurge	FT	No effect
San Joaquin orcutt grass	FT	No effect
Hartweg's golden sunburst	FE	No effect
Keck's checker-mallow	FE	No effect
Red Hills vervain	FT	No effect

5.2. Federal Fisheries and Essential Fish Habitat Consultation Summary

The aquatic resources in the BSA are not designated as Essential Fish Habitat.

5.3. California Endangered Species Act Consultation Summary

Two State listed species under the jurisdiction of the CDFW occur or are presumed to occur in the BSA: tricolored blackbird (emergency listing) and Swainson's hawk. CTS are not anticipated to be present within the project area. Caltrans, as the local lead agency, would apply for the Incidental Take Permit. The potential for take of these species are described below:

- The build alternatives would remove between 0.82 ac and 2.51 ac of nesting habitat and between 330.04 ac and 409.29 ac of foraging habitat for tricolored blackbird. However, no take of an occupied, active tricolored blackbird nest (eggs or young) or tricolored blackbird individuals are anticipated. Should tricolored blackbird maintain its emergency listing status or otherwise be formally listed under CESA and project activities occur too close to an occupied, active tricolored blackbird nest, an Incidental Take Permit pursuant to Section 2081 of the State Fish and Game Code would be acquired to authorize work within proximity to an active nest.

- All of the build alternatives would remove a maximum of two known Swainson's hawk nest trees, and between one and three known Swainson's hawk nest trees occur within 0.5 mi. However, no take of an occupied, active Swainson's hawk nest (eggs or young) or Swainson's hawk individuals are anticipated. Should CDFW determine removal of a known Swainson's hawk nest tree would result in take, or project activities occur too close to an occupied, active Swainson's hawk nest, an Incidental Take Permit would be acquired to authorize removal of the known nest trees and/or to authorize work within proximity to an active nest.

- Based on the negative results from the 2014/2015 and 2015/2016 protocol breeding surveys, CTS are not anticipated to be present within the project area. The surveys are determined to be valid based on adequate rainfall and inundation of features during the breeding season and the identification of multiple sightings within the Mckinley Avenue reference site. No take of CTS is anticipated; therefore, an Incidental Take Permit would not be required.

5.4. Wetlands and Other Waters Coordination Summary

5.4.1. U.S. Army Corps of Engineers

Impacts to potential waters of the U.S. differ between build alternatives and would range from 3.61 ac for Alternative 2A to 4.66 ac for Alternative 1B. Table 29 below summarizes impacts to potential waters of the U.S. for the different build alternatives.

Table 29: Summary of Permanent Impacts to Potential Waters of the U.S. by Build Alternative (acres)

	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
Wetlands	3.02	3.22	3.00	3.37
Non-wetland Waters	0.78	1.44	0.61	1.06
Total	3.80	4.66	3.61	4.43

Following selection of the preferred build alternative, a qualified biologist shall perform a final delineation of waters of the U.S. within the project impact area. The final delineation shall be submitted to the USACE for verification and a request for an Approved Jurisdictional Determination.

If it is determined that the preferred build alternative would result in permanent impacts to waters of the U.S. in excess of 0.5 ac, an Individual 404 Permit would likely be required to authorize impacts to waters of the U.S.

5.4.2. Regional Water Quality Control Board

Discharges into waters of the U.S. under Section 404 of the CWA also require a Water Quality Certification from the RWQCB pursuant to Section 401 of the CWA. Additionally, the preferred alternative may impact some features that are determined exempt from USACE jurisdiction pursuant to Section 404 of the CWA; these features could be regulated by RWQCB as waters of the State pursuant to its authority under the PCWQCA. The extent of waters of the State impacted by the preferred alternative, if any, would be determined following verification of the Preliminary Jurisdictional Determination.

5.4.3. California Department of Fish and Wildlife

CDFW jurisdictional waters in the BSA total would be less than impacts to waters of the U.S. since CDFW typically does not regulate canals. Impacts to these resources from the preferred alternative would require a Lake and Streambed Alteration Agreement from CDFW, pursuant to Sections 1600-1616 of the Fish and Game Code.

5.5. Executive Order 11990 – Protection of Wetlands

The project would result in permanent and temporary impacts to wetlands. The project has been designed to avoid impacts to wetlands, where feasible, utilizing various design elements such as retaining walls, non-standard slope gradients, and bridges (versus culverts). The measures in Sections 4.1.3.2 would also minimize impacts to wetlands during and after construction. Based upon the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.

5.6. Executive Order 11988 – Floodplain Management

The proposed includes sufficient design feature to ensure it would not have significant adverse impacts to the existing floodplain or significantly alter the hydraulics of the project site. Therefore, the project would not increase the risk of flooding.

5.7. Invasive Species

To avoid the introduction of invasive species into the BSA during project construction, contract specifications shall include, at a minimum, the following measures.

1. All earthmoving equipment to be used during project construction shall be thoroughly cleaned before arriving on the project site.

2. All seeding equipment (i.e., hydroseed trucks) shall be thoroughly rinsed prior to beginning seeding work.

3. To avoid spreading any non-native invasive species already existing on-site, to off-site areas, all equipment shall be thoroughly cleaned before leaving the site.

5.8. Migratory Bird Treaty Act and California Fish and Game Code (Breeding Birds)

Disturbance of migratory birds during their nesting season (February 15 to September 1) could result in "take" which is prohibited under the MBTA and Section 3513 of the California Fish and Game Code. Fish and Game Code (Section 3503) also prohibits take or destruction of bird nests or eggs.

The following seasonal work restrictions shall be implemented during construction to minimize the potential for take of nesting birds:

1. If work must begin during the nesting season (February 15 to September 15), a qualified biologist shall survey all suitable nesting habitat in the BSA for presence of nesting birds. This survey shall occur no more than 10 days prior to the start of construction. If no nesting activity is observed, work may proceed as planned. If an active nest is discovered, a qualified biologist shall evaluate the potential for the proposed project to disturb nesting activities. The evaluation criteria shall include, but are not limited to, the location/orientation of the nest in the nest tree, the distance of the nest from the BSA, and line of sight between the nest and the BSA.

2. If work is allowed to proceed, a qualified biologist shall be on-site weekly during construction activities to monitor nesting activity. The biologist shall have the authority to stop work if it is determined the project is adversely affecting nesting activities.

3. If work must begin during the nesting season (February 15 to September 15) and swallow mud nests or remains of mud nests are observed, exclusion nesting and/or other exclusion structures shall be installed to prevent nesting. Exclusion structures shall be installed prior to the start of nesting season (February 15 to September 1), and shall be left in place and maintained until work in the vicinity of the nest is complete, or September 1, whichever is earlier. Mud nests or remains of mud nests shall be removed prior to installation of exclusion structures.

   Alternatively, high pressure hoses, extension poles, or similar methods shall be utilized to remove mud nests or remains of mud nests prior to the start of the nesting season (February 15 to September 1). In addition, regular monitoring shall

be required to remove new mud nests before they are large enough to support egg-laying.

Chapter 6. References

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Appendix A CNDDB, USFWS, CNPS and NMFS Lists

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Avena (3712171) OR Bachelor Valley (3712087) OR Brush Lake (3712151) OR Ceres (3712058) OR Cooperstown (3712065) OR Denair (3712057) OR Escalon (3712078) OR Farmington (3712088) OR Knights Ferry (3712076) OR Manteca (3712172) OR Montpelier (3712056) OR Oakdale (3712077) OR Paulsell (3712066) OR Peters (3712181) OR Ripon (3712162) OR Riverbank (3712068) OR Salida (3712161) OR Stockton East (3712182) OR Turlock Lake (3712055) OR Waterford (3712067) OR Westley (3712152))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
Atriplex minuscula lesser saltscale	PDCHE042M0	None	None	G2	S2	1B.1
Atriplex subtilis subtle orache	PDCHE042T0	None	None	G1	S1	1B.2
Blepharizonia plumosa big tarplant	PDAST1C011	None	None	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Branchinecta conservatio Conservancy fairy shrimp	ICBRA03010	Endangered	None	G2	S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Branta hutchinsii leucopareia cackling (=Aleutian Canada) goose	ABNJB05035	Delisted	None	G5T3	S3	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Calicina breva Stanislaus harvestman	ILARAU8020	None	None	G1	S1	
California macrophylla round-leaved filaree	PDGER01070	None	None	G3?	S3?	1B.2
Calycadenia hooveri Hoover's calycadenia	PDAST1P040	None	None	G3	S3	1B.3
Castilleja campestris var. succulenta succulent owl's-clover	PDSCR0D3Z1	Threatened	Endangered	G4?T2T3	S2S3	1B.2
Caulanthus lemmonii Lemmon's jewelflower	PDBRA0M0E0	None	None	G3	S3	1B.2
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2S3	SSC
Clarkia rostrata beaked clarkia	PDONA050Y0	None	None	G2G3	S2S3	1B.3
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Cryptantha hooveri Hoover's cryptantha	PDBOR0A190	None	None	GH	SH	1A
Delphinium recurvatum recurved larkspur	PDRAN0B1J0	None	None	G2?	S2?	1B.2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elderberry Savanna Elderberry Savanna	CTT63440CA	None	None	G2	S2.1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eremophila alpestris actia California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
Eryngium racemosum Delta button-celery	PDAPI0Z0S0	None	Endangered	G1	S1	1B.1
Erythranthe marmorata Stanislaus monkeyflower	PDPHR01130	None	None	G2?	S2?	1B.1
Eschscholzia rhombipetala diamond-petaled California poppy	PDPAP0A0D0	None	None	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G5T4	S3S4	SSC
Euphorbia hooveri Hoover's spurge	PDEUP0D150	Threatened	None	G1	S1	1B.2
Falco columbarius merlin	ABNKD06030	None	None	G5	S3S4	WL
Fritillaria agrestis stinkbells	PMLIL0V010	None	None	G3	S3	4.2
Great Valley Cottonwood Riparian Forest Great Valley Cottonwood Riparian Forest	CTT61410CA	None	None	G2	S2.1	
Great Valley Mixed Riparian Forest Great Valley Mixed Riparian Forest	CTT61420CA	None	None	G2	S2.2	
Great Valley Valley Oak Riparian Forest Great Valley Valley Oak Riparian Forest	CTT61430CA	None	None	G1	S1.1	
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Icteria virens yellow-breasted chat	ABPBX24010	None	None	G5	S3	SSC
Lagophylla dichotoma forked hare-leaf	PDAST5J070	None	None	G2	S2	1B.1
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lasiurus blossevillii western red bat	AMACC05060	None	None	G5	S3	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Lytta moesta moestan blister beetle	IICOL4C020	None	None	G2	S2	
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC
Monadenia mormonum buttoni Button's Sierra sideband	IMGASC7071	None	None	G2T1	S1S2	
Monardella leucocephala Merced monardella	PDLAM180C0	None	None	GH	SH	1A
Mylopharodon conocephalus hardhead	AFCJB25010	None	None	G3	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Neostapfia colusana Colusa grass	PMPOA4C010	Threatened	Endangered	G1	S1	1B.1
Neotoma fuscipes riparia riparian (=San Joaquin Valley) woodrat	AMAFF08081	Endangered	None	G5T1Q	S1	SSC
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Oncorhynchus mykiss irideus steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Orcuttia inaequalis San Joaquin Valley Orcutt grass	PMPOA4G060	Threatened	Endangered	G1	S1	1B.1
Orcuttia pilosa hairy Orcutt grass	PMPOA4G040	Endangered	Endangered	G1	S1	1B.1
Pseudobahia bahiifolia Hartweg's golden sunburst	PDAST7P010	Endangered	Endangered	G2	S2	1B.1
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
Spea hammondii western spadefoot	AAABF02020	None	None	G3	S3	SSC
Sphenopholis obtusata prairie wedge grass	PMPOA5T030	None	None	G5	S2	2B.2
Sylvilagus bachmani riparius riparian brush rabbit	AMAEB01021	Endangered	Endangered	G5T1	S1	
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
Tuctoria greenei Greene's tuctoria	PMPOA6N010	Endangered	Rare	G1	S1	1B.1
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	
Vulpes macrotis mutica San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2	S2	

Record Count: 75

CNPS California Native Plant Society

Plant List

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1 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712087

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Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Neostapfia colusana	Colusa grass	Poaceae	annual herb	May-Aug	1B.1	S1	G1

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 13 April 2017].

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California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712151

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Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	4.2	S3	G3T3
Sphenopholis obtusata	prairie wedge grass	Poaceae	perennial herb	Apr-Jul	2B.2	S2	G5

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Plant List

Inventory of Rare and Endangered Plants

2 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712058

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G3T2
Atriplex subtilis	subtle orache	Chenopodiaceae	annual herb	Jun,Aug,Sep(Oct)	1B.2	S1	G1

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 13 April 2017].

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12 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712065

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Calycadenia hooveri	Hoover's calycadenia	Asteraceae	annual herb	Jul-Sep	1B.3	S3	G3
Castilleja campestris var. succulenta	succulent owl's-clover	Orobanchaceae	annual herb (hemiparasitic)	(Mar)Apr-May	1B.2	S2S3	G4? T2T3
Clarkia rostrata	beaked clarkia	Onagraceae	annual herb	Apr-May	1B.3	S2S3	G2G3
Cryptantha hooveri	Hoover's cryptantha	Boraginaceae	annual herb	Apr-May	1A	SH	GH
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	2B.2	S2	GU
Euphorbia hooveri	Hoover's spurge	Euphorbiaceae	annual herb	Jul-Sep(Oct)	1B.2	S1	G1
Lagophylla dichotoma	forked hare-leaf	Asteraceae	annual herb	Apr-May	1B.1	S2	G2
Monardella leucocephala	Merced monardella	Lamiaceae	annual herb	May-Aug	1A	SH	GH
Neostapfia colusana	Colusa grass	Poaceae	annual herb	May-Aug	1B.1	S1	G1
Orcuttia pilosa	hairy Orcutt grass	Poaceae	annual herb	May-Sep	1B.1	S1	G1
Pseudobahia bahiifolia	Hartweg's golden sunburst	Asteraceae	annual herb	Mar-Apr	1B.1	S2	G2
Tuctoria greenei	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	1B.1	S1	G1

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 13 April 2017].

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Plant List

Inventory of Rare and Endangered Plants

1 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712057

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	1B.1	S1	G1

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 13 April 2017].

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2 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712078

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	1B.1	S2	G2
Tuctoria greenei	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	1B.1	S1	G1

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 13 April 2017].

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1 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712088

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Tuctoria greenei	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	1B.1	S1	G1

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 13 April 2017].

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Plant List

Inventory of Rare and Endangered Plants

7 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712076

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Clarkia rostrata	beaked clarkia	Onagraceae	annual herb	Apr-May	1B.3	S2S3	G2G3
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	2B.2	S2	GU
Eryngium jepsonii	Jepson's coyote thistle	Apiaceae	perennial herb	Apr-Aug	1B.2	S2?	G2?
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	4.2	S3	G3
Lagophylla dichotoma	forked hare-leaf	Asteraceae	annual herb	Apr-May	1B.1	S2	G2
Neostapfia colusana	Colusa grass	Poaceae	annual herb	May-Aug	1B.1	S1	G1
Pseudobahia bahiifolia	Hartweg's golden sunburst	Asteraceae	annual herb	Mar-Apr	1B.1	S2	G2

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 13 April 2017].

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Plant List

Inventory of Rare and Endangered Plants

5 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712056

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Euphorbia hooveri	Hoover's spurge	Euphorbiaceae	annual herb	Jul-Sep(Oct)	1B.2	S1	G1
Neostapfia colusana	Colusa grass	Poaceae	annual herb	May-Aug	1B.1	S1	G1
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	1B.1	S1	G1
Orcuttia pilosa	hairy Orcutt grass	Poaceae	annual herb	May-Sep	1B.1	S1	G1
Tuctoria greenei	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	1B.1	S1	G1

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 13 April 2017].

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Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712066

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Calycadenia hooveri	Hoover's calycadenia	Asteraceae	annual herb	Jul-Sep	1B.3	S3	G3
Neostapfia colusana	Colusa grass	Poaceae	annual herb	May-Aug	1B.1	S1	G1
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	1B.1	S1	G1
Orcuttia pilosa	hairy Orcutt grass	Poaceae	annual herb	May-Sep	1B.1	S1	G1
Tuctoria greenei	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	1B.1	S1	G1

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 13 April 2017].

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Plant List

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Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712181

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	4.2	S3	G3T3
Eryngium racemosum	Delta button-celery	Apiaceae	annual / perennial herb	Jun-Oct	1B.1	S1	G1

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 13 April 2017].

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4 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712162

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Atriplex coronata var. coronata	crownscale	Chenopodiaceae	annual herb	Mar-Oct	4.2	S3	G4T3
Atriplex minuscula	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	1B.1	S2	G2
Eryngium racemosum	Delta button-celery	Apiaceae	annual / perennial herb	Jun-Oct	1B.1	S1	G1
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	1B.2	S2	G3

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 13 April 2017].

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3 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712182

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	4.2	S3	G3T3
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	1B.2	S2?	G2?
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	(Apr)May-Nov	1B.2	S2	G2

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 13 April 2017].

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Inventory of Rare and Endangered Plants

4 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712055

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Eryngium racemosum	Delta button-celery	Apiaceae	annual / perennial herb	Jun-Oct	1B.1	S1	G1
Euphorbia hooveri	Hoover's spurge	Euphorbiaceae	annual herb	Jul-Sep(Oct)	1B.2	S1	G1
Neostapfia colusana	Colusa grass	Poaceae	annual herb	May-Aug	1B.1	S1	G1
Orcuttia pilosa	hairy Orcutt grass	Poaceae	annual herb	May-Sep	1B.1	S1	G1

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 13 April 2017].

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Inventory of Rare and Endangered Plants

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Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quad 3712067

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Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Clarkia rostrata	beaked clarkia	Onagraceae	annual herb	Apr-May	1B.3	S2S3	G2G3
Neostapfia colusana	Colusa grass	Poaceae	annual herb	May-Aug	1B.1	S1	G1
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	1B.1	S1	G1
Tuctoria greenei	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	1B.1	S1	G1

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: April 13, 2017
Consultation Code: 08ESMF00-2017-SLI-0820
Event Code: 08ESMF00-2017-E-04452
Project Name: North County Corridor New State Route 108

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2017-SLI-0820

Event Code: 08ESMF00-2017-E-04452

Project Name: North County Corridor New State Route 108

Project Type: TRANSPORTATION

Project Description: The proposed project is located in Caltrans District 10 within portions of the Oakdale, Riverbank, and Modesto communities, Stanislaus County, California. The NCC Project will connect SR-219 near Modesto, CA to SR-120 near Oakdale, CA. The proposed project consists of four Build Alternatives (1A, 1B, 2A, and 2B) and the No-Build Alternative. Construction is expected to begin in 2018, and be completed by 2022.

Project Location:

Approximate location of the project can be viewed in Google Maps:
https://www.google.com/maps/place/37.7433913433743N120.8211648599591W

Counties: Stanislaus, CA

Endangered Species Act Species

There is a total of 14 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
San Joaquin Kit Fox *(Vulpes macrotis mutica)* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Reptiles

NAME	STATUS
Giant Garter Snake *(Thamnophis gigas)* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *(Rana draytonii)* There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *(Ambystoma californiense)* Population: U.S.A. (Central CA DPS) There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *(Hypomesus transpacificus)* There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened
Steelhead *(Oncorhynchus (=Salmo) mykiss)* Population: Northern California DPS There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1007	Threatened

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *(Desmocerus californicus dimorphus)* There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *(Branchinecta conservatio)* There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *(Branchinecta lynchi)* There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *(Lepidurus packardi)* There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Colusa Grass *(Neostapfia colusana)* There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5690	Threatened
Greene's Tuctoria *(Tuctoria greenei)* There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1573	Endangered
Hartweg's Golden Sunburst *(Pseudobahia bahiifolia)* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1704	Endangered
San Joaquin Orcutt Grass *(Orcuttia inaequalis)* There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5506	Threatened

Critical habitats

There are no critical habitats within your project area.

Angela Scudiere

From: NMFSWCRCA Specieslist - NOAA Service Account <nmfswcrca.specieslist+canned.response@noaa.gov>
Sent: Thursday, April 13, 2017 11:42 AM
To: Angela Scudiere
Subject: "5" Re: Caltrans District 10; North County Corridor New State Route 108 Project

Thank you for using NMFS' California species list, providing information for ESA, MSA, and MMPA resources under the jurisdiction of NMFS. Messages sent to this email address are not responded to directly. For questions, please contact Darren Howe by phone at 707-575-3152 or by email at darren.howe@noaa.gov.

Angela Scudiere

From: Angela Scudiere
Sent: Thursday, April 13, 2017 11:42 AM
To: 'nmfswcrca.specieslist@noaa.gov'
Subject: Caltrans District 10; North County Corridor New State Route 108 Project

Federal agency name and address:
Philip Vallejo, Acting Senior Environmental Planner
Caltrans District 10
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Non-federal agency (Project Proponent):
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North County Corridor Transportation Expressway Association
1716 Morgan Rd.
Modesto, CA 95358

Point-of-contact:
Angela Scudiere, Biologist/Environmental Planner
ascudiere@dokkenengineering.com
(916) 858-0642

Search Results for the Project Area Quadrangles:

Quad Name **Salida**
Quad Number **37121-F1**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -

CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat - **X**
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH - **X**
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -
Quad Name **Riverbank**
Quad Number **37120-F8**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -

CCV Steelhead Critical Habitat - **X**
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH - **X**
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Quad Name **Waterford**
Quad Number **37120-F7**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat - **X**
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -

Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH - **X**
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Quad Name **Oakdale**
Quad Number **37120-G7**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat - **X**
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH - **X**
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds
See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Quad Name **Knights Ferry**
Quad Number **37120-G6**

ESA Anadromous Fish

SONCC Coho ESU (T) -

CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat - **X**
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH - **X**
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Best,

Angela Scudiere
Biologist/Environmental Planner
DOKKEN ENGINEERING
110 Blue Ravine Road, Suite 200, Folsom, CA 95630
Phone: (916) 858-0642 - Fax: (916) 858-0643

Appendix B Preliminary Jurisdictional Delineation

North County Corridor New State Route 108

Preliminary Jurisdictional Delineation

Cities of Modesto, Riverbank, and Oakdale

Stanislaus County, California

10-STA-108

SR-108 [PM 27.5/44.5], SR-219 [PM 3.7/4.8], SR-120 [PM 6.9-11.6]

Project ID. 1000000263

EA 10-0S800

February 2015

CALIFORNIA DEPARTMENT OF TRANSPORTATION

Preliminary Jurisdictional Delineation

Cities of Modesto, Riverbank, and Oakdale

Stanislaus County, California

10-STA-108

SR-108 [PM 27.5/44.5], SR-219 [PM 3.7/4.8], SR-120 [PM 6.9-11.6]

Project ID. 1000000263

EA 10-0S800

February 2015

STATE OF CALIFORNIA
Department of Transportation
County of Stanislaus

Prepared By: _____ Date: __2-13-15___

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For Approval By: _____ Date: _____

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List of Abbreviated Terms

Caltrans	California Department of Transportation
EPA	United States Environmental Protection Agency
ft	foot/feet
GIS	Geographic Information System
ICF	ICF International
mi	miles
MID	Modesto Irrigation District
NCC	North County Corridor New State Route 108
OID	Oakdale Irrigation District
OHWM	Ordinary high water mark
SR	State Route
USACE	United States Army Corps of Engineers

Chapter 1. Introduction

The California Department of Transportation (Caltrans), in cooperation with the North County Corridor Transportation Expressway Authority, proposes to construct the North County Corridor New State Route 108 (NCC) in northern Stanislaus County, California.

This report presents the results of a delineation of the extent of waters of the United States, including wetlands, within the study area developed for the NCC. Waters of the United States are subject to United States Army Corps of Engineers (USACE) regulation under Section 404 of the Clean Water Act.

1.1. Project Location

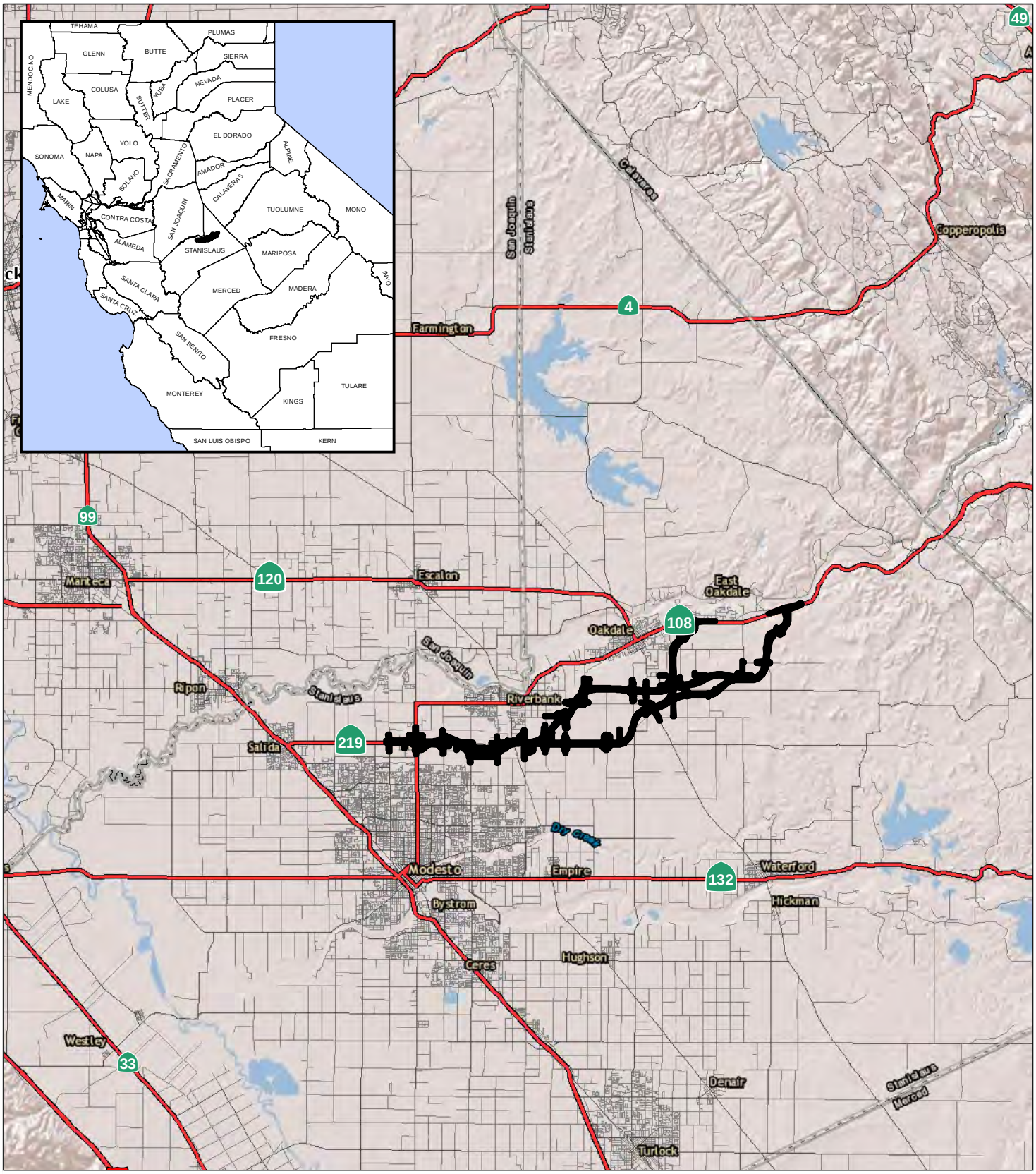
The NCC is located in northern Stanislaus County in the San Joaquin Valley. The western end of the NCC begins approximately 4 miles (mi) east of State Route (SR) 99 and approximately 0.75 mi north of Modesto. The NCC extends approximately 18 mi to the east/northeast and ends at SR-108 east of Oakdale.

The NCC is located within portions of Township 2 South Ranges 9, 10, and 11E and Township 3 South Ranges 9, 10, and 11E Mount Diablo Baseline and Meridian, on the Salida, California; Riverbank, California; Waterford, California; Oakdale, California; and Knights Ferry, California 7.5-minute series United States Geological Survey topographic maps.

The regional vicinity is shown in Figure 1. The project location is shown in Figures 2 and 3.

1.1.1. Driving Directions

To reach the western end of the study area: from SR-99, exit at Broadway Avenue/Kiernan Avenue/CA-219 and proceed east on Broadway Avenue/Kiernan Avenue/CA-219 about 4 mi until reaching the Claribel Road/Tully Road intersection (western limit of the study area). To reach the eastern end of the study area: continue east from the Claribel Road/Tully Road intersection approximately 4 mi until reaching Albers Road. Proceed north on Albers until it reaches SR-108, then proceed east. The eastern limit of the study area is approximately 6 mi east, near the intersection of Lancaster Road and SR-108.



LEGEND

Study Area

FIGURE 1

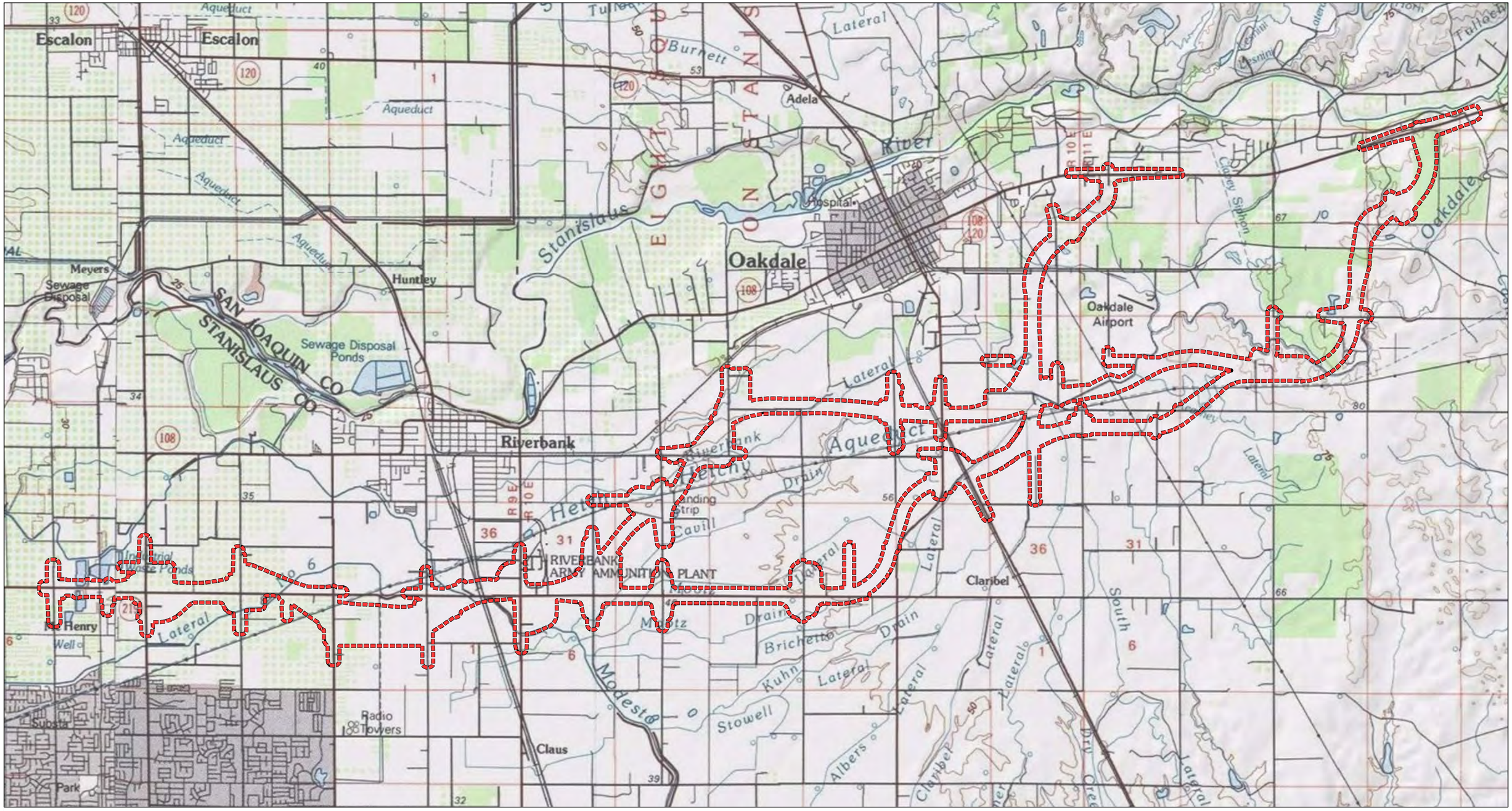
0 2.5 5
MILES

SOURCE: ESRI Imagery (4/2008)

I:\Dhg1302\GIS\Reports\Delin\fig1_reg_loc.mxd (7/14/2014)

Regional Location

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



LEGEND

Study Area

FIGURE 2

Caltrans

N

0 0.5 1

MILES

SOURCE: USGS Topo Map (San Joaquin and Stanislaus Counties)

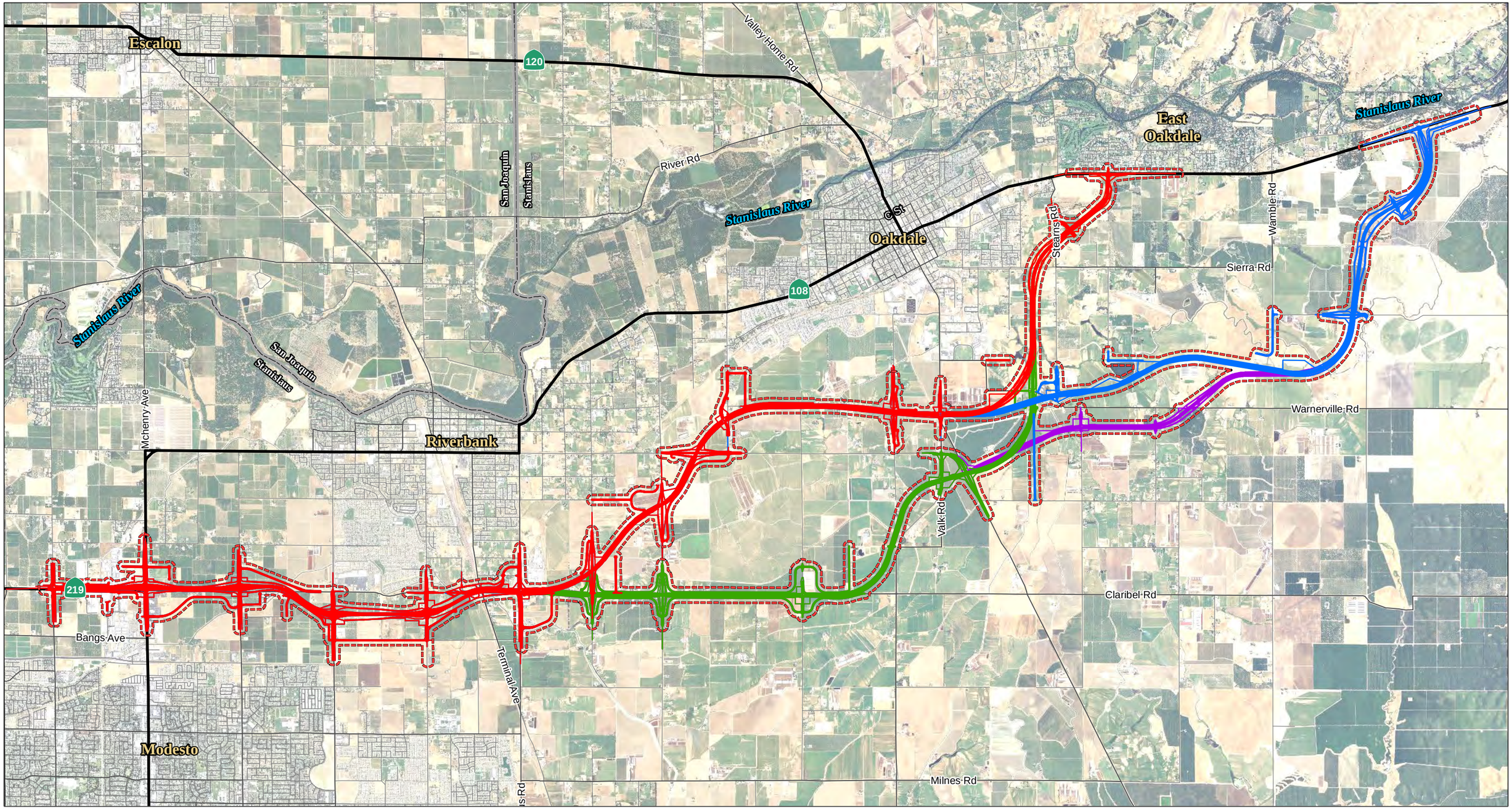
I:\Dhg1302\GIS\Reports\Delin\fig2_proj_vic.mxd (7/14/2014)

Study Area on Topographic Base

EA: 10-0S800, Project ID # 1000000263

North County Corridor New State Route 108 Project

Stanislaus County, California



LEGEND

- Study Area
- Alternative 1A
- Alternative 1B
- Alternative 2A
- Alternative 2B

0 0.5 1
MILES

SOURCE: NAIP (2012)

I:\Dhg1302\GIS\Reports\Delin\fig3_proj_vic_aerial.mxd (1/14/2015)

FIGURE 3

Study Area and Project Alternatives

EA: 10-0S800, Project ID # 1000000263

North County Corridor New State Route 108 Project

Stanislaus County, California

1.2. Project Description

The proposed project is located in Caltrans District 10 within portions of the Oakdale, Riverbank, and Modesto communities, Stanislaus County, California (see Figures 1 and 2). The NCC will connect SR-219 near Modesto, CA to SR-120 near Oakdale, CA. The proposed project consists of four Build Alternatives (1A, 1B, 2A, and 2B) and the No-Build Alternative (see Figure 3).

The western terminus of all alternatives is at the SR-219 (Kiernan Avenue)/Tully Road intersection. The alternatives proceed to the vicinity of the Claus Road/Claribel Road intersection, where Segment 2 begins and the alternatives separate into two different alignments (A and B). In Segment 2, Alternatives 1A and 1B veer northeast near the Claus Road/Claribel Road intersection and pass through the southern boundary of Oakdale, and Alternatives 2A and 2B continue easterly along Claribel Road and turn northeastward past the intersection of Claribel Road/Bentley Road. Each of the alternatives then breaks into two possible alignments to their eastern terminus in Segment 3, just past the Oakdale-Waterford Highway. The eastern terminus of Alternatives 1A and 2A end along SR-108/120 just east of the City of Oakdale boundary. Alternatives 1B and 2B end farther east of the Alternatives 1A and 2A terminus, along SR-108/120 in the vicinity of Lancaster Road. The purpose of the project is to reduce existing and future traffic congestion in northern Stanislaus County, enhance traffic safety on existing SR-108, support the efficient movement of goods, and improve interregional travel.

The proposed project improvements include:

- At grade intersections;
- Grade separation structures at major roadway and railway crossings;
- Structures at various waterway crossings, such Modesto Irrigation District (MID) and Oakdale Irrigation District (OID) canals;
- County and City roadway improvements at various locations; and,
- New freeway/expressway controlled access travel lanes.

The four alternatives would consist of two to three 12-foot (ft)-wide through lanes with 5-ft to 10-ft-wide left and right shoulders in each direction. The east-bound and west-bound alignments would be separated by a 46 to 70-ft-wide median, including

the 5-ft to 19-ft-wide shoulders and 26-ft to 60-ft-wide graded, unpaved median area. Drainage swales would be located along either side of the new roadway.

As the proposed roadway would function as a freeway/expressway with controlled access, new and realigned local access roads are needed to provide continued access to existing properties. This would involve construction of a discontinuous local roadway system, which would provide a 12-ft-wide through lane and an 8-ft-wide shoulder, in each direction. Up to a 12-ft-wide area would be provided between the right-of-way limit and the edge of pavement to allow for drainage ditches. Where required, turn lanes would provide connections to cross roads. Each of the four build alternatives includes these proposed local access roads, which are delineated on Figure 3.

Elevated roadways, separated grade crossings, single point urban interchanges, signalized intersections, and roundabouts would be needed for each of the four alternatives. A Class 2 bike lane would also be constructed within the road shoulder from Claus Road to the eastern terminus at State-Route 108/120.

Various utilities exist throughout the project area that would need to be relocated. These include electric, telephone, water, sewer, and irrigation lines. At the time of this report, the exact locations to which the impacted utilities would be relocated is unknown, but relocation would take place within the currently defined project area.

Permanent right-of-way and temporary construction easements would also be required for the proposed project.

Chapter 2. Environmental Setting

The study area is located in northern Stanislaus County in the San Joaquin Valley, the western limits begin northeast of the City of Modesto continuing south of the City of Riverbank and ending east of the City of Oakdale, on the existing SR-108/120.

The study area, as discussed herein, consists of the proposed NCC and local access road right of way limits plus an additional 250 ft. On continuous sections of the NCC (i.e., with no interchanges, intersections, etc.), the study area is approximately 740 ft wide; the average width of the study area along local access roads is 560 ft; the total acreage of the project area is approximately 5,434 acres.

2.1. Topography

The western and central portions of the study area are generally flat; the topography begins trending upward in the eastern portion of the study area. The elevation within the study area ranges from approximately 100 ft above sea level at the western end to approximately 250 ft above sea level at the eastern end.

2.2. Climate

The climate in the study area is Mediterranean with cool, wet winters and hot, dry summers. The average total annual precipitation is approximately 12.21 inches (Western Regional Climate Center, 2014), most of which falls between November and April. There is normally less than 0.5 inch of rain between June and September. The average winter temperature is 47.5 ºF and the average winter low temperature is 39.6 ºF. The average summer temperature is 75.1 ºF and the average summer high temperature 91.6 ºF.

2.3. Hydrology

The study area is located within the Middle San Joaquin-Lower Merced-Lower Stan Watershed (Hydrologic Unit Code # 18040002) (U.S. Environmental Protection Agency 2014).

There are no substantial waterways in the study area but several small waterways are present. Many of these waterways are very small and unnamed, with only seasonal

water conveyance. The eastern portion of the study area, generally north of Warnerville Road, drains to the north towards the Stanislaus River. The remainder of the study area generally drains south or southwest towards Dry Creek, which is tributary to Tuolumne River.

Several irrigation canals also occur within the study area. These canals are part of either the Modesto Irrigation District (western part of the study area) or the Oakdale Irrigation District (eastern part of the study area). The irrigation canals are generally concrete-lined and controlled with earthen levees.

2.4. Soils

According to the *Soil Survey of the Eastern Stanislaus County Area* (Arkley 1964), a total of 54 soil mapping units occur within the study area. These units are summarized below in Table 1 and are shown on Figures 4a and 4b.

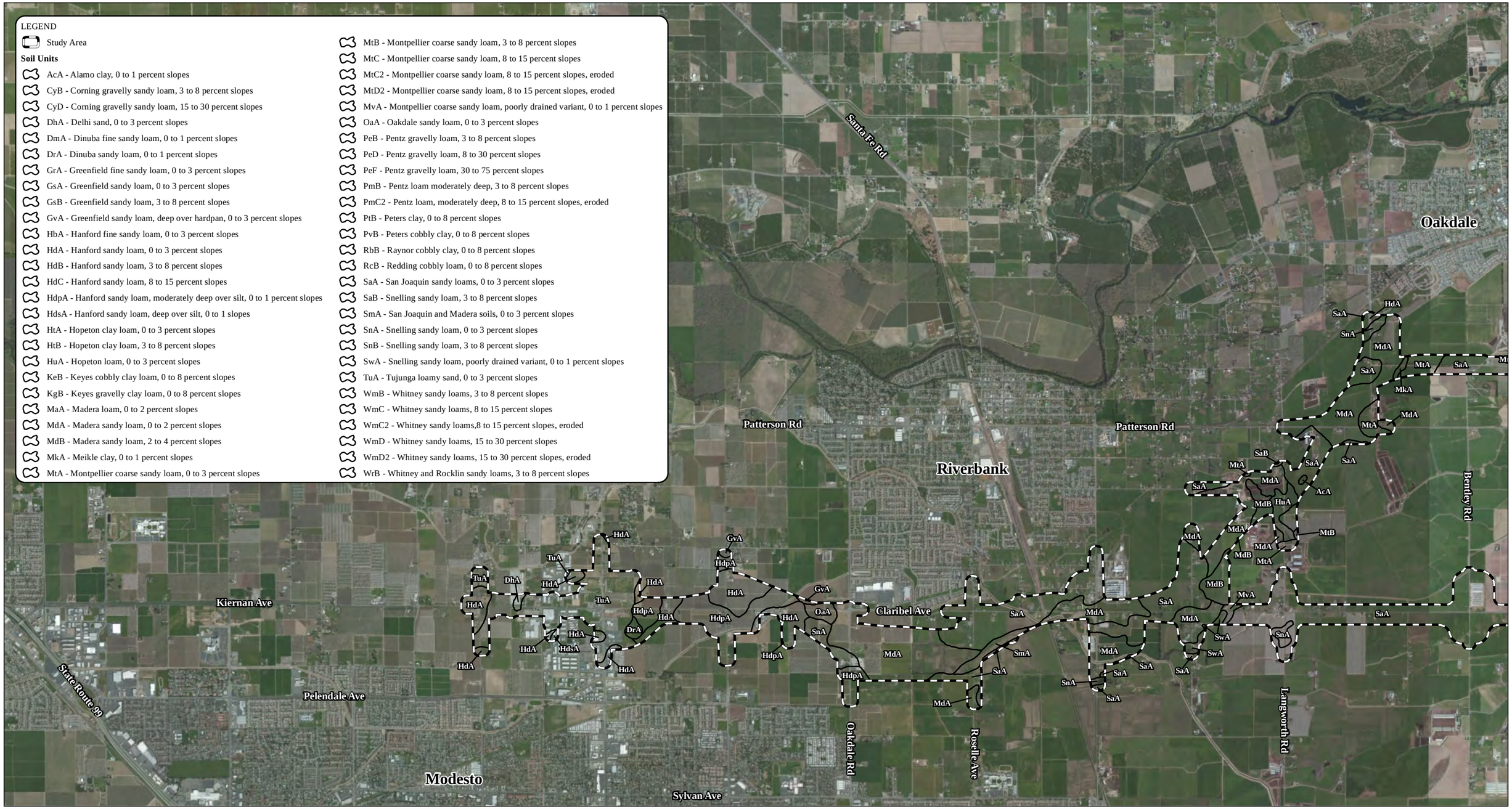
Table 1: Summary of Soil Units that Occur within the Study Area

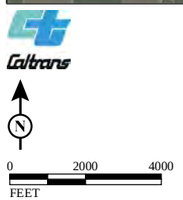
Map Unit	Soil Series	Location	Drainage Class	Permeability	Texture
AcA	Alamo clay, 0 to 1 percent slopes	Fan remnants	Poorly drained	Very slow, non through hardpan	Clay
CyB	Corning gravelly sandy loam, 3 to 8 percent slopes	Stream terraces	Moderately well drained	Slow	Sandy loam
CyD	Corning gravelly sandy loam, 15 to 30 percent slopes	Stream terraces	Moderately well drained	Slow	Sandy loam
DhA	Delhi sand, 0 to 3 percent slopes	Sand sheets	Somewhat excessively drained	Very rapid	Sand
DmA	Dinuba fine sandy loam, 0 to 1 percent slopes	Alluvial fans	Moderately well drained	Moderate	Fine sandy loam
DrA	Dinuba sandy loam, 0 to 1 percent slopes	Alluvial fans	Moderately well drained	Moderate	Sandy loam
GrA	Greenfield fine sandy loam, 0 to 3 percent slopes	Alluvial fans	Well drained	Moderate	Fine sandy loam
GsA	Greenfield sandy loam, 0 to 3 percent slopes	Alluvial fans	Well drained	Moderately rapid	Sandy loam

Map Unit	Soil Series	Location	Drainage Class	Permeability	Texture
GsB	Greenfield sandy loam, 3 to 8 percent slopes	Alluvial fans	Well drained	Moderately rapid	Sandy loam
GvA	Greenfield sandy loam, deep over hardpan, 0 to 3 percent slopes	Alluvial fans	Well drained	Moderately rapid	Sandy loam
HbA	Hanford fine sandy loam, 0 to 3 percent slopes	Alluvial fans	Well drained	Moderately rapid	Fine sandy loam
HdA	Hanford sandy loam, 0 to 3 percent slopes	Alluvial fans	Well drained	Rapid	Sandy loam
HdB	Hanford sandy loam, 3 to 8 percent slopes	Alluvial fans	Well drained	Rapid	Sandy loam
HdC	Hanford sandy loam, 8 to 15 percent slopes	Alluvial fans	Well drained	Rapid	Sandy loam
HdpA	Hanford sandy loam, moderately deep over silt, 0 to 1 percent slopes	Alluvial fans	Well drained	Rapid	Sandy loam
HdsA	Hanford sandy loam, deep over silt, 0 to 1 slopes	Alluvial fans	Well drained	Rapid	Sandy loam
HtA	Hopeton clay loam, 0 to 3 percent slopes	---	Moderately well drained	Slow	Clay loam
HtB	Hopeton clay loam, 3 to 8 percent slopes	---	Moderately well drained	Slow	Clay loam
HuA	Hopeton loam, 0 to 3 percent slopes	---	Moderately well drained	Slow	Clay loam
KeB	Keyes cobbly clay loam, 0 to 8 percent slopes	Fan remnants	Moderately well drained	Very slow	Clay loam
KgB	Keyes gravelly clay loam, 0 to 8 percent slopes	Fan remnants	Moderately well drained	Very slow	Clay loam
MaA	Madera loam, 0 to 2 percent slopes	Fan remnants	Moderately well drained	Very slow	Loam
MdA	Madera sandy loam, 0 to 2 percent slopes	Fan remnants	Moderately well drained	Very slow	Sandy loam
MdB	Madera sandy loam, 2 to 4 percent slopes	Fan remnants	Moderately well drained	Very slow	Sandy loam

Map Unit	Soil Series	Location	Drainage Class	Permeability	Texture
MkA	Meikle clay, 0 to 1 percent slopes	Basin floor	Somewhat poorly drained	Very slow	Clay
MtA	Montpellier coarse sandy loam, 0 to 3 percent slopes	Fan remnants	Well drained	Slow	Coarse sandy loam
MtB	Montpellier coarse sandy loam, 3 to 8 percent slopes	Fan remnants	Well drained	Slow	Coarse sandy loam
MtC	Montpellier coarse sandy loam, 8 to 15 percent slopes	Fan remnants	Well drained	Slow	Coarse sandy loam
MtC2	Montpellier coarse sandy loam, 8 to 15 percent slopes, eroded	Fan remnants	Well drained	Slow	Coarse sandy loam
MtD2	Montpellier coarse sandy loam, 15 to 30 percent slopes, eroded	Fan remnants	Well drained	Slow	Coarse sandy loam
MvA	Montpellier coarse sandy loam, poorly drained variant, 0 to 1 percent slopes	Drainageways	Poorly drained	Slow	Coarse sandy loam
OaA	Oakdale sandy loam, 0 to 3 percent slopes	Fan remnants	Well drained	Moderate	Sandy loam
PeB	Pentz gravelly loam, 3 to 8 percent slopes	Hillslopes	Well drained	Moderate	Gravelly loam
PeD	Pentz gravelly loam, 8 to 30 percent slopes	Hillslopes	Well drained	Moderate	Gravelly loam
PeF	Pentz gravelly loam, 30 to 75 percent slopes	Hillslopes	Well drained	Moderate	Gravelly loam
PmB	Pentz loam moderately deep, 3 to 8 percent slopes	Hillslopes	Well drained	Moderate	Loam
PmC2	Pentz loam, moderately deep, 8 to 15 percent slopes, eroded	Hillslopes	Well drained	Moderate	Loam
PtB	Peters clay, 0 to 8 percent slopes	Hillslopes	Well drained	Slow	Clay
PvB	Peters cobbly clay, 0 to 8 percent slopes	Hillslopes	Well drained	Slow	Cobbly clay
RbB	Raynor cobbly clay, 0 to 8 percent slopes	Terraces	Well drained	Slow	Cobbly clay

Map Unit	Soil Series	Location	Drainage Class	Permeability	Texture
RcB	Redding cobbly loam, 0 to 8 percent slopes	Fan remnants	Moderately well drained	Very slow	Cobbly loam
SaA	San Joaquin sandy loams, 0 to 3 percent slopes	Fan remnants	Moderately well drained	Very slow	Sandy loam
SaB	Snelling sandy loam, 3 to 8 percent slopes	Fan remnants	Moderately well drained	Very slow	Sandy loam
SmA	San Joaquin and Madera soils, 0 to 3 percent slopes	Fan remnants	Moderately well drained	Very slow	Sandy loam
SnA	Snelling sandy loam, 0 to 3 percent slopes	Fan remnants	Well drained	Moderately slow	Sandy loam
SnB	Snelling sandy loam, 3 to 8 percent slopes	Fan remnants	Well drained	Moderately slow	Sandy loam
SwA	Snelling sandy loam, poorly drained variant, 0 to 1 percent slopes	Depressions	Poorly drained	Moderately slow	Sandy loam
TuA	Tujunga loamy sand, 0 to 3 percent slopes	Alluvial fans	Somewhat excessively drained	Very rapid	Loamy sand
WmB	Whitney sandy loams, 3 to 8 percent slopes	Fan remnants	Well drained	Moderate	Sandy loam
WmC	Whitney sandy loams, 8 to 15 percent slopes	Fan remnants	Well drained	Moderate	Sandy loam
WmC2	Whitney sandy loams,8 to 15 percent slopes, eroded	Fan remnants	Well drained	Moderate	Sandy loam
WmD	Whitney sandy loams, 15 to 30 percent slopes	Fan remnants	Well drained	Moderate	Sandy loam
WmD 2	Whitney sandy loams, 15 to 30 percent slopes, eroded	Fan remnants	Well drained	Moderate	Sandy loam
WrB	Whitney and Rocklin sandy loams, 3 to 8 percent slopes	Backslope	Well drained	Moderate (Whitney); moderately slow (Rocklin)	Sandy loam





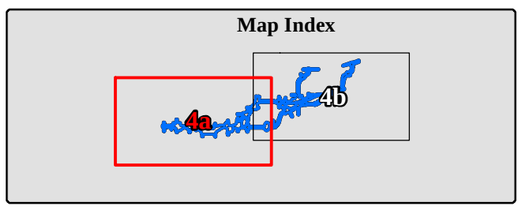


FIGURE 4a

Soil Units

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - NRCS Eastern Stanislaus County Soil Survey (1964)
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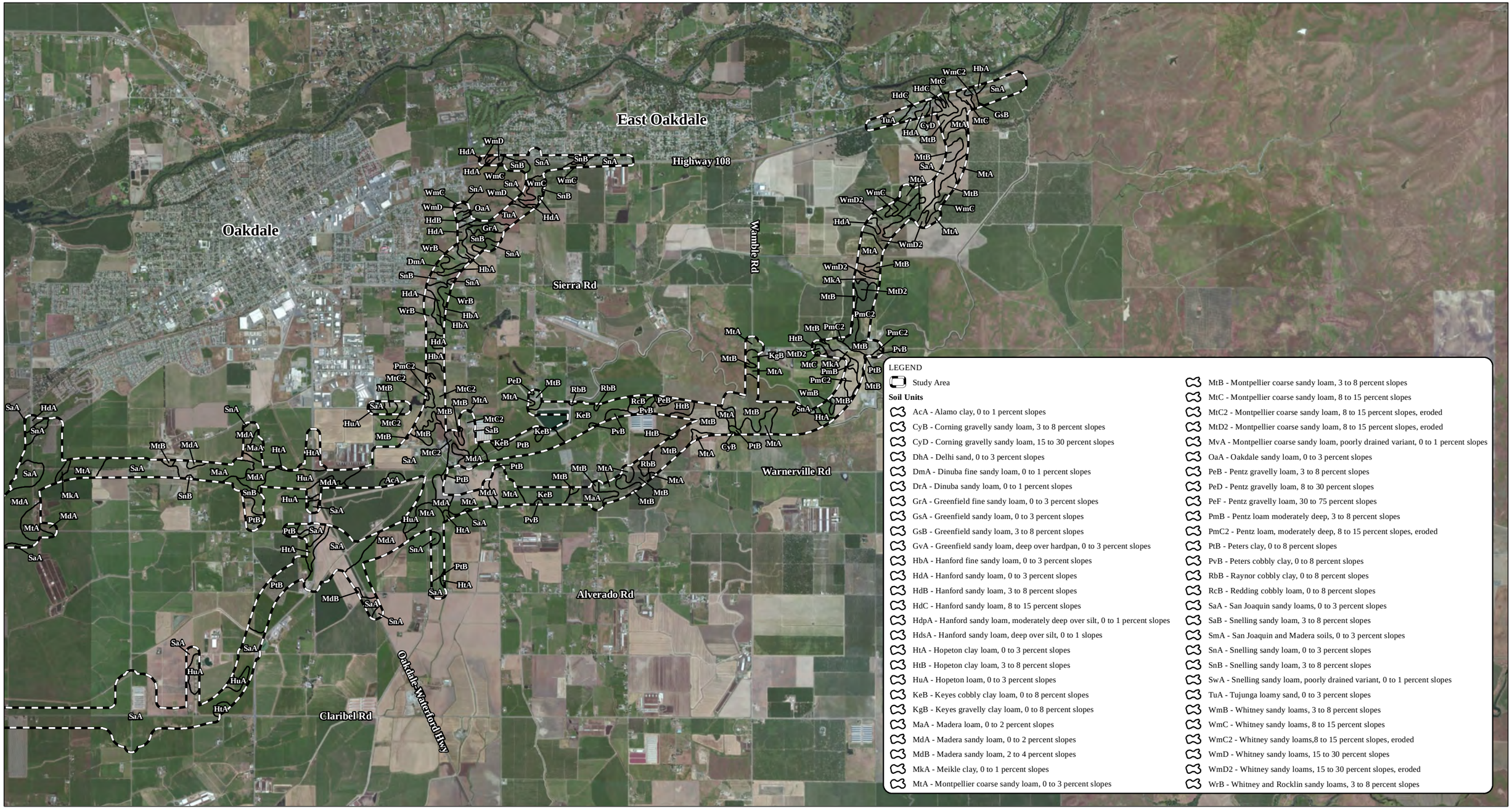

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Map Index

FIGURE 4b

Soil Units

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - NRCS Eastern Stanislaus County Soil Survey (1964)
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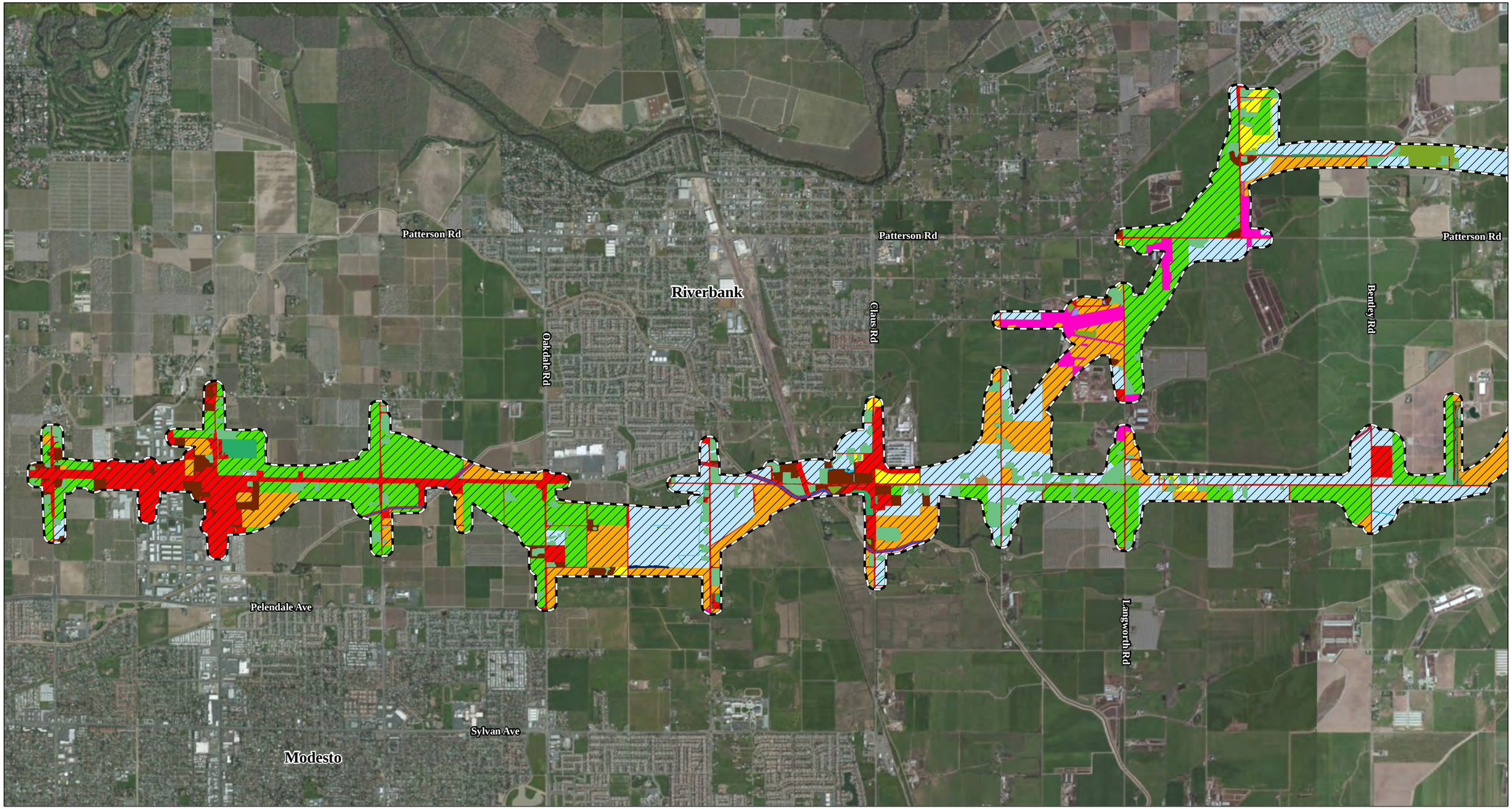
2.5. Vegetation Communities and Land Uses

Vegetation communities and land uses in the study area include eight natural communities: interior live oak woodland, annual grassland, Himalayan blackberry bramble, perennial marsh, seasonal marsh, and seasonal wetlands. Eleven other vegetation communities and land uses not considered natural are also present: ponds/basin, ruderal, agricultural, orchard, irrigated pasture, canal, ditch, dairy and poultry farms, landscaped, rural residential and urban. Vegetation communities/land uses are summarized in Table 2 and shown in Figures 5a and 5b.

These classifications were identified and described by ICF International (ICF) (2012) during a previous mapping effort for the NCC. The classifications were updated by LSA Associates, Inc. during the 2014 field effort to reflect current conditions in the study area and account for changes to the project design (which resulted in changes to the study area).

Table 2: Vegetation Communities and Land Uses

Natural Communities	**Acres**
Interior live oak woodland	12.01
Blue oak savannah	5.08
Annual grassland	188.66
Himalayan blackberry bramble	7.06
Perennial marsh	14.14
Seasonal marsh	6.35
Riparian scrub	0.36
Seasonal wetland	7.63
Subtotal	***241.29***
Other Vegetation Communities/Land Uses	
Ruderal	184.73
Agricultural	894.98
Orchard	1,657.10
Irrigated pasture	1,301.81
Pond/basin	68.22
Canal	26.71
Ditch	12.07
Dairy and poultry farms	112.58
Landscaped	39.02
Rural residential	320.45
Urban	575.73
Subtotal	***5193.40***
Total	**5,434.69**



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LEGEND

Study Area

Vegetation Communities / Land Uses - (5,434.69 ac)

- Agricultural - (894.98 ac)
- Annual Grassland - (188.66 ac)
- Himalayan Blackberry Bramble - (7.06 ac)
- Blue Oak Savannah - (5.08 ac)
- Canal - (26.99 ac)
- Dairy and Poultry Farms - (112.58 ac)
- Ditch - (12.01 ac)
- Interior Live Oak Woodland - (12.01 ac)
- Irrigated Pasture - (1,301.81 ac)
- Landscaped - (39.02 ac)
- Perennial Marsh - (14.07 ac)
- Orchard - (1,657.10 ac)
- Pond/Basin - (68.22 ac)
- Riparian Scrub - (0.36 ac)
- Ruderal - (184.73 ac)
- Rural Residential - (320.45 ac)
- Seasonal Marsh - (6.35 ac)
- Seasonal Wetland - (7.63 ac)
- Urban - (575.59 ac)

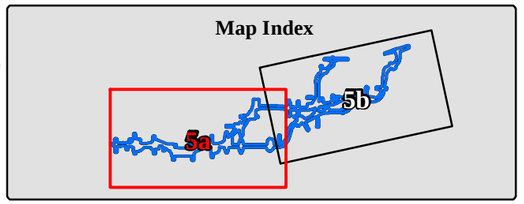

FIGURE 5a

Vegetation Communities and Land Use

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - ICF (2011); LSA Associates, Inc. (2014)
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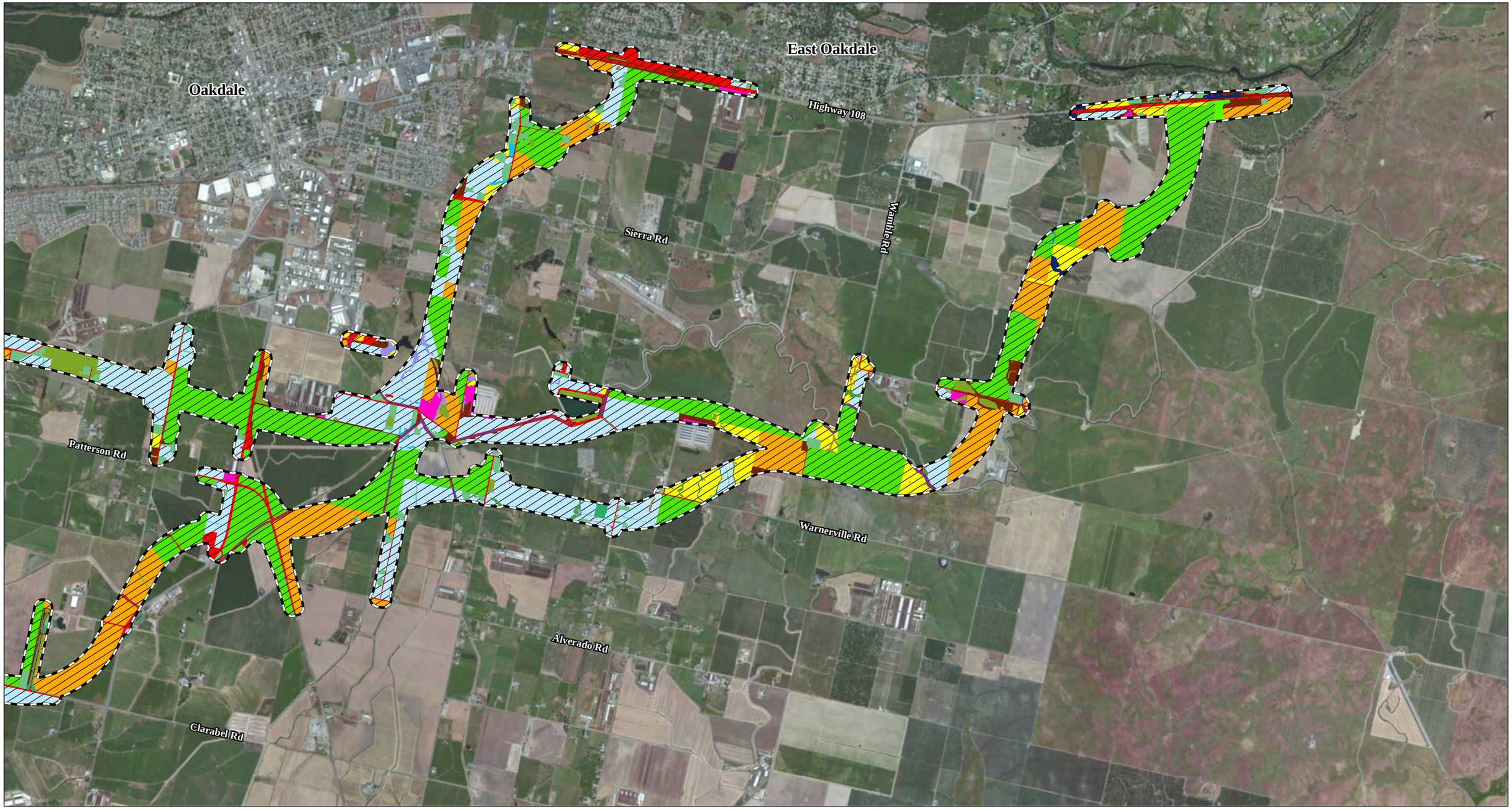

LEGEND

Study Area

Vegetation Communities / Land Uses - (5,434.69 ac)

- Agricultural - (894.98 ac)
- Annual Grassland - (188.66 ac)
- Himalayan Blackberry Bramble - (7.06 ac)
- Blue Oak Savannah - (5.08 ac)
- Canal - (26.99 ac)
- Dairy and Poultry Farms - (112.58 ac)
- Ditch - (12.01 ac)
- Interior Live Oak Woodland - (12.01 ac)
- Irrigated Pasture - (1,301.81 ac)
- Landscaped - (39.02 ac)
- Perennial Marsh - (14.07 ac)
- Orchard - (1,657.10 ac)
- Pond/Basin - (68.22 ac)
- Riparian Scrub - (0.36 ac)
- Ruderal - (184.73 ac)
- Rural Residential - (320.45 ac)
- Seasonal Marsh - (6.35 ac)
- Seasonal Wetland - (7.63 ac)
- Urban - (575.59 ac)

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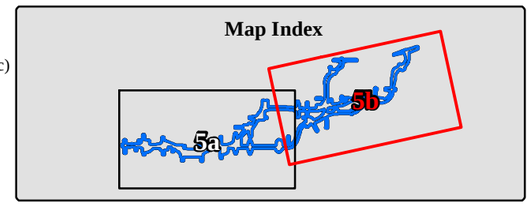

FIGURE 5b

Vegetation Communities and Land Use

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - ICF (2011); LSA Associates, Inc. (2014)

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2.5.1. Natural Communities

Interior Live Oak Woodland

The interior live oak woodland occurs in two locations at the east end of the study area. This community is dominated by interior live oak (*Quercus wislizeni*) but Valley oaks (*Quercus lobata*) are found in a ditch that occurs where the woodland adjoins with the current SR-108. The understory is dominated by invasive grasses. Interior live oak woodland occurs on the east end of the BSA, where Alternatives 1B and 2B abut Highway 120. Interior live oak woodland also occurs approximately 1 mi south of where Alternatives 1B and 2B meet with Highway 120.

Interior live oak woodland provides suitable nesting habitat for the white tailed kite (*Elanus leucurus*), Swainson's hawk (*Buteo swainsoni*), red-tailed hawk (*Buteo jamaicensis*), and other nesting birds. Oak trees may be used by the pallid bat (*Antrozous pallidus*), silver haired bat (*Lasionycteris noctivagans*), western red bat (*Lasiurus blossevillii*), hoary bat (*Lasiurus cinereus*) and the western mastiff bat (*Eumops perotis*). Mammals such as coyote (*Canis latrans*) and the red fox (*Vulpes vulpes*) may also be observed in this community.

Annual Grassland

Annual grasslands occur throughout the study area, but are found in larger areas in the eastern half of the study area. This community includes annual brome grassland, wild oat grassland and perennial rye grass fields. Dominant species include wild oat *(Avena fatua),* ripgut brome (*Bromus diandrus),* soft chess (*Bromus hordeaceus*), Italian rye grass (*Festuca perenne*), foxtail barley (*Hordeum murinum*) and rattail sixweeks grass *(Festuca myuros*). common fiddleneck (*Amsinckia menziesii*), Italian thistle (*Carduus pycnocephalus*), field chickweed (*Cerastium arvense*), cutleaf geranium (*Geranium dissectum*) and milk thistle (*Silybum marianum*) also occur in this community.

Annual grasslands can provide suitable habitat for western burrowing owl (*Athene cunicularia*), if suitable burrows are present. Several bird species may forage in the annual grasslands including Swainson's hawk. If suitable aquatic habitat is nearby, Pacific pond turtles (*Emys marmorata*) may use annual grasslands as upland habitat.

Blue Oak Savannah

Blue oak savannah occurs at one location at the east end of the study area, where Alternatives 1B and 2B abut Highway 120. The dominant overstory species is blue

oak (*Quercus douglasii*). The understory is dominated by native saxifrage (*Lithophragma affine*), elegant clarkia (*Clarkia unguiliculata*), and other annual forbs and grasses.

Blue oak savannah habitat value is similar to the interior live oak woodland community in the study area.

Himalayan Blackberry Bramble

Himalayan blackberry bramble occurs in large patches adjacent to the riparian woodland and annual grassland west of Stearns Road and north of Sierra Road. Himalayan blackberry (*Rubus armeniensis*) is the dominant species in this community.

Large areas of blackberry bramble provide suitable nesting habitat for tricolored blackbirds (*Agelaius tricolor*).

Perennial Marsh

Perennial marshes occur primarily in the central and eastern half of the study area. Dominant species include low manna grass (*Glyceria declinata*), soft rush (*Juncus effusus*), knotweed (*Polygonum* sp.), Himalayan blackberry, curly dock (*Rumex crispus*), common tule (*Schoenoplectus acutus occidentalis*), narrow-leaved cattail (*Typha angustifolia*) and broad-leaved cattail (*Typha latifolia*).

Perennial marsh habitat, with sufficient open water, may provide suitable habitat for California tiger salamander (*Ambystoma californiense*), western spadefoot toad (*Spea hammondii*), and Pacific pond turtle. Western yellow billed cuckoo (*Coccyzus americanus*) and other bird species may forage in the perennial marsh habitat.

Seasonal Marsh

Seasonal marshes occur in the western and central section of the study area, adjacent to the irrigated pastures and annual grasslands. Dominant species include amaranth (*Amaranthus* sp.), nutsedge (*Cyperus eragrostis*), soft rush, sprangletop (*Leptochloa* sp.), water primrose (*Ludwigia peploides*), dallis grass (*Paspalum dilatatum*), knotweed, Himalayan blackberry and broad-leaved cattail.

Seasonal marshes provide cover and foraging habitat for many small birds and mammals. They may also provide suitable habitat for vernal pool invertebrates, including vernal pool tadpole shrimp (*Lepidurus packardi*) and vernal pool fairy shrimp (*Branchinecta lynchi*).

Riparian Scrub

Riparian scrub occurs in three small areas in the central part of the BSA, west of South Stearns Road and north of Sierra Road, and in one location along a concrete canal, adjacent to orchards, near the west end of the BSA. This community consists entirely of narrow-leaved willow (*Salix exigua*).

The small amount of riparian scrub provides suitable upland habitat for Pacific pond turtle. It also provides suitable nesting habitat for white tailed kite and other nesting birds. Cavities and foliage may also provide suitable roosting habitat for multiple bat species.

Seasonal Wetland

Seasonal wetlands typically occur in topographically low-lying areas within annual grasslands and ditches and occur throughout the study area. Dominant species observed were water starwort (*Callitriche* sp.), nutsedge, three-spiked goose grass (*Eleusine tristachya*), creeping spikerush (*Eleocharis macrostachya*), coyote thistle (*Eryngium* sp.), low manna grass, and velvet grass (*Holcus lanatus*). Additional species include Italian rye grass, water primrose, hyssop loosestrife (*Lythrum hyssopifolia*), annual blue grass (*Poa annua*), rabbitsfoot grass (*Polypogon monspeliensis*), buttercup (*Ranunculus* sp.), Himalayan blackberry, and fiddle dock (*Rumex pulcher*). Seasonal wetlands do not remain inundated for long periods of time during the growing season.

Some seasonal wetlands may provide suitable habitat for vernal pool invertebrates. Larger features may provide suitable habitat for CTS and western spadefoot toad, depending on the length of inundation.

2.5.2. Other Vegetation Communities / Land Uses

Ruderal

Ruderal vegetation occurs throughout the study area, typically areas along roadsides, buildings, and dirt roads. Ruderal plants are those that colonize and quickly establish in poor soils and disturbed or waste areas. They generally have fast growing roots, low nutritional needs, and produce massive amounts of seeds. Dominant species include invasive annual grasses and weedy forbs.

If suitable burrows are present, ruderal sites may provide suitable habitat for western burrowing owl. Many species of birds may use ruderal vegetation for foraging,

including Swainson's hawk, red-tailed hawk, red-winged blackbirds (*Agelaius phoeniceus*), and tricolored black birds.

Agricultural

Agricultural fields occur throughout the study area and include row crops, alfalfa, rice fields and grains. Agricultural fields may be disked or left fallow for part of the year. Ruderal and invasive species occur along the edges and in open areas that have not been plowed.

Agricultural fields provide suitable foraging habitat for Swainson's hawks, white tailed kites and other bird species.

Orchard

Orchards occur throughout the study area and are comprised of monotypic and tree dominated habitats, although some areas contain vineyards. Generally this community is sprinkler irrigated and intensively managed. The understory is either bare ground or annual grasses and forbs.

Orchards may provide suitable foraging habitat for Swainson's hawks and other raptors. Western red bats and hoary bats may also utilize orchards as roosting sites.

Irrigated Pasture

Irrigated pastures occur throughout the study area and are grassland areas that receive irrigated water to support pastures for livestock. Dominant plants include Bermuda grass (*Cynodon dactylon*), tall fescue (*Festuca arundinacea*), English plantain (*Plantago lanceolata*), annual blue grass, knotroot bristle grass (*Setaria parviflora*) and subterranean clover (*Trifolium subterraneum*).

This community is not considered suitable for fossorial mammals or other species that utilize burrows due to the flooded that occurs from early spring through fall. However, several bird species may forage in irrigated pasture, including Swainson's hawks, red-tailed hawks, and great horned owls (*Bubo virginianus*).

Pond and Basin

This community consists of natural and created ponds or basins that occur throughout the study area. Most of the ponds are utilized as detention basins, however some are dairy, catfish or other fish-rearing ponds. Dominant vegetation consists of Bermuda grass, Italian rye grass and knotweed.

Some ponds within the study area may provide suitable habitat for CTS and Pacific pond turtles. If fish are present, osprey (*Pandion haliaetus*) may be observed foraging in this community.

Canal

Canals consist of all manmade linear water conveyance features that are contained within levees. Canals are generally much larger than features identified as ditches. Canals are located throughout the study area and generally provide little value as wildlife habitat; however, Pacific pond turtles and other aquatic species could utilize the canals.

Ditch

Ditches consist of all non-leveed water conveyance channels and include roadside, agricultural, and natural drainage features. Several of these ditches support wetland vegetation that may vary from perennial to seasonal. These ditches occur throughout the study area, but are more heavily concentrated in the central portion. Similar to canals, ditches generally provide little value as wildlife habitat but could be used by Pacific pond turtles and other aquatic species.

Dairy and Poultry Farms

This land use includes structures and disturbed areas associated with dairy and poultry farms. This area supports little to no vegetation, however some ruderal species were observed.

Landscaped

Landscaped areas contain ornamental trees, shrubs and forbs. This community occurs throughout the study area and is interspersed with residential and commercial areas. Eucalyptus (*Eucalyptus* sp.) and cottonwood (*Populus* sp.) rows are included in this community.

Landscaped vegetation provides suitable nesting habitat for various bird species, including yellow warbler (*Setophaga petechia*) and Swainson's hawk. Some ornamental trees may also provide roosting habitat for the western red bat and hoary bat.

Rural Residential

This land use includes ranches or houses that are surrounded by large natural areas. Rural residences occur throughout the study area and contain primarily landscaped and ruderal vegetation.

Blue elderberry (*Sambucus nigra* ssp. *caerulea*) shrubs, habitat for the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), were observed around rural residences.

Urban

This community is comprised of dense housing, industrial and commercial buildings. Paved roadways and dirt roads occur throughout urban areas. Any vegetation in this land use is ruderal or landscaped.

Urban development is not considered to be suitable habitat for wildlife species.

Chapter 3. Regulatory Background

The USACE regulates discharges of dredged or fill material into waters of the U.S. These waters include wetlands and non-wetland waters, as described below. The USACE typically regulates as waters of the U.S. any body of water displaying an ordinary high water mark (OHWM). USACE jurisdiction over nontidal waters of the U.S. extends laterally to the OHWM or beyond the OHWM to the limit of any adjacent wetlands, if present (33 CFR 328.4). The OHWM is defined as "…that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area" (33 CFR 328.3). USACE jurisdiction typically extends upstream to the point where the OHWM is no longer perceptible.

3.1. Wetlands

Wetland delineations for Section 404 purposes must be conducted according to the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (Arid West Supplement) (USACE 2008) and the Army Corps of Engineers 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Where there are differences between the two documents, the Regional Supplement takes precedence over the 1987 Manual.

The USACE and United States Environmental Protection Agency (EPA) define wetlands as follows:

> "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions."

To be considered a jurisdictional wetland under Section 404, an area must possess three wetland characteristics: hydrophytic vegetation, hydric soils, and wetland hydrology. Each characteristic has a specific set of mandatory wetland criteria that must be satisfied for that particular wetland characteristic to be met. Several indicators may be analyzed to determine whether the criteria are satisfied.

3.1.1. Hydrophytic Vegetation

Hydrophytic vegetation is plant life that grows and is typically adapted for life in permanently or periodically saturated soils. The hydrophytic vegetation criterion is met if more than 50 percent of the dominant plant species from all strata (tree, shrub, herb, and woody vine layers) are considered hydrophytic. Hydrophytic species are those included on the Arid West 2014 Final Regional Wetland Plant List (Lichvar 2014), published by the USACE. Each species on that list is rated according to a wetland indicator category, as shown in Table 3. To be considered hydrophytic, the species must have a wetland indicator status (i.e., be rated as OBL, FACW, or FAC).

Table 3: Hydrophytic Vegetation

Category	Rating	Probability
Obligate Wetland	OBL	Almost always occur in wetlands (estimated probability >99%)
Facultative Wetland	FACW	Usually occur in wetlands (estimated probability 67%-99%)
Facultative	FAC	Equally likely to occur in wetlands and nonwetlands (estimated probability 34%-66%)
Facultative Upland	FACU	Usually occur in nonwetlands (estimated probability 67%-99%)
Obligate Upland	UPL	Almost always occur in nonwetlands (estimated probability >99%)

To be considered hydrophytic, the species must have wetland indicator status, i.e., be rated as OBL, FACW, or FAC.

The delineation of hydrophytic vegetation is typically based on the most dominant species from each vegetative stratum (strata are considered separately). When more than 50 percent of these dominant species are hydrophytic (i.e., FAC, FACW, or OBL), the vegetation is considered hydrophytic. In particular, the USACE recommends the use of the “50/20” rule (also known as the dominance test) from the Regional Supplement for determining dominant species. Under this method, dominant species are the most abundant species that immediately exceed 50 percent of the total dominance measure for the stratum, plus any additional species composing 20 percent or more of the total dominance measure for the stratum. In cases where indicators of hydric soil and wetland hydrology are present but the vegetation initially fails the dominance test, the prevalence index must be used. The prevalence index is a weighted average of all plant species within a sampling plot.

The prevalence index is particularly useful when communities only have one or two dominants, where species are present at roughly equal coverage, or when strata differ greatly in total plant cover. In addition, USACE guidance provides that morphological adaptations may be considered when determining hydrophytic vegetation when indicators of hydric soil and wetland hydrology are present (USACE 2008). If the plant community passes either the dominance test or prevalence index after reconsideration of the indicator status of any plant species that exhibit morphological adaptations for life in wetlands, then the vegetation is considered hydrophytic.

3.1.2. Hydric Soil

Hydric soils[1] are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.[2] Soils are considered likely to meet the definition of a hydric soil when one or more of the following criteria are met:

1. All Histels except Folistels and Histosols except Folists;
2. Soils that are frequently ponded for a long duration or very long duration[3] during the growing season; or
3. Soils that are frequently flooded for a long duration or very long duration during the growing season.

Hydric soils develop under conditions of saturation and inundation combined with microbial activity in the soil that causes a depletion of oxygen. While saturation may occur at any time of year, microbial activity is limited to the growing season, when soil temperature is above biologic zero (the soil temperature at a depth of 20 inches, below which the growth and function of locally adapted plants are negligible).

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[1] The hydric soil definition and criteria included in the 1987 Manual are obsolete. Users of the Manual are directed to the United States Department of Agriculture Natural Resources Conservation Service website for the most current information on hydric soils.

[2] Current definition as of 1994 (Federal Register [FR] July 13, 1994).

[3] A long duration is defined as a single event ranging from 7 to 30 days. A very long duration is defined as a single event that lasts longer than 30 days.

Biogeochemical processes that occur under anaerobic conditions during the growing season result in the distinctive morphologic characteristics of hydric soils. Based on these criteria, a National List of Hydric Soils was created from the National Soil Information System database and is updated annually.

3.1.3. Hydrology

Under natural conditions, development of hydrophytic vegetation and hydric soils is dependent on a third characteristic: wetland hydrology. Areas with wetland hydrology are those where the presence of water has an overriding influence on vegetation and soil characteristics due to anaerobic and reducing conditions, respectively (Environmental Laboratory 1987). The wetland hydrology parameter is satisfied if the area is seasonally inundated or saturated to the surface for a minimum of 14 consecutive days during the growing season in most years (USACE 2008).

Hydrology is often the most difficult criterion to measure in the field due to seasonal and annual variations in water availability. Indicators commonly used to identify wetland hydrology include visual observation of inundation or saturation, watermarks, recent sediment deposits, surface scour, and oxidized root channels (rhizospheres) resulting from prolonged anaerobic conditions.

3.2. Non-wetland Waters

Non-wetland waters essentially include any body of water, not otherwise exempted, that displays an OHWM.

Chapter 4. Methodology

The approach to this jurisdictional delineation was developed with the intent to request a Preliminary Jurisdictional Delineation from the USACE pursuant to Regulatory Guidance Letter 08-02 (June 2008).

4.1. Field Investigation

Field investigation was conducted during site visits on March 12-14, 2014, April 15, 16, and 22, 2014, and June 6, 2014, by LSA biologists Mike Trueblood and Dayna Winchell. Where right of entry was granted (see Section 4.2 below), the study area was surveyed on foot referencing a March 2011 color aerial photo.

A routine approach, as described in the 1987 Manual, was employed for the delineation, supplemented by the procedures and wetland indicators described in the Arid West Supplement. The method for large areas (i.e., greater than 5 ac), consisting of establishment of a baseline and uniform transects, was initially considered for the study area. However, based on review of the aerial photos and reconnaissance field data, it was clear that the majority of potential waters of the U.S. in the study area were located in the drainages and swales, or were randomly spread throughout the study area. Consequently, use of the routine approach for large areas was not appropriate.

A total of 49 formal observation points were described in the field. Most data points were paired, with an upland point directly adjacent to a wetland point. At each point, a pit was dug (if necessary), and soils and hydrology examined. Soils were not examined in detail at every location, as sites dominated by wetland vegetation were occasionally inundated or saturated at the surface, supporting a conclusion of an aquic moisture regime. Copies of the wetland data forms are included in Appendix B. Representative photos were taken at most data points, and are included in Appendix C.

Potential waters of the U.S. were mapped in the field using a Geographic Positioning System unit with submeter accuracy. All data was entered into a Geographic Information System (GIS) database to calculate the extent of potential waters of the U.S. in the study area and to produce the final mapping. Final mapping was completed using the aforementioned aerial photo at a scale of 1 inch = 500 feet.

4.2. Previous Studies/Coordination

A portion of the study area was previously delineated by ICF in 2011. Material available for review from this effort included GIS shapefiles of preliminary delineation mapping and associated data forms. Documentation of coordination with staff from the USACE, the EPA, and Caltrans was also available.

4.3. Access

Right of entry was granted for the majority of the properties within the study area that supported potential jurisdictional waters (as determined by aerial photo review and reconnaissance surveys). Assessment of properties where right of entry was not granted, and that supported potential jurisdictional waters, consisted of a combination of field level review from the public right of way (i.e., "looking over the fence") and current and historic aerial photo review.

4.4. Irrigated Pasture Wetlands

Potential wetlands in irrigated pasture were assessed in accordance with the USACE Sacramento District's Regulatory Branch Memorandum 2007-01 (USACE 2007) on irrigated wetlands. Methods included aerial photo review followed by ground-truthing, as necessary. This approach is consistent with recommendations provided during an April 10, 2012 field meeting (attendees included Leah Fisher, USACE Sacramento District; Clifton Meek, EPA, Region 9, Frank Meraz, Caltrans Central Region; and ICF botanists, Lisa Webber and John Holson) and additional information from Ms. Fisher and Mike Finan, USACE, Sacramento District (Fisher, pers. comm.).

Chapter 5. Results

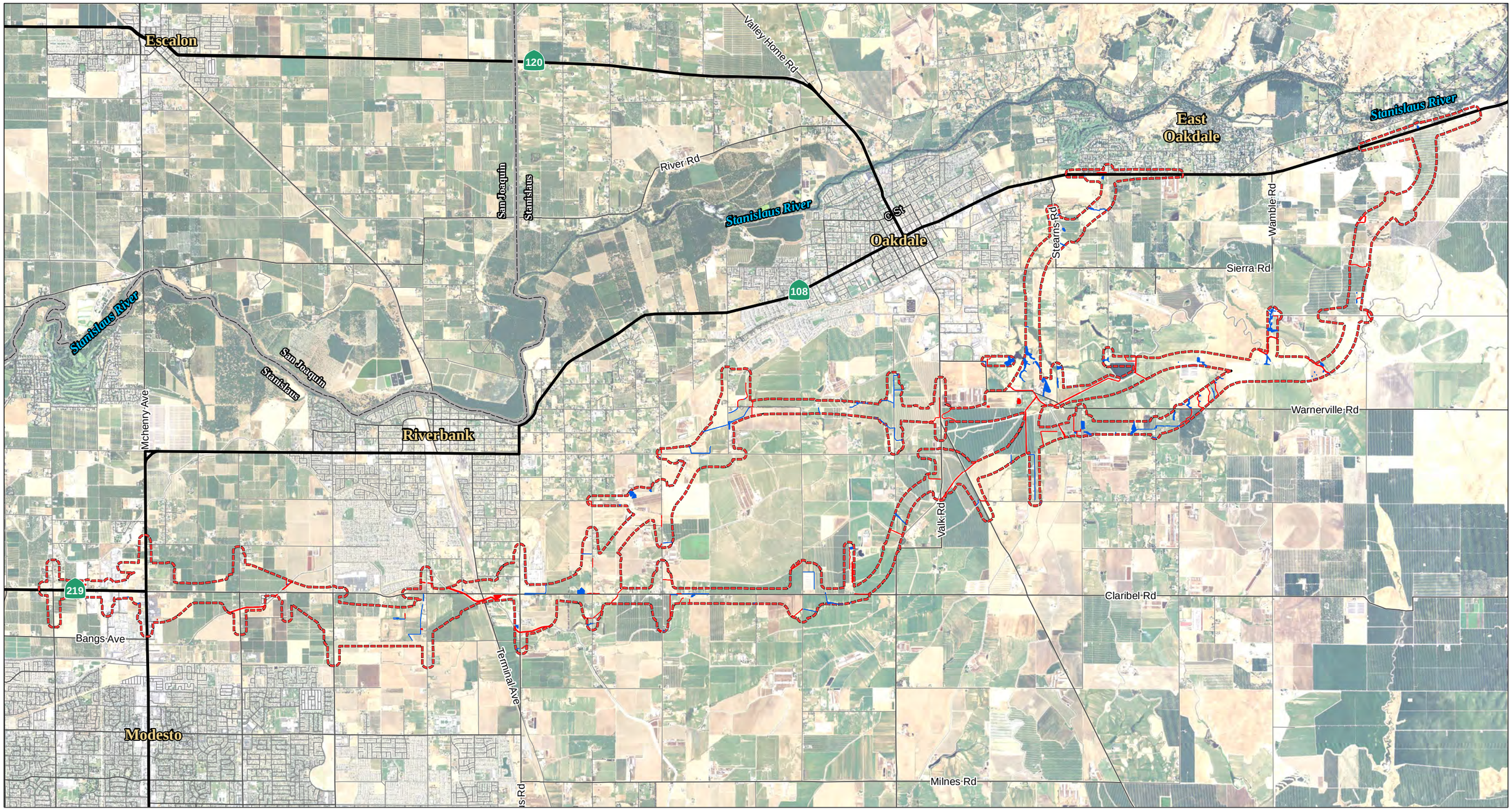
Features potentially meeting USACE criteria for wetlands or other waters of the U.S. in the study area include seasonal wetlands, perennial marsh, ditches, ponds, canals, and irrigated wetlands. These feature classes are described below and summarized in Table 4. An overview of the delineation is shown in Figure 6 and detailed delineation maps are included in Appendix A (as noted in Chapter 4, wetland data forms and representative photos are included in Appendices B and C, respectively). Appendix A also includes a listing of each feature, the feature class, wetlands status, and acreage. A summary table by build alternative is included in Appendix D.

Table 4: Summary of Potential Waters of the U.S. in the Study Area (acres)

Feature Class	Wetlands	Non-Wetland Waters	Total
Seasonal Wetland	10.23	----	**10.23**
Perennial Marsh	14.14	----	**14.14**
Ditches	7.31	4.76	**12.07**
Ponds	10.12	5.83	**15.95**
Canals	----	26.71	**26.71**
Irrigated Wetlands	3.75	----	**3.75**
Total	**45.55**	**37.30**	**82.85**

Two current Caltrans projects, the SR-219 Widening Project and the Claribel Widening Project, overlap a portion of the western limits of the BSA. The limits of these projects are labeled as “Not a Part of Study Area” and are shown in Appendix A, Figures A-1 and A-2 (SR-219 Widening) and A-2, A-3, and A-4 (Claribel Widening). Potential waters of the U.S. within these areas were previously evaluated in a Natural Environment Study (NES) prepared for each project.

The NES for the SR-219 Widening Project (dated October 2001) identified a retention basin and Chapel Ditch, a concrete lined canal. Per discussions with Kathy Norton of the ACOE on March 9, 2000, the retention basin was determined not to be a water of the U.S., but Chapel Ditch was determined to be a water of the U.S. because it connects with Lateral No. 6 canal, which ultimately connects to the Tuolumne River.



LEGEND

Study Area

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

Wetlands - (45.55 ac)

Non-Wetland Waters - (37.30 ac)

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FIGURE 6

Preliminary Jurisdictional Delineation Overview

EA: 10-0S800, Project ID # 1000000263

North County Corridor New State Route 108 Project

Stanislaus County, California

SOURCE: Basemap - NAIP (2012); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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The NES for the Claribel Widening Project (dated August 2011) determined that there were no waters of the U.S. within the project area. The jurisdictional delineation and field survey were conducted by Chuck Hughes, M.S., Botanist/ Biologist/ Professional Wetland Scientist #2029 and Jessica Easley, Biologist.

Seasonal Wetlands

This feature class occurs throughout the study area but is more prevalent in the eastern portion. In general, common hydrophytes identified in the seasonal wetlands include low mana grass (*Glyceria declinata*) – FACW, knotweed –OBL, buttercup – OBL, needle spikerush (*Eleocharis acicularis*) – OBL, smooth goldfields (*Lasthenia glaberrima*) – OBL, curly dock – FAC, and hyssop loosestrife – OBL, which are all known to occur in seasonal wetland conditions. Soils in these features contained noticeably reduced chroma and consistently supported redoxomorphic concentrations in the matrix. Hydrology indicators were generally identified by either inundation/saturation on aerial imagery or by matted vegetation and drainage patterns. For purposes of the preliminary jurisdictional delineation, areas of the seasonal marsh community described in Section 2.5.1. that meet USACE criteria for wetlands were included in the seasonal wetlands feature class. A total of 10.23 ac of seasonal wetlands occur in the study area.

5.1. Perennial Marsh

The majority of this feature class occurs along Stearns Road north of Warnerville Road in wide marshy areas dominated by broad-leaved cattail – OBL and common tule – OBL. The fringes of this community are often dominated by narrow-leaved willow (*Salix exigua*) – FACW. Perennial marsh also occurs in a few other isolated locations to the east and west of Stearns Road. Perennial marsh was typically inundated or saturated to the surface. A total of 14.14 ac of perennial marsh occur in the study area.

5.2. Ditches

Ditches consist of all non-leveed water conveyance channels and include roadside, agricultural, and natural drainage features. Several of these ditches support wetland vegetation that may vary from perennial (i.e., cattail marsh) to seasonal (i.e., rushes, nutsedges, knotweed, and a mix of annual grasses). These ditches occur throughout the study area, but are more heavily concentrated in the central portions. Soils in these

ditches tend to be consistent with seasonally wet soils (i.e., redoximorphic concentrations in the matrix). However, a few were deeply inundated at the time of the surveys and soils were too wet to identify any color variations in the soil. A total of 12.07 ac of ditches occur in the study area.

5.3. Ponds

The pond feature class consists of manmade ponds, most of which support wetlands. Several large ponds associated with dairy and poultry farms, and ponds associated with the irrigation districts, are not included in the mapping. The ponds that support wetlands tend to be perennial in nature and are generally associated with irrigation and/or stock ponds for cattle. Similar to the ditch feature class, ponds can be found throughout the study area but are more concentrated in the central portions. A total of 15.95 ac of ponds occur in the study area.

5.4. Canals

Canals consist of all manmade linear water conveyance features that are contained within levees. Canals are generally much larger than features identified as ditches. None of the canal features in the study area support wetlands. Canals are located throughout the study area. A total of 26.71 ac of canals occur in the study area.

5.5. Irrigated Wetlands

Irrigated wetlands consist of features located within irrigated pasture that meet USACE wetlands criteria. A total of 3.75 acres of irrigated wetlands occur in the study area.

Chapter 6. Conclusion

6.1. Conclusion

The study area encompasses a total of 82.85 acres of potential jurisdictional waters. These potentially jurisdictional features consist of approximately 45.55 acres of potential wetlands and approximately 37.30 acres of potential non-wetland waters.

Chapter 7. References

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USACE (United States Army Corps of Engineers). 2007. *Irrigated Wetlands*. Sacramento District Regulatory Branch Memorandum 2007-01. March 13.

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Appendix A Delineation Maps / Potential Jurisdictional Waters Table

LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

- Non-Wetland Waters - (37.30 ac)
- Wetlands - (45.55 ac)
- Data Point
- Photo Point

Acronym Names

C - Canal
D - Ditch
P - Pond
SW - Seasonal Wetland
PM - Perennial Marsh
IW - Irrigated Wetland

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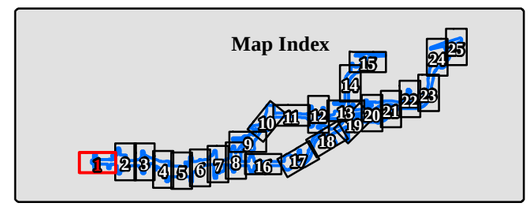

FIGURE A-1

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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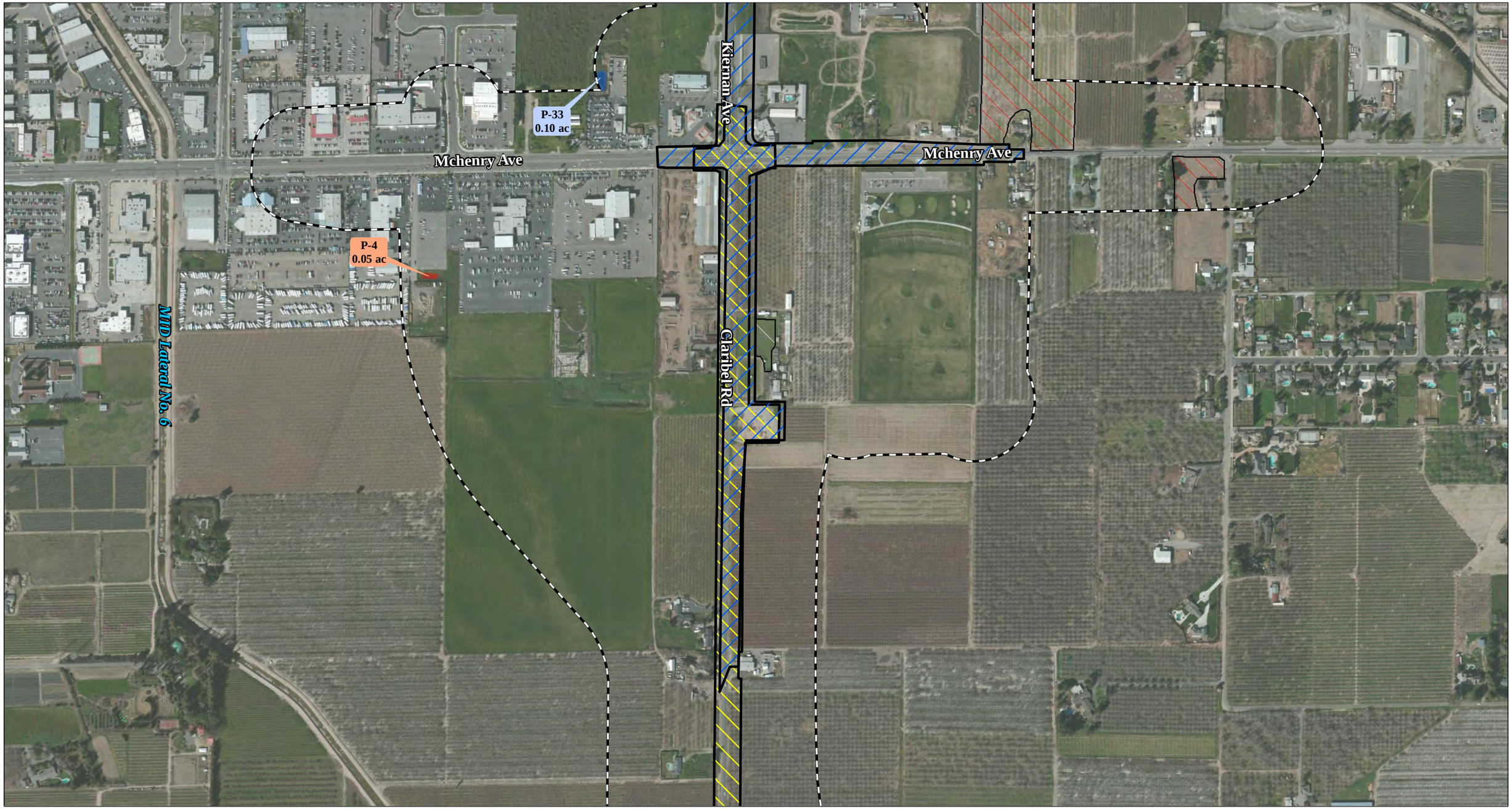

LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

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Map Index

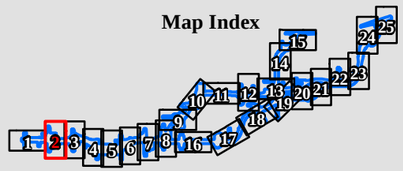

FIGURE A-2

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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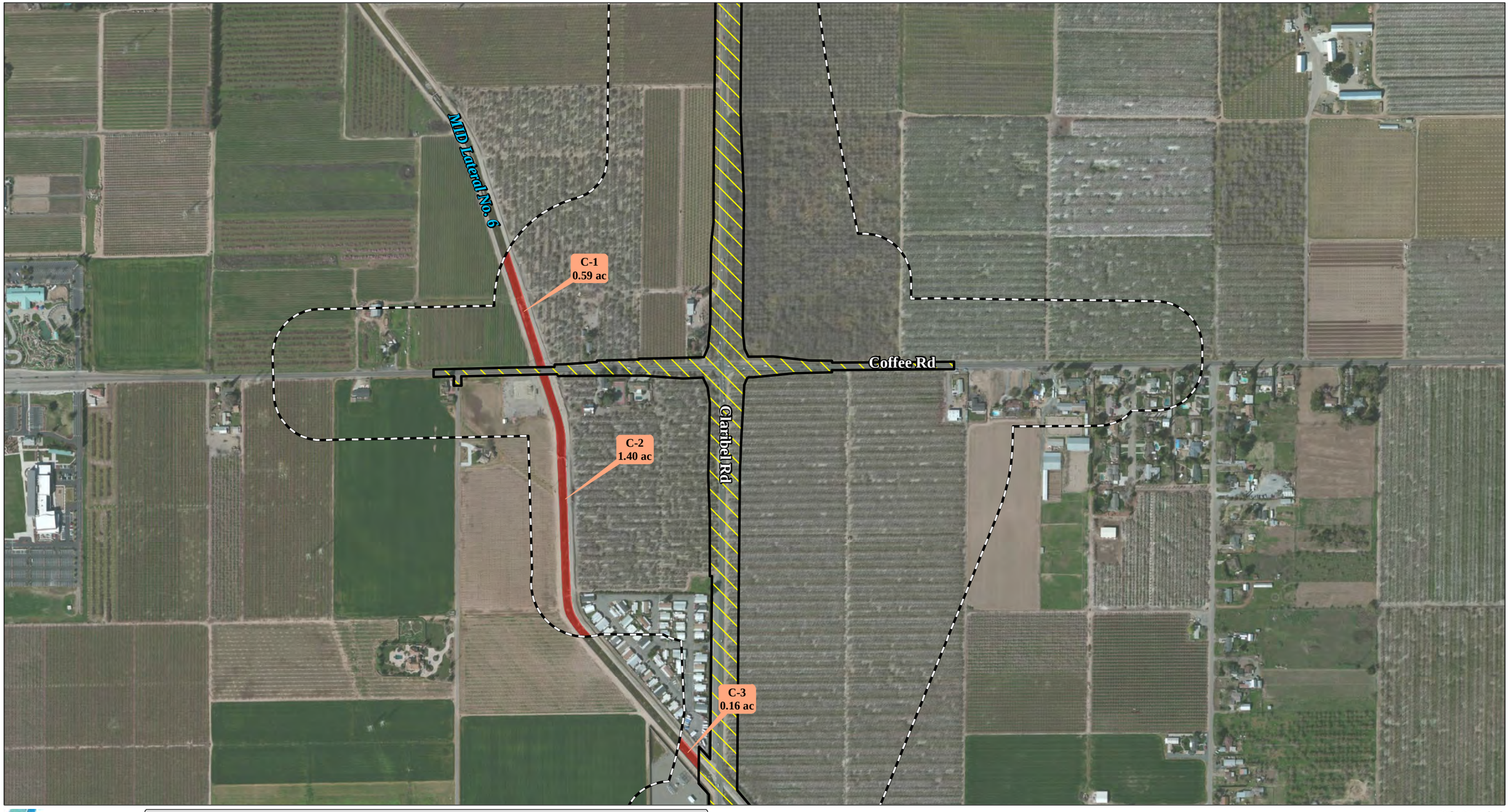

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LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

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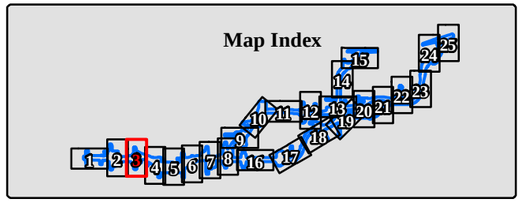

FIGURE A-3

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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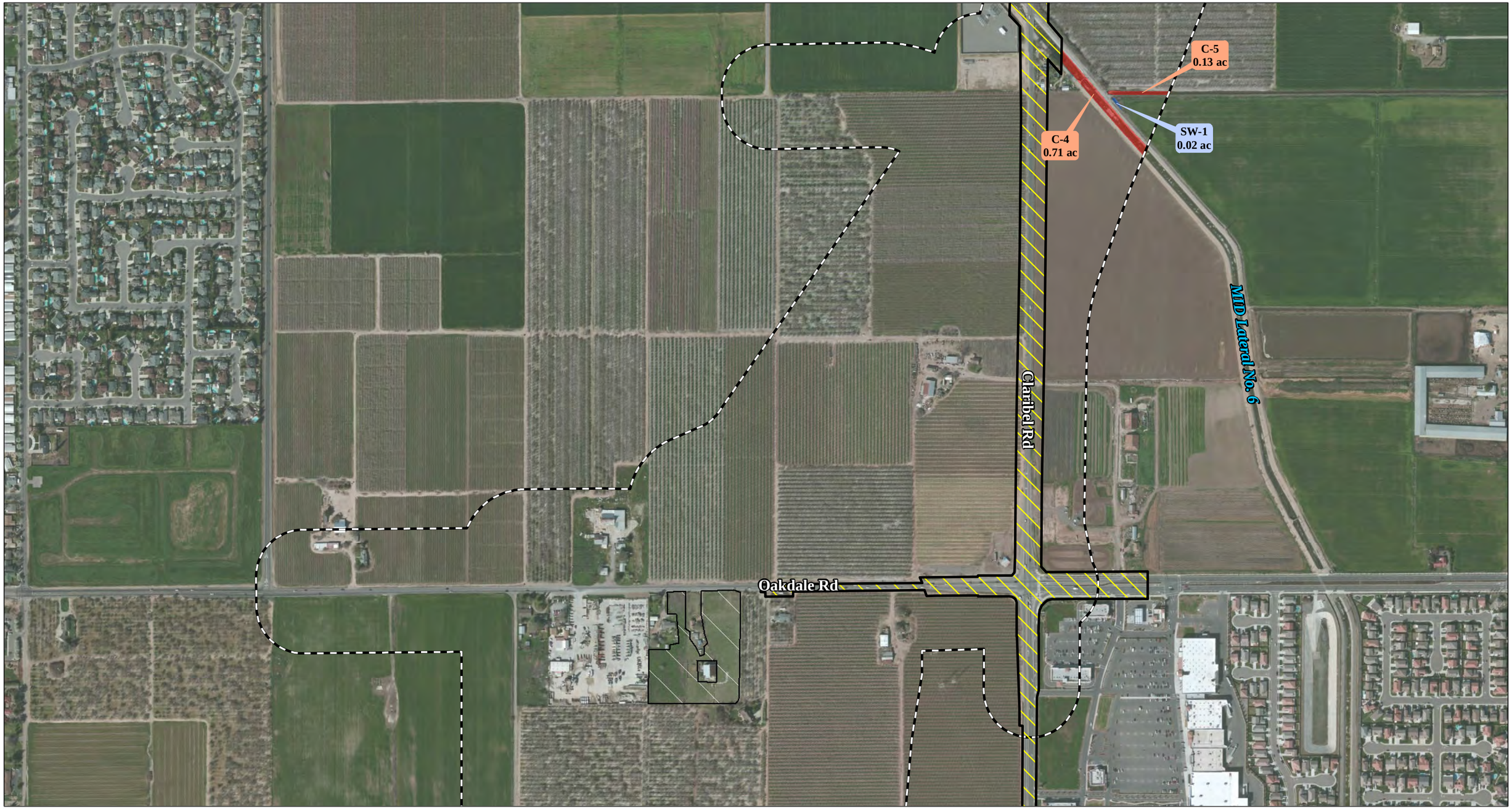

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LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

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- Photo Point

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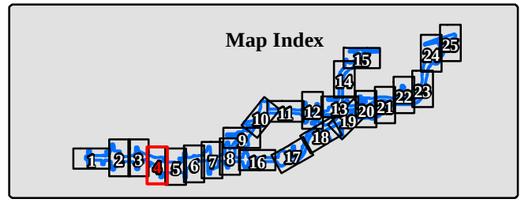

FIGURE A-4

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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LEGEND

- Study Area
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- SR-219 Widening Project
- Converted to Orchard
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IW - Irrigated Wetland

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Map Index

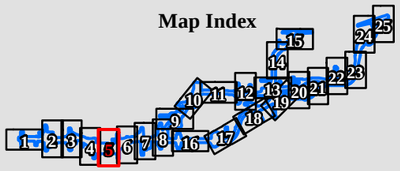

FIGURE A-5

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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LEGEND

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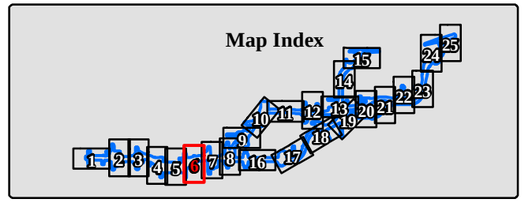

FIGURE A-6

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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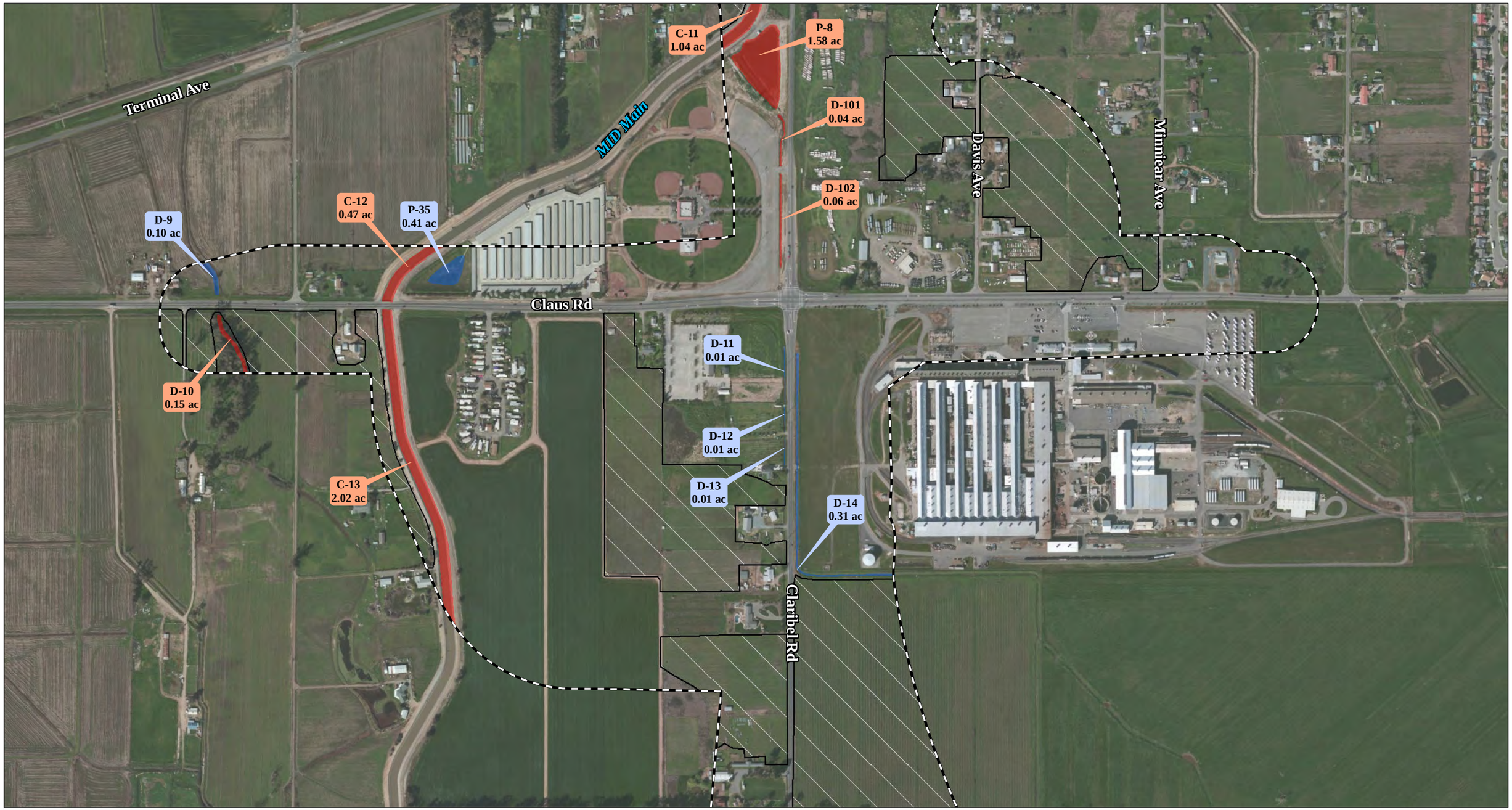

LEGEND

- Study Area
- Claribel Rd. Widening Project
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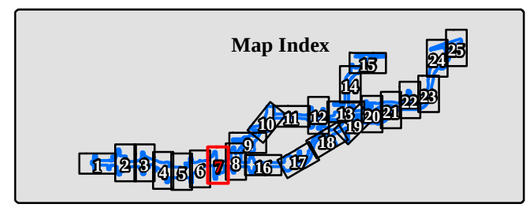

FIGURE A-7

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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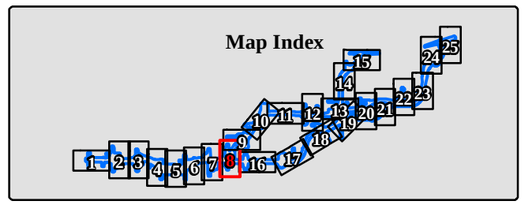

FIGURE A-8

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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LEGEND

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Map Index

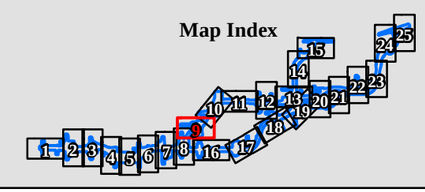

FIGURE A-9

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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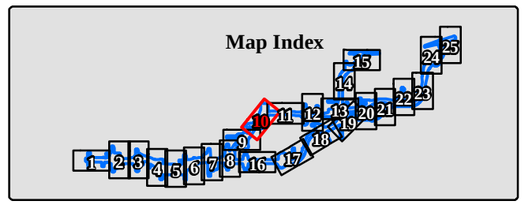

FIGURE A-10

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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LEGEND

- Study Area
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- SR-219 Widening Project
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Potential Jurisdictional Waters of the U.S. - (82.85 ac)

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D - Ditch
P - Pond
SW - Seasonal Wetland
PM - Perennial Marsh
IW - Irrigated Wetland

Map Index

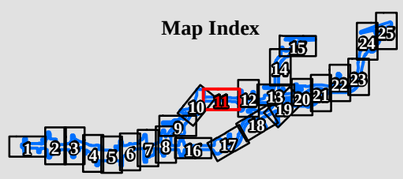

FIGURE A-11

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

- Non-Wetland Waters - (37.30 ac)
- Wetlands - (45.55 ac)
- Data Point
- Photo Point

Acronym Names

C - Canal
D - Ditch
P - Pond
SW - Seasonal Wetland
PM - Perennial Marsh
IW - Irrigated Wetland

0 250 500
FEET

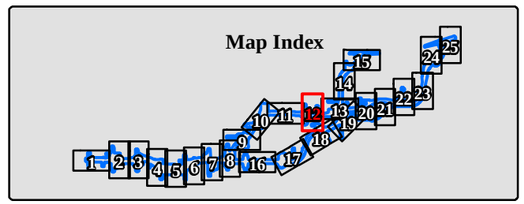

FIGURE A-12

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

- Non-Wetland Waters - (37.30 ac)
- Wetlands - (45.55 ac)
- Data Point
- Photo Point

Acronym Names

C - Canal
D - Ditch
P - Pond
SW - Seasonal Wetland
PM - Perennial Marsh
IW - Irrigated Wetland

0 250 500
FEET

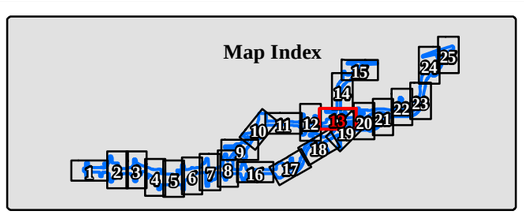

FIGURE A-13

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

- Non-Wetland Waters - (37.30 ac)
- Wetlands - (45.55 ac)
- Data Point
- Photo Point

Acronym Names

C - Canal
D - Ditch
P - Pond
SW - Seasonal Wetland
PM - Perennial Marsh
IW - Irrigated Wetland

0 250 500
FEET

Map Index

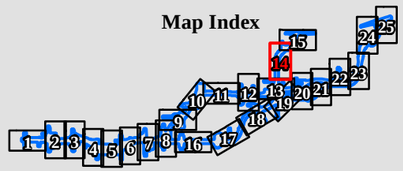

FIGURE A-14

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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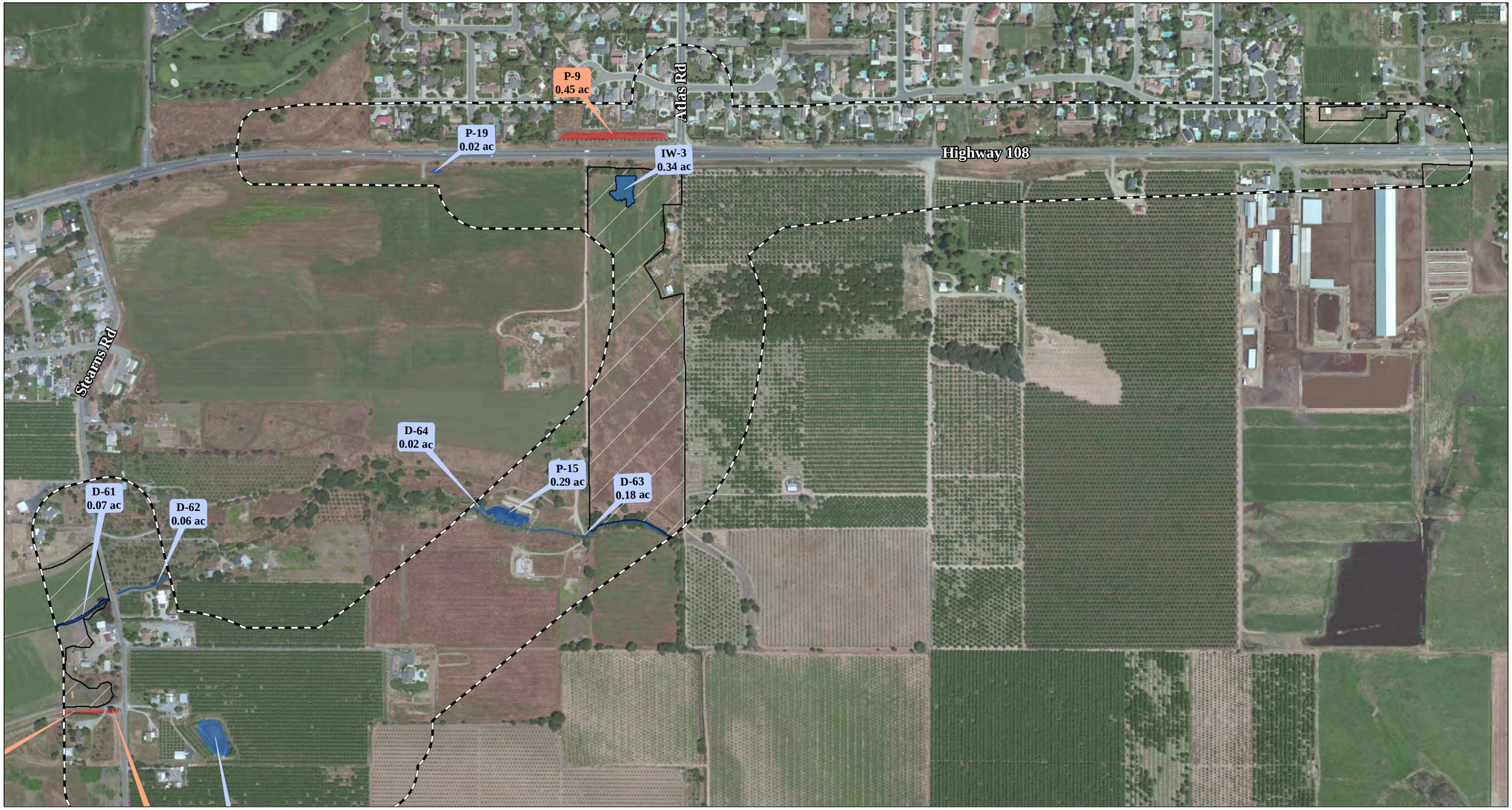

Caltrans

0 250 500
FEET

LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

- Non-Wetland Waters - (37.30 ac)
- Wetlands - (45.55 ac)
- Data Point
- Photo Point

Acronym Names

C - Canal
D - Ditch
P - Pond
SW - Seasonal Wetland
PM - Perennial Marsh
IW - Irrigated Wetland

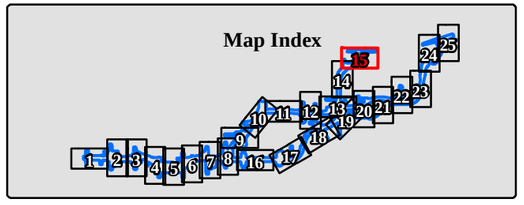

FIGURE A-15

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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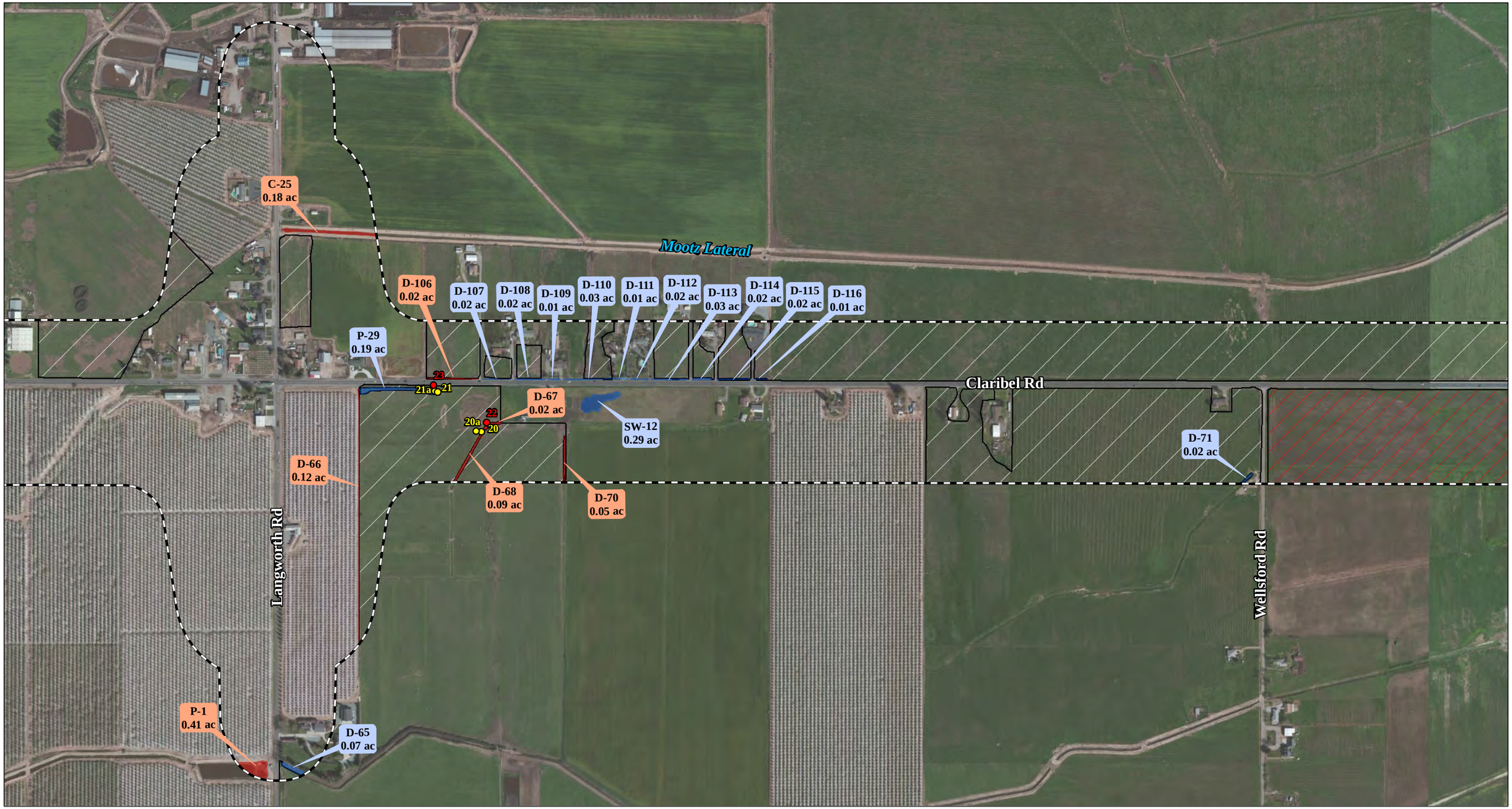

LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

- Non-Wetland Waters - (37.30 ac)
- Wetlands - (45.55 ac)
- Data Point
- Photo Point

Acronym Names

C - Canal
D - Ditch
P - Pond
SW - Seasonal Wetland
PM - Perennial Marsh
IW - Irrigated Wetland

0 250 500
FEET

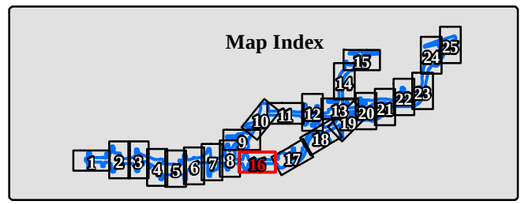

FIGURE A-16

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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Mootz Lateral
C-26
0.51 ac
D-23
0.23 ac
P-16
0.04 ac
D-72
0.20 ac
Bentley Rd
D-73
0.13 ac
D-74
0.08 ac
P-21
0.57 ac
27
D-75
0.08 ac
D-98
0.02 ac
Claribel Rd
D-77
0.30 ac
P-38
0.39 ac
P-10
1.40 ac
D-76
0.07 ac
Mootz Lateral
C-27
0.32 ac
Albers Rd

Caltrans

0 250 500
FEET

LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

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- Photo Point

Acronym Names

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Map Index

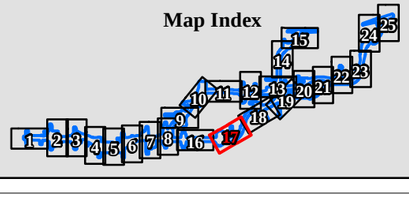

FIGURE A-17

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

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- Photo Point

Acronym Names

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0 250 500
FEET

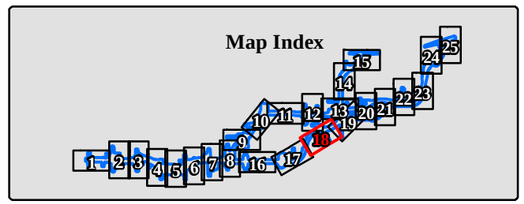

FIGURE A-18

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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Caltrans

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FEET

LEGEND

- Study Area
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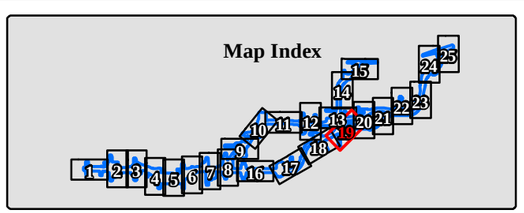

FIGURE A-19

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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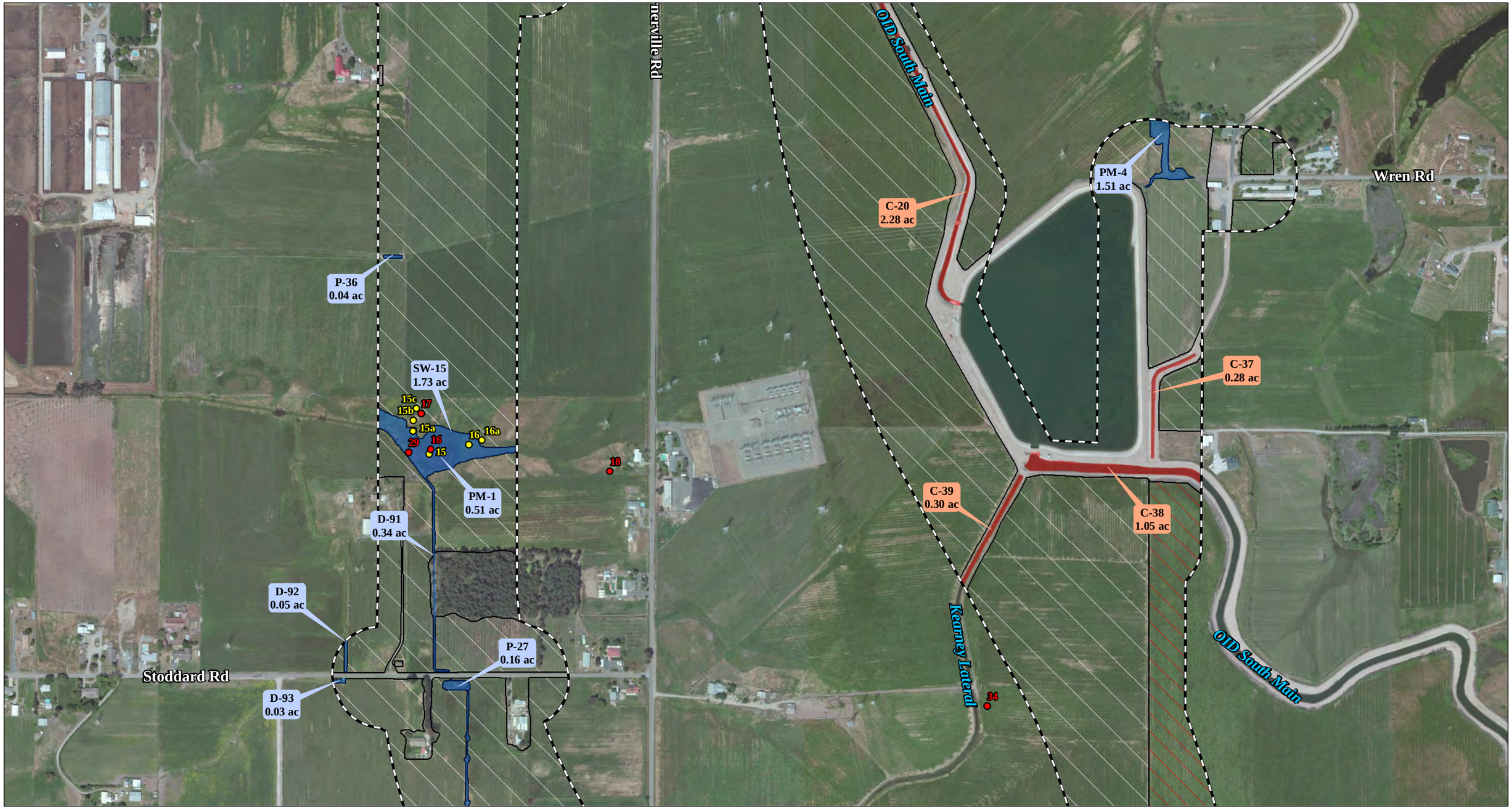

Caltrans

LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

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Acronym Names

C - Canal
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SW - Seasonal Wetland
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0 250 500
FEET

Map Index

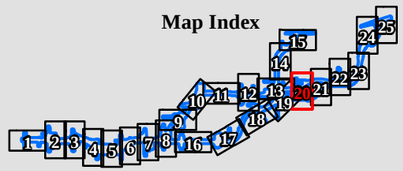

FIGURE A-20

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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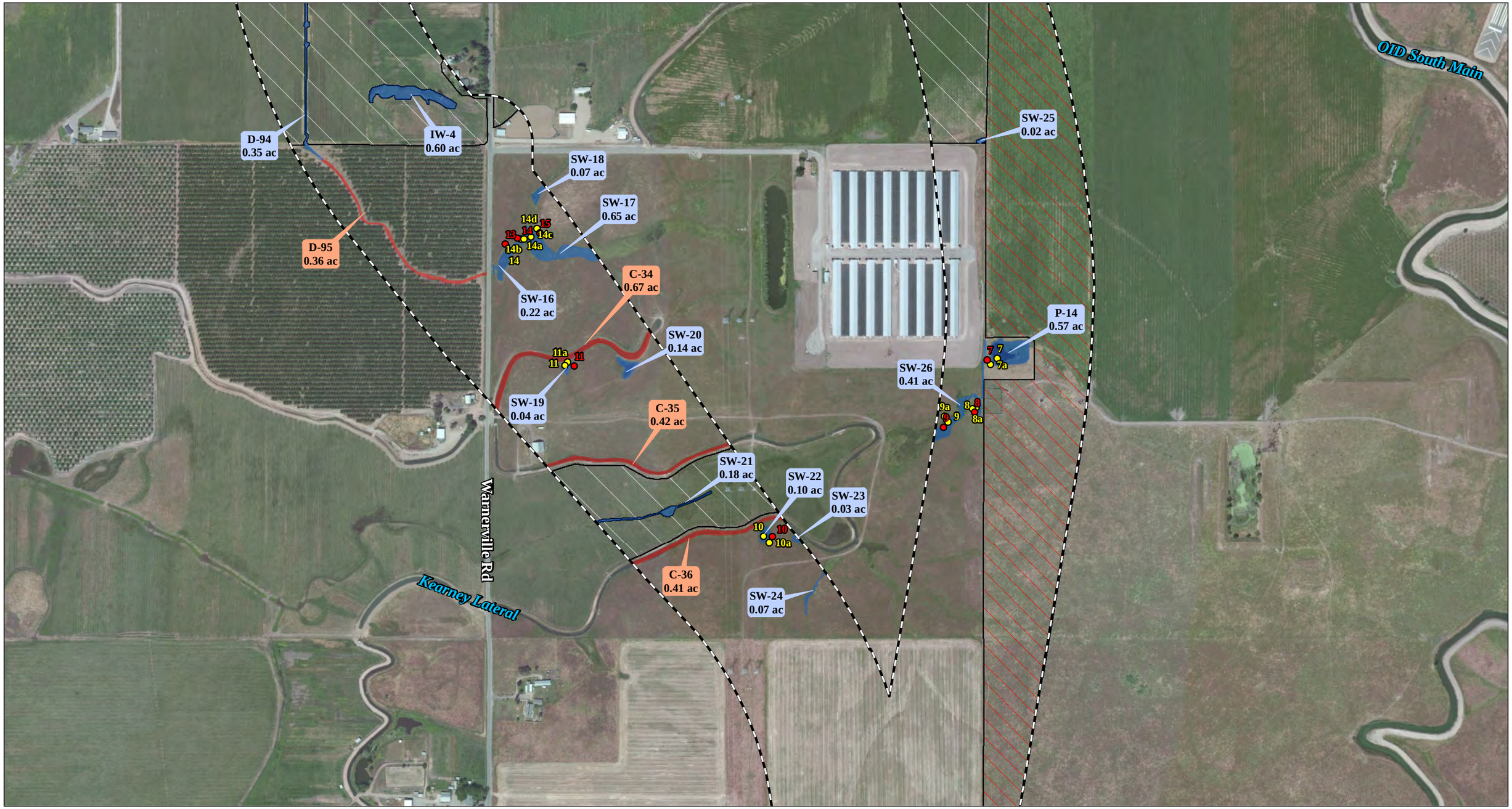

Caltrans

0 250 500
FEET

LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

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- Wetlands - (45.55 ac)
- Data Point
- Photo Point

Acronym Names

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Map Index

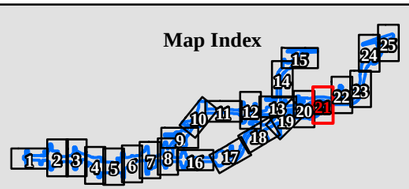

FIGURE A-21

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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Caltrans

LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

- Non-Wetland Waters - (37.30 ac)
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- Data Point
- Photo Point

Acronym Names

C - Canal
D - Ditch
P - Pond
SW - Seasonal Wetland
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0 250 500
FEET

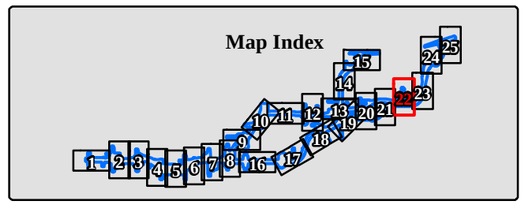

FIGURE A-22

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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Caltrans

LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

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- Data Point
- Photo Point

Acronym Names

C - Canal
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P - Pond
SW - Seasonal Wetland
PM - Perennial Marsh
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0 250 500
FEET

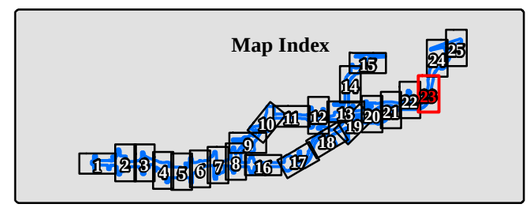

FIGURE A-23

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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FIGURE A-24

LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

- Non-Wetland Waters - (37.30 ac)
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- Data Point
- Photo Point

Acronym Names

C - Canal
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SW - Seasonal Wetland
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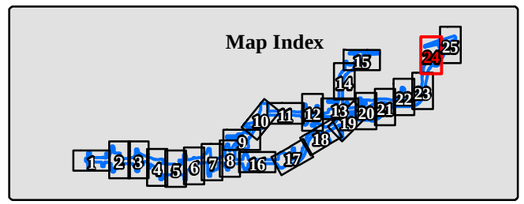
0 250 500
FEET



Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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LEGEND

- Study Area
- Claribel Rd. Widening Project
- SR-219 Widening Project
- Converted to Orchard
- Irrigated Pasture

Potential Jurisdictional Waters of the U.S. - (82.85 ac)

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P - Pond
SW - Seasonal Wetland
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0 250 500
FEET

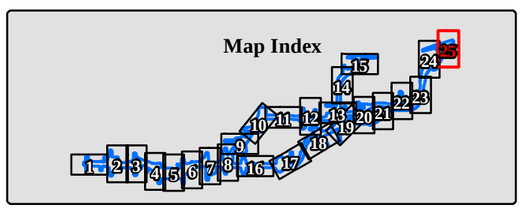

FIGURE A-25

Preliminary Jurisdictional Delineation

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014); ICF (2011)

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North County Corridor New State Route 108 - Potential Jurisdictional Waters			
Feature Class	Label	Area (ac)	Wetlands?
Canal	C-1	0.59	No
Canal	C-10	0.08	No
Canal	C-11	1.04	No
Canal	C-12	0.47	No
Canal	C-13	2.02	No
Canal	C-14	0.48	No
Canal	C-15	0.23	No
Canal	C-16	0.34	No
Canal	C-17	0.12	No
Canal	C-18	0.66	No
Canal	C-19	1.31	No
Canal	C-2	1.40	No
Canal	C-20	2.28	No
Canal	C-21	0.64	No
Canal	C-22	0.05	No
Canal	C-23	1.24	No
Canal	C-24	0.21	No
Canal	C-25	0.18	No
Canal	C-26	0.51	No
Canal	C-27	0.32	No
Canal	C-28	0.05	No
Canal	C-29	0.60	No
Canal	C-3	0.16	No
Canal	C-30	0.50	No
Canal	C-31	0.01	No
Canal	C-32	0.29	No
Canal	C-33	0.46	No
Canal	C-34	0.67	No
Canal	C-35	0.42	No
Canal	C-36	0.41	No
Canal	C-37	0.28	No
Canal	C-38	1.05	No
Canal	C-39	0.30	No
Canal	C-4	0.71	No
Canal	C-40	0.90	No
Canal	C-41	0.61	No
Canal	C-42	0.15	No
Canal	C-43	1.15	No
Canal	C-44	0.24	No
Canal	C-45	0.27	No
Canal	C-5	0.13	No
Canal	C-6	0.18	No
Canal	C-7	0.18	No
Canal	C-8	1.33	No

North County Corridor New State Route 108 - Potential Jurisdictional Waters			
Canal	C-9	1.49	No
Ditch	D-1	0.02	Yes
Ditch	D-10	0.15	No
Ditch	D-100	0.01	Yes
Ditch	D-101	0.04	No
Ditch	D-102	0.06	No
Ditch	D-103	0.02	No
Ditch	D-104	0.02	No
Ditch	D-105	0.06	No
Ditch	D-106	0.02	No
Ditch	D-107	0.02	Yes
Ditch	D-108	0.02	Yes
Ditch	D-109	0.01	Yes
Ditch	D-11	0.01	Yes
Ditch	D-110	0.03	Yes
Ditch	D-111	0.01	Yes
Ditch	D-112	0.02	Yes
Ditch	D-113	0.03	Yes
Ditch	D-114	0.02	Yes
Ditch	D-115	0.02	Yes
Ditch	D-116	0.01	Yes
Ditch	D-117	0.15	Yes
Ditch	D-12	0.00	Yes
Ditch	D-13	0.00	Yes
Ditch	D-14	0.31	Yes
Ditch	D-15	0.12	Yes
Ditch	D-16	0.01	Yes
Ditch	D-17	0.13	No
Ditch	D-18	0.46	No
Ditch	D-19	0.11	No
Ditch	D-2	0.02	Yes
Ditch	D-20	0.00	No
Ditch	D-21	0.08	Yes
Ditch	D-22	0.08	No
Ditch	D-23	0.23	Yes
Ditch	D-24	0.04	No
Ditch	D-25	0.09	No
Ditch	D-26	0.07	No
Ditch	D-27	0.16	Yes
Ditch	D-28	0.01	Yes
Ditch	D-29	0.06	No
Ditch	D-3	0.03	Yes
Ditch	D-30	0.09	No
Ditch	D-31	0.41	Yes
Ditch	D-32	0.33	Yes

North County Corridor New State Route 108 - Potential Jurisdictional Waters			
Ditch	D-33	0.21	Yes
Ditch	D-34	0.05	No
Ditch	D-35	0.01	No
Ditch	D-36	0.07	No
Ditch	D-37	0.06	Yes
Ditch	D-38	0.11	Yes
Ditch	D-39	0.04	Yes
Ditch	D-4	0.01	No
Ditch	D-40	0.13	No
Ditch	D-41	0.03	Yes
Ditch	D-42	0.02	No
Ditch	D-43	0.05	No
Ditch	D-44	0.05	No
Ditch	D-45	0.13	Yes
Ditch	D-46	0.09	Yes
Ditch	D-47	0.05	Yes
Ditch	D-48	0.06	Yes
Ditch	D-49	0.04	Yes
Ditch	D-5	0.37	Yes
Ditch	D-50	0.05	Yes
Ditch	D-51	0.10	Yes
Ditch	D-52	0.16	Yes
Ditch	D-53	0.09	Yes
Ditch	D-54	0.17	No
Ditch	D-55	0.20	No
Ditch	D-56	0.09	Yes
Ditch	D-57	0.04	No
Ditch	D-58	0.31	Yes
Ditch	D-59	0.05	No
Ditch	D-6	0.09	Yes
Ditch	D-60	0.02	No
Ditch	D-61	0.07	Yes
Ditch	D-62	0.06	Yes
Ditch	D-63	0.18	Yes
Ditch	D-64	0.02	Yes
Ditch	D-65	0.07	Yes
Ditch	D-66	0.12	No
Ditch	D-67	0.02	No
Ditch	D-68	0.09	No
Ditch	D-69	0.12	Yes
Ditch	D-7	0.27	Yes
Ditch	D-70	0.05	No
Ditch	D-71	0.02	Yes
Ditch	D-72	0.20	No
Ditch	D-73	0.13	Yes

North County Corridor New State Route 108 - Potential Jurisdictional Waters			
Ditch	D-74	0.08	Yes
Ditch	D-75	0.08	Yes
Ditch	D-76	0.06	No
Ditch	D-77	0.30	No
Ditch	D-78	0.32	Yes
Ditch	D-79	0.17	No
Ditch	D-8	0.11	Yes
Ditch	D-80	0.06	Yes
Ditch	D-81	0.04	Yes
Ditch	D-82	0.02	Yes
Ditch	D-83	0.08	No
Ditch	D-84	0.07	Yes
Ditch	D-85	0.07	Yes
Ditch	D-86	0.45	Yes
Ditch	D-87	0.48	No
Ditch	D-88	0.07	No
Ditch	D-89	0.04	No
Ditch	D-9	0.10	Yes
Ditch	D-90	0.26	No
Ditch	D-91	0.34	Yes
Ditch	D-92	0.05	Yes
Ditch	D-93	0.03	Yes
Ditch	D-94	0.35	Yes
Ditch	D-95	0.36	No
Ditch	D-96	0.07	No
Ditch	D-98	0.01	Yes
Ditch	D-99	0.00	Yes
Irrigated Wetland	IW-1	2.15	Yes
Irrigated Wetland	IW-2	0.08	Yes
Irrigated Wetland	IW-3	0.34	Yes
Irrigated Wetland	IW-4	0.60	Yes
Irrigated Wetland	IW-5	0.57	Yes
Pond/Basin	P-1	0.25	No
Pond/Basin	P-10	1.40	No
Pond/Basin	P-11	1.22	No
Pond/Basin	P-12	0.26	Yes
Pond/Basin	P-13	0.47	Yes
Pond/Basin	P-14	0.57	Yes
Pond/Basin	P-15	0.29	Yes
Pond/Basin	P-16	0.04	Yes
Pond/Basin	P-17	1.94	Yes
Pond/Basin	P-18	0.10	Yes
Pond/Basin	P-19	0.02	Yes
Pond/Basin	P-2	0.13	No
Pond/Basin	P-20	1.70	Yes

North County Corridor New State Route 108 - Potential Jurisdictional Waters			
Pond/Basin	P-21	0.57	Yes
Pond/Basin	P-22	0.03	Yes
Pond/Basin	P-23	0.17	Yes
Pond/Basin	P-24	0.05	Yes
Pond/Basin	P-25	0.62	Yes
Pond/Basin	P-26	1.17	Yes
Pond/Basin	P-27	0.16	Yes
Pond/Basin	P-28	0.17	Yes
Pond/Basin	P-29	0.19	Yes
Pond/Basin	P-3	0.01	No
Pond/Basin	P-30	0.12	No
Pond/Basin	P-31	0.03	Yes
Pond/Basin	P-32	0.05	Yes
Pond/Basin	P-33	0.10	Yes
Pond/Basin	P-34	0.07	Yes
Pond/Basin	P-35	0.41	Yes
Pond/Basin	P-36	0.04	Yes
Pond/Basin	P-37	0.50	Yes
Pond/Basin	P-38	0.39	Yes
Pond/Basin	P-4	0.05	No
Pond/Basin	P-5	0.17	No
Pond/Basin	P-6	0.18	No
Pond/Basin	P-7	0.28	No
Pond/Basin	P-8	1.58	No
Pond/Basin	P-9	0.45	No
Perennial Marsh	PM-1	0.51	Yes
Perennial Marsh	PM-10	2.18	Yes
Perennial Marsh	PM-11	0.27	Yes
Perennial Marsh	PM-12	0.12	Yes
Perennial Marsh	PM-13	0.05	Yes
Perennial Marsh	PM-14	0.07	Yes
Perennial Marsh	PM-2	0.86	Yes
Perennial Marsh	PM-3	0.22	Yes
Perennial Marsh	PM-4	1.51	Yes
Perennial Marsh	PM-5	0.08	Yes
Perennial Marsh	PM-6	3.10	Yes
Perennial Marsh	PM-7	2.44	Yes
Perennial Marsh	PM-8	2.30	Yes
Perennial Marsh	PM-9	0.42	Yes
Seasonal Wetland	SW-1	0.02	Yes
Seasonal Wetland	SW-10	0.02	Yes
Seasonal Wetland	SW-11	0.15	Yes
Seasonal Wetland	SW-12	0.29	Yes
Seasonal Wetland	SW-13	0.26	Yes
Seasonal Wetland	SW-14	0.79	Yes

North County Corridor New State Route 108 - Potential Jurisdictional Waters			
Seasonal Wetland	SW-15	1.73	Yes
Seasonal Wetland	SW-16	0.22	Yes
Seasonal Wetland	SW-17	0.65	Yes
Seasonal Wetland	SW-18	0.07	Yes
Seasonal Wetland	SW-19	0.04	Yes
Seasonal Wetland	SW-2	0.06	Yes
Seasonal Wetland	SW-20	0.14	Yes
Seasonal Wetland	SW-21	0.18	Yes
Seasonal Wetland	SW-22	0.10	Yes
Seasonal Wetland	SW-23	0.03	Yes
Seasonal Wetland	SW-24	0.07	Yes
Seasonal Wetland	SW-25	0.02	Yes
Seasonal Wetland	SW-26	0.41	Yes
Seasonal Wetland	SW-27	1.17	Yes
Seasonal Wetland	SW-28	1.65	Yes
Seasonal Wetland	SW-29	1.45	Yes
Seasonal Wetland	SW-3	0.14	Yes
Seasonal Wetland	SW-4	0.10	Yes
Seasonal Wetland	SW-5	0.01	Yes
Seasonal Wetland	SW-6	0.04	Yes
Seasonal Wetland	SW-7	0.09	Yes
Seasonal Wetland	SW-8	0.30	Yes
Seasonal Wetland	SW-9	0.04	Yes

Appendix B Wetland Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/12/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 1

Investigator(s): Mike Truebloud / Dayna Winchel Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Polygonum sp.	40	y	OBL
2. Geranium dissectum	10	n	UPL
3. Hordeum marinum	20	n	Fac
4. Rumex acetosella	40	y	FacU
5.			
6.			
7.			
8.			
Total Cover: 110			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	40	x 1 = 40
FACW species		x 2 =
FAC species	20	x 3 = 60
FACU species	40	x 4 = 160
UPL species	10	x 5 = 50
Column Totals:	110 (A)	(B)

Prevalence Index = B/A = 2.8

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8"	7.5YR: 2/2	100						Silty loam
9-15"	7.5YR: 3/1	100						Silty clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- X Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): —

Water Table Present? Yes ___ No X Depth (inches): 7.5"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 7.5"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/12/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 1a

Investigator(s): Mike Truebloud/Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Upland point

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			

Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			

Herb Stratum			
1. Hordeum x Murinum ? leporinum	80	y	FACU
2. Centaurea solstitialis	10	n	UPL
3. Rumex acetosella	10	n	UPL
4. Amsinckia menziesii	4	n	UPL
5. Capsella bursa-pastoris	1	n	FACU
6.			
7.			
8.			
Total Cover: 105			

Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	7.5 YR 2/2	100						Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): 7/12"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): 7/12"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/12/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 2.

Investigator(s): Mike Truebloodd, Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____
Hydric Soil Present?	Yes X	No _____
Wetland Hydrology Present?	Yes X	No _____

Is the Sampled Area within a Wetland? Yes X No _____

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Glyceria declinata	40	Y	FACW
2. Polygynum sp.	50	Y	FACW
3. Lactuca serriola	10	n	FACU
4.			
5.			
6.			
7.			
8.			
Total Cover: 100			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4"	10YR 3/1	100						clayloam
5-10"	10YR 3/2	95	7.5YR 3/4	5	C	M		clayloam
10-15"	7.5YR 3/3	100						clayloam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Concretions also observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): –

Water Table Present? Yes ___ No ✓ Depth (inches): 7.5"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): 7.5"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/12/14
Applicant/Owner: Stanislaus County State: CA Sampling Point: 2a
Investigator(s): Mike Truebloodd/Daphne Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Rumex acetosella	10	n	FACU
2. Glyceria declinata	15	n	FACW
3. Rumex crispus	30	y	FAC
4. Rumex sp.	50	y	FAC
5.			
6.			
7.			
8.			
Total Cover: 105			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
Rumex sp. assumed FAC species due to presence in wet area only

SOIL

Sampling Point: 2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	10 YR 3/1	100%						Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): –

Water Table Present? Yes _____ No X Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): >12"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/12/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 2b

Investigator(s): Mike Truebloud/Daysha Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Rumex crispus	50	Y	FAC
2. Rumex sp.	30	Y	Fac
3. Glyceria ~~sp.~~ declinata	15	N	FACW
4. Rumex acetosella	10	N	FACU
5.			
6.			
7.			
8.			
Total Cover: 105			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Rumex sp. assumed FAC species due to presence in wet area only

SOIL

Sampling Point: 2b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	7.5YR 3/1	100%						Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/12/14
Applicant/Owner: Stanislaus County State: CA Sampling Point: 3
Investigator(s): Mike Trueblood/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil ✓, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Disced basin

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. unidentified annual grass	55	Yes	–
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	55		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
Total Number of Dominant Species Across All Strata: _____ (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
__ Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks: Vegetation criteria not used. Basin recently disced, vegetation not identifiable.

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100	—	—	—	—		Coarse sandy loam - Disced
8-11	10YR 3/2	95	7.5YR 4/4	5	C	M		Coarse sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

Soil disced Top 8 inches

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): 7.11"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): 7.11"

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/12/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 4

Investigator(s): Mike Trueblood Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes _____	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Centaurea solstitialis	5	no	UPL
2. unknown annual grass	10	no	—
3. Juncus effusus	40	yes	FACW
4. Cyperus eragrostis	5	no	FACW
5. Polygonum sp.	10	no	FACW
6. Eleocharis macrostachya	5	no	OBL
7. Ranunculus sp	55	yes	OBL
8.			
Total Cover: 130			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5YR 2.5/1	80	2.5YR 5/6	10	C	M		Sandy loam
			5YR 5/8	10	C	M		Sandy loam
10"	—	—						hard claypan

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

claypan @ 10 inches

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): 7-10"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): 7-10"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

matted vegetation from water. obvious swale feature.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/12

Applicant/Owner: Stanislaus County State: CA Sampling Point: ~~1B~~ 4a

Investigator(s): Mike Truebloud/Dayna Windrich Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes _____	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. rumex sp	20	Yes	FAC
2. Juncus effusus	50	yes	Obl
3. Unknown grass	40	yes	
4. Dodecatheon sp	5	no	FACW
5. Trifolium hirtum	1	no	UPL
6. Bromus hordeaceus	1	no	FACU
7.			
8.			
Total Cover: 117			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Unknown annual grassland present, however other indicator show wetland

SOIL

Sampling Point: 4a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8"	7.5YR 3/3	93	5YR 4/6	7	C	M		Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

hardpan at 8 inches

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >8"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >8"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

matted vegetation, obvious swale feature

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/12

Applicant/Owner: Stanislaus County State: CA Sampling Point: 4b

Investigator(s): Mike Truebloud Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: Upland data point

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Unknown grass	90	y	UPL
2. Holocarpha virgata	15	n	UPL
3. Erodium sp.	2	n	UPL
4. Bromus hordeaceus	20	n	FACU
5. Amsinkia menziesii	15	n	UPL
6.			
7.			
8.			
Total Cover: 132			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 46

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8"	7.5YR 2.5/3	100						cobbly loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >8"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >8"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/12/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 5

Investigator(s): Mike Truebloud/Dayna Mitchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _	
Wetland Hydrology Present?	Yes X	No _	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Unknown grass	40	y	Fac
2. Paspalum dilatatum	45	y	FAC
3. Trifolium hirtum	30	n	UPL
4. Juncus tenuis	15	n	FACW
5.			
6.			
7.			
8.			
Total Cover: 130			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Unknown annual grass heavily grazed. Assumed facultative since it is only present in the swale depression.

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9"	10YR 2/2	95	5YR 3/4	5	C	M		Silty loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): –

Water Table Present? Yes ___ No ✓ Depth (inches): >9"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >9"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: matted vegetation from recent water. obvious shale feature.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/12/14
Applicant/Owner: Stanislaus County State: CA Sampling Point: 6
Investigator(s): Mike Trueblood/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. unknown grass	30	yes	FAC
2. trifolium hirtum	30	yes	UPL
3. Juncus tenuis	20	yes	FACW
4. Ranunculus sp.	20	yes	FACW
5.			
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 2/1	97	5YR 3/4	3	C	M		loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Evidence of water, abrupt vegetation type edge and matted vegetation
Obvious swale feature.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/13/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 7

Investigator(s): Mike Truebloodt/Dalyna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1 Nasturtium officinale	40	Y	OBL
2. Typha latifolia	70	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover: 110			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	7.5 YR 2.5/1	90	2.5 YR 2.5/4	10	C	M		Clayloam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): —

Water Table Present? Yes ___ No X Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): >12"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/13/2014
Applicant/Owner: Stanislaus County State: CA Sampling Point: 7a
Investigator(s): Mike Truebloud/Dayna Wonchen Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: Upland data point

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. [redacted]			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Hordeum murinum Hyperidum	50%	Yes	UPL
2. Amsinkia menziesii	10%	No	UPL
3. Erodium sp.	20%	Yes	UPL
4. Centaurea solstitialis	5%	No	UPL
5. Avena sativa	5%	No	UPL
6.			
7.			
8.			
Total Cover: 90%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 10% % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
__ Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 7a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	7.5YR 3/3	100%						Cobbly silty clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/13/2014
Applicant/Owner: Stanislaus County State: CA Sampling Point: 8
Investigator(s): Mike Truebloud/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Juncus effusus	20%	Yes	OBL
2. Eleocharis macrostachya	60%	Yes	OBL
3. Lythrum hyssopifolia	10%	No	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover: 90%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 10% % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
1 - 10"	7.5YR 3/2	90%	5YR 3/4	10%	C	M		Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): –

Water Table Present? Yes ___ No ✓ Depth (inches): 7-10"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): 7-10"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/13/2014

Applicant/Owner: Stanislaus County State: CA Sampling Point: 8a

Investigator(s): Mike Trueblood/Dayna Dinchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: Upland data point

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Centaurea solstitialis	10%	No	UPL
2. Erodium sp.	30%	Yes	UPL
3. Hordeum murinum leporinum	40%	Yes	UPL
4. Brassica nigra	2%	No	UPL
5. Holocarpa virgata	10%	No	UPL
6.			
7.			
8.			
Total Cover: 92%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 8% % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 8a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10"	10YR 3/2	95%	7.5YR 5/8	5%	C	M		clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >10"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >10"

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/13/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 9

Investigator(s): Mike Truebloud/Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Juncus effusus	50	y	FACW
2. Unknown annual grass	50	y	FAC
3. Erodium botrys	2	n	UPL
4. Lythrum hyssopifolium	2	n	FACW
5. Conyza Canadensis	2	n	FACU
6.			
7.			
8.			
Total Cover: 104			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Unknown annual grass assumed Facultative since it only occurs in the shale area.

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-7"	10YR 2/2	95	5YR 4/6	5	C	M		clayloam
7-11"	10YR 3/2	80	5YR 4/6	20	C	M		loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >11"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >11"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/12
Applicant/Owner: Stanislaus County State: CA Sampling Point: 9a
Investigator(s): Mike Truebloud/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: Upland data point

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Holocarpha virgata	10	n	UPL
2. Erodium botrys	50	n	UPL
3. unknown annual grass	60	y	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover: 120			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: 9a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10"	10YR 3/2	95	7.5YR 5/8	5	C	M		clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): –

Water Table Present? Yes ___ No X Depth (inches): 7-10"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 7-10"

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/13/2014

Applicant/Owner: Stanislaus County State: CA Sampling Point: 10

Investigator(s): Mike Truebloodd/Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Eryngium sp.	20%	Yes	FACW
2. Fraxinus bothrys	1%	No	UPL
3. Eleocharis macrostacha	5%	No	OBL
4. Eleocharis acicularis	20%	Yes	OBL
5. Plagiobothrys sp.	5%	No	FACW
6. Lasthenia glabrata	50%	Yes	OBL
7.			
8.			
Total Cover:	96%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 4% % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 3/2	95%	5YR 4/6	5%	C	M		Loamy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): –

Water Table Present? Yes ___ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/12/2014
Applicant/Owner: Stanislaus County State: CA Sampling Point: 10s
Investigator(s): Mike Trueblood/Dalna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: upland data point

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Helocarpha virgata	20%	Yes	UPL
2. Erodium botrys	30%	Yes	UPL
3. Bromus diandrus	50%	Yes	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover: 100%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 10a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9"	7.5YR3/4	90%	5YR 4/6	10%	C	M		Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >9"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): 7.9"

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/13/14
Applicant/Owner: Stanislaus County State: CA Sampling Point: 11
Investigator(s): Mike Truebloodl/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Plagiobothrys sp.	20	y	FACW
2. unknow annual grass	20	y	Fac
3. Erodium botrys	5	n	UPL
4. Deschampsia danthonioides	10	n	FACW
5. Lasthenia glabemma	50	y	Obl
6.			
7.			
8.			
Total Cover: 105			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
Unknown annual grass assumed facultative since it only occurs in the depression.
Heavily grazed vegetation.

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/1	80	2.5YR 2.5/4	20	C	M		Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): —

Water Table Present? Yes ___ No X Depth (inches): 7½"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 7½"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/13/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 11a

Investigator(s): Mike Trueblood & Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Upland datapoint

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus diandrus	20	y	UPL
2. Bromus hordeaceus	20	y	FACU
3. Erodium sp.	40	y	UPL
4. Holocarpha virgata	10	n	UPL
5. Leontodon taraxacoides	5	n	UPL
6.			
7.			
8.			
Total Cover: 95			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: 11a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10"	10 YR 3/3	100	—		—	—		sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >10"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >10"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/13/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 12

Investigator(s): Mike Truebloud/Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Typha latifolia	50	Y	Obl
2. polygonum sp.	30	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	80		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	10 YR 2/1	100						loamy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks:

no redox concentrations identified due to heavy cattle tramplin g. Disturbed soil, strong hydrology indicators strongly suggest hydric soil

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 3 inches

Water Table Present? Yes X No ___ Depth (inches): surface

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/13/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 12a

Investigator(s): Mike Truebloot/Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Upland point

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Centaurea Solstitialis	5	n	UPL
2. Festuca perennis	60	y	FACU
3. Erodium sp	10	n	UPL
4. Malva parviflora	5	n	UPL
5. Cynodon dactylon	5	n	UPL
6.			
7.			
8.			
Total Cover:	85		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: 12a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9"	5YR 4/4	100						loamy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >9"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >9"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/14/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 13

Investigator(s): Mike Truebloud/Dana Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: Irrigated pasture, wetlands present due to irrigation only.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Matricaria discoidea	15	y	FACU
2. Rumex sp.	2	n	Fac
3. Plantago lanceolata	2	n	Fac
4. Eleocharis sp.	30	y	Obl
5. Nasturtium officinale	15	y	Obl
6. Callitriche sp	15	y	Obl
7.			
8.			
Total Cover: 79			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 21 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-13"	10YR 4/1	80	5YR 3/4	20	C	M		Loamy Clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 7in

Water Table Present? Yes X No / Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 3/13/14
Applicant/Owner: Stanislaus County State: CA Sampling Point: 13A
Investigator(s): Mike Truebloud/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Vegetation was chewed down by cattle. Higher spot in irrigated pasture.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Matricaria discoidea	40	Yes	FACU
2. Unknown grass	65	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover: 105			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:
In the middle of pasture, all plants were chewed down

SOIL

Sampling Point: 13a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10"	5YR 4/4	100						loamy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): –

Water Table Present? Yes ___ No X Depth (inches): >10"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): >10"

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Irrigated pasture

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/15/2014
Applicant/Owner: Stanislaus County State: CA Sampling Point: 14
Investigator(s): Mike Truebloot/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Eleocharis macrostachya	80%	Yes	OBL
2. Juncus effusus	20%	Yes	OBL
3. Glyceria declinata	7%	No	OBL
4. Rumex crispus	1%	No	FAC
5. Mimulus guttatus	1%	No	OBL
6.			
7.			
8.			
Total Cover: 109%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-13"	10YR 3/1	88%	2.5YR 2.5/4	12%	C	M		Clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >13"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >13"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/15/2014

Applicant/Owner: Stanislaus County State: CA Sampling Point: 14a

Investigator(s): Mike Truebloodt/Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Eleocharis macrostachya	75%	Yes	OBL
2. Glyceria declinata	20%	Yes	OBL
3. Juncus effusus	5%	No	OBL
4. Ranunculus sp.	1%	No	FACW
5.			
6.			
7.			
8.			
Total Cover: 101			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 14a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR3/1	90%	2.5YR2.5/4	10%	C	M		Clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/15/2014

Applicant/Owner: Stanislaus County State: CA Sampling Point: 14b

Investigator(s): Mike Truebloodf Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Trifolium hirtum	55%	Yes	UPL
2. Juncus bufonius	1%	No	FACW
3. Festuca perenne	5%	No	FACU
4. Bromus hordeaceus	3%	No	FACU
5. Eleocharis macrostachya	30%	Yes	OBL
6. Ranunculus sp.	5%	No	FACW
7. Lymus triticoides	2%	No	FAC
8. Heracleum maximum var. gussoneanum	1%	No	FAC
Total Cover: 102%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	30	x 1 = 30
FACW species	6	x 2 = 12
FAC species	3	x 3 = 9
FACU species	8	x 4 = 32
UPL species	55	x 5 = 275
Column Totals:	102 (A)	358 (B)

Prevalence Index = B/A = 3.5

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 14b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5"	7.5YR 2.5/1	100%	—	—	—			Silty Loam Large Rocks
5-8"	10YR 4/1	85%	5YR 3/4	15%	C	M		Silty Sand large Rock

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ✓ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks: Appears to be old fill material. Large rock backfilled with sand. Top layer is new organic soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >8"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >8"

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Small berm. Water sheet flows over area. Likely flows through well drained sand.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/15/2014
Applicant/Owner: Stanislaus County State: CA Sampling Point: 14c
Investigator(s): Mike Truebloodt/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____
Hydric Soil Present?	Yes ✓	No _____
Wetland Hydrology Present?	Yes ✓	No _____

Is the Sampled Area within a Wetland? Yes ✓ No _____

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Eleocharis macrostachya	85%	Yes	OBL
2. Glyceria declinata	5%	No	OBL
3.			
4. Juncus effusus	15%	No	OBL
5. Nasturtium officinale	5%	No	OBL
6.			
7.			
8.			
Total Cover: 110%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 14c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14"	10YR 3/1	80%	2.5YR 2.5/4	20%	C	M, RC		Clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): –

Water Table Present? Yes ___ No ✓ Depth (inches): 7/14"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/15/2014
Applicant/Owner: Stanislaus County State: CA Sampling Point: 14d
Investigator(s): Mike Trueblood/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: Upland data point

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Hordeum marinum var. gussoneanum	15	No	FAC
2. Erodium botrys	20	Yes	UPL
3. Bromus hordeaceus	25	Yes	FACU
4. Amsinkia menziesii	10	No	UPL
5. Hordeum murinum leporinum	10	No	FACU
6.			
7.			
8.			
Total Cover:	85		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 14d

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8"	7.5YR 3/4	90	2.5YR 3/6	10	C	M		loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Concretions present in soil

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >8"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >8"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/15/14
Applicant/Owner: Stanislaus County State: CA Sampling Point: 15
Investigator(s): Mike Truebloodt/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Typha latifolia	70	y	OBL
2. Juncus sp.	10	n	FACW
3. Artemesia douglasiana	25	n	FACW
4. Leymus triticoides	50	y	UPL
5 Nasturtium officinale	45	n	Obl
6.			
7.			
8.			
Total Cover: 200			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	115	x 1 = 115
FACW species	35	x 2 = 70
FAC species		x 3 =
FACU species		x 4 =
UPL species	50	x 5 = 200
Column Totals:	200 (A)	385 (B)

Prevalence Index = B/A = 1.92

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14"	10YR 3/1	100						Clay - mucky

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks: Soils too wet for positive redox identification. However, adjacent more seasonal areas show redox. Assume redox is present but too wet to identify

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 1-3"

Water Table Present? Yes ✓ No ___ Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/15/2014
Applicant/Owner: Stanislaus County State: CA Sampling Point: 15a
Investigator(s): Mike Truebloood/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____
Hydric Soil Present?	Yes X	No _____
Wetland Hydrology Present?	Yes X	No _____

Is the Sampled Area within a Wetland? Yes X No _____

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Trifolium hirtum	5	No	UPL
2. Mimulus guttatus	7	No	OBL
3. Rumex crispus	15	No	FAC
4. Glyceria declinata	30	Yes	OBL
5. Festuca perennis	30	Yes	FACU
6. Plantago lanceolata	10	No	FACU
7. Bromus hordeaceus	5	No	FACU
8.			
Total Cover:	102		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	37	x 1 =	37
FACW species		x 2 =	
FAC species	15	x 3 =	45
FACU species	45	x 4 =	180
UPL species	5	x 5 =	25
Column Totals:	102 (A)		287 (B)

Prevalence Index = B/A = 2.8

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 15a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10"	10YR 3/1	90	7.5YR 5/6	10	C	M		Sandy Clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 2"

Water Table Present? Yes X No ___ Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Field under current irrigation. False positive hydrology indicator for surface water. however, aerial imagery and obvious flow patterns were observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/15/14
Applicant/Owner: Stanislaus County State: CA Sampling Point: 15b
Investigator(s): Mike Trueblood/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: upland hillock

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. hordium murinum leporidum	60	y	UPL
2. hordium marinum sussecreanum	20	n	FAC
3. bromus hordeaceus	15	n	FACU
4. Trifolium hirtum	30	y	UPL
5. Rumex crispus ca	2	n	FAC
6.			
7.			
8.			
Total Cover: 127			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: 15b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4"	10YR 3/2	97	7.5YR 5/6	3	C	M		Sandy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

Very hard soil, not very deep

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): —

Water Table Present? Yes ___ No X Depth (inches): 74"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 74"

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/15/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 15C

Investigator(s): Mike Truebloot/Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
area was irrigated yesterday, water still flowing

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	60	Yes	FACU
2. Trifolium hirtum	55	Yes	UPL
3. Eleocharis macrostachya	2	n	Obl
4.			
5.			
6.			
7.			
8.			
Total Cover: 117			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: 15C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 3/1	97	5YR 4/6	3	C	M		Sandy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 1"

Water Table Present? Yes X No ___ Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Irrigation activities ongoing during data collection. Fair positive inundation indicator. However, aerial imagery and slow patches were observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/15/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 16

Investigator(s): Mike Truebloot/Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

recent irrigation, area still inundated.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Trifolium hirtum	2	n	UPL
2. Glyceria declinata	60	y	OBL
3 Leymus triticoides	50	y	FAC
4. Eleocharis macrostachya	5	n	OBL
5. Rumex crispus	20	n	FAC
6.			
7.			
8.			
Total Cover: 137			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14"	10YR 3/1	100						Sandy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

Soil too wet to find redox indicator. However, several other data points were collected in the area that support redox concentrations. Assumed redox dark surface satisfied for this location.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 1-4"

Water Table Present? Yes X No ___ Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Irrigation activities ongoing and currently inundated. False positive surface water indicator. However, aerial imagery and flow patterns were observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/15/2014
Applicant/Owner: Stanislaus County State: CA Sampling Point: 16a
Investigator(s): Mike Truebloood/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes Y No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: upland data point

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Hordeum murinum leporinum	40	Yes	UPL
2. Festuca perennis	40	Yes	FACU
3. Bromus hordeaceus	10	No	FACU
4. Trifolium hirtum	10	No	UPL
5. Erodium botrys	5	No	UPL
6.			
7.			
8.			
Total Cover: 105			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: 16a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9"	10YR3/2	100	—	—	—			Sandy loamy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): —

Water Table Present? Yes _____ No X Depth (inches): 79"

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): 79"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/16
Applicant/Owner: Stanislaus County State: CA Sampling Point: 17
Investigator(s): Mike Truebloodt/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	10%	Yes	FACW
2. Populus fremontii	5%	No	FACW
3.			
4.			
Total Cover: 15			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	40	Yes	FACW
2. Spergularia rubra	35	Yes	FAC
3. Vicia villosa	5	No	UPL
4. Rumex crispus	2	No	FAC
5. Lythrum hyssopifolia	3	No	FACW
6.			
7.			
8.			
Total Cover: 82			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6"	7.5YR 3/2	95	5YR 5/6	5	C	M		loamy sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): –

Water Table Present? Yes ___ No X Depth (inches): 76"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 76"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/16/14
Applicant/Owner: Stanislaus County State: CA Sampling Point: 17A
Investigator(s): Mike Trueblood/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Upland data point

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus diandrus	35	Yes	UPL
2 Erodium botrys	45	Yes	UPL
3. Vicia villosa	20	Yes	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover: 100			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: 17a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-7"	7.5YR 3/2	100						loamy sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): —

Water Table Present? Yes ___ No X Depth (inches): 77"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 77"

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/16/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 18

Investigator(s): Mike Truebloodt/Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus hordeaceus	5	No	FACU
2. Glyceria declinata	40	Yes	OBL
3. Polygonum sp.	45	Yes	FACW
4. unknown rhizomatous vine	5	No	–
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8"	10YR 4/2	95	5YR 4/6	5	C	M		Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): —

Water Table Present? Yes ___ No X Depth (inches): 78"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 78"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/16/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 19

Investigator(s): Mike Trueblood/Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. hordium marinum	10	n	FAC
2. glyceria declinata	20	n	Obl
3. Nasturtium officinale	100	y	Obl
4.			
5.			
6.			
7.			
8.			
Total Cover: 130			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-13"	10YR 3/1	100						Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

Inundated soils. unable to identify redox. would likely be identifiable in drier soils
Assumed soil hydric indicator met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 0-3'

Water Table Present? Yes X No ___ Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/22/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 20

Investigator(s): Mike Trueblood / Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Irrigation ditch not currently in use.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Glyceria declinata	60	y	FACW
2. Bromus hordeaceus	5	n	FACU
3. Deschampsia danthonoides	50	y	FACW
4. Cyperus eragrostis	5	n	FACW
5.			
6.			
7.			
8.			
Total Cover: 120			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10"	7.5YR 4/2	85	5YR 4/6	15	C	M		Sandy loam
10-13"	7.5YR 4/2	85	5YR 4/6	15	C	M		Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): –

Water Table Present? Yes ___ No X Depth (inches): >13"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): >13"

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Irrigation ditch that is no longer being used

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/22/14
Applicant/Owner: Stanislaus County State: CA Sampling Point: 20A
Investigator(s): Mike Truebloodd/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Upland data point in irrigated pasture.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. cynodon dactylon	45	y	FAC
2. Trifolium hirtum	35	n	UPL
3. Bromus hordeaceus	10	n	FACU
4. Plantago lanceolata	5	n	FACU
5. Atriplex sp	2	n	UPL
6. hordeum murinum leperidum	5	n	UPL
7. Deschampsia danthonoides	55	y	FACW
8.			
Total Cover: 175			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 20A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	7.5YR 3/4	100						sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): –

Water Table Present? Yes ____ No X Depth (inches): 7-12"

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): 7-12"

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/22/14
Applicant/Owner: Stanislaus County State: CA Sampling Point: 21
Investigator(s): Mike Truebloud/Dayna Winchell Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Brassica nigra	15	n	UPL
2. Ranunculus sp.	10	n	FACW
3. Trifolium hirtum	10	n	UPL
4. Bromus hordeaceus	15	n	FACU
5. Glyceria declinata	40	y	FACW
6. Cyperus eragrostis	5	n	FACW
7. Lepidium sp	2	n	–
8.			
Total Cover:	107		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8"	7.5 4/3	100						Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

too wet for soil indicators soil was collected in inundated area.
redox expected in drier conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 12 in

Water Table Present? Yes X No ___ Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/22/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 21A

Investigator(s): Mike Trueblood/Daysha Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Upland data point.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Hordeum murinum leporidum	100	Y	UPL
2. Brassica nigra	15	N	UPL
3. erodium botrys	40	Y	UPL
4. malva parviflora	10	N	UPL
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: 2HA

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3"	7.5 YR 3/4	100						Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Very hard soil

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): –

Water Table Present? Yes _____ No X Depth (inches): >3"

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): >3"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 4/22/14

Applicant/Owner: Stanislaus County State: CA Sampling Point: 22

Investigator(s): Mike Truebloop/Dayna Winchell Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil X, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____
Hydric Soil Present?	Yes _____	No _____
Wetland Hydrology Present?	Yes X	No _____

Is the Sampled Area within a Wetland? Yes X No _____

Remarks: Soil criteria not used, Deep inundation and insised bank prohibit pit digging.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Nasturtium officinale	30	y	Obl
2. Festuca perrenis	30	y	FACW
3. Cyperus eragrostis	5	n	FACW
4. Rumex crispus	5	n	
5. Typha sp.	2	n	Obl
6. Leersia oryzoides	20	n	
7.			
8.			
Total Cover: 82			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: The nasturtium is in the water while the Festuca is located on the banks

SOIL

Sampling Point: 22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

Unable to dig a hole due to steep banks and inundation water too deep to dig. Soil criteria excluded.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 24 inch

Water Table Present? Yes X No _____ Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): Surface

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 6/6/2014

Applicant/Owner: Stanislaus County State: CA Sampling Point: 23

Investigator(s): Mike Truebloud Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	100%	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10"	7.5YR 3/2	100%	—	—	—	—		Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): —

Water Table Present? Yes ____ No ✓ Depth (inches): 7-10"

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): 7-10"

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 6/6/2014

Applicant/Owner: Stanislaus County State: CA Sampling Point: 24

Investigator(s): Mike Inkelood Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Rubus armeniacus	20%	Yes	FACU
2.			
3.			
4.			
5.			
Total Cover:	20%		
Herb Stratum			
1. Typha latifolia	10%	NO	OBL
2. Rumex crispus	5%	NO	FAC
3. Cyperus eragrostis	10%	NO	FACW
4. Festuca perennis	12%	NO	UPL
5. Glyceria declinata	30%	Yes	OBL
6.			
7.			
8.			
Total Cover:	65%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 20% % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	40	x 1 = 40
FACW species	10	x 2 = 20
FAC species	5	x 3 = 15
FACU species	20	x 4 = 80
UPL species	10	x 5 = 50
Column Totals:	85 (A)	205 (B)

Prevalence Index = B/A = 2.41

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ✓ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	7.5YR 4/2	90%	5YR 3/4	10%	C	M		Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): 7½"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): 7½"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 6/6/2014

Applicant/Owner: Stanislaus County State: CA Sampling Point: 24a

Investigator(s): Mike Trueblood Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus hordeaceus	10%	No	FACU
2. Glyceria declinata	10%	No	OBL
3. Festuca perennis	30%	Yes	UPL
4. Juncus tenuis	20%	Yes	FACW
5. Eleocharis macrostachya	5%	No	OBL
6. Rumex crispus	2%	No	FAC
7. Lycopus Tritecordes	10%	No	FAC
8.			
Total Cover: 87%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 13% % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	15	x 1 = 15
FACW species	20	x 2 = 40
FAC species	12	x 3 = 36
FACU species	10	x 4 = 40
UPL species	30	x 5 = 150
Column Totals:	87 (A)	281 (B)

Prevalence Index = B/A = 3.23

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 24a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	7.5YR 3/3	95%	2.5YR 4/6	5%	C	M		Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: North County Corridor City/County: Stanislaus Sampling Date: 6/6/2014

Applicant/Owner: Stanislaus County State: CA Sampling Point: 25

Investigator(s): Mike Trueblood Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: irrigated pasture - approximately 30 cattle in field during survey

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus hordeaceus	20%	Yes	FACU
2. Festuca perennis	50%	Yes	UPL
3. Erodium botrys	10%	No	UPL
4. Hordeum murinum Leporinum	5%	No	UPL
5. Trifolium hirtum	10%	No	UPL
6. Ansinkia menziesii	5%	No	UPL
7.			
8.			
Total Cover: 100%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	7.5YR 3/2	85%	5YR 3/4	15%	C	M		Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C Representative Photos

Photopoint # 1: Data Point # 1.

Photopoint # 2: Data Point # 2.

Photopoint # 3: Data Points # 2a and 2b.

Photopoint # 4: Data Point # 3.

Caltrans

Representative Photos

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc. (2014).

I:\Dhg1302\AI\Revised JD\Page 1.ai (07/15/14)

Photopoint # 5: Data Point # 4.

Photopoint # 6: Seasonal marsh swale near Data Points 4 through 6. APN # 010-072-004.

Photopoint # 7: Data Points # 7 and 7a.

Photopoint # 8: Data Points # 8.

Representative Photos

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc. (2014).

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Photopoint # 9: Data Point # 9.

Photopoint # 10: Data Point # 10.

Photopoint # 11: Data Point # 11.

Photopoint # 12: Data Points # 12 and 12a.

Caltrans

Representative Photos

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc. (2014).

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Photopoint # 13: Data Point # 14.

Photopoint # 14: Data Points # 14a and 14b.

Photopoint # 15: Data Point # 14d.

Photopoint # 16: Data Point # 15.

Representative Photos

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc. (2014).

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Photopoint # 17: Data Point # 15c.

Photopoint # 18: Data Points # 16 and 16a.

Photopoint # 19: Data Points # 17 and 17a.

Photopoint # 20: Data Point # 18.

Representative Photos

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc. (2014).

I:\Dhg1302\AI\Revised JD\Page 5.ai (07/15/14)

Photopoint # 21: Data Point # 19.

Photopoint # 22: Data Points # 20 and 20a.

Photopoint # 23: Data Point # 21.

Photopoint # 24: Data Point # 22.

Caltrans

Representative Photos

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc. (2014).

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Photopoint # 25: Newly planted orchard; previously seasonal wetlands. APN # 010-041-039.

Photopoint # 26: Typical irrigation ditch in orchard. APN # 064-031-032.

Photopoint # 27: Dredged irrigation ditch. APN # 014-002-014.

Photopoint # 28: Cattail marsh next to Stearns Road. APN # 064-029-017.

Caltrans

Representative Photos

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc. (2014).

I:\Dhg1302\AI\Revised JD\Page 7.ai (07/15/14)

Photopoint # 29: Irrigated pasture and ditch. APN # 011-016-023.

Photopoint # 30: Inundated pool in irrigated pasture adjacent to Claribel Road. APN # 075-025-011.

Photopoint # 31: Cavill Drain Irrigation ditch at Claribel Road. APN # 014-049-001.

Photopoint # 32: Wetland ditch in irrigated pasture. APN # 062-025-005.

Caltrans

Representative Photos

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc. (2014).

I:\Dhg1302\AI\Revised JD\Page 8.ai (07/15/14)

Photopoint # 33: Irrigation ditch in agricultural field. APN # 063-027-002.

Photopoint # 34: Irrigated pasture. APN # 010-040-004.

Caltrans

Representative Photos

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc. (2014).

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Appendix D Summary of Waters of the U.S. by Build Alternative

Summary of Potential Waters of the U.S. in the Study Area by Build Alternative

	Alternative 1A	**Alternative 1B**	**Alternative 2A**	**Alternative 2B**
Seasonal Wetland	1.59	6.33	2.63	10.52
Perennial Marsh	11.71	9.78	8.28	3.29
Ponds	2.85	3.26	5.28	3.74
Ditches	6.40	6.60	6.00	7.09
Canal	10.56	19.97	15.48	18.88
Irrigated Wetlands	0.42	0.66	2.57	3.41
Total	**33.53**	**46.60**	**40.24**	**46.93**

Appendix C Bat Habitat Assessment

BAT HABITAT ASSESSMENT

AND AERIAL/SATELLITE ANALYSIS

NORTH COUNTY CORRIDOR, STANISLAUS COUNTY, CA

June 11, 2014

Prepared for

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Prepared by

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Bat Habitat Assessment
North County Corridor
Stanislaus County

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SUMMARY

Dokken Engineering hired Wildlife Research Associates to analyze potential impacts to roosting bats in natural and man-made habitats along the North County Corridor project area Alternative Routes 1A, 1B, 2A, and 2B, located in Stanislaus County, California. This report details our analysis of aerial and satellite images and a two-day field assessment of sampled locations for potentially suitable bat roost habitat. This report also presents our results with associated figures, regulatory information pertaining to bats, biological information on bats and their roosting ecology, and a discussion and recommendations to prevent take of bats in buildings and trees, with general evaluation of which Alternative Route may impact fewer bat roosting resources.

In summary, potentially suitable habitat in the form of buildings and trees is fairly evenly distributed throughout most portions of the Alignment Alternatives except;

1) Alternatives 1A and 1B in the central portion of the alignment provides substantial density and distribution of potentially suitable habitat compared to Alternatives 2A and 2B, and;
2) Alternatives 1A and 2A at the northern portion of the alignment at Hwy. 108/120 appears to provide greater density and distribution of potentially suitable building and tree habitat compared to Alternatives 1B and 2B.

INTRODUCTION

The North County Corridor Transportation Expressway Authority (NCCTEA) proposes to construct the North County Corridor New State Route (SR) 108 Project (project). For this project, the NCCTEA is represented by California Department of Transportation (Caltrans) District 10, Stanislaus County, and the cities of Oakdale, Riverbank, and Modesto.

The project is located in Northern Stanislaus County between Tully Road SR-219 at the western terminus to SR-120/SR-108 at the eastern terminus, and is intended to relive existing traffic congestion, reduce delays, and facilitate future traffic, among other goals as stated in the Draft EIR (Caltrans, in preparation). The project study area is bounded by SR-120 to the north, Kiernan Avenue/SR219/Claribel Road to the south, Tully Road to the west, and Lancaster Road to the east.

Because bat species may roost in colonies in tree cavities, crevices or exfoliating bark, or in buildings, bridges and culverts, or singly in tree foliage, there is the potential for direct mortality to roosting bats resulting from construction and/or demolition or tree removal activities. Under subcontract to Dokken Engineering, Wildlife Research Associates has been hired to conduct an initial habitat assessment of potentially suitable roost locations in trees and buildings along the proposed alternative routes, designated as Alternative 1A, 1B, 2A, and 2B. This report provides the results of the habitat assessment, an evaluation of the alternative routes for bat habitat value, as well as general mitigation strategies to prevent direct mortality of roosting bats. The Discussion section of this report provides detail on future survey efforts that will be required to prevent direct mortality of bats resulting from project activities.

METHODS

A Habitat Assessment was prepared for this project; detailed methods are described below. Focused presence/absence surveys (i.e. detailed examination of the exterior surfaces and interior spaces of all buildings and trees that may be impacted by project activities) will be conducted prior to construction once an alternative is selected. See the Discussion and Recommendations section below. Focused presence/absence surveys will likely not take place until right of way has been purchased. Construction is currently anticipated to begin after 2020.

Aerial/Satellite Image Analysis

An analysis was first conducted of Google satellite and aerial images of locations where trees and buildings appear potentially suitable for use by roosting bats. Those locations were marked with polygons shaded in light purple with a purple line border, each tagged with brief descriptions of potential habitat. After conducting the Field Habitat Assessments and verifying site conditions, it was possible to eliminate many locations identified during aerial and satellite image analysis. Remaining polygons are those locations that were not visited or verified in the field, either due to time or access restrictions. Those remaining polygons are shown on the attached exhibit; labels describing potentially suitable habitat features for those location polygons are shown in Table 2.

Field Habitat Assessments

On May 12 and 13, 2014, we conducted a roadside survey of trees and buildings within the areas of impact along the alignments and connectors, as depicted in aerial images provided to us by Dokken Engineering. We drove along the alternative routes, searching for trees containing suitable cavity, crevice or exfoliating bark habitat suitable for colonial bat species, in addition to foliage habitat suitable for solitary, obligate tree-roosting bat species, or individual colonial bats.

In addition to potentially suitable tree roost habitat, we also noted locations of structures that appear to contain suitable construction and condition to provide openings or suitable roost features commonly used by bats. We recorded locations where potentially suitable habitat was found using a consumer-grade GPS, and marking locations on the aerial photos supplied by Dokken Engineering.

The field assessment was intended to provide additional data and ground-truthing to supplement and cross-check our aerial analysis. Access to private property was limited to those driveway areas or private roads where permission had been previously obtained by the project.

All GPS locations and those noted on aerial images during the field habitat assessment were compiled and are displayed on the attached exhibit, and shown in Table 3. Potentially suitable habitat buildings or trees that were identified in the field are depicted as light green polygons with dark green borders.

A .kmz file corresponding to the exhibit polygons can be made available upon request.

REGULATORY INFORMATION

Bats in California are afforded protection under the California Fish and Game Code, TTITLE 14 of the California Code of Regulations, as well as through Caltrans Environmental Policy Caltrans Environmental Procedures, Federal Highway Administration (FHWA) Environmental Policy and FHWA Environmental Procedures.

All bats are classified as non-game mammals, and 11 of California's 25 known species are classified as Species of Special Concern (SSC). All SSC species are to be considered under the California Environmental Quality Act (CEQA), however several non-SSC species can form very large colonies in suitably-sized roosts, such that their roost is considered a significant local breeding population under the California Environmental Quality Act (CEQA), thereby receiving the same attention as special-status bat species classified as California Species of Special Concern (SSC).

BACKGROUND BIOLOGICAL INFORMATION

Roost Selection

California bats include colonial and solitary species. Colonial bats are those that roost in groups of dozens to many thousands, and include Brazilian free-tailed bats (*Tadarida brasiliensis*), Yuma myotis (*Myotis yumanensis*), big brown bat (*Eptesicus fuscus*), and other *Myotis* species. Though all non-SSC, as stated previously, these may form significant local breeding populations in roosts of sufficient size, which usually occur in buildings, bridges or culverts, but occasionally in large tree hollows. Where this SSC-species occurs, *A. pallidus* often roosts colonially in cavities and crevices in structures with suitable conditions, and often in suitable trees, including oaks. As stated above, *C. townsendii*, Proposed Endangered, roosts colonially, and often in the types of structures that occur within the alignment alternatives. Trees are rarely used, and no suitable trees for this species were observed during our field habitat assessment or aerial analysis.

Obligate tree-roosting bats include the SSC *L. blossevillii*; females roost singly and with 2-6 pups during maternity season, and there is evidence that *L. blossevillii* is often faithful to selected trees. Potentially suitable tree canopy habitat is present within the alignment for this species, as well as for a non-SSC tree-roosting species, hoary bat (*Lasiurus cinereus*).

Seasonality of Roost Usage

Use of roosts by bats varies temporally and spatially throughout annual cycles as well as shorter, seasonal and daily cycles. Roost types are generally referred to as day roosts (used during breeding season by males and/or non-reproductive females), day maternity roosts (used for pup-rearing by females), night roosts (used by all volant bats during seasonal periods of bat activity, e.g. when foraging), dispersal roosts (where breeding occurs, or en route to winter roosts), and winter roosts (used either for hibernation or torpor).

Bats in this region of California are not active year-round. During the maternity season, non-volant young of colonial bats remain in the roost until late summer (end of August), after which they may disperse from the natal roost or remain into or throughout the winter. During winter months, roosting bats typically enter torpor, rousing only occasionally to drink water or opportunistically feed on insects. The onset of torpor is dependent upon environmental conditions, primarily temperature and rainfall. To prevent direct mortality of either non-volant young or torpid bats during winter months, roosts must not be disturbed or destroyed until bats are seasonally active, and only after they have been provided a means of escape from the roost, generally through either humane bat eviction/exclusion, or partial dismantling under supervision and guidance of a qualified bat expert. See text below for additional details.

RESULTS

Alternatives 1A, 1B, 2A and 2B are combined together at the western portion of the project, and bifurcate east of Claus Rd. and west of Eleanor Ave. into 1A and 1B to the north and 2A and 2B to the south, almost converging just east of the Oakdale-Waterford Highway, continuing north to 1A and 2A, or continuing east as 1B, then turning north to include Alternative 2B.

In general, it appears the greatest concentration of potentially suitable roost habitat in trees and buildings occurs in the western portion of the alignment – Alternatives 1A, 1B, 2A, and a portion of 2B (See Fig. 1). It should be noted that construction activities are already underway along Kiernan Ave. in the western portion of the project area (Alternatives 1A, 1B); road widening has already begun, with removal of trees that has apparently occurred west of Tully Blvd. (Fig. 2). Some habitat has apparently been removed, but some remains, including some buildings and trees.

Potential habitat that occurs within the western portion of the alignment is composed largely of a variety of farm and commercial structures containing openings into potentially suitable roost crevices or cavities; oak

and other trees containing cavities, crevices or exfoliating bark that could provide day and/or night roosting habitat for colonial species; and a few palm trees with down-facing, dry fronds that could support individual colonial bat species or solitary, obligate-tree roosting bat species (Figs 3-6). Most buildings are barns, residences or other farm buildings; however, there are some commercial structures, including warehouses. As the alignment moves east, a very large industrial complex is situated at the intersection of Claus Rd. and Claribel Rd. that contains many large structures that could potentially provide habitat for large bat colonies, based on size, age, construction and condition of the structures visible during our roadside habitat assessment (Fig. 7).

Continuing east along Claribel Rd. towards Wellsford Rd. (Fig. 8), most of the potentially suitable habitat occurs fairly evenly distributed throughout. Potentially suitable habitat is found in trees and farm or residential structures located within the area of impact along the alignment. The most suitable habitat appears to be some of the older structures; however, some newer structures also appear to provide suitable habitat and construction design and condition warrants more detailed habitat assessments and surveys.

The alignment bifurcates from Claribel Rd. just after Claus Rd. (Fig. 8), forming one northern route at around Bender Rd., and a southern route that continues along Claribel Rd. (Fig. 9). Potentially suitable bat habitat, mostly for colonial species, occurs regularly along Claribel Road in farm buildings, residences, and trees, but becomes patchier after Smith Rd., after which the route becomes Alignment 1B, moving north to Warnerville Rd. at the southern limit, then continuing northeast to Lancaster Rd. at Hwy. 108/120. Most of this land was not readily accessible so could not be assessed during our field surveys, however, aerial analysis shows a significant reduction in available building and tree density in many parts of this alternative route (Fig. 10).

Alternative routes 1A and 2A occur along about S. Stearns Rd., crossing Sierra Rd. to the north, and then heading northeast through farmland to join Hwy. 108/120. A relatively high density of potentially suitable bat roost habitat, both for colonial species and for obligate tree-roosting bats, was present along this alternative alignment in the form of farm buildings and trees (Fig. 11).

Bat Species Likely to Occur Within the Project Area

The locality of the project area is likely to support a wide range of bat species during foraging, however, a reduced number of species is supported by available roost habitat. Table 1 provides a list of bat species that could roost within trees or buildings along the alignment alternatives.

One SSC bat species that often roosts in structures or suitable trees in those areas where they occur is the pallid bat (*Antrozous pallidus*). Removal of occupied roosts without prior humane eviction or other actions approved by the California Department of Fish and Wildlife (CDFW) would result in “take”, defined under the California Endangered Species Act (CESA) as “to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill”.

Another SSC species that could occur in the project area is western red bat (*Lasiurus blossevillii*). An obligate tree-roosting species, *L. blossevillii* uses tree foliage, typically of large-leafed trees such as cottonwood (*Populus fremontii*) and others, but is also associated with orchards where suitable canopy density occurs.

One species, Townsend’s big-eared bat (*Corynorhinus townsendii*) was formally proposed for listing as Endangered by the California Fish and Wildlife Commission in December, 2013. During the 1-year review and comment period for the listing proposal, *C. townsendii* is provided all of the protections of a fully Endangered species in California. This is important, because when this species selects man-made structures, it prefers old or disused farm or residential buildings, many of which occur within the North County Corridor project area. Surveys, impact assessments, and mitigation measures for this species at an elevated level are likely for this species.

Table 1. Bat Species With Potential to Roost Within the Project Area

Common Name	Scientific Name	Roost Preferences Within Project Area	Regulatory Status	Potential to Occur
Pallid bat	Antrozous pallidus	Buildings, large tree cavities	CDFW: SSC	Moderate – Suitable elevation and climate; potential buildings (farm, residence, commercial) and tree roosts available
Townsend's big-eared	Corynorhinus townsendii	Buildings	CDFW: Proposed Endangered	Moderate – Suitable elevation and climate; many potentially suitable building roosts available (farm, disused residence)
Big brown bat	Eptesicus fuscus	Buildings, tree cavities	CDFW: Non-game mammal	Moderate – Suitable elevation and climate; roosts in small groups in trees, buildings
Western red bat	Lasiurus blossevillii	Tree foliage	CDFW: SSC	Moderate – Suitable elevation and climate; roosts singly (except females with several pups during maternity season) in trees including orchards
Hoary bat	Lasiurus cinereus	Tree foliage, crevices	CDFW: Non-game mammal	Moderate – Suitable elevation and climate; roosts singly (except females with several pups during maternity season) in trees including orchards
California myotis	Myotis californicus	Buildings, tree cavities, exfoliating bark	CDFW: Non-game mammal	Moderate – Suitable elevation and climate; roosts in small groups in trees, buildings
Little brown bat	Myotis lucifugus	Buildings, large tree cavities	CDFW: Non-game mammal	High – Suitable elevation and climate; potential building roosts available (farm, residence, commercial) and tree roosts available
Yuma myotis	Myotis yumanensis	Buildings, large tree cavities	CDFW: Non-game mammal	High – Suitable elevation and climate; potential building roosts available (farm, residence, commercial) and tree roosts available
Brazilian free-tailed bat	Tadarida brasiliensis	Buildings, large tree cavities	CDFW: Non-game mammal	High – Suitable elevation and climate; potential building roosts available (farm, residence, commercial)

SSC: California Species of Special Concern

DISCUSSION

One of the purposes of the initial evaluation of potentially suitable bat roost habitat was to aid in selection of route alternatives (Holm, personal communications). Potentially suitable roost habitat was present along many portions of the alignment, and consisted of availability of structures that provide suitable construction and condition to permit access by bats into suitable roost cavities or crevices in walls, roof areas or other suitable locations, as well as trees that can support colonial bats in cavities, deep crevices or large patches of exfoliating bark or dense, down-facing palm fronds. Solitary tree-roosting bats can use any trees with sufficiently dense foliage, which could include palms, some oaks, cottonwoods, and dense orchard tree canopy.

Our aerial analysis suggests that potentially suitable bat roosting habitat is most densely distributed at the western portion of the site along Alternatives 1A, 1B, 2A, and 2B, with similar patterns of density continuing along Alternatives 2A and 2B up to about Wellsford Rd. Aerial analysis of Alternatives 1A and 1B to the north show evenly distributed potential bat roost habitat to the northern portion of the alignment at Hwy. 108/120. Aerial analysis suggests lower densities of tree and building roost habitat at the eastern and northern portions of Alternatives 1B and 2B until Hwy. 108/120, however there was a small portion of this route that was inaccessible during our habitat assessment (private access roads).

The results of our field habitat assessments on May 12 and 13, 2014 indicate that the pattern of distribution and density of potentially suitable habitat overlapped in many locations.

To summarize, the greatest density and occurrence of potentially suitable roost habitat appears to be located at the western portion of the alignment, consisting largely of potentially suitable buildings, with some potentially suitable orchards and/or individual trees. Alternatives 1A and 1B in the central portion of the alignment provides substantial density and distribution of potentially suitable tree and building roost habitat in comparison to Alternatives 2A and 2B. As Alternatives 1B and 2B continue east, density and distribution of potentially suitable roost habitat appears similar. Alternatives 1A and 2A at the northern portion of the alignment at Hwy. 108/120 appears to provide greater density and distribution of potentially suitable building and tree habitat compared to Alternatives 1B and 2.

RECOMMENDATIONS

General Information - Preventing Take of Bats in Buildings

In the case of buildings to be demolished for redevelopment, there are only two effective methods for getting bats out of the structure. The first, utilized mainly when the building is in good condition and the work is feasible, is “humane eviction”, or “bat exclusion”, which relies on the bats’ ability to fly out of the roost.

In this method, all potential, but currently unused entry points into the structure are sealed. The active entry points are fitted with one-way exits, which are left in place 7-10 days to allow all bats to emerge normally during nightly feeding flights. The one-way exits are then removed and the remaining openings sealed until demolition if it will occur more than 30 days after demolition. If the interval between successful eviction and demolition will be short (less than 4 weeks), the one-way exits may often be left in place until demolition. This work must be conducted by, or under direct supervision or instruction by a bat biologist qualified in humane bat eviction methods and materials.

In some cases, the physical condition of the structure is so poor that humane eviction as described above is not possible. If that occurs, the building must be carefully, and selectively dismantled in such a way that the internal environment is altered to a degree sufficient to cause bats to abandon the roost and not return. This must occur under the guidance of a bat biologist qualified in partial dismantling of structures for bat eviction.

NOTE:
Humane bat eviction or other approved methods such as partial dismantling must only be conducted during seasonal periods of bat activity. In this region, between March 1 (or after evening temperatures rise above 45F and/or no more than 1/2" of rainfall within 24 hours occurs), and April 15, or between September 1 and October 15 (or before evening temperatures fall below 45F and/or more than 1/2" of rainfall within 24 hours occurs).

General Information - Preventing Take of Bats in Trees

As with those bats that roost in buildings, colonial bats that roost in trees are seasonally inactive (e.g. non-volant young during maternity season or torpid bats during winter months). Unlike with buildings however, bats cannot readily be humanely evicted from trees. This is because many trees have numerous cavities, crevices, or large areas of exfoliating bark that cannot be fitted with one-way exits, or cannot even be safely worked on due to poor condition. This is particularly true of snags due to their extremely poor condition, however snags provide some of the most preferred and substantial bat tree roost habitat.

Conducting visual cavity surveys is only rarely possible due to difficulty with access and number of trees and emergence surveys of potential roost trees is only feasible where a few habitat trees occur, because only 1-2 trees can be surveyed each night per observer. Importantly, because bats tend to switch tree roosts more frequently than more stable roosts such as caves, mines, rock outcrops, buildings, bridges, or culverts, negative results have extremely limited temporal validity (24-48 hours), which would result in multiple mobilizations by tree cutters in order to remove trees immediately after a negative survey. In the event a tree is found to be occupied, a method for safely getting the bats out of the tree will still be needed.

As with humane eviction, it must only occur during seasonal periods of bat activity as described above; however, there are certain, limited exceptions, such as when the roost features can be visually surveyed and absence of bats can be determined, or when the roost features do not provide suitable maternity or overwintering habitat (e.g. shallow crevices in bark or wood).

I have developed a method that provides the most reasonable and cost-effective opportunity for bats to abandon the roost tree prior to cutting; this method has been widely utilized in a large variety of settings, including transportation projects. This is a two-step method, *conducted over two consecutive days*, and works by creating noise and vibration by cutting non-habitat branches and limbs from habitat trees using chainsaws only (no excavators or other heavy machinery) on Day 1. The noise and vibration disturbance, together with the visible alteration of the tree, is very effective in causing bats that emerge nightly to feed, to not return to the roost that night. The remainder of the tree is removed on Day 2.

A bat biologist qualified in two-step tree removal is required on Day 1 to supervise and instruct the tree-cutters who will be on the site conducting the work, for a time sufficient to train all tree cutters who will conduct two-step removal of habitat trees. The bat biologist is not required on Day 2, unless a very large cavity is present and a large colony is suspected.

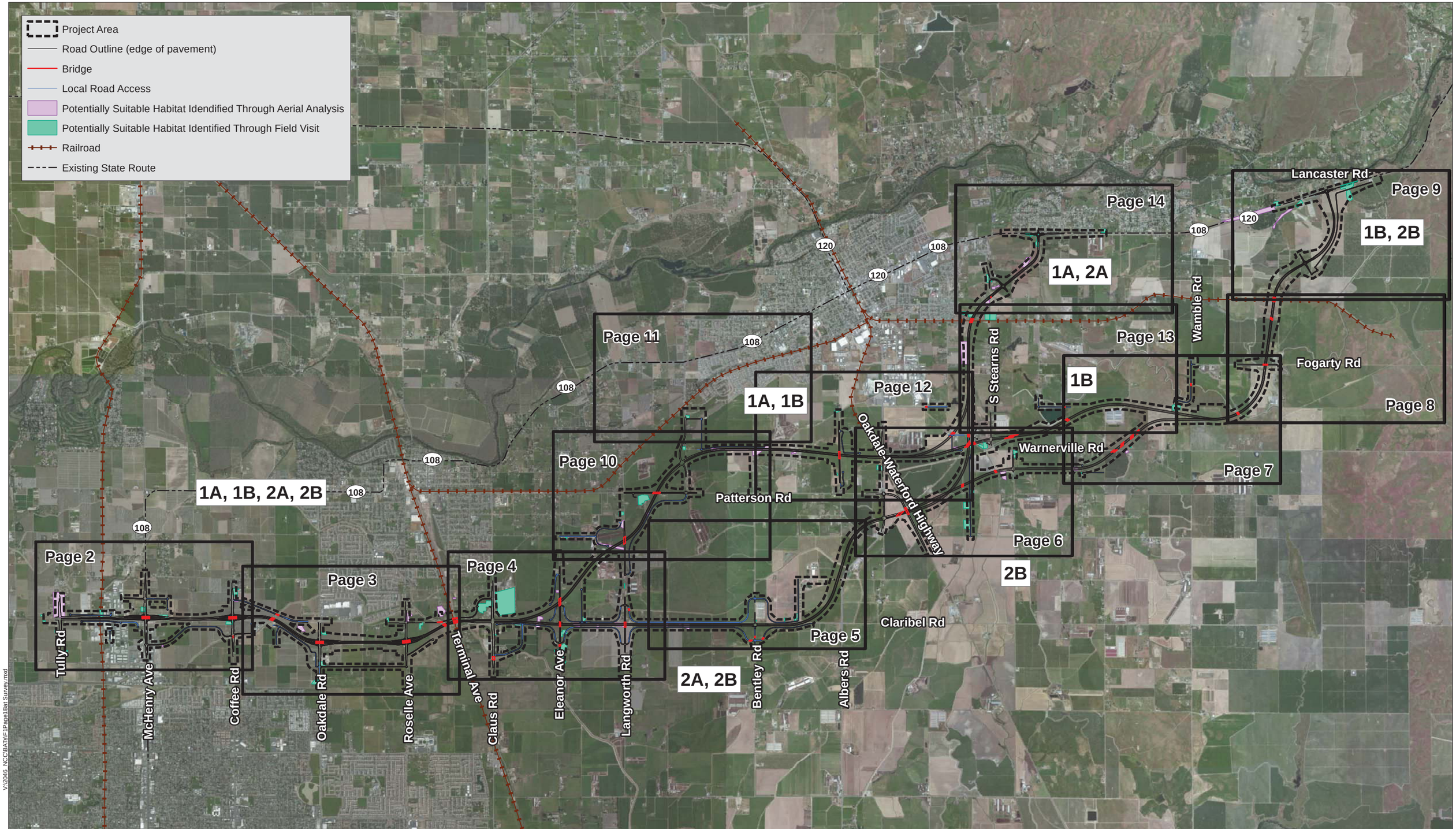
In the event there are roost features that are completely accessible by boom truck, man lift, or other equipment, a visual inspection using fiber optic or video probes could be conducted outside the seasonally restricted periods, to permit removal at that time, but only if no bats are present. If all roost features can be completely surveyed, the entire tree may be removed in one action, making two-step removal unnecessary. Those trees without potentially suitable bat habitat can generally be removed any time prior to those with habitat (however, site conditions may warrant these be removed only days prior to removal of habitat trees). *This approach is only effective in a small percentage of cases due to accessibility limitations of trees and roost features.*

Two-step tree removal must only be conducted during seasonal periods of bat activity. In this region, between March 1 (or after evening temperatures rise above 45F and/or no more than 1/2" of rainfall within

24 hours occurs), and April 15, or between September 1 and October 15 (or before evening temperatures fall below 45F and/or more than 1/2" of rainfall within 24 hours occurs).

Selection of any of the Alternatives (1A, 1B, 2A, 2B) will each result in impacts to bat roosting habitat. To prevent direct mortality of roosting bats, buildings and trees that occur within impact areas along the finally selected Alternatives must be assessed for potential roost habitat by a qualified bat biologist, at least 3-6 months prior to construction activities to allow sufficient time to plan and implement suitable bat avoidance measures. Exteriors and interiors of each structure to be impacted must be surveyed for suitable openings and signs of past or present use by bats (e.g. fecal pellets, staining, live or dead bats, etc.). Trees must be assessed for suitable cavity, crevice or exfoliating bark habitat for colonial bat species, and foliage for obligate tree-roosting bats.

Once identified, those roost resources must be removed following the general methods described above so that bats can either escape through properly-designed one-way exits and are precluded from re-entering through other openings, or buildings must be made unsuitable for bats through specific actions to be detailed by a qualified bat biologist after the field assessment and surveys. Trees must be removed using a two-step process during seasonal periods that allows bats to escape without harm.



Source: ESRI Maps Online March 2011; Dokken Engineering 6/13/2014; Created By: carleneg

0 0.5 1 1.5 2 Miles

FIGURE 1
Bat Habitat Assessment Results
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EA: 10-08800, Project ID # 1000000263
North County Corridor New State Route
108 Project Stanislaus County, California

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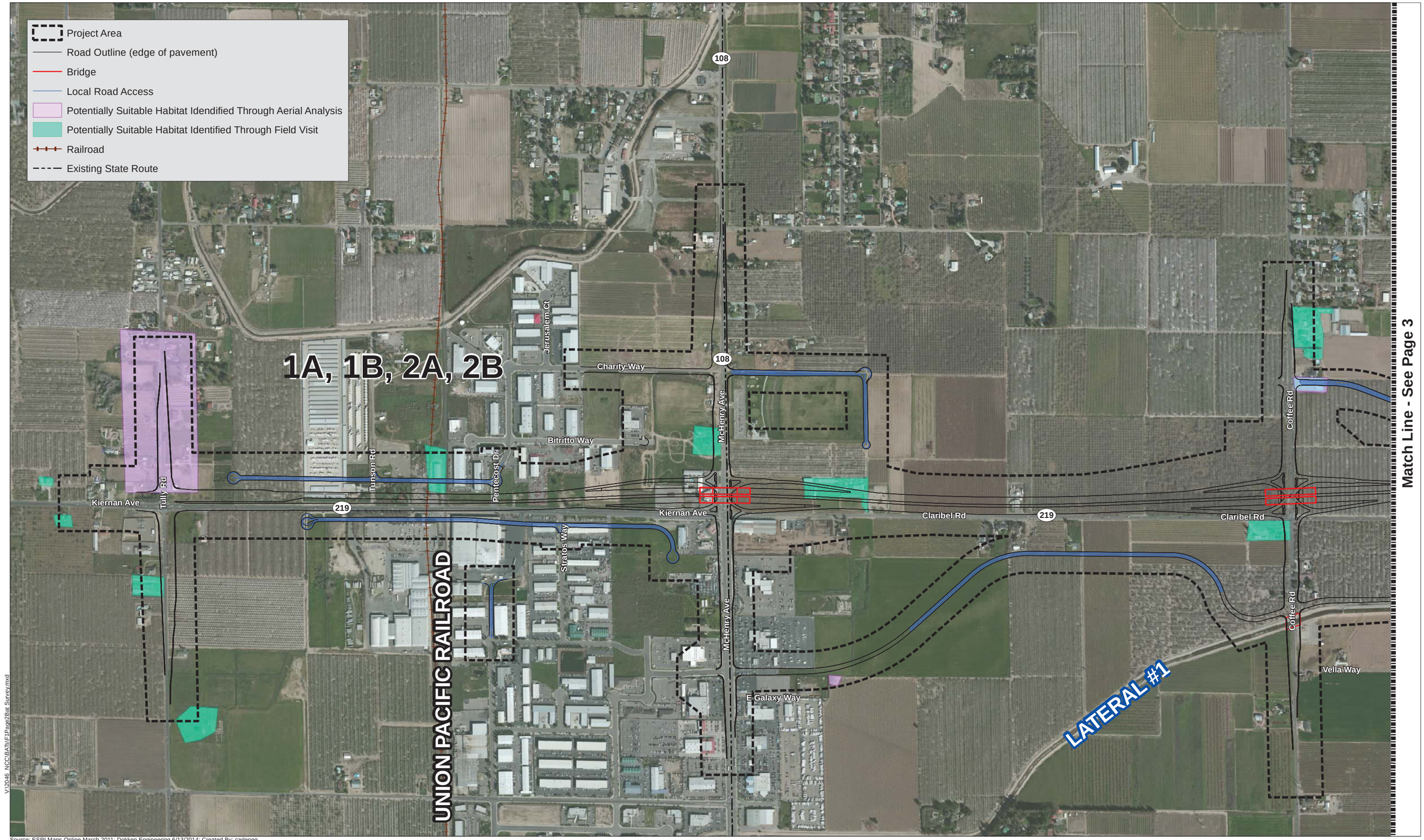

Source: ESRI Maps Online March 2011; Dokken Engineering 6/13/2014; Created By: carleneg

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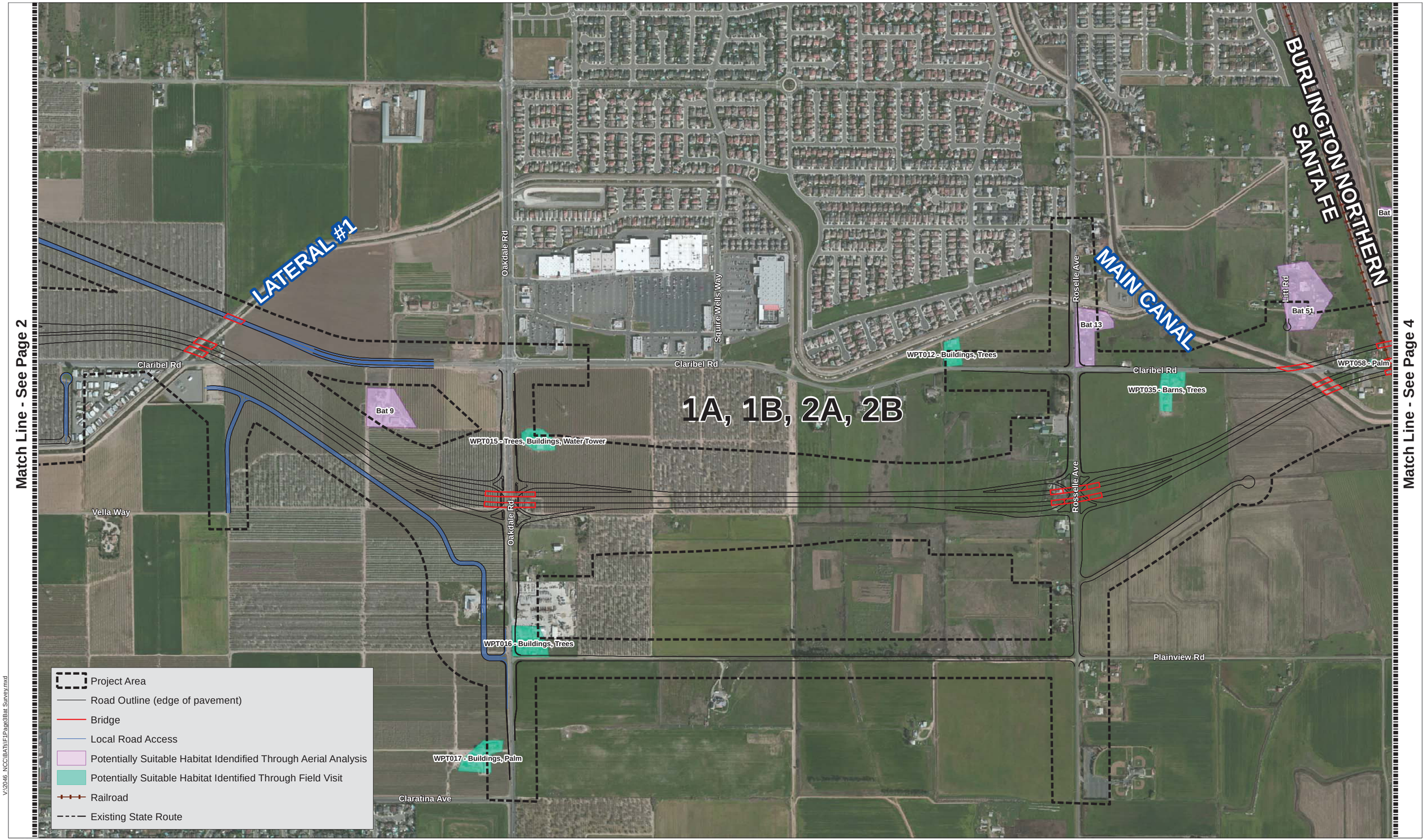
FIGURE 1
Bat Habitat Assessment Results
Page 2 of 14
EA: 10-08800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



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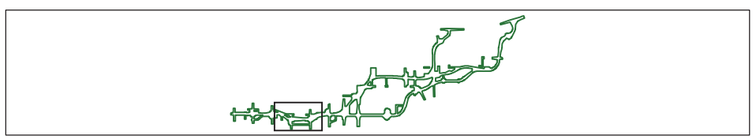

FIGURE 1
Bat Habitat Assessment Results
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EA: 10-08800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

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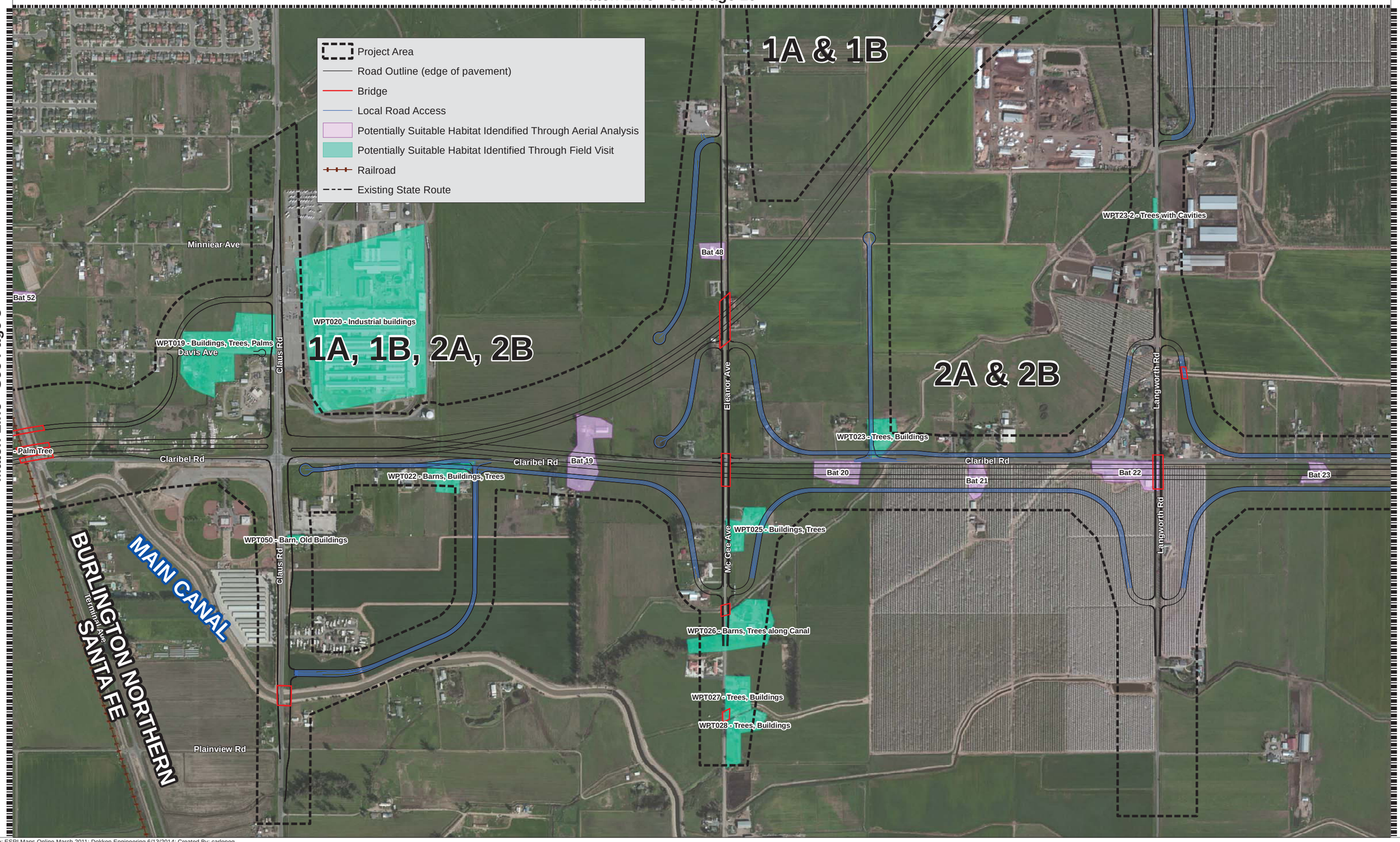

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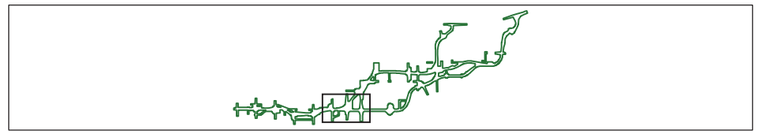

FIGURE 1
Bat Habitat Assessment Results
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North County Corridor New State Route 108 Project
Stanislaus County, California

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Source: ESRI Maps Online March 2011; Dokken Engineering 6/13/2014; Created By: carleneg

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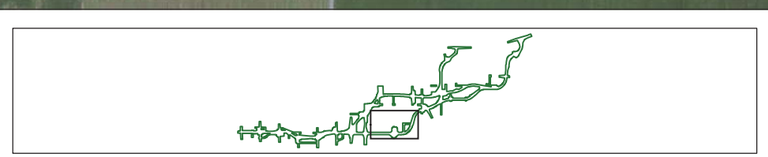

FIGURE 1
Bat Habitat Assessment Results
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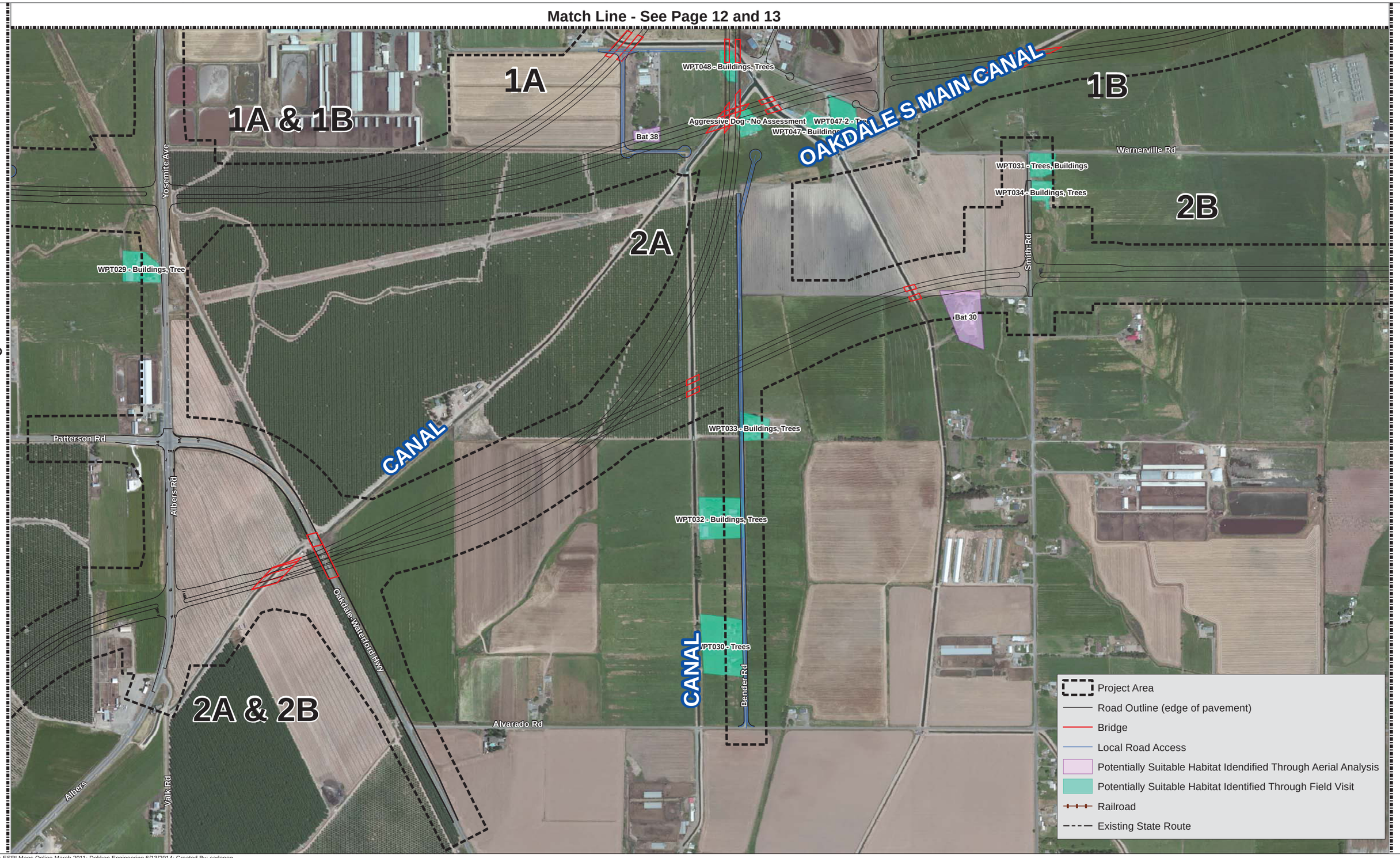
EA: 10-08800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



Source: ESRI Maps Online March 2011; Dokken Engineering 6/13/2014; Created By: carleneg

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FIGURE 1
Bat Habitat Assessment Results
Page 6 of 14
EA: 10-08800, Project ID # 1000000263
North County Corridor New State Route 108 Project
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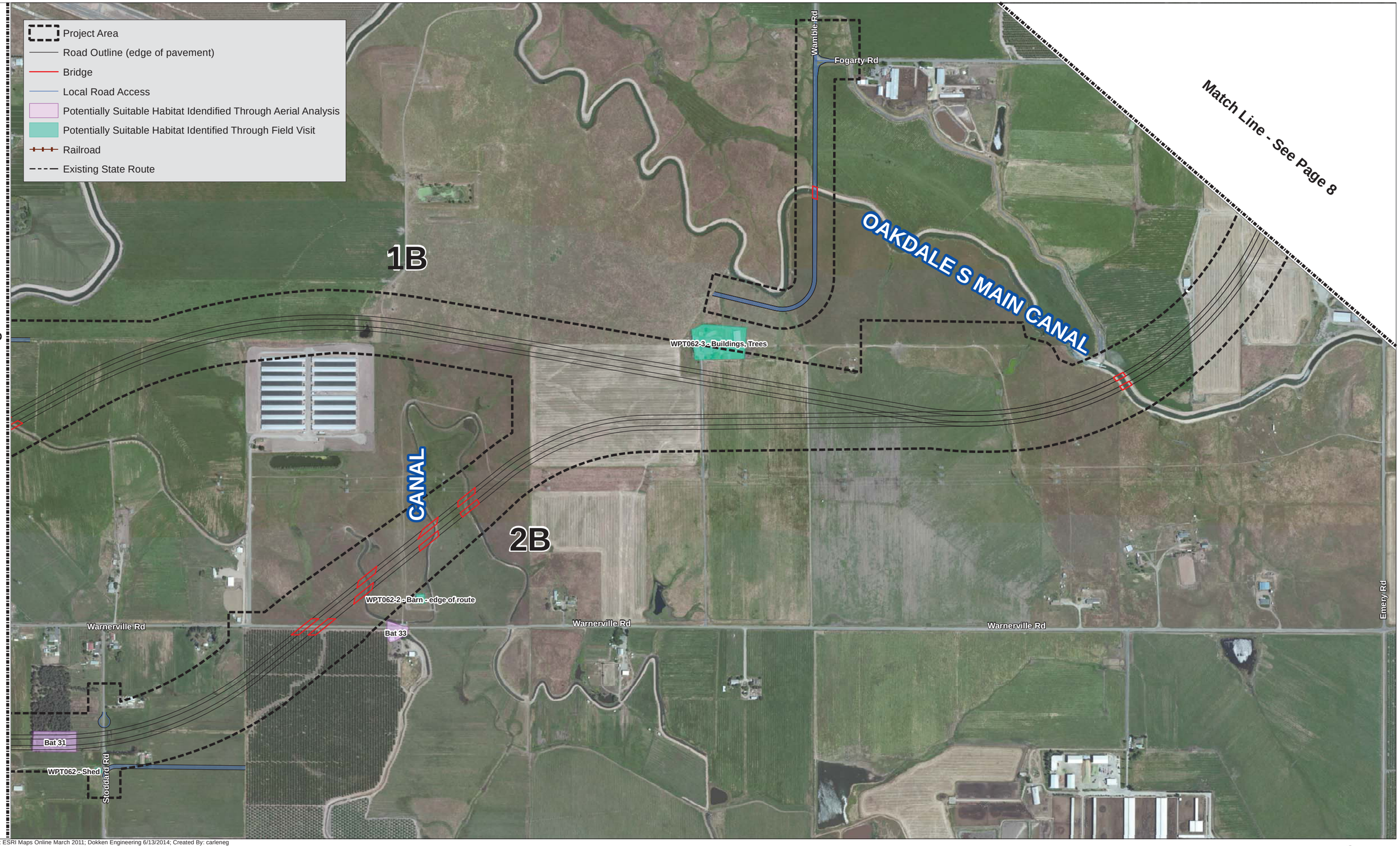

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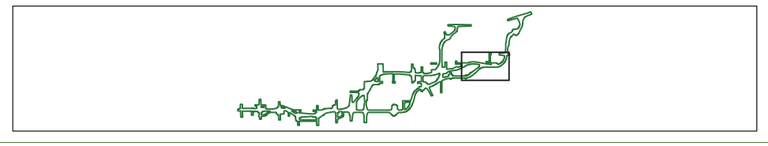

FIGURE 1
Bat Habitat Assessment Results
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North County Corridor New State Route 108 Project
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Match Line - See Page 9

SIERRA RAILROAD

1B & 2B

OAKDALE S MAIN CANAL

Fogarty Rd

Emery Rd

Project Area
Road Outline (edge of pavement)
Bridge
Local Road Access
Potentially Suitable Habitat Idendified Through Aerial Analysis
Potentially Suitable Habitat Identified Through Field Visit
Railroad
Existing State Route

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Source: ESRI Maps Online March 2011; Dokken Engineering 6/13/2014; Created By: carleneg

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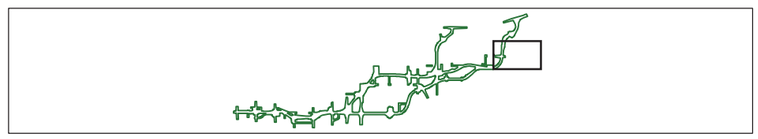
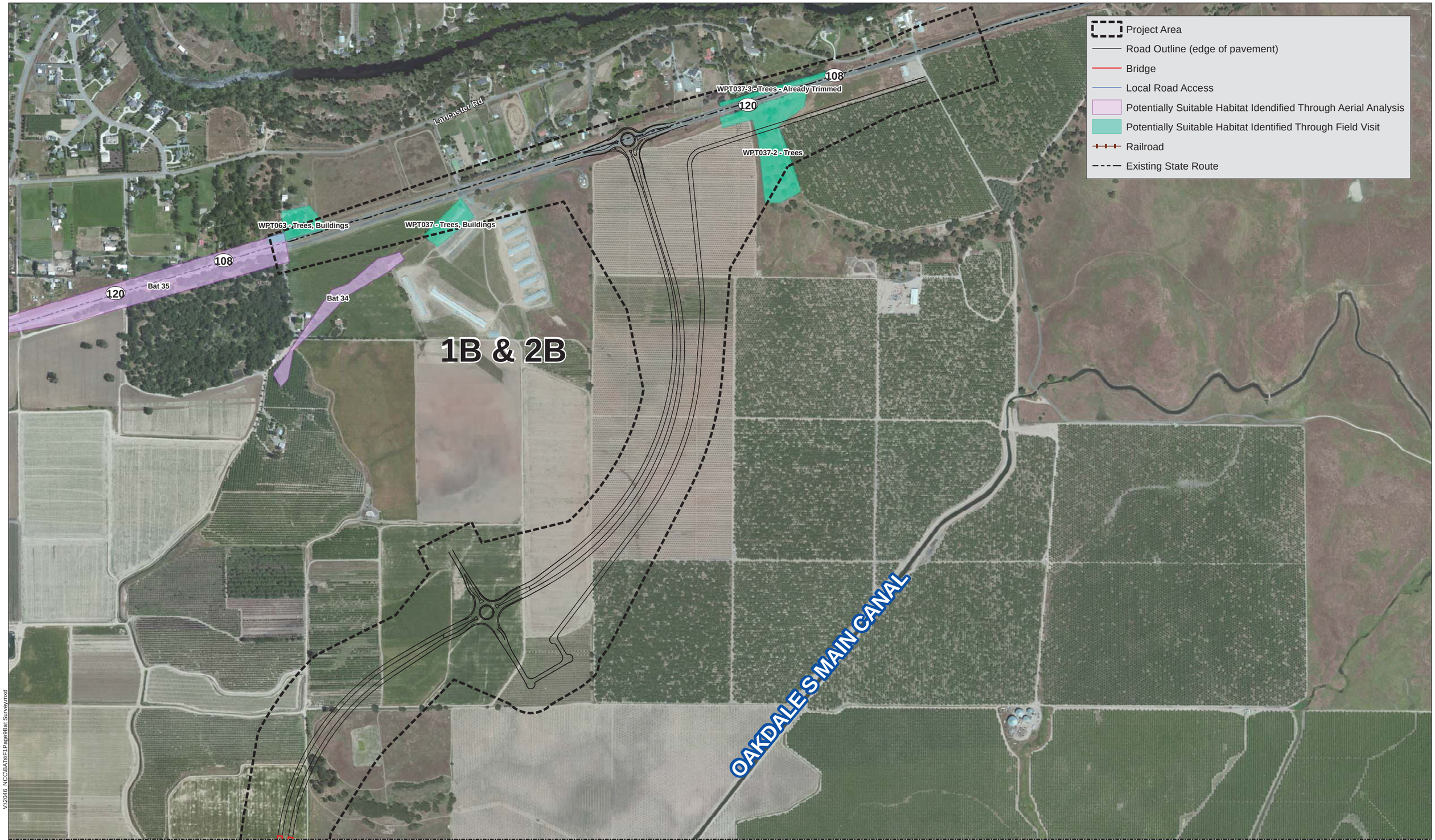


FIGURE 1
Bat Habitat Assessment Results
Page 8 of 14
EA: 10-08800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



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Source: ESRI Maps Online March 2011; Dokken Engineering 6/13/2014; Created By: carleneg

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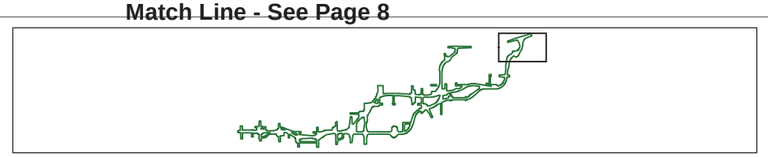

FIGURE 1
Bat Habitat Assessment Results
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North County Corridor New State Route 108 Project
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Source: ESRI Maps Online March 2011; Dokken Engineering 6/13/2014; Created By: carleneg

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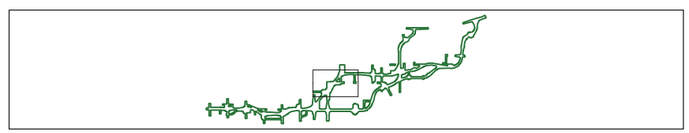

FIGURE 1
Bat Habitat Assessment Results
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North County Corridor New State Route 108 Project
Stanislaus County, California

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Source: ESRI Maps Online March 2011; Dokken Engineering 6/13/2014; Created By: carleneg

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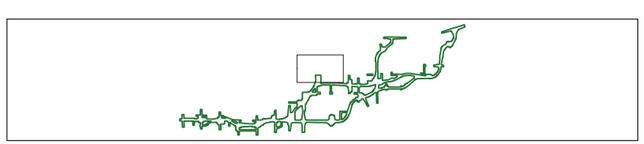

FIGURE 1
Bat Habitat Assessment Results
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EA: 10-08800, Project ID # 1000000263
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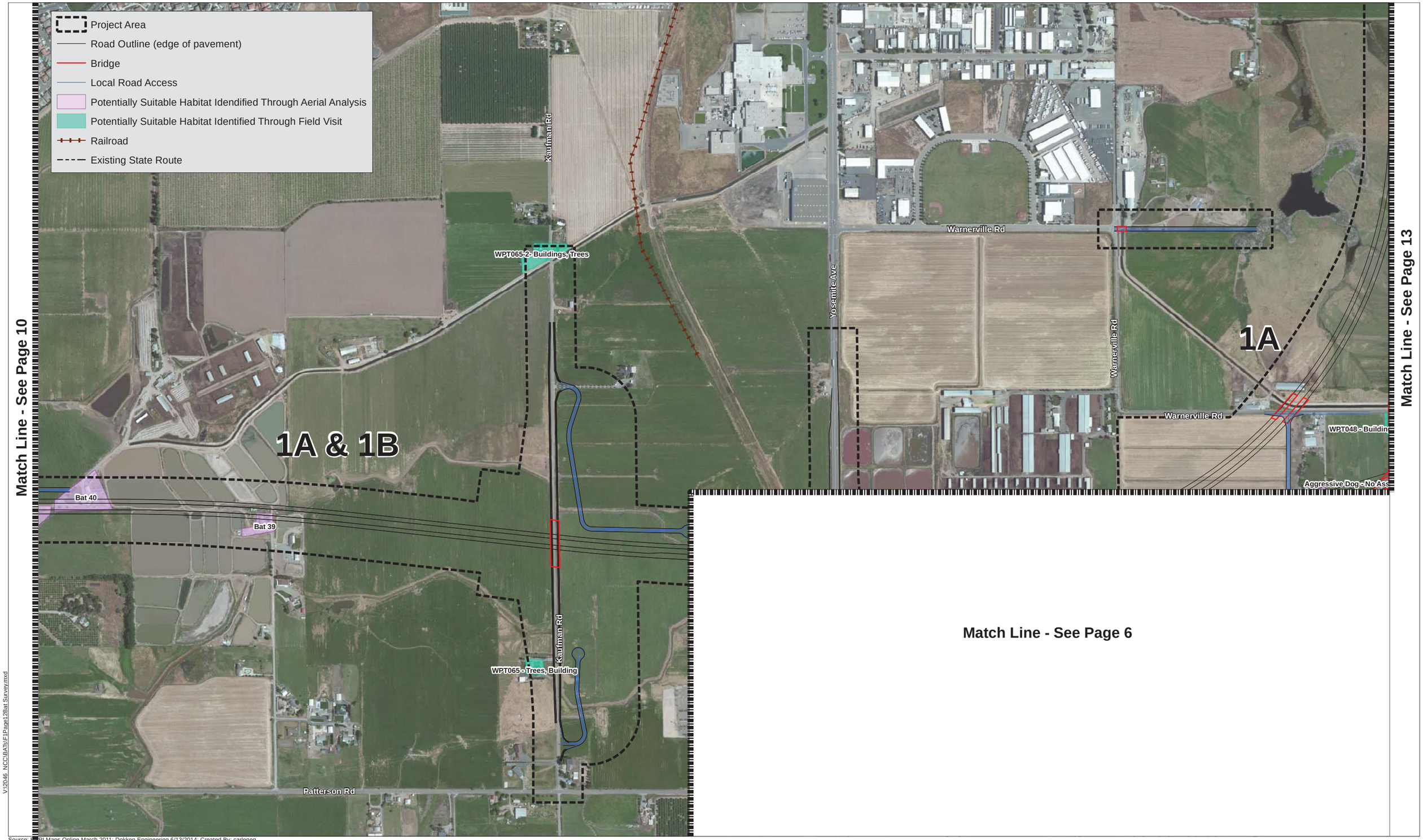

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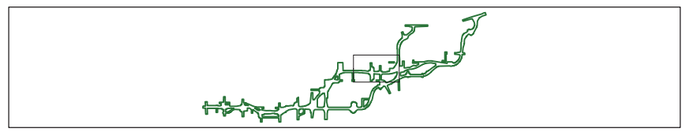

FIGURE 1
Bat Habitat Assessment Results
Page 12 of 14
EA: 10-08800, Project ID # 1000000263
North County Corridor New State Route 108 Project
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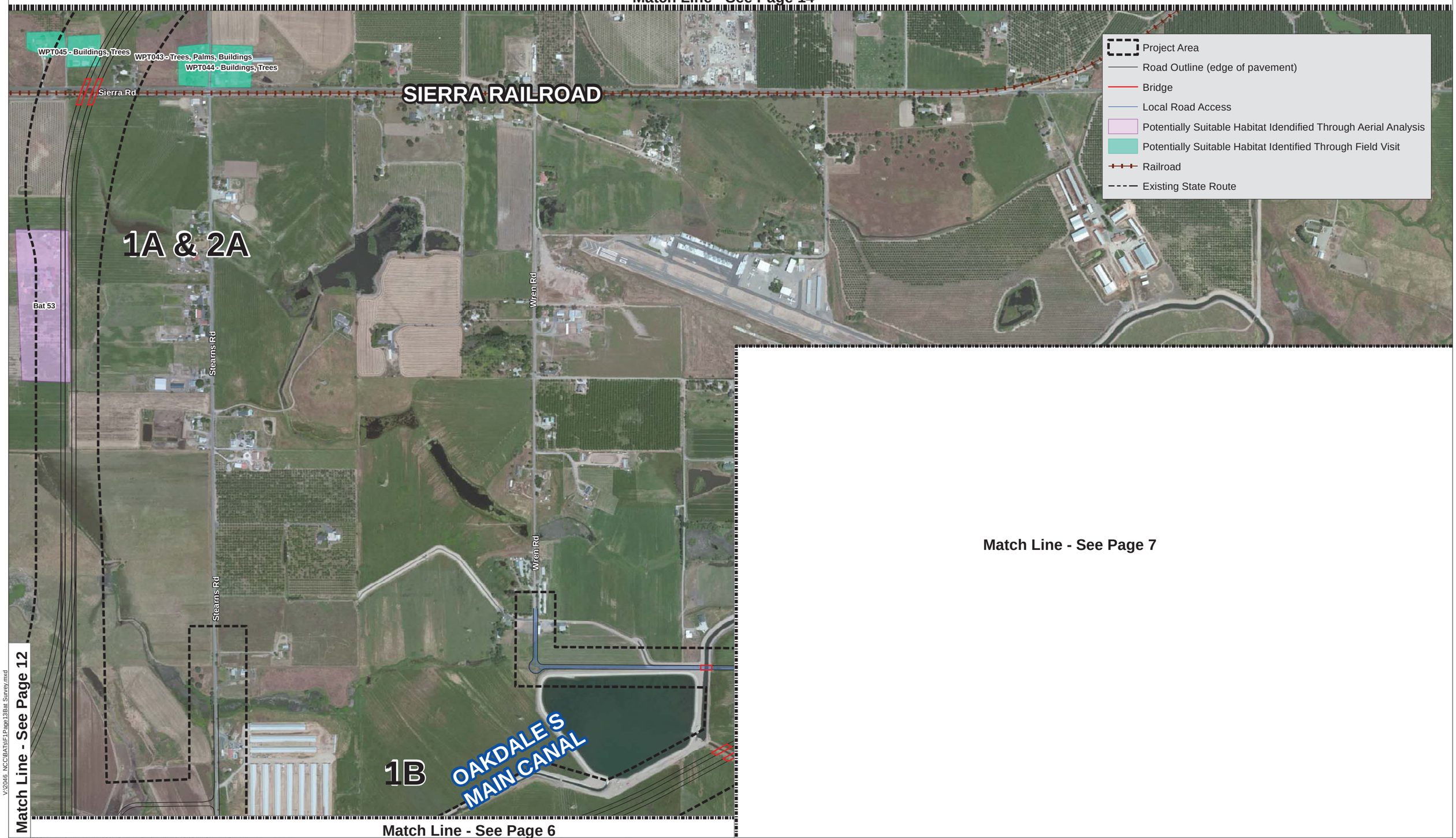

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Source: ESRI Maps Online March 2011; Dokken Engineering 6/13/2014; Created By: carleneg

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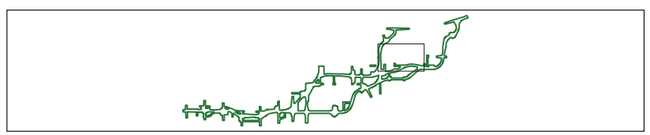
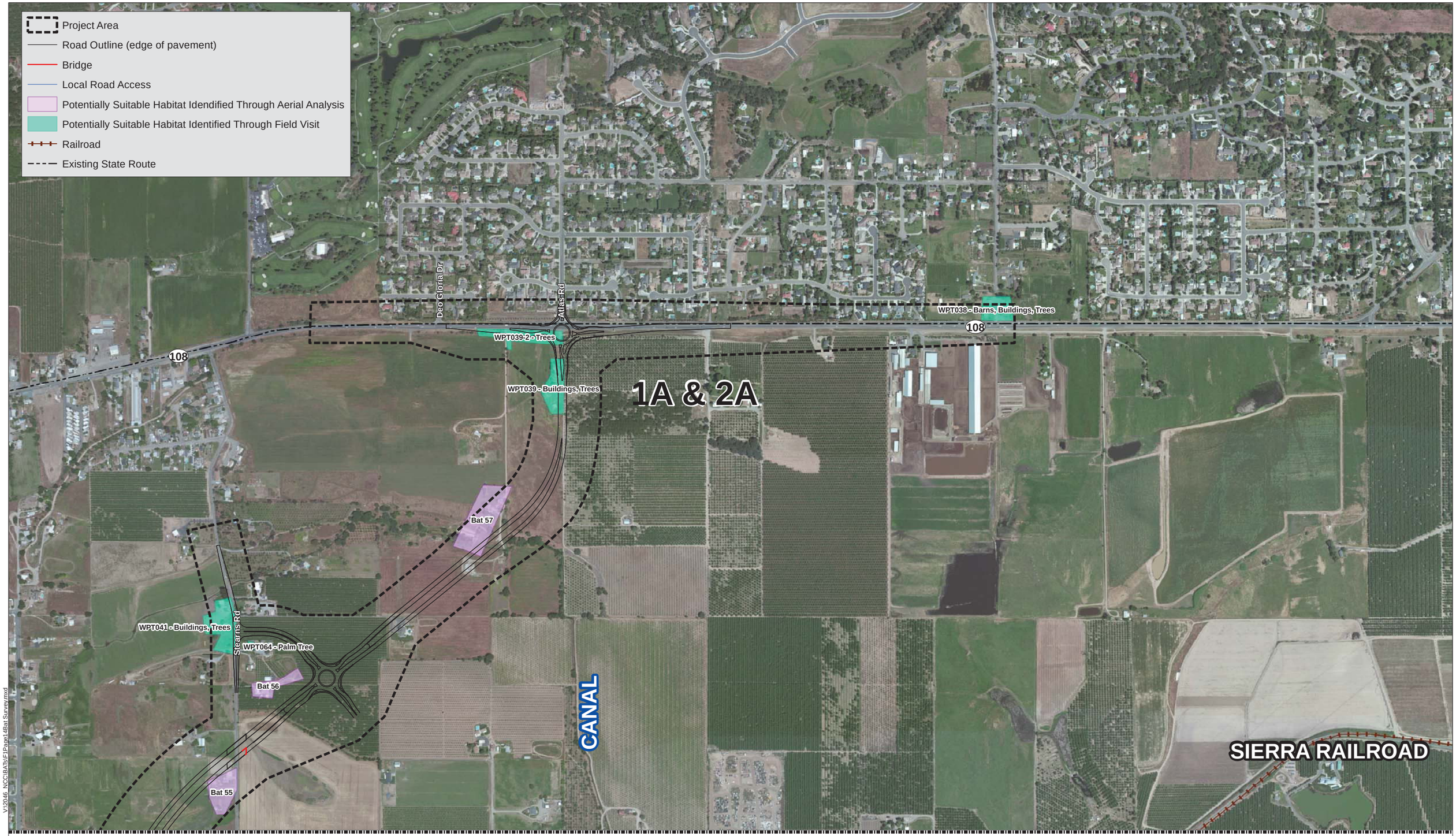


FIGURE 1
Bat Habitat Assessment Results
Page 13 of 14
EA: 10-08800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



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Source: ESRI Maps Online March 2011; Dokken Engineering 6/13/2014; Created By: carleneg

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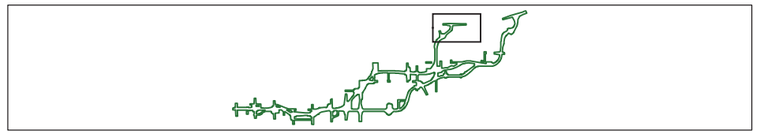

FIGURE 1
Bat Habitat Assessment Results
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Table 2. Aerial Analysis of Potentially Suitable Bat Habitat

Bat 1A	Potential building and tree habitat
Bat 2B	Potential tree habitat
Bat 7D	Potential building habitat
Bat 9	Potential building and tree habitat - out of construction area?
Bat 13	Potential building and tree habitat - out of construction area?
Bat 19	Potential building and tree habitat
Bat 20	Potential building and tree habitat
Bat 21	Potential building and tree habitat
Bat 22	Potential building and tree habitat
Bat 23	Potential building and tree habitat
Bat 24	Potential building and tree habitat
Bat 26	Potential building and tree habitat
Bat 27	Potential building and tree habitat
Bat 30	Potential tree and building habitat
Bat 31	Potential tree habitat
Bat 33	Potential building habitat - out of construction area?
Bat 34	Potential tree habitat
Bat 35	Potential tree habitat
Bat 38	Potential building and tree habitat
Bat 39	Potential building and tree habitat
Bat 40	Potential building habitat
Bat 41	Potential tree habitat
Bat 42	Potential tree habitat
Bat 45	Potential building habitat
Bat 46	Potential tree and building habitat
Bat 47	Potential red bat or hoary bat tree habitat - Eucalyptus
Bat 48	Potential building habitat
Bat 51	Potential buildings and trees
Bat 52	Potential tree habitat
Bat 53	Potential building and tree habitat
Bat 55	Potential building and tree habitat
Bat 56	Potential building and tree habitat
Bat 57	Potential tree and building habitat

Table 3. Field Habitat Assessment List of Potentially Suitable Bat Roost Habitat

Aggressive Dog - No Assessment	-120.9440244	37.71134038
WPT002 - Barn	-120.9440244	37.71134038
WPT008 - Buildings, Trees	-120.9440244	37.71134038
WPT009 - Horse Stables Buildings, Trees	-120.9440244	37.71134038
WPT010 - Barns, Residence, Palms, Trees	-120.9440244	37.71134038
WPT011 - Barns, Buildings, Trees	-120.9440244	37.71134038
WPT012 - Buildings, Trees	-120.9440244	37.71134038
WPT015 - Trees, Buildings, Water Tower	-120.9440244	37.71134038
WPT016 - Buildings, Trees	-120.9440244	37.71134038
WPT017 - Buildings, Palm	-120.9440244	37.71134038
WPT019 - Buildings, Trees, Palms	-120.9440244	37.71134038
WPT020 - Industrial buildings	-120.9440244	37.71134038
WPT022 - Barns, Buildings, Trees	-120.9440244	37.71134038
WPT023 - Trees, Buildings	-120.9440244	37.71134038
WPT025 - Buildings, Trees	-120.9440244	37.71134038
WPT026 - Barns, Trees along Canal	-120.9440244	37.71134038
WPT027 - Trees, Buildings	-120.9440244	37.71134038
WPT028 - Trees, Buildings	-120.9440244	37.71134038
WPT029 - Buildings, Tree	-120.9440244	37.71134038
WPT030 - Trees	-120.9440244	37.71134038
WPT031 - Trees, Buildings	-120.9440244	37.71134038
WPT032 - Buildings, Trees	-120.9440244	37.71134038
WPT033 - Buildings, Trees	-120.9440244	37.71134038
WPT034 - Buildings, Trees	-120.9440244	37.71134038
WPT035 - Barns, Trees	-120.9440244	37.71134038
WPT037 - Trees, Buildings	-120.9440244	37.71134038
WPT037-2 - Trees	-120.9440244	37.71134038
WPT037-3 - Trees - Already Trimmed	-120.9440244	37.71134038
WPT038 - Barns, Buildings, Trees	-120.9440244	37.71134038
WPT039 - Buildings, Trees	-120.9440244	37.71134038
WPT039-2 - Trees	-120.9440244	37.71134038
WPT041 - Buildings, Trees	-120.9440244	37.71134038
WPT043 - Trees, Palms, Buildings	-120.9440244	37.71134038
WPT044 - Buildings, Trees	-120.9440244	37.71134038
WPT045 - Buildings, Trees	-120.9440244	37.71134038
WPT046 - Buildings, Trees	-120.9440244	37.71134038
WPT047 - Buildings, Trees	-120.9440244	37.71134038
WPT047-2 - Trees	-120.9440244	37.71134038
WPT048 - Buildings, Trees	-120.9440244	37.71134038
WPT050 - Barn, Old Buildings	-120.9440244	37.71134038

WPT052 - Oak Trees, Silo	-120.9440244	37.71134038
WPT053 - Buildings, Orchard	-120.9440244	37.71134038
WPT054 - Palm Tree	-120.9440244	37.71134038
WPT055 - Buildings, Trees	-120.9440244	37.71134038
WPT056 - Trees, Buildings	-120.9440244	37.71134038
WPT057 - Horse Stables - Bldgs., Trees	-120.9440244	37.71134038
WPT058 - Palm Tree	-120.9440244	37.71134038
WPT060 - Trees, Old Barn	-120.9440244	37.71134038
WPT061 - Wood Quonset Huts	-120.9440244	37.71134038
WPT062 - Shed	-120.9440244	37.71134038
WPT062-2 - Barn - edge of route	-120.9440244	37.71134038
WPT062-3 - Buildings, Trees	-120.9440244	37.71134038
WPT063 - Trees, Buildings	-120.9440244	37.71134038
WPT064 - Palm Tree	-120.9440244	37.71134038
WPT065 - Trees, Building	-120.9440244	37.71134038
WPT065-2- Buildings, Trees	-120.9440244	37.71134038
WPT066 - Barn, Shed	-120.9440244	37.71134038
WPT067 - Buildings, Trees	-120.9440244	37.71134038
WPT068 - Barns, Oak Tree	-120.9440244	37.71134038
WPT23-2 - Trees with Cavities	-120.9440244	37.71134038
WPT23-3 - Tree	-120.9440244	37.71134038
WPT23-4 - Trees, Buildings	-120.9440244	37.71134038
WPT23-5 - Trees, Buildings	-120.9440244	37.71134038

Appendix D Burrowing Owl Habitat Assessment

HABITAT ASSESSMENT FOR WESTERN BURROWING OWL

NORTH COUNTY CORRIDOR NEW STATE ROUTE 108

STANISLAUS COUNTY, CALIFORNIA

August 2014

HABITAT ASSESSMENT FOR WESTERN BURROWING OWL

NORTH COUNTY CORRIDOR NEW STATE ROUTE 108

STANISLAUS, CALIFORNIA

Prepared for:
Stanislaus County
Department of Public Works
1716 Morgan Road
Modesto CA 95358
(209) 525-4130

August 2014

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A: REPRESENTATIVE PHOTOS OF THE PROJECT SITE

1.0 INTRODUCTION

1.1 PURPOSE OF ASSESSMENT

LSA Associates, Inc. (LSA) prepared this burrowing owl (*Athene cunicularia*) habitat assessment for the North County Corridor New State Route 108 project (NCC). The habitat assessment was conducted in accordance with the guidelines of the 2012 California Department of Fish and Wildlife (CDFW*) Staff Report on Burrowing Owl Mitigation.*

1.2 ASSESSMENT AREA

1.2.1 Location

The NCC is located in northern Stanislaus County in the San Joaquin Valley. The western end of the NCC begins approximately 4 miles (mi) east of State Route (SR) 99 and approximately 0.75 mi north of Modesto. The NCC extends approximately 18 mi to the east and ends at SR-108 east of Oakdale (Figures 1 and 2).

The NCC is located within portions of Township 2 South Ranges 9, 10, and 11E and Township 3 South Ranges 9, 10, and 11E Mount Diablo Baseline and Meridian, on the Salida, Riverbank, Waterford, Oakdale, and Knights Ferry 7.5 minute series United States Geological Survey (USGS) topographic maps.

1.2.2 Physical Description

The assessment area lies largely in the outskirts of the Cities of Modesto, Riverbank, and Oakdale. Generally, the assessment area is within areas of rural residential and agricultural properties. More urban residential and commercial development occurs in Riverbank, on the west end of the project site. Most of the project area has been developed either into residential or agricultural properties.

The assessment area is located within the Middle San Joaquin Lower Merced-Lower Stan Watershed. There are no substantial waterways in the assessment area but several small waterways are present. Many of these waterways are very small and unnamed, with only seasonal water conveyance. The northeastern and western parts of the assessment area drain to the north towards the Stanislaus River. The topography in the western and central portions is generally flat; the topography begins trending upward in the eastern portion of the assessment area. The elevation within the assessment area ranges from approximately 100 feet above sea level at the western end to approximately 250 feet above sea level at the eastern end.

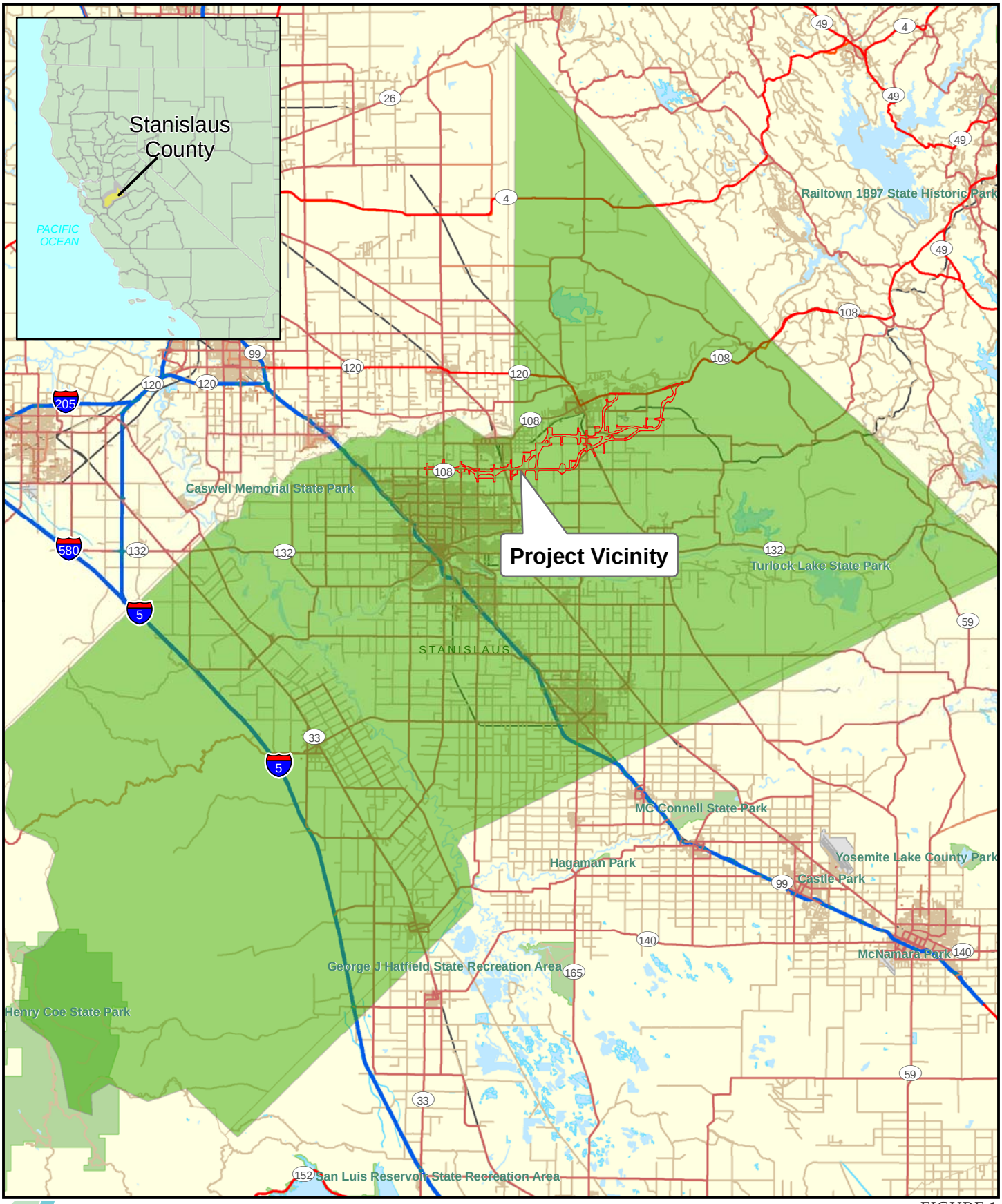


FIGURE 1

Project Vicinity

0 5 10
MILES

SOURCE: ESRI 2008; Dokken Engineering 5/8/2014.

I:\DHG1302\AI\Project Description\Figure 1.ai (5/14/14)

EA: 10-08800, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California

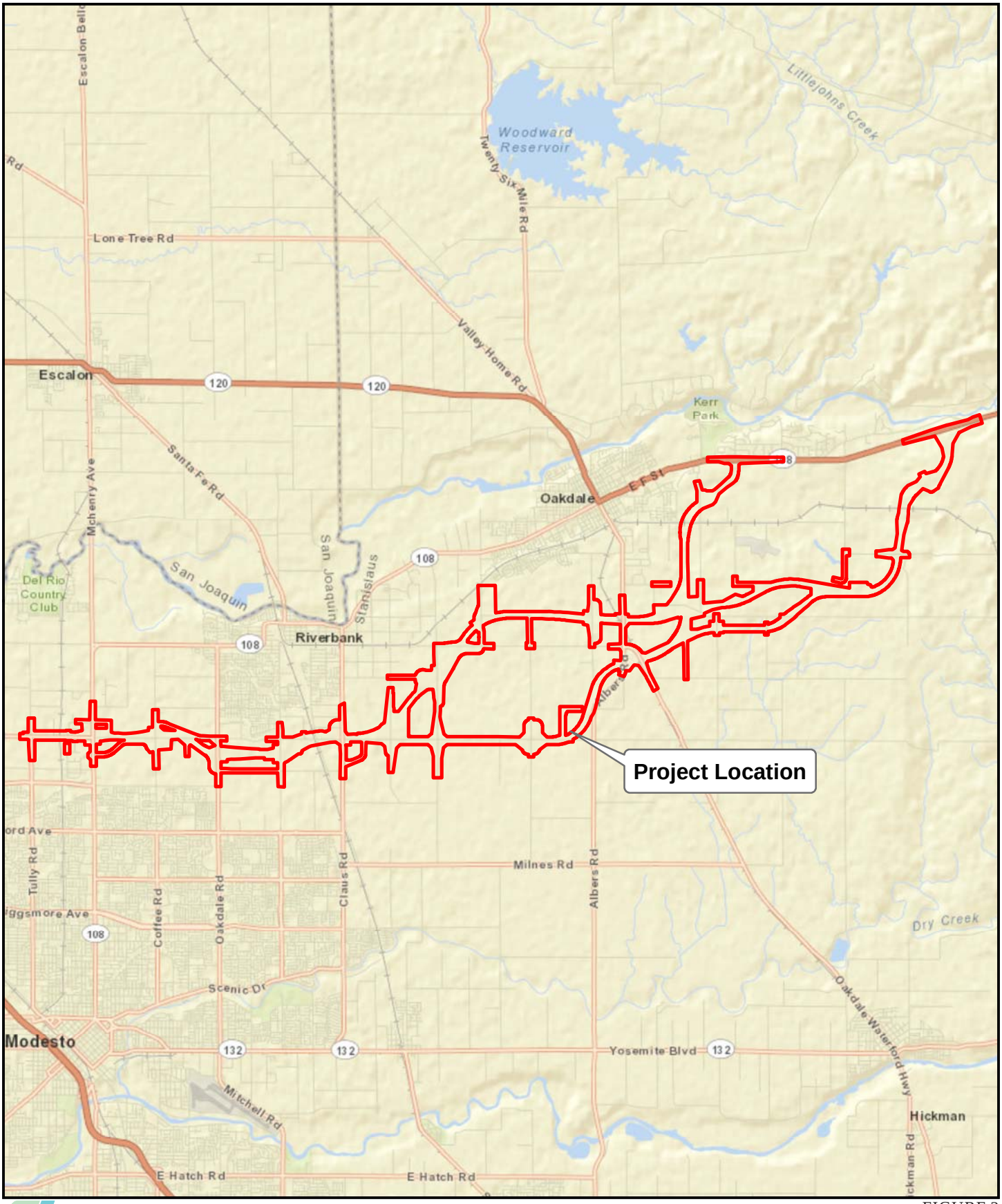


FIGURE 2

Caltrans

0 2.5 5
MILES

Project Location

EA: 10-08800, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California

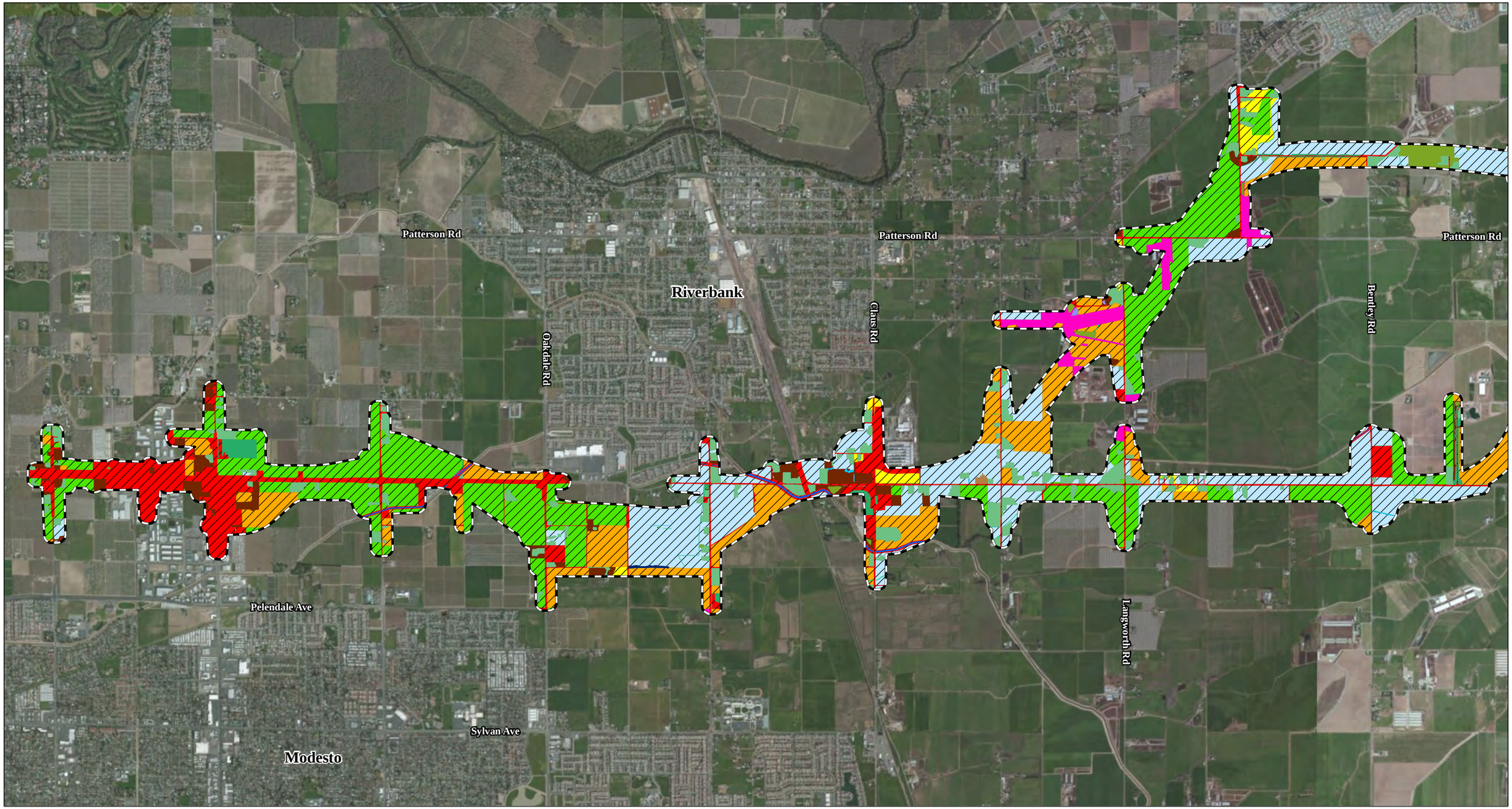
SOURCE: World Street Map; Dokken Engineering 5/8/2014.
I:\DHG1302\AI\Project Description\Figure 2.ai (5/14/14)

Vegetation communities and land uses in the assessment area include eight natural communities: interior live oak woodland, blue oak savannah, annual grassland, Himalayan blackberry bramble, riparian scrub, perennial marsh, seasonal marsh, and seasonal wetlands. Ten other vegetation communities and land uses not considered natural are also present: ponds/basin, ruderal, agricultural, orchard, irrigated pasture, canal and ditch, dairy and poultry farms, landscaped, rural residential and urban. Vegetation communities and land uses are summarized in Table 1 and shown in Figure 3.

These classifications were identified and described by ICF International in 2012 during a previous mapping effort for the NCC.

Table 1: Vegetation Comunities and Land Uses

Natural Communities	**Acres**
Interior live oak woodland	12.01
Blue oak savannah	5.08
Annual grassland	188.66
Himalayan blackberry bramble	6.94
Perennial marsh	14.07
Seasonal marsh	6.35
Riparian scrub	0.49
Seasonal wetland	7.63
Subtotal	***241.23***
Other Vegetation Communities/Land Uses	
Ruderal	184.73
Agricultural	894.98
Orchard	1,657.10
Irrigated pasture	1,301.81
Pond/basin	68.22
Canal and ditch	39.0
Dairy and poultry farms	112.58
Landscaped	39.02
Rural residential	320.45
Urban	575.57
Subtotal	***5193.46***
Total	**5,434.69**



Caltrans

0 1500 3000
FEET

LEGEND

Study Area

Vegetation Communities / Land Uses - (5,434.69 ac)

- Agricultural - (894.98 ac)
- Annual Grassland - (188.66 ac)
- Himalayan Blackberry Bramble - (7.06 ac)
- Blue Oak Savannah - (5.08 ac)
- Canal - (26.99 ac)
- Dairy and Poultry Farms - (112.58 ac)
- Ditch - (12.01 ac)
- Interior Live Oak Woodland - (12.01 ac)
- Irrigated Pasture - (1,301.81 ac)
- Landscaped - (39.02 ac)
- Perennial Marsh - (14.07 ac)
- Orchard - (1,657.10 ac)
- Pond/Basin - (68.22 ac)
- Riparian Scrub - (0.36 ac)
- Ruderal - (184.73 ac)
- Rural Residential - (320.45 ac)
- Seasonal Marsh - (6.35 ac)
- Seasonal Wetland - (7.63 ac)
- Urban - (575.59 ac)

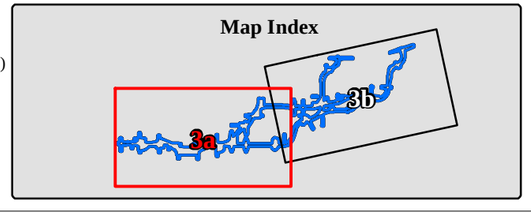


FIGURE 3a

Natural Communities and Land Use

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - ICF (2011); LSA Associates, Inc. (2014)

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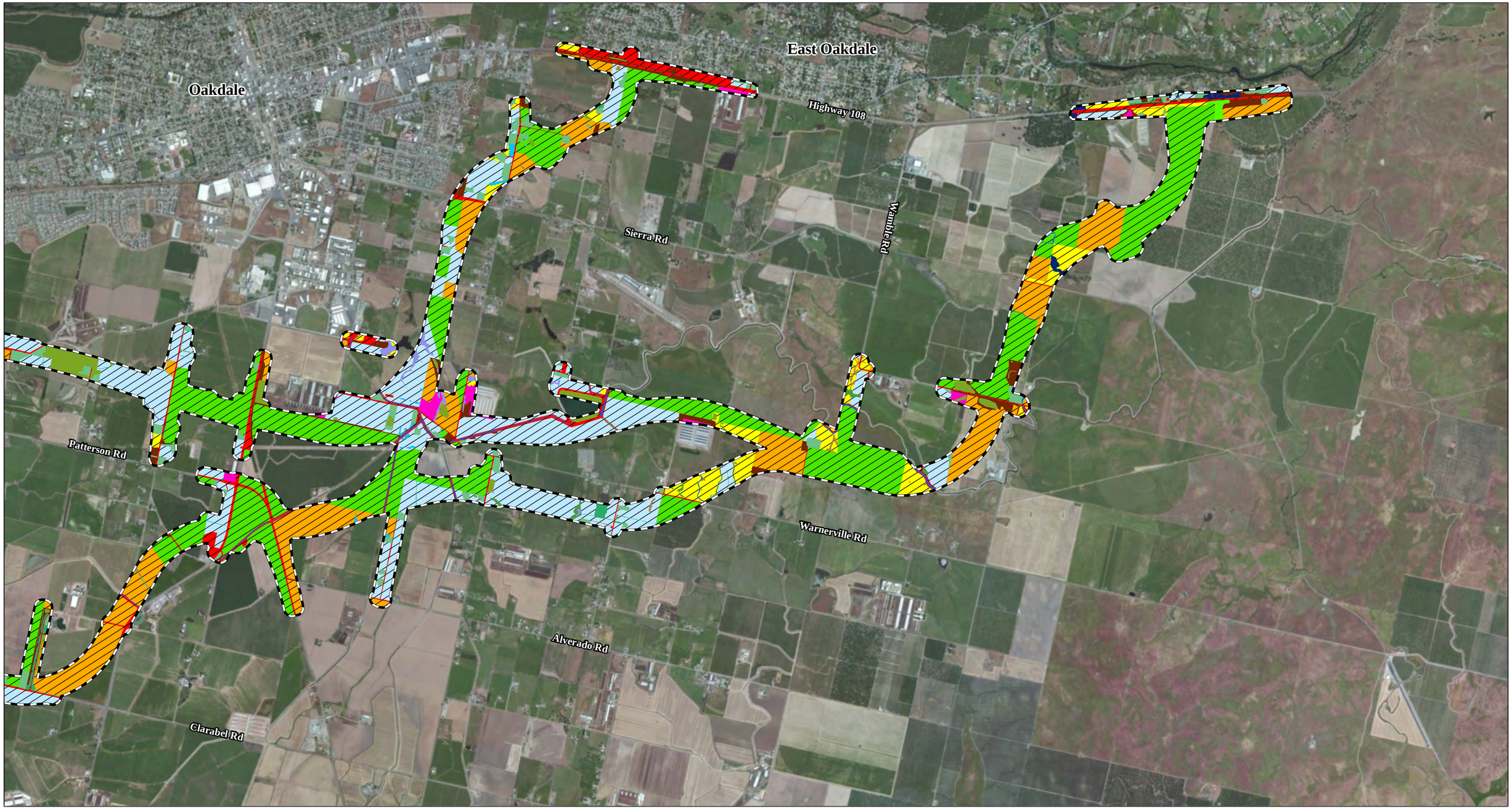

LEGEND

Study Area

Vegetation Communities / Land Uses - (5,434.69 ac)

- Agricultural - (894.98 ac)
- Annual Grassland - (188.66 ac)
- Himalayan Blackberry Bramble - (7.06 ac)
- Blue Oak Savannah - (5.08 ac)
- Canal - (26.99 ac)
- Dairy and Poultry Farms - (112.58 ac)
- Ditch - (12.01 ac)
- Interior Live Oak Woodland - (12.01 ac)
- Irrigated Pasture - (1,301.81 ac)
- Landscaped - (39.02 ac)
- Perennial Marsh - (14.07 ac)
- Orchard - (1,657.10 ac)
- Pond/Basin - (68.22 ac)
- Riparian Scrub - (0.36 ac)
- Ruderal - (184.73 ac)
- Rural Residential - (320.45 ac)
- Seasonal Marsh - (6.35 ac)
- Seasonal Wetland - (7.63 ac)
- Urban - (575.59 ac)

0 1500 3000
FEET

Map Index

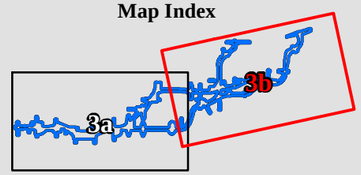

FIGURE 3b

Natural Communities and Land Use

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - ICF (2011); LSA Associates, Inc. (2014)

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2.0 PROJECT DESCRIPTION

The California Department of Transportation (Caltrans) in cooperation with the North County Corridor Transportation Expressway Authority proposes to construct the NCC. The project would replace the existing SR-108, which currently runs through the City of Riverbank and south of the City of Oakdale. The project would increase roadway capacity to accommodate existing and future traffic volumes.

In response to worsening traffic conflicts and traffic congestions in the region, increasing concern over traffic safety, and the continuing inhabitation of delivering goods and services, the purpose of the project is to improve the regional network circulation, relieve existing traffic congestion, reduce traffic delays, accommodate future traffic, increase interregional connectivity, support efficient movement of goods and services, and enhance traffic safety.

Four build and one no-build alternatives have been selected for evaluation. The four build alternatives (1A, 1B, 2A, and 2B) have the same western terminus, starting at the SR-219/Tully Road intersection, and then proceed east to the vicinity of the Claus Road/Claribel Road intersection. At this point, the project separates into two different alignments, 1 and 2. Alternatives 1A and 1B veer northeast through the southern boundary of Oakdale and Alternatives 2A and 2B continue past the Clairbel Road/Claus Road intersection and veer northeastward past Bentley Road. Each alternative then breaks into two possible alignments to their eastern terminus, just past the Oakdale-Waterford Highway. The eastern terminus of Alternatives 1A and 2A end along the SR-108/120 just east of the City of Oakdale boundary. Alternatives 1B and 1B end further east of the Alternatives 1A and 2A along SR-108/120 in the vicinity of Lancaster Road. In order to maintain access to all parcels, new and realigned local access roads will be included as part of the proposed project throughout the project area.

3.0 ASSESSMENT

3.1 METHODS

Prior to conducting the habitat assessment, LSA searched the California Natural Diversity Database (CNDDB) for burrowing owl records within the vicinity of the project site. LSA also reviewed aerial photographs of the site to identify areas that could potentially provide suitable habitat. In addition, LSA reviewed previous surveys that were conducted in the area to determine whether evidence of presence had been observed.

LSA biologist Dayna Winchell visited the project site and vicinity on March 3, March 5 and April 17, 2014. The field portion of the habitat assessment consisted of walking areas within the assessment area mapped as ruderal, annual grasslands, irrigated pastures, canals and levees in search of suitable burrowing owl burrows. The surveys covered areas where suitable habitat was present on and within 500 feet (approximately) of the project site that may directly or indirectly be impacted by the project. Inaccessible areas that contained suitable habitat were scanned with binoculars. While walking the project site, LSA searched for burrowing owls, suitable owl burrows and/or burrow surrogates (e.g. culverts and concrete rubble), and owl signs (e.g. tracks, feathers, pellets, whitewash and prey items). Suitable burrows within the project area were mapped in the field.

In addition, LSA spoke with local farmers and ranchers to understand irrigation practices that may impact potential burrowing owl habitat.

3.2 DOCUMENTED OCCURRENCES

LSA searched for records of burrowing owl in the project vicinity by querying the CNDDB referencing the 21 surrounding 7.5-minute USGS topographic quadrangles. There are 13 occurrences listed within the search area. The closest occurrence, dated 2004, is located approximately 0.5 miles north of the project site. According to the CNDDB record, the individual was observed perched on a fence and did not appear to be associated with a burrow. The next closest occurrence is located approximately 4 miles from the project site, north of Oakdale. All other occurrences are located at a minimum of 15 miles from the project site.

A survey conducted by ICF International (ICF) in 2012 documented signs of burrowing owls at two locations in the project area. The first observation was in annual grassland located north of Warnerville Road, just west of Emrey Road. The property contained multiple burrows on site and whitewash was observed around one burrow. The second observation occurred in annual grassland in the western portion of the project site, northeast of the intersection of Claribel Road and Claus Road. There are multiple suitable burrows on the property and downy feathers and prey remains were observed around one burrow.

3.3 SURVEY RESULTS

The habitat assessment included surveys of annual grasslands, ruderal vegetation, irrigated pasture, and canals and levees throughout the assessment area. Some of these areas provided potential burrowing owl habitat; however, no burrowing owls or evidence of burrowing owls were observed. Figure 4 illustrates areas with potential habitat for burrowing owl in the assessment area.

Annual Grassland and Ruderal

Annual grasslands and ruderal vegetation occur at several locations within the assessment area. LSA observed annual grasslands and ruderal vegetation that contained burrows of suitable size for burrowing owls and found some of these areas provided suitable burrows and foraging habitat for burrowing owls. LSA also observed areas of annual grasslands and ruderal vegetation that did not appear to be regularly managed (i.e., the vegetation was over 1.5 feet in height). Areas with tall vegetation are generally not considered suitable habitat for burrowing owls. No burrowing owls or sign of burrowing owls were observed in annual grasslands or ruderal vegetation within the assessment area.

LSA also surveyed the locations where ICF documented burrowing owl sign. The annual grasslands on the east end of the project have been converted to orchards and burrows are no longer on the property. The annual grassland in the west end of the project (at the northeast corner of Claribel Road and Claus Road) was surveyed three times throughout the habitat assessment. Although there are many burrows of suitable size for burrowing owl the property, the vegetation was regularly too tall (over 1.5 feet) to provide optimal habitat. Per discussion with management of this property, this corner of annual grassland is only minimally managed and, therefore, the vegetation is tall throughout a large portion of the year. Lastly, LSA also surveyed the location of the CNDDB record; located 0.5 mile north of the project area. This has been converted into a housing development and no longer supports suitable burrows.

Irrigated Pasture

LSA observed numerous irrigated pastures containing burrows of suitable size for burrowing owl; however, irrigation practices render these burrows unusable for multiple periods of time throughout the year. Per discussion with several local ranchers, the standard irrigation practice involves flooding the fields beginning in March and ending in September or October (weather depending). The local water district allocates 50 hours of water every 10 days. Although the frequency and length of watering depends on the hydrology of the pasture, the fields generally remain flooded for multiple days at a time. As a result, any suitable sized burrows would be flooded and unusable for most of the year. In addition, flooded fields do not provide suitable habitat for burrowing owl prey. The lack of prey base in irrigated pastures decreases the likelihood of burrowing owl utilizing burrows in irrigated pastures.

Some irrigated pastures throughout the project area contain elevated embankments or levees, generally in the back of the pasture. Some of these embankments, which are elevated above the flooded pastures, contain burrows suitable for burrowing owls. However, due to the regular flooding of the irrigated pastures, it is unlikely that there is sufficient prey base for the owls. No burrowing owls or sign of burrowing owls were observed in irrigated pasture within the assessment area.

Patterson Rd
Patterson Rd
Patterson Rd
Riverbank
Oakdale Rd
Claus Rd
Bentley Rd
Pelendale Ave
Langworth Rd
Sylvan Ave
Modesto

LEGEND

Biological Study Area

Suitable Burrowing Owl Burrows

0 1500 3000
FEET

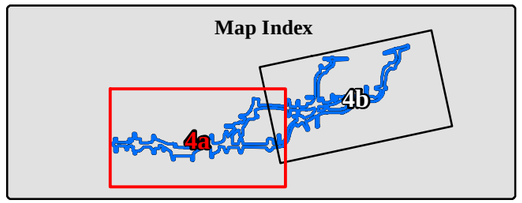

FIGURE 4a

Suitable Burrowing Owl Habitat

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014)
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LEGEND

Biological Study Area

Suitable Burrowing Owl Burrows

0 1500 3000
FEET

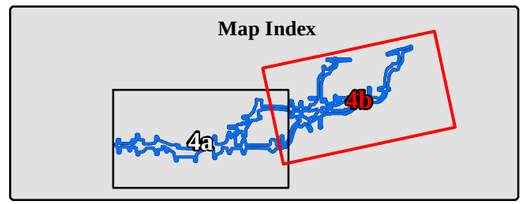


FIGURE 4b

Suitable Burrowing Owl Habitat

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: Basemap - ESRI Aerial Imagery (2011); Mapping - LSA Associates, Inc. (2014)
I:\Dhg1302\GIS\Reports\Burr Owl\BO_fig4_bo_hab.mxd (8/18/2014)

Canals and Levees

LSA also surveyed the canal levees throughout most of the assessment area; focusing on areas where there was suitable foraging habitat (e.g., grassland) nearby. Canals adjacent to orchards and vineyards were not surveyed since these areas do not provide a suitable prey base for the owls, thus making the adjacent levees unsuitable. In addition, crop-dusting was observed over many of the canals; this practice would also reduce the prey base for burrowing owls, further reducing the value of levees as habitat. Canals and levees that contain suitable burrows and adjacent foraging habitat were surveyed for burrowing owl and evidence of burrowing owls; no sign of burrowing owl presence was observed.

4.0 CONCLUSIONS

Overall, the assessment area only provides marginally suitable habitat for burrowing owls. Most of the assessment area is developed (into either urban or agriculture) or does not provide suitable habitat of burrowing owls (e.g., woodlands or marshes).

Remaining areas within the assessment area that potentially provide suitable habitat for burrowing owls include annual grasslands, ruderal vegetation, irrigated pastures, and canals and levees. LSA surveyed these areas of potentially suitable habitat within the assessment area to determine what areas provide suitable habitat for burrowing owls. Annual grasslands and ruderal areas, where burrows are present and the vegetation is managed, provides suitable habitat. Due to regular flooding, irrigated pastures do not provide suitable habitat for burrowing owls. Canals and levees provide only marginally suitable habitat due to lack of vegetation and implementation of crop-dusting.

Historically, there are very few known occurrences of burrowing owls in the vicinity of the assessment area. ICF, during a previous survey of the assessment area, documented two locations where evidence of burrowing owls was observed but only one of these locations still supports suitable habitat and no burrowing owl or sign was observed in 2014.

LSA identified numerous burrows of suitable size within the assessment area, but no burrowing owls or sign of burrowing owls were observed within the assessment area. The findings of this report are that there is marginally suitable habitat for western burrowing owls in the assessment area and it is unlikely that a substantial number of burrowing owls occur within the vicinity of the assessment area.

5.0 REFERENCES

California Department of Fish and Game. 2013. Rarefind 5 personal computer program. Sacramento, CA. Records search executed January 24, 2014. Sacramento, California.

California Department of Fish and Game. 2012. Staff Report On Burrowing Owl Mitigation. Sacramento, CA. 34 pp.

APPENDIX A

REPRESENTATIVE PHOTOS OF THE PROJECT SITE

Suitable burrow adjacent to annual grassland.

Unsuitable burrows along an unvegetated levee.

Suitable burrowing in irrigated pasture, prior to flooding.

Suitable burrows that are flooded due to irrigation practices.

North County Corridor Project
Stanislaus County, California
EA 10-0S800

Burrowing Owl Site Assessment
Representative Photos

SOURCE: LSA Associates, Inc (2014).

I:\Dhg1302\AI\Burrowing Owl Assessment\.BurrowingOwlRepPhotos.ai (08/18/14)

Appendix E USFWS Interim Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of Endangered Species Act for Listed Vernal Pool Branchiopods

United States Department of the Interior

FISH AND WILDLIFE SERVICE

IN REPLY REFER TO:

April 19, 1996

Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods

The endangered Conservancy fairy shrimp (*Branchinecta conservatio*), longhorn fairy shrimp (*Branchinecta longiantenna*), vernal pool tadpole shrimp (*Lepidurus packardi*), and the threatened vernal pool fairy shrimp (*Branchinecta lynchi*) were listed on September 19, 1994, under the Endangered Species Act of 1973, as amended (Act) (59 Federal Register 48136). These species are endemic to vernal pools in the Central Valley, coast ranges, and a limited number of sites in the Transverse Range and Riverside County, California. The endangered Riverside fairy shrimp (*Streptocephalus woottoni*) was listed under the Act on August 3, 1993 (58 Federal Register 41391). This species inhabits Riverside, Orange and San Diego Counties, California, and northern Baja California, Mexico. These five species, hereafter referred to as vernal pool branchiopods, are fully protected under the Act. The San Diego fairy shrimp (*Branchinecta sandiegonensis*) is a proposed endangered species. Surveys for all these species should follow the methodologies described in these Interim Survey Guidelines (Guidelines). It is expected that the Guidelines will be revised in the future as additional information becomes available.

These Guidelines are issued as guidance to section 10(a)(1)(A) permittees. Because taking (killing, injuring, harming or harassing) endangered species is strictly prohibited under the Act, a section 10(a)(1)(A) recovery permit must be obtained prior to initiating any surveys or studies that might result in the take of endangered or threatened branchiopods. Failure to obtain this permit may result in violation(s) of section 9 of the Endangered Species Act. Additionally, violation(s) of a section 10(a)(1)(A) permit may result in its non-renewal, suspension or revocation.

For the purposes of these Guidelines, vernal pools and swales are defined as follows:

> Vernal pools and swales are ephemeral wetlands that form in areas of California with Mediterranean climates that have shallow depressions underlain by a substrate of hardpan, clay, or basalt near the surface that restricts the percolation of water. They may be characterized by a barrier to overland flow that causes water to collect and pond. Vernal pools/swales may occur singly, but more typically occur in vernal pool/swale complexes, due to the local hydrology, geology, and topography. Initially, the dry soil in vernal pools/swales becomes wet and starts to saturate during the fall and early winter rains. The second stage in a typical vernal pool cycle is characterized by peak rainfall and inundation of the vernal pools/swales. Vernal pools may remain inundated until spring or early summer, sometimes filling and emptying numerous times during the wet season. The vernal pools gradually dry down during the spring, quite often forming the unique

"bathtub ring" of flowers from endemic vernal pool plants blooming profusely at the pool margins. This drying down stage is typified by the production of seeds in the endemic plants and the dispersal of animals from the vernal pools. These pools eventually dry down totally, with the onset of drought conditions. During this final stage, early season and shallow-rooted plants turn brown, and the soil dries and may crack. With average rainfall patterns, vernal pools are typically characterized by a predominantly annual plant community dominated by wetland species.

Note: At this time, vernal pool-associated activities not directed toward the listed species, such as botanical surveys and wetland delineations, are not considered to require a permit. <u>However, persons conducting such activities should minimize any potential impact on the vernal pool branchiopods or plants by reducing the amount of walking through vernal pools to the lowest extent practical</u>. Persons conducting projects that require permits (e.g., branchiopod or amphibian surveys) should also minimize walking through the pools.

I. Survey Approval

Unless otherwise authorized by the U.S. Fish and Wildlife Service (Service) in writing, these Guidelines shall be utilized for all surveys conducted for the listed vernal pool branchiopods. Any deviations from the methods prescribed by these Guidelines must be approved by the Service <u>before</u> surveys are conducted. The permittee shall provide the appropriate Service Field Office (see XI, Service Contact section) with all of the following information in writing for each project site at least 10 working days prior to the anticipated start date of survey work:

a. The precise location of the project site clearly delineated on either an original or high quality copy of a U.S. Geological Survey topographic map (exact scale, 7.5 minute, 1"=2000 ft.). The map should contain the project name, type of project by category [the categories are: development, mitigation banking, or other (specify)], the estimated area (acreage) of the project site and an estimated number or area (acreage) of pool/swales on the site, quad name, and county name;

b. Names of all vernal pool biologists and associated personnel with reference to their section 10(a)(1)(A) permit number; and

c. A written request to commence wet season or dry season sampling for each project to be surveyed for the listed vernal pool branchiopods.

II. Sampling Survey Completion

a. Once initiated, surveys conducted pursuant to these Guidelines may be suspended prior to completion if:

1. the presence of one or more of the five listed branchiopods on the subject site is determined through identification at any point within the <u>wet season</u> survey cycle; or

2. it is agreed that one or more of the listed vernal pool branchiopods are present on the subject site.

b. Permission to dry season survey for the listed vernal pool branchiopods requires the completion of both the full wet season survey and the dry season survey, including the complete analysis of all dry soil samples (see V).

c. A complete survey consists of sampling for either:

1. two full wet season surveys done within a 5-year period; or

2. two consecutive seasons of one full wet season survey and one dry season survey (or one dry season survey and one full wet season survey).

d. Each vernal pool/swale in a vernal pool/swale complex shall be surveyed as per these Guidelines. However, in the case of a large vernal pool/swale complex, the Service may authorize a representative portion or portions of the vernal pool/swale complex to be surveyed as per these Guidelines.

III. Notification of Presence

Should the permittee determine that any of the five listed vernal pool branchiopods are present at a site, the appropriate Service Field Office (see XI, Service Contact section) shall be notified within 10 working days by letter or telephone.

IV. Wet Season Surveys

Wet season survey sampling shall not be conducted at any project site unless the permittee receives prior permission from the Service (see I (c)).

a. Survey Initiation, Frequency, and Termination

1. Surveyors should visit sites after initial storm events to determine when pools/swales have been inundated. A pool/swale is considered to be inundated when it holds greater than 3 cm of standing water 24 hours after a rain event.

2. Pools/swales shall be adequately sampled once every two weeks, beginning no later than two weeks after their initial inundation and continuing until they are no longer inundated, or until they have experienced 120 days of continuous inundation.

3. In cases where the pools/swales dry and then refill in the same wet season, sampling shall be reinitiated within eight days of refilling every time they meet the 3 cm of standing water criteria and shall continue until they have experienced 120 days of continuous inundation, or until they are no longer inundated.

4. If a vernal pool/swale has already experienced 120 days of continuous inundation, but then dries down and subsequently refills in the same wet season, surveys must be

re-initiated in accordance with IV(a)(3) above, each time the vernal pool/swale refills and meets the 3 cm of standing water criteria.

5. Once initiated, surveys conducted pursuant to these Guidelines may be suspended prior to completion if the presence of one or more of the five listed branchiopods on the subject site is determined through identification at any point within the wet season survey cycle

b. Survey Sampling

At each wet season visit, representative portions of the pool/swale bottom, edges, and vertical water column shall be adequately sampled using a seine, dip net or aquarium net appropriate for the size of the pool or swale. Net mesh size shall not be larger than (1/8) inch. Seines shall be examined and emptied of material at least once every five linear meters.

c. Voucher Specimens

1. Voucher specimens shall be collected only once for each individual vernal pool/swale and shall be accessioned to either the California Academy of Sciences (CAS) or the Natural History Museum of Los Angeles County (LACM) (see VIII).

2. Voucher specimens of all listed vernal pool branchiopods captured shall be collected and all other specimens shall be returned in good condition to the vernal pool/swale where they were found as quickly as possible.

3. No more than 20 specimens of each species of listed vernal pool branchiopods from each pool/swale, or less than 10% of the subpopulation present in the pool/swale, whichever is the lesser amount, shall be retained and preserved as voucher specimens.

4. Only sexually mature, adult branchiopods shall be used for purposes of voucher specimens for species identification. The Service will not accept species identifications made using immature specimens.

5. The sample of 20 voucher specimens shall include no less than three specimens of either sex.

V. Dry Season Surveys

Dry season soil sampling shall not be conducted at any project site unless the permittee receives prior written permission from the Service (see I (c)).

a. Soil Collection

Soil shall be collected when it is dry to avoid damaging or destroying cysts which are more fragile when wet. A hand trowel or similar instrument shall be used to collect

approximately one liter volume sample per pool/swale of the top 1-3 cm of pool sediment. Whenever possible, soil samples shall be collected in chunks. The trowel shall be used to pry up intact chunks of sediment, rather than loosening the soil by raking and shoveling which can damage cysts.

In southern California there are a number of federally listed plant species (*Orcuttia californica, Pogogyne abramsii,* and *Pogogyne nudiscula*) that often co-occur with the fairy shrimp. Removal of soil could damage populations of these plants by inadvertently removing seed. Dry sampling should be minimized or avoided within those vernal pools/swales that are known to, or may, contain these species. The permittee shall contact the Carlsbad Field Office (see XI, Service Contact section) regarding the distribution of these listed plants species prior to conducting dry sampling in Los Angeles, Orange, Riverside and other southern California counties.

b. Soil Sample Volume

Each soil sample from the 10 soil sample locations shall be labeled, stored, and analyzed individually.

1. A total of 10 soil samples of approximately 100 ml each shall be taken from each pool/swale, for a total soil sample volume of approximately one liter per pool/swale.

2 In the case of a very large playa, dry lake, or vernal pool, the Service may authorize the removal of more than one liter of soil.

3. If a pool has a diameter of less than three meters, the total soil sample taken shall not exceed ½ liter in volume per pool, and the 10 soil samples shall be approximately 50 ml each in volume.

c. Soil Sample Locations

A total of 10 soil samples shall be collected from the following locations within each pool/swale sampled:

1. Starting with one soil sample taken from the edge of the pool/swale, at least four soil samples shall be taken from equidistant points along the longest transect of the pool/swale.

2. Starting with one soil sample taken from the edge of the pool/swale, at least four soil samples shall be taken from equidistant points along the widest transect of the pool/swale.

3. If neither the longest or the widest transect encompasses the deepest part (or parts) of the pool/swale, then at least two soil samples shall be taken from the deepest part (or parts) of the pool/swale..

d. Soil Storage

1. The soil samples from each soil sample location shall be stored in separate bags, labeled with the specific location within the pool/swale from where each soil sample was taken. A sketch of the pool/swale showing the specific location of each soil sample shall be included in the 90-day report.

2. Soil samples containing any residual moisture initially shall be adequately ventilated and allowed to air dry thoroughly before storage of the sample. The bags containing the soil samples shall be kept out of direct sunlight in order to avoid excessively heating the sample.

3. All soil samples shall be retained and stored as directed in V(d)(1) and V(d)(2) above until the Service is able to provide direction in species-level identification of the cysts of all the aforementioned branchiopod species.

e. Soil Sieving

1. The soil samples shall not be ground, crushed, or otherwise manipulated in order to expedite the sieving process. A relatively short period of pre-soaking the soil sample may be helpful/necessary in order to facilitate the sieving process. Small aliquots (approximately 50 ml in volume) of soil shall be gently washed with water through a graded series of U.S. standard eight inch soil sieves ending in mesh sizes 300 micron (um), and 150 micron (um).

2. Sieves must be thoroughly rinsed and visually inspected for any cysts adhered to the sieves prior to the start of sieving. This process must be repeated for each individual soil sample location. Sieves shall also be rinsed and thoroughly inspected upon completion of sieving soil samples.

f. Soil Examination

1. Washed and sieved soil fractions from the 300 um and 150 um sieves shall be examined under a dissecting microscope for tadpole shrimp and fairy shrimp cysts. The process shall be repeated until all individual soil samples have been examined. All sieved material shall be processed and dried as quickly as possible, preferably within one hour from the initial wetting.

   Note: Do not return soil to survey sampling site.

2. All fairy shrimp and tadpole shrimp cysts shall be removed from the soil, separated by cyst type into labeled vials, allowed to air-dry, and then <u>stored dry</u>.

g. Cyst Density

Cyst density information for each soil sample location shall be calculated by dividing the total number of cysts recovered by the total amount of soil from the individual aliquots from that soil sample location. Total cyst density information for each soil sample location shall be reported for each species in terms of: none; 1-25 cysts/100 ml soil;

26-50 cysts/100 ml soil; 51-100 cysts/100 ml soil; 101-199 cysts/100 ml soil; or more than 200 cysts/100 ml soil.

h. Cyst Identification

Each fairy shrimp and tadpole shrimp cyst type shall be identified to genus by a qualified biologist. The Service may require an independent review by a crustacean biologist(s) of any vernal pool branchiopod or cyst identification.

There are two options when a branchiopod cyst identification is made to genus:

1. the survey, pursuant to these Guidelines, may be suspended if it is agreed one or more of the listed species are present on the project site; or

2. one subsequent complete wet season sampling survey shall be conducted to complete survey requirements.

VI. Cyst Voucher Specimens

A representative sample of each cyst type from each pool/swale shall be accessioned to either CAS or LACM (see VIII).

VII. 90-Day Reports

a. U.S. Fish & Wildlife Service

The permittee shall provide the appropriate Service Fish and Wildlife Office (listed in the Service Contact section) with all of the following information in writing, using the appropriate Vernal Pool Data Sheet where applicable as the reporting form, no more than 90 calendar days after completing the last field visit of the season at each project site:

1. The location of the project site clearly delineated on an original or high quality copy of a U.S. Geological Survey topographic map (exact scale, 7.5 minute, 1"=2000 ft.). The location of the listed vernal pool branchiopods is to be included on the 7.5 minute maps in as precise a manner as possible (e.g., lat/long or location within a section).

2. Five color photographic 35mm slides and/or 3" x 5" photographs of each project site taken during sampling in the wet season; this is to include two slides and/or photographs taken from standing position that portray the general landscape of the site [i.e., two photos from an opposing axis of the site (e.g., north and south compass headings)]; and three slides and/or photographs of representative vernal pools, swales, and other areas within the site sampled for the five listed vernal pool branchiopod species. The following information shall be legibly written on each slide/photograph with permanent ink: precise location of the project site, direction from which photograph was taken, date of photograph, initials of photographer, and

initials of the scientific names of any of the five listed vernal pool branchiopod species that were found at the depicted site.
Note: Slides and/or photographs only need to be submitted once per project site.

3. The estimated number of individuals of any of the listed vernal pool branchiopods observed in each pool/swale shall be reported in terms of an order of magnitude (e.g., 10's, 100's, 1000's).
(Refer to the Vernal Pool Data Sheet)

4. The number of individuals of any of the listed vernal pool branchiopods or cysts preserved from each pool/swale and the name of the institution in which they are accessioned.
(Refer to the Vernal Pool Data Sheet)

5. A qualitative description of the vernal pool/swale community. A general list of amphibian species and non-listed vernal pool crustacean species (by common and/or scientific name) encountered at the project site is desirable. For purposes of this permit a full survey for these species is not required. However, if more detailed information is collected, it shall be included in the Vernal Pool Data Sheet.
(Refer to the Vernal Pool Data Sheet)

6. Data collected during each field visit, including: date, air temperature, water temperature, weather conditions (e.g., sunny, overcast), maximum depth of each pool/swale, and size (area in square meters) of each pool/swale.
(Refer to the Vernal Pool Data Sheet).

7. (Optional) water chemistry data collected during each field visit, including: alkalinity (total: ppm or mg/l), conductivity (uMHO), dissolved oxygen (ppm or mg/l), dissolved NH_4 (ppm or mg/l), pH, salinity (ppt), total dissolved solids (TDS, ppm), and turbidity.
(Refer to the Vernal Pool Data Sheet)

b. California Department of Fish & Game

1. Permittees should consult with the California Department of Fish and Game (916/653-4875) to determine their responsibilities under the California Endangered Species Act and the California Fish and Game Code.

2. The permittee shall supply the California Department of Fish and Game (Natural Diversity Data Base, California Department of Fish and Game, 1807 13th Street, Suite 202, Sacramento, California 95814; telephone 916/322-2494) with completed California Native Species Field Survey Forms, no more than 90 calendar days after completing the last field visit of the season at each project site.

VIII. Accessioning Voucher Specimens

a. All vernal pool branchiopod voucher specimens (including individuals collected and cysts) shall be accessioned into either the California Academy of Sciences (CAS) or the Natural History Museum of Los Angeles County (LACM). All specimens shall be preserved according to the accession standards of the repository which will accession and maintain the specimens. The October 1995 CAS and September 1995 LACM standards are attached to these Interim Survey Guidelines.

b. All vernal pool branchiopod voucher specimens (including individuals collected and cysts), along with a copy of the Vernal Pool Data Sheet containing all of the items listed in VII (a), shall be permanently deposited in the CAS or LACM within 90 calendar days of the completion of the field survey and the Service shall be supplied with the CAS or LACM catalog numbers given to the specimens.

c. The permittee shall supply the CAS or LACM with a photocopy of their section 10(a)(1)(A) permit to validate that the specimens supplied to them were taken pursuant to a permit. The Service will likely consider refusal by the CAS or LACM to accession any listed branchiopod specimens to be a violation by the permittee of their section 10(a)(1)(A) permit (e.g., if due to improper preservation/storage).

California Academy of Sciences (CAS)
Department of Invertebrate Zoology and Geology, Golden Gate Park,
San Francisco, California 94118; telephone (415) 750-7082

Natural History Museum of Los Angeles County (LACM)
Crustacea Section, Invertebrate Zoology, 900 Exposition Boulevard,
Los Angeles, California 90007; telephone (213) 744-3450

IX. Additional information, limitations, and caveats with respect to these Guidelines are as follows:

a. From time to time, specific circumstances may justify or necessitate revision of these Guidelines, on a case-by-case basis. At the discretion of the Service, such a variance may be allowable under these Guidelines if:

1. the permittee explains to the Service in writing why the variance to the Guidelines is needed and justified; and

2. the Service concurs, in writing, with the variance requested by the permittee.

b. The Service reserves the right to reject vernal pool branchiopod surveys conducted under these protocols as inadequate if:

1. survey methods used are inconsistent with these Guidelines, unless prior written permission (see I, Survey Approval) has been obtained; or

2. other information indicates that the survey is inadequate as determined by the Service.

X. Permit Infractions

The Service may consider any of these actions to be a violation by the permittee of their section 10(a)(1)(A) permit:

a. falsification of any reporting or information;

b. failure to follow the stated Guidelines sampling methodologies;

c. failure to obtain prior permission to commence wet season surveys or failure to obtain written permission to commence dry season surveys (see section I (c));

d. failure to notify the Service within 10 days of a determination of presence of one or more of the listed vernal pool branchiopods on a survey site;

e. failure to accession voucher specimens or improperly accessioned voucher specimens;

f. failure to file completed 90-day reports with the Service within 90 calendar days after completing the last field visit of the season at each project site; or

g. failure to file completed Natural Diversity Data Base forms with the California Department of Fish and Game within 90 calendar days after completing the last field visit of the season at each project site.

Violation(s) of a section 10(a)(1)(A) permit may result in its non-renewal, suspension or revocation.

XI. Service Contact

For the Central Valley hydrographic basin and the coast ranges north of the Santa Cruz County line, the Sacramento Fish and Wildlife Office (2800 Cottage Way, W-2605, Sacramento, California 95825; telephone 916/414-6600) should be contacted regarding vernal pool branchiopod issues.

For areas from Santa Cruz County south to Ventura County, contact the Ventura Field Office (2493 Portola Road - Suite B, Ventura, California 93003; telephone 805/644-1766).

For areas from Los Angeles County south to the U.S.- Mexico border, contact the Carlsbad Field Office (2730 Loker Avenue West, Carlsbad, California 92008; telephone 619/431-9440).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no ____ yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: ____/____/____ Time: _____ County: _____ Quad: _____

Collector(s): _____ Permit #: _____

Site/Project Name: _____ Pool #: _____

Township: _____ Range: _____ Section: _____ _____lat._____long.

Temperature: Water: _____ °C Air: _____ °C

Pool Depth:
at time of sampling: _____cm
estimated maximum: _____cm

Surface Area:
at time of sampling: _____m x _____m
estimated maximum: _____m x _____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep
other_____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l Conductivity:_____uMHO

Dissolved NH_4:_____ppt or ppm Dissolved Oxygen:_____ppm or mg/l

pH:_____ Turbidity: (secchi disc depth)_____cm or: clear to bottom _____

Salinity :_____ppt or ppm Total Dissolved Solids (TDS):_____ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
(note reproductive status)

Notostracans:
(note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
Frogs	yes	no	Corixidae:	yes	no
Salamanders	yes	no	Notonectidae:	yes	no
Waterfowl	yes	no	Belostomatidae:	yes	no
Other (specify) _____			Other (specify) _____		

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____ no _____ yes

Required color slides and/or photographs for the project site are included: _____ no _____ yes

Date: ____/____/____ Time: _____ County: _____ Quad: _____

Collector(s): _____ Permit #: _____

Site/Project Name: _____ Pool #: _____

Township: _____ Range: _____ Section: _____ _____lat. _____ long.

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other_____
  light moderate heavy

- land use of habitat:

Pool Bottom Surface: (circle where appropriate)
hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m^2 (estimated maximum)

Sketch of pool and transects showing:
- scale
- indication of North
- sampling locations

U.S Fish and Wildlife Service Vernal Pool Data Sheet
Dry Season Survey
Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml)	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml)

Voucher Specimens
Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

Collection, Preservation, Handling, and Accessioning Information for Small Crustaceans

Crustacea Section, Invertebrate Zoology
The Natural History Museum of Los Angeles County
900 Exposition Boulevard
Los Angeles, California 90007

Collection Data

To the extent possible, the following data should be included. The Museum reserves the right to refuse acceptance of any specimens without a minimum of usable, legible collection data. Archival quality materials (including glass vials, permanent ink or pencil and permanent label paper, and glass outer jars with screw-top polypropylene lids) should always be used (see below). All collections should include the following information:

Taxon name: (Lowest available or known, down to species where possible)
Date: (day, month, year)
Time of Day: (if known)
Detailed Location:
Latitude and Longitude:
Specific habitat information:
Name of collector:
Collecting method(s) / device(s):
Preservative used:
Notes: (to include any observations on behavior, co-occurring species, etc.)

Preservation

Ideally, even small crustaceans should be initially fixed in 5 to 10% formalin (37% formaldehyde in solution, as commercially purchased, mixed with 90-95% water). As an alternative, 100% ethyl alcohol, although not a fixative and so not as good for long term tissue preservation, can sometimes be used (not recommended for animals longer than 20 mm total length). With either method, specimens should be transferred to 70% ethyl alcohol (ethanol) after a minimum of 8 hours of fixation. The 70% ethanol to tissue ratio should be approximately 3 to 1 for long term storage.

Storage

Archival quality materials (including glass vials, permanent ink or pencil and permanent label paper, and glass outer jars with screw-top polypropylene lids) should always be used. Specimens should be placed in small glass vials completely filled with 70% ethanol and plugged with cotton (not foam). Vials are then inverted and stored in a slightly larger outer storage jar of glass or plastic, also filled with 70% ethanol and fitted with a polypropylene-closure lid. Labels are ideally situated in the outer jar containing the vial rather than in the shell vial, never on the outside of the jar or affixed to the lid.

Shipping
Specimens should be shipped in plastic, leak-proof bottles, jars, or vials, and must be adequately cushioned by bubble-wrap, plastic peanuts, etc. to ensure their safe arrival. It is preferred that specimens that are designated types or vouchers be sent by registered or certified mail, although this is at the discretion of the sender. Use the complete address given at the top of this document.

Cost of Specimen Accessioning
Because of the rising costs of accessioning and maintaining valuable collections, the Natural History Museum reserves the right to charge on a per-sample basis for accessioning collections. This fee varies with the size of the collection, duration of the project, and availability of Museum staff at the time of deposition. The fee may be waived at the discretion of the Curator or Collections Manager of Crustacea and may fluctuate depending upon our evaluation of lots received.

Accessioning Information
The Natural History Museum of Los Angeles County will accept for permanent care and curation selected collections of Crustacea, including those from vernal pools and other ephemeral freshwater habitats and representatives of threatened or endangered taxa. The Museum is willing to act as the repository for collections acquired during USFWS or other surveys.

To be accepted for accessioning, the collections must be in reasonably good shape, meaning that the animals themselves must not be overly deteriorated and that all previously stated collecting, preserving, and labeling protocols have been followed. Furthermore, all collections must be accompanied by a detailed list of the specimens being sent.

The Museum reserves the right to charge an accessioning fee to cover the costs of accessioning any and all deposited specimens. This fee may be waived at the discretion of the curator in charge of the Museum Section that will be overseeing the accessioning and curation of the collection.

The Museum reserves the right to decide whether an incoming collection should be stored topically vs. separated and stored according to taxonomic divisions (i.e. storing all members of one family together rather than keeping all collections from one site together).

The Museum further reserves the right to decide which specimens will be kept and maintained for long term storage and which may be passed on to other institutions in exchange or as long term loans for research purposes.

For further information contact: (Or write to the address given above)

Dr. Gary Pettit, Collections Manager, Crustacea 213-744-3450 fax 746-2999
Dr. Joel W. Martin, Curator of Crustacea 213-744-3440 fax as above

This document current as of 25 September 1995

California Academy of Sciences
Department of Invertebrate Zoology and Geology
Golden Gate Park
San Francisco, CA 94118

October 1995

Protocols and standards for preservation and archival of vernal pool crustaceans.

Specimens of vernal pool crustaceans listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS) and collected during surveys permitted by the USFWS may be deposited as voucher specimens at the California Academy of Sciences, Department of Invertebrate Zoology and Geology (CASIZG). However, only those specimens which have been properly fixed, preserved and documented will be accepted for archival. The vendors listed below can supply the necessary materials for specimen storage, however these vendors are not specifically required and materials from other sources will be acceptable provided they meet the standard requirements of CASIZG.

Any questions regarding these standards and protocols may be directed to Dr. Robert Van Syoc, Senior Collection Manager of invertebrates at CASIZG (415-750-7082). Visits to the collection to deposit potential voucher specimens must be at least 7 days in advance. Specimens may be shipped to CASIZG, but shipments with damaged specimens or broken containers will not be accepted. Each shipment must be accompanied by a packing list of specimens sent. CASIZG catalog numbers will be assigned by CAS staff and notification sent to you by U. S. mail. This will be done in an expeditious manner, but staffing limitations may cause delays. Therefore, allow several days for notification of CASIZG catalog numbers.

Materials required:

100% or 95% non-denatured ethanol
75% non-denatured ethanol (diluted from 100% or 95% with de-ionized or distilled water)
2 dram, 4 dram, 6 dram glass shell vials
Clean cotton
8 oz. tall flint glass bottles, 48 mm aperture (inside diameter) or 32 oz. glass *bottles*, 74 mm aperture (inside diameter)
White polypropylene screw-top closures with solid (no holes) smooth surface, 58 mm diameter (8 oz. bottles) or 85 mm diameter (32 oz. bottles), with foam or plastic liners
Nalgene polypaper
Dot-matrix printer and alcohol-proof ink ribbons, or technical pen with alcohol-proof ink, or #2 pencil'

Standards and Protocols:

Vernal pool crustaceans must be fixed in 100-95% non-denatured ethanol and preserved for archival in 75% non-denatured ethanol. Enough 100-95% ethanol should be used in the initial fixation to insure proper fixing of tissues. A ratio of at least 10 parts 100-95% ethanol to 1 part tissue is required for initial fixation. A ratio of at least 3 parts 75% ethanol to 1 part tissue is required for preservation.

All specimens must be sorted by collecting event (each locality/date/time of collection). They must be identified to species level, each species from each collecting event placed into a vial or vials in it's own 8 or 32 oz. bottle (use the smaller size if possible).

Specimens are placed into 2 dram, 4 dram, or 6 dram glass shell vials filled with 75% ethanol. The vial or vials are plugged with clean cotton in such a manner that no air bubbles are trapped inside and placed inverted into an 8 or 32 oz. glass bottle filled with 75% ethanol (Fig. 1). If open vials with specimens are inserted upright into the larger container, then plugged with cotton, air bubbles will not be trapped in the vial. The vial may then be removed and placed back into the bottle with cotton plug down for archival. It is important to remember that the specimens should not be jammed into the vials. The purpose of placing specimens into vials is to protect them from potential damage which could be caused by contact with labels placed into the jar or during removal from the 8 or 32 oz. container. However, putting too many specimens into a vial or putting specimens into a vial which is too small will damage them. The required ratio of preservative to tissue inside the vial is at least 3 parts 75% ethanol to 1 part tissue. This may require splitting a species sample from a single collecting event into two or more vials within a bottle or even into two bottles.

The 8 or 32 oz. glass bottle is capped with the foam or plastic lined, screw-top polypropylene closure.

Each 8 or 32 oz. bottle must contain a label with collecting event data on Nalgene polypaper in alcohol-proof ink or #2 pencil. Labels must be placed into the specimen bottle which contains the specimen vial(s), not directly inside the vials and not attached to the outside of the bottle. The data may be printed using a dot-matrix printer with alcohol-proof ink ribbon. Alternatively, it may be hand printed with technical pen using alcohol-proof ink or a #2 pencil. Laser printed or photocopied labels are not acceptable. All labels must be easily readable by CAS staff. If labels are not legible, specimens will not be accepted or cataloged into the CAS collection. Labels should be no larger than 3 x 5 inches and no smaller than 2 x 3 inches.

Data required for specimen labels:

Species name

County, city/town, and other clearly worded description of collection locality so as to enable another scientist to find the collection locality

Latitude and longitude

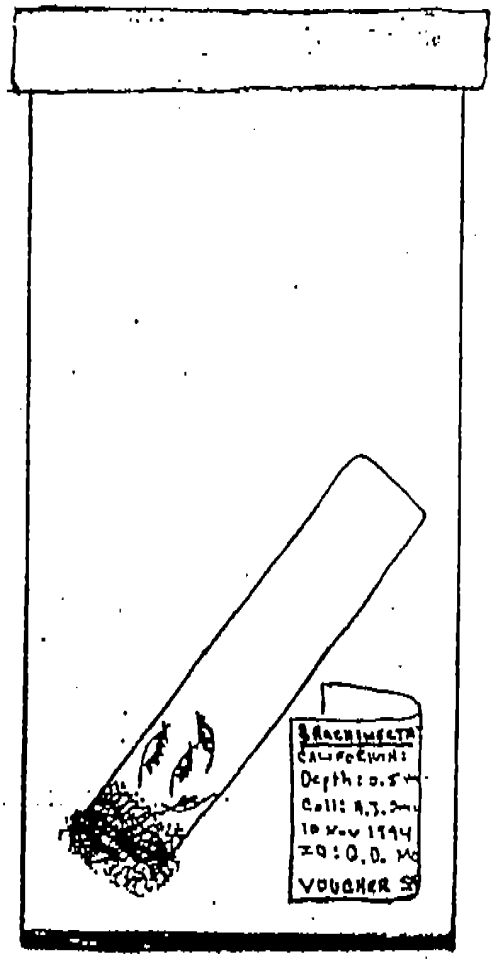
Environmental data regarding habitat (temperature, turbidity, depth and size of pool)

Full names of collector(s) and identifier

Dates of collection and identification, dates should clearly indicate day, month and year (e.g. 10 Jan 1995)

The phrase "Voucher specimen: Vernal Pool Crustacean Survey"

Fig. 1: 8 oz. bottle containing inverted glass vial plugged with cotton. Note label inside jar, but not inside vial.



List of potential (not specifically required) vendors of some required materials.

Glass vials: S-930	Acme Vial and Glass 1601 Commerce Way Paso Robles, CA 93446 (805) 239-2666
Glass bottles: and polypropylene lids	California Glass 155 98th Ave. Oakland, CA 94603 (510) 635-7700
Polypropylene lids:	Berlin Packaging 7900 Edgewater Dr. Oakland, CA 94621 (510) 562-7201
Cotton: non-sterile	California Medical Supplies 3315 Broadway Oakland, CA (510) 885-5105
Nalgene Polypaper:	VWR Scientific (415) 468-7150 (800) 932-5000
Alcohol-proof ("non-bleeding") printer ribbons:	Automated Office Products Inc. 9700-A Martin Luther King Jr. Hwy. Lanham, MD 20708
Non-denatured ethanol 190 or 200 proof (95% or 100%)	Gold Shield Chemical 3111 Depot Rd. Hayward, CA 94545 510-782-2040

Materials may be obtained from other sources, but should conform to the specific standards listed above. CASIZG will not act as a supplier of materials.

Field survey forms and information regarding the California Natural Diversity Database can be accessed on the internet at http://www.dfg.ca.gov/whdab/cnddb.htm.

State of California • The Resources Agency
Department of Fish and Game • Wildlife & Habitat Data Analysis Branch
The California Natural Diversity Database
Commonly Asked Questions

What is the California Natural Diversity Database (CNDDB)?

The CNDDB is a program within the Department of Fish and Game' s Habitat Conservation Division and wit hin the Wildlife & Habitat Data Analys is Branch. The CNDDB' s mission is to track the location and condition of California's many species of rare and sensitive plants, animals, and natural communities (e.g., marshes, riparian systems, desert scrub, etc .). These species and natural communities are collectively referred to as "elements."

The CNDDB includes in its inventory all federally and state listed plants and animals, all species that are candidates for listing, all species of special concern, and those species that are considered "sensitive" by government agencies and the conservation community. Th is is a computerized inventory and information is available for a fee in hard copy and digital forms. The CNDDB is a dynamic system with information continually being added and upgraded. The CNDDB contains over 36,000 locational records for over 3,000 elements.

How is CNDDB information set up or organized?

CNDDB data are organized geographically and taxonomically. Information is retrieved by Unit ed States Geological Survey (USGS) map sheet (e.g., typically 1:24,000, 1:100,000, or 1:250,000 scale), or by taxa. Most CNDDB clients request information for USGS 7.5U minute quads. The approximately 49 square miles covered by a single USGS 7.5U minute quad is the smallest area for which we will perform a data retrieval. Due to the nature of our inventory , it is important that our clients query surrounding quads as well as the quads on which their project site or area of interest is located.

What types of information can I obtain?

OVERLAYS & TEXT We can produce computer generated overlays for the 1:24 ,000 -, 1:100,000-, or 1:250,000-scale base maps. Text reports are included only with the USGS 7.5' scale overlays. An Element Table on the USGS 7.5' (1:24,000) overlay provides the following information for each element occurrence: a map feature number, occurrence number, map index number, element code, accuracy class, element count, the common and scientific names, numbers of components, and legend. Most of our clients request overlays for USGS 1:24,000 and 1:100,000 scale maps (map index numbers only with legend for 1:100,000 scale). Overlays cost $30 (standard vellum media) per quad which include text reports, except for RAREFIND subscribers (see below).

RAREFIND 2 - We can also make our data available via a microcomputer database application called RAREFIND 2. You can obtain our entire statewide data set. RAREFIND 2 is available on a yearly subscription basis. The cost for the statewide data set is $1,250 for government agencies and nonprofit conservation organizations or $2,500 for commercial clients. A subscription includes an initial set of data with the RAREFIND 2 application followed by an updated data set 6 months later. The GIS digital layer is also available to subscription customers. Renewing customers are given a 10% discount.

RAREFIND 2 subscribers are also afforded a special overlay price of $20 per quad. RAREFIND 2 is a compiled, stand alone application that requires a 386 or higher series PC, with 560 K free DOS memory and 100 MB free hard disk space. RareFind 2 will run on M S-DOS version 5.0 or higher, Windows 3.1, Windows 95 or NT. No additional software is required.

How do I order information from t he CNDDB?

It is easy to request information from the CNDDB. Call one of our Information Services staff at (916) 324-3812 at to place your order by phone or e-mail u s at kbates@dfg.ca.gov . It is most helpful to have the name or names of the 7.5' quad maps for which you want information contact us. We will give you a cost estimate before we proceed with your request.

How long does it take t o get information from the CNDDB?

The usual turn around time for data requests is one to two weeks. We ask you to remember that this is a computerized system and it does go down from time to time. Such unforeseen event scan interfere with our normal response time.

How do I pay?

You are invoiced directly from our accounting department after the products have been sent to you. You do not need to pay up front; but invoices are due and payable upon presentation—no terms are available. Delinquent accounts will be denied additional services until the balance has been paid.

NOTE: There is a 50% cancellation charge if you cancel your order after we have already processed your request and generated our products. There is a no-return policy on products already delivered.

Why is there a charge f or this information?

Our enabling legislation requires that we " insure cost -sharing by all who use the CNDDB, and develop a fee structure to recover actual costs" for its use. The Department of Finance has determined that this will include not only direct costs for generating and distributing our data, but will also include some program overhead. We recover about $225,000 per year in fees, which amount to about 25% of our program costs.

The Wildlife & Habitat Data Analysis' Mission and Vision:

" ..to provide high quality scientific information, tools, and expertise needed by Department employees, other public agencies, private organizations, and the public for making informed conservation decisions regarding our biological resources. ...to serve as the State's clearinghouse for biological data and center for conducting conservation analyses at statewide, regional, and local scales and actively acquire, integrate, improve, and distribute biological resource data and associated spatial data in support of conservation policy and planning needs."

Appendix F Vernal Pool Invertebrate Reports

July 18, 2013

Mr. David Kelly
Recovery Biologist/Permit Coordinator
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Subject: 90-Day Report of Findings: Wet Season Surveys for Listed Vernal Pool Branchiopods for the North County Corridor State Route 108 Project

Dear Mr. Kelly:

This report documents the findings of listed vernal branchiopod surveys conducted within and along the North County Corridor State Route (SR) 108 Project in Stanislaus County, California (U.S. Fish and Wildlife Service [USFWS] reference number 2012-TA- 0341).

Executive Summary

Forty-one aquatic habitats were surveyed during the 2012–13 wet season. No listed branchiopods were observed in any of the habitats surveyed. All pertinent materials required to comply with the terms and conditions of ICF Jones & Stokes (ICF) 10(a)(1)(A) recovery permit (TE-795934-10) are included in this report.

Project Description

Caltrans and the County of Stanislaus (County) are proposing to construct the North County Corridor SR 108 (SR 99 to SR 120) Project (project) in Stanislaus County. The project would relocate SR 108 to a new alignment. The project would begin just west of the intersection of Kiernan Avenue and McHenry Avenue (SR 108) and would extend easterly approximately 21 miles, ending along the alignment of SR 120/108, east of Oakdale (Figure 1). There are two build alternatives that have two ending alignment options. The project has been identified as a necessary improvement to accommodate regional east-west traffic and to improve north-south connectivity in Stanislaus County and southern San Joaquin County.

Methods

Coordination with U.S. Fish and Wildlife Service

On September 11, 2012, Ms. Haire submitted a request to USFWS to conduct dry season sampling within suitable habitats located within the entire proposed Project corridors, where

landowner access had been granted. Surveys were to be conducted by Ms. Haire under ICF's permit, and by ICF wildlife biologist John Howe under permit # TE-114928. Authorization to conduct dry season and subsequent wet season surveys was granted by David Kelly of the Sacramento USFWS office on September 12, 2012, via email (Attachment A).

Pool Sampling

Forty-one aquatic habitats were surveyed during the wet season (Attachment B). Part way through the wet season, it was discovered that one of the aquatic habitats (# 35) is located outside of the study area; however, monitoring of this pool continued until the end of the wet season. Aquatic habitats sampled included those within the project study area, which included a 250-foot buffer from the respective alternative alignments, where landowners gave permission to conduct surveys. Wet season sampling commenced after several storms of the 2012–2013 wet season began filling the pools. Surveys were initiated on December 11, 2012 and were conducted approximately every 2 weeks through April 18, 2013. Fifteen aquatic habitats identified during the 2012 dry season survey, and one additional retention pond where access had been obtained, were surveyed initially. Several other potential aquatic habitats were monitored for their potential to pond.

On December 11, 2012, Ms. Haire surveyed all 23 aquatic habitats identified at that time except for three, which were surveyed by Mr. Howe on December 14, 2012. Significant rain (nearly 2 inches) between December 22 and 25, 2012 resulted in additional ponding of 18 aquatic habitats that had not been previously identified. Ms. Haire conducted a survey of 27 aquatic habitats on December 28–29, 2012; 14 habitats could not be surveyed because Ms. Haire had not anticipated there being so many additional pools and ran out of daylight in which to conduct surveys. All 41 aquatic habitats ultimately identified in the study area were surveyed by Ms. Haire and/or Mr. Howe on January 9 and 11, 2013. Mr. Howe conducted further surveys on January 24, February 6 and 21, March 8 and 22, and April 2 and 3, 2013. Ms. Haire conducted the final survey on April 18, 2013.

All vernal pool branchiopod surveys were conducted in accordance with USFWS's *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a) (1) (A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods* (April 19, 1996). During each visit, portions of the pool bottom, edges and vertical water column were sampled using a fine mesh dip net or brine shrimp net appropriate for the size and depth of the habitat. Mesh sizes of the nets were smaller than 1/8 inch. Sample contents were emptied into a clear plastic bin (for the dip net) or clear plastic Petri dish (for the brine shrimp net) in order to thoroughly search for vernal pool branchiopods and other invertebrates.

Air temperature, water temperature, maximum depth, estimated surface area, and habitat condition (undisturbed/disturbed, grazed/ungrazed) for each aquatic habitat at the time of sampling were recorded on a modified/expanded version of USFWS's *Vernal Pool Data Sheet for Wet Season Surveys*. Vertebrates and invertebrates observed in the aquatic habitat were also recorded.

Results

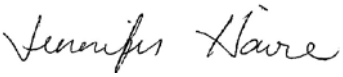
Survey Results

No listed vernal pool branchiopods were observed in the 41 aquatic habitats that were sampled. The aquatic habitats consist of five types: seasonal pool, seasonal swale, roadside seasonal pool, seasonal pond, and retention basin. The seasonal pools and swales are located mainly in the eastern portion of the study area in grazed annual grassland. The roadside pools, seasonal ponds, and retention basins are mainly located within the western portion of the study area, where more development is present. The versatile fairy shrimp (*Branchinecta lindahli*) was found in seven of the aquatic habitats surveyed (1, 4, 5, 6, 16, 17, and 18). The California fairy shrimp (*Linderiella occidentalis*) was found in three of the aquatic habitats surveyed (1, 4, and 11). A summary of the survey results is included in Table 1. The aquatic habitat type and locations (in Universal Transverse Mercator geographic coordinate system) of the habitats surveyed are included in Table 2.

There were two circumstances worth noting during the surveys. First, the area where pools 14 and 15 are located was planted with wheat prior to the start of the wet season surveys. The area was not planted when soil was collected from these pools during the dry season survey in October 2012. Second, the area where pools 2 and 3 are located was observed to be a construction staging area during the April 18, 2012 survey visit. Soil was also collected from these pools in October 2012. Processing of soil collected from these pools and other aquatic habitats within the study area was put on hold per the County's direction so results are not yet available.

Representative photographs of surveyed habitats in the study area are included in Attachment C. Copies of the completed data sheets are included in this document as Attachment D. The certification statement for these survey results is included in Attachment E. If you have any questions about these survey results, please contact me at (916) 231-9575 or by email at jennifer.haire@icfi.com.

Sincerely,



Jennifer Haire
Senior Wildlife Biologist

Attachments
Tables 1 and 2
Included on enclosed CD:
Attachment A: Correspondence with USFWS
Attachment B: Locations of Aquatic Habitats Surveyed for Vernal Pool Branchiopods

Attachment C: Representative Photographs of Pools Surveyed
Attachment D: Vernal Pool Data Sheets
Attachment E: Certification Statement

cc: Jen Schofield, Contract Biologist, Caltrans Liaison, USFWS
Claire Bromund, ICF International
Lauren Abom, Jacobs Engineering
Jim Hoyt, Jacobs Engineering

Table 1. Results of Wet Season Surveys for Listed Branchiopods for the North County Corridor State Route 108 Project

Habitat ID	Survey Dates (2012–2013)									
	12/11, 12/14	12/28–12/29	1/9, 1/11	1/24	2/6	2/21	3/8	3/22	4/2–4/3	4/18
1	IMM 100s BRLI 100s	None	LIOC 100s	Dry	Dry	None	Dry	Dry	None	Dry
2	Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
3	Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
4	IMM 100s-1,000s	IMM 100s	LIOC 1000s BRLI 1000s	BRLI 1000s	Dry	None	Dry	Dry	IMM 100s	Dry
5	BR sp. 100s-1000s	BRLI 10s-100s	BRLI 10s-100s	BRLI 100s	BRLI 100s	None	None	None	None	Dry
6	IMM 10s-low 100s	IMM 100s-1,000s	BR sp. 1,000s	BRLI 1,000s	None	IMM 10s	None	None	IMM 1000s	BRLI 100s
7	None	None	None	None	Dry	None	Dry	Dry	None	Dry
8	None	None	None	None	Dry	None	None	None	None	Dry
9	None	None	None	Dry	Dry	None	Dry	Dry	None	Dry
10	Dry	None	None	None	Dry	None	Dry	Dry	None	Dry
11	Dry	None	None	None	LIOC 100s	None	Dry	Dry	None	Dry
12	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
13	None	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
14	Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
15	Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
16	BRLI 10s	None	None	None	None	None	None	None	None	None
17	BR sp. 10s-100s BRLI <10	BRLI 100s-1,000s IMM 10s	BRLI 100s-1,000s	BRLI 100s	BRLI 10s	None	Dry	Dry	IMM 1000s	Dry
18	BRLI 10s	BRLI 10s	BRLI 10s-100s	None	BRLI 10s	None	BRLI 100s	Dry	IMM 1000s	Dry
19	NS/Dry	NS	None	None	Dry	Dry	Dry	Dry	Dry	Dry
20	NS/Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
21	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
22	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
23	None	None	None	Dry	Dry	None	Dry	Dry	Dry	Dry
24	NS/Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
25	Dry	None	None	Dry	Dry	None	Dry	Dry	Dry	Dry
26	Dry	None	None	None	Dry	None	Dry	Dry	Dry	Dry
27	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry

Table 1. Continued

Habitat ID	Survey Dates (2012–2013)									
	12/11, 12/14	12/28–12/29	1/9, 1/11	1/24	2/6	2/21	3/8	3/22	4/2–4/3	4/18
28	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
29	NS/Dry	NS	None	Dry	Dry	None	Dry	Dry	Dry	Dry
30	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
31	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
32	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
33	NS/Dry	NS	None	None	Dry	Dry	Dry	Dry	Dry	Dry
34	NS/Dry	NS	None	None	Dry	Dry	Dry	Dry	Dry	Dry
35*	NS/Dry	NS	None	None	Dry	Dry	Dry	Dry	Dry	Dry
36	NS/Dry	NS	None	None	Dry	Dry	Dry	Dry	Dry	Dry
37	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
38	Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
39	NS/Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
40	Dry	None	None	None	Dry	Dry	Dry	Dry	Dry	Dry
41	NS/Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry

*Aquatic habitat 35 is located outside of the study area.

Code Descriptions

IMM = immature fairy shrimp of unknown genus present
BRLI = *Branchinecta lindahli* (versatile fairy shrimp) present
LIOC = *Linderiella occidentalis* (California fairy shrimp) present
BR sp. = *Branchinecta* of unknown species present (could not identify to species because only immature fairy shrimp present)
None = No vernal pool branchiopods observed at the time of survey
Dry = Habitat was observed dry at the time of survey
NS/Dry = Not surveyed/pool likely dry and not discovered until following survey
NS = Not surveyed; not yet identified or could not be surveyed because of lack of time/daylight.

Table 2. Types and Locations of Aquatic Habitats Surveyed for Listed Vernal Pool Branchiopods for the North County Corridor State Route 108 Project

Habitat ID	Habitat Type	UTM Northing*	UTM Easting*
1	Retention basin	4175539.86432008	676433.038132035
2	Seasonal pool	4175712.92150576	677190.910329119
3	Seasonal pool	4175693.81516457	677178.7519403
4	Retention basin	4175945.77302062	681752.060497654
5	Seasonal pond	4175821.62457551	682191.98278207
6	Roadside seasonal pool	4175697.96258409	682529.148840963
7	Seasonal pond	4183235.12418649	692729.999393696
8	Retention basin	4183296.18775039	692956.730070035
9	Seasonal swale	4179344.97144585	694528.416527434
10	Seasonal pool	4179293.00349598	694711.753393912
11	Seasonal pool	4179401.21280634	694807.233579169
12	Seasonal pool	4179375.65356204	694802.715186995
13	Seasonal pool	4180159.31095264	695595.304799603
14	Seasonal pool	4180151.32526634	696489.265683183
15	Seasonal pool	4180132.36561041	696491.897856291
16	Retention basin	4175731.84177601	675687.72546284
17	Roadside seasonal pool	4175782.02179595	682214.331410564
18	Roadside seasonal pool	4178343.22033177	690476.960042524
19	Seasonal pool	4179305.40029262	694864.445832534
20	Seasonal pool	4179405.09394474	694918.556499109
21	Seasonal pool	4179426.05686179	694861.663653476
22	Seasonal pool	4179419.60850102	694849.455593375
23	Seasonal pool	4180068.10827017	694943.147403752
24	Seasonal pool	4180039.12688116	694987.575095508
25	Seasonal pool	4180069.21949845	695098.18336266
26	Seasonal pool and swale	4180059.36552947	695191.965723463
27	Seasonal pool	4180097.14810321	695201.54418513
28	Seasonal pool	4180156.08798914	695230.516240669
29	Seasonal pool	4180099.97423837	695397.814594344
30	Seasonal pool	4180104.0867037	695609.311126586
31	Seasonal pool	4180194.90471484	695439.228900485
32	Seasonal pool	4180258.54254439	695231.565426271
33	Seasonal pool	4180219.64987324	695221.339744976
34	Seasonal pool	4180282.96329066	694870.921339534
35	Seasonal pool	4180312.71218359	694882.694940907
36	Seasonal pool	4180262.77058717	694849.209113344
37	Seasonal pool	4180209.46705459	695088.035998473
38	Seasonal pool	4179515.66086516	695137.847278117
39	Seasonal pool	4179384.3303768	695246.150269944
40	Seasonal pool	4179363.80291341	695244.23466407
41	Seasonal pool	4179334.58153669	695216.434025581

* Coordinates are in North American Datum 1983, UTM Zone 10N.

LSA ASSOCIATES, INC.
157 PARK PLACE
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510.236.6810 TEL
510.236.3480 FAX
BERKELEY
CARLSBAD
FORT COLLINS
FRESNO
IRVINE
PALM SPRINGS
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO

March 6, 2014

David Kelly
Recovery Permit Coordinator
U. S. Fish and Wildlife Service
2800 Cottage Way, W2605
Sacramento, California, 95825

Subject: Results of 2012 Dry Season Fairy Shrimp Survey for the North County Corridor Project, Stanislaus County

Dear Mr. Kelly:

This letter provides the results of a 2012 dry season presence/absence survey for listed vernal pool crustaceans conducted by ICF International (ICF) and LSA Associates, Inc. (LSA). This protocol level dry season survey was conducted in partial fulfillment of protocol level surveys documenting the presence or absence of listed vernal pool branchiopods for the proposed North County Corridor (NCC) Project, near Oakdale in Stanislaus County (Figure 1). The NCC is generally bounded by State Route (SR) 120/108 on the north, Claribel Road on the south, Tully Road on the west, and SR-120/108/Lancaster Road on the east (Figure 2).

The proposed project is located in Stanislaus County and would begin at the SR-219 (Kiernan Avenue)/Tully Road intersection, extend easterly approximately 20 miles, and end along the alignment of SR-120/108 east of the City of Oakdale. The build alternatives consist of three segments each. The western terminus of all alternatives is at the State Route 219 (Kiernan Avenue)/Tully Road intersection. Alternatives 1 and 2 proceed to the vicinity of the Claus Road/Claribel Road intersection, where they separate into two different alignments to their middle terminus. Alternative 1 veers northeast near the Claus Road/Claribel Road intersection and passes through the southern boundary of Oakdale. Alternative 2 continues to extend easterly along Claribel Road, and turn northeastward past the intersection of Claribel Road/Bentley Road. Each of the Alternatives then breaks into two possible alignments to their eastern terminus. The eastern terminus of Alternatives 1A and 2A end along State Route 120/108 just east of the Oakdale City boundary. Alternatives 1B and 2B end further east of the Alternatives 1A/2A terminus along SR-120/108 in the vicinity of Lancaster Road.

A previous wet season survey for listed vernal pool branchiopods was conducted by ICF in 2012-2013 and included 41 features. Two unlisted species of fairy shrimp, versatile fairy shrimp (*Branchinecta lindahli*) and California fairy shrimp (*Linderiella occidentalis*) were observed during the survey.

METHODS

The 2012 dry season surveys for the NCC were conducted by and ICF biologist Jennifer Haire under LSA Federal 10(a)(1)(A) Permit TE-795934 and LSA senior biologist David Muth LSA Federal 10(a)(1)(A) Permit TE-797234, in accordance with the United States Fish and Wildlife Service

(USFWS) *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for Listed Vernal Pool Branchiopods*, dated April 19, 1996. The survey was approved by USFWS Recovery Permit Coordinator David Kelley on September 12, 2012.

As described below, all samples were collected by Ms. Haire in 2012. Ms. Haire also processed a portion of the samples in 2012 but did not examine the resulting soil material. Mr. Kelly approved transfer of the samples to David Muth at LSA on December 3, 2013, and Mr. Muth obtained all of the samples on December 10, 2013 (see attached Chain of Custody Record). Mr. Muth processed the remaining samples and examined all of the soil material for cyst presence and identification.

During three site visits, Ms. Haire collected a series of ten 0.1 liter samples of soil material from each of 14 potential habitat areas observed within the NCC study area (Figure 3). Samples were collected from features numbered 4, 9, 10, 11, and 12 on September 26, 2012; samples from features 1- 3, 5- 7, and 8 were collected on October 3, 2012; and samples from features 14 and 15 were collected on October 5, 2012. The soil was stored in plastic zip-lock bags marked to indicate the site of collection and sample number.

Ms. Haire processed the soil samples from features 1-6 and portions of feature 7 on November 5-8, 12, 19, and 29, and December 4-5, 2012. Methodology appears to have consisted of the following: hydrating the soils and pouring them through a set of sieves (that included sizes of 300 and 150 microns), placing material captured in the 300 and 150 micron sieves in a brine solution to separate mineral substrate from biological detritus, and then pouring the floated biological material into a series of labelled petri dishes to dry.

Mr. Muth processed the remaining samples, from features 8-12, 14, and 15, on December 15 and 26, 2013. The soil samples were processed individually by placing each in a 5 gallon bucket containing 1 to 2 gallons of water to saturate the soil. After saturating the soil sample for approximately 10 to 15 minutes, the bucket was stirred and poured through a series of three sieves with mesh sizes of 710, 355, and 212 microns (as recommended by Richard Hill of Caltrans). The sieves were stacked with the largest mesh size at the top to the smallest mesh size on the bottom. Samples were poured and washed through the set with water. Material trapped in the two smallest sieve sizes in each set was saved for analysis by washing the material into coffee filters. Material in the coffee filters was poured into a brine solution to separate mineral substrate from biological detritus. The floating biological portions were poured back into the coffee filters and left to dry.

All sieved material was examined by Mr. Muth on December 30, 2013 using a 10 to 40 power Olympus stereo-optic scope. A reference cyst collection was available and could be used when necessary for comparison of any cysts found in the samples. Following examination, the soil material with cysts was stored in the accompanying petri dish or filter paper pending arrangements for final deposition.

RESULTS

Cysts identified as those of animals in the genus *Branchinecta* were identified in samples from features 1-5, and 6. Concentrations in features 2, 3, and 5 were very low and consisted of 1-3 cysts; feature 6 had approximately 200 cysts; and features 1 and 4 had between 500 and 1,000 cysts. These results are summarized in Table A and shown in Figure 3.

Table A: Location and Results of Features Sampled

Feature	General Location	Genus of Cysts Identified
1	T3S, R10E, Sect 5	*Branchinecta* (500-1,000)
2	T2S, R10E, Sect 33	*Branchinecta* (1)
3	T2S, R10E, Sect 33	*Branchinecta* (1)
4	T2S, R10E, Sect 36	*Branchinecta* (500-1,000)
5	T2S, R10E, Sect 36	*Branchinecta* (3)
6	T3S, R10E, Sect 1	*Branchinecta* (200)
7	T2S, R10E, Sect 7	None
8	T2S, R10E, Sect 7	None
9	T2S, R11E, Sect 20	None
10	T2S, R11E, Sect 20	None
11	T2S, R11E, Sect 20	None
12	T2S, R11E, Sect 20	None
14	T2S, R11E, Sect 21	None
15	T2S, R11E, Sect 21	None

No cysts of vernal pool tadpole shrimp (*Lepidurus packardi*) were detected in the samples.

Information on feature characteristics for the eggs identified in features 1-5, and 6 is currently unavailable. Ms. Haire reports collecting this information and recording it on USFWS data sheets during sample collection. However, the data sheets appear to have been misplaced prior to the transfer of the soil samples and, as of the date of this report, have not been located.

DISCUSSION

The results of this dry season survey indicate that fairy shrimp in the genus *Branchinecta* occur in features 1-5, and 6. Relatively large numbers of cysts were found in the samples from features 1, 4 and 6, suggesting that these features likely support sustaining populations of this genus. However, very few cysts were found in the samples from features 2, 3 and 5; based solely on the dry season collection material, it is questionable whether these features support viable populations of this genus.

The wet season surveys conducted by ICF in 2012-2013 were negative for listed vernal pool branchiopods (e.g., vernal pool fairy shrimp [*Branchinecta lynchi]*), for all 14 features included in this survey, although unlisted species versatile fairy shrimp and California fairy shrimp, were reported in pools 1, 4, 5, and 6. The report documenting this survey, dated July 18, 2013, is attached. The results of this dry season survey conducted during the fall of 2012, taken in conjunction with the results of the 2012-2013 wet season surveys, constitute a complete survey per the USFWS protocol for the 14 features included in this survey.

For 8 of the 14 features (7-12, 14, and 15), results of both the dry and wet season surveys were negative for all vernal pool branchiopods, indicating that fairy shrimp in the genus *Branchinecta*

(including listed species of this genus) do not occur in these features. Results for the remaining 6 features (1-5, and 6), are less conclusive. Wet season surveys were negative for listed vernal pool branchiopods but report the presence of versatile fairy shrimp in these features. The presence of this unlisted species may account for the presence of *Branchinecta* cysts in pools 1, 4, 5 and 6. However, considering that vernal pool fairy shrimp was reported in 2011 approximately 0.5 mile south of feature 6, additional efforts may be necessary to determine the status of listed vernal pool branchiopods in features 1-5, and 6. One option is to conduct an additional wet season survey of these features, possibly in 2013-2014. Alternatively, the *Branchinecta* cysts collected from these features might be hatched and the individuals grown to a sufficient level of development that would allow identification to species.

Please contact me if you require any additional information.

Sincerely,

LSA ASSOCIATES, INC.

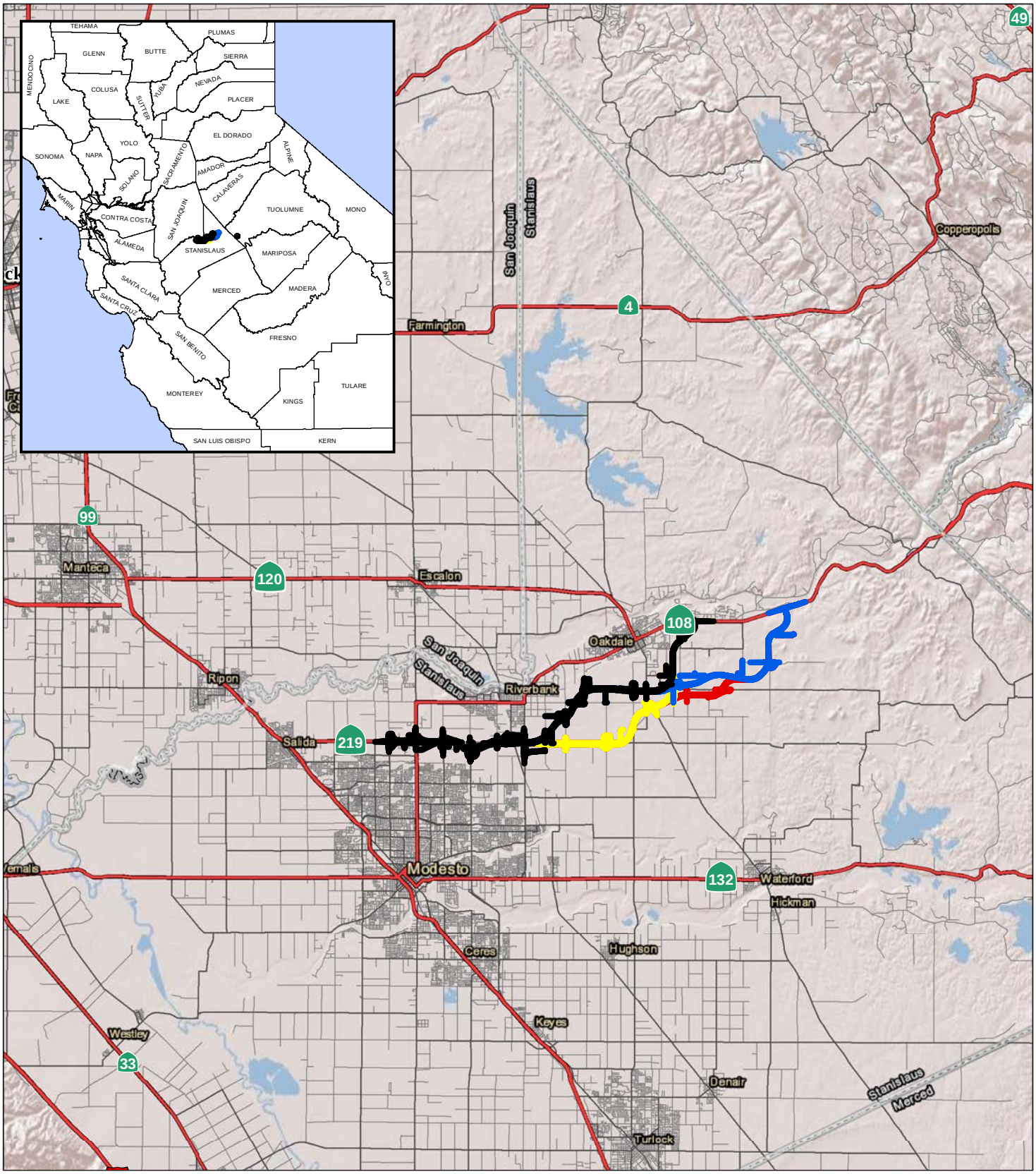
David Muth
Senior Herpetologist

Attachments:
Figure 1: Regional Location
Figure 2: Project Vicinity
Figure 3: Branchiopod Dry Season Samples
Data Sheets
Chain of Custody Record
90-Day Report for 2012-2013 Wet Season Surveys (ICF, July 18, 2013)

cc: Jennifer Haire, ICF International
Claire Bromund, ICF International
Jennifer Schofield, U.S. Fish and Wildlife Service

I CERTIFY THAT THE INFORMATION IN THIS SURVEY REPORT AND ATTACHED EXHIBITS FULLY AND ACCURATELY REPRESENTS MY WORK:

SURVEYOR:	PERMIT NUMBER	DATE:
David Muth	TE-797234	January 21, 2014



LEGEND

- Alternative 1A
- Alternative 1B
- Alternative 2A
- Alternative 2B

0 2.5 5
MILES

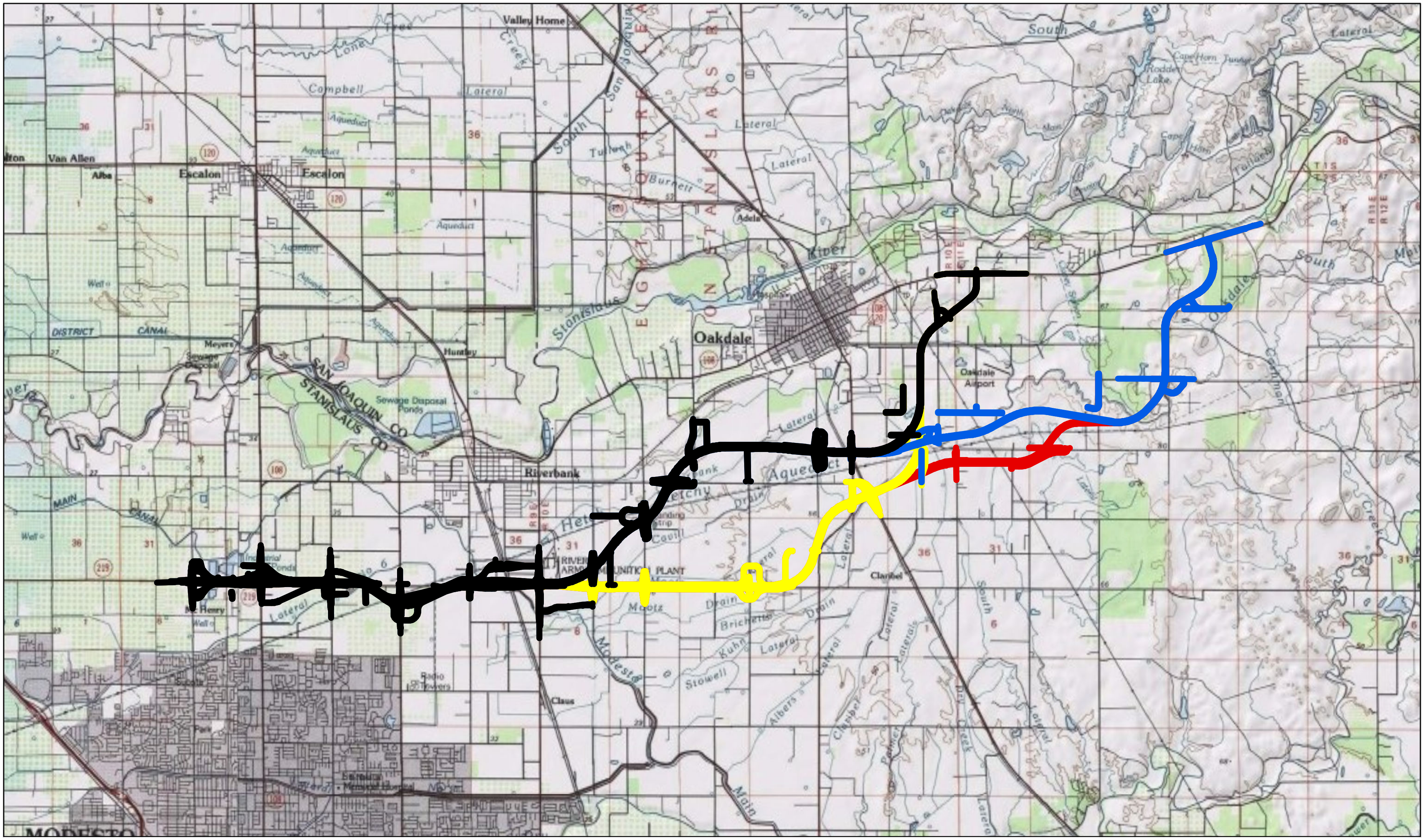
SOURCE: ESRI Imagery (4/2008)

I:\Dhg1302\GIS\branchio_survey_fig1_prj_loc.mxd (1/21/2014)

FIGURE 1

North County Connector Project
Stanislaus County, California
EA 10-0S800

Regional Location



LEGEND

Alternative 1A

Alternative 1B

Alternative 2A

Alternative 2B

0 1 2

MILES

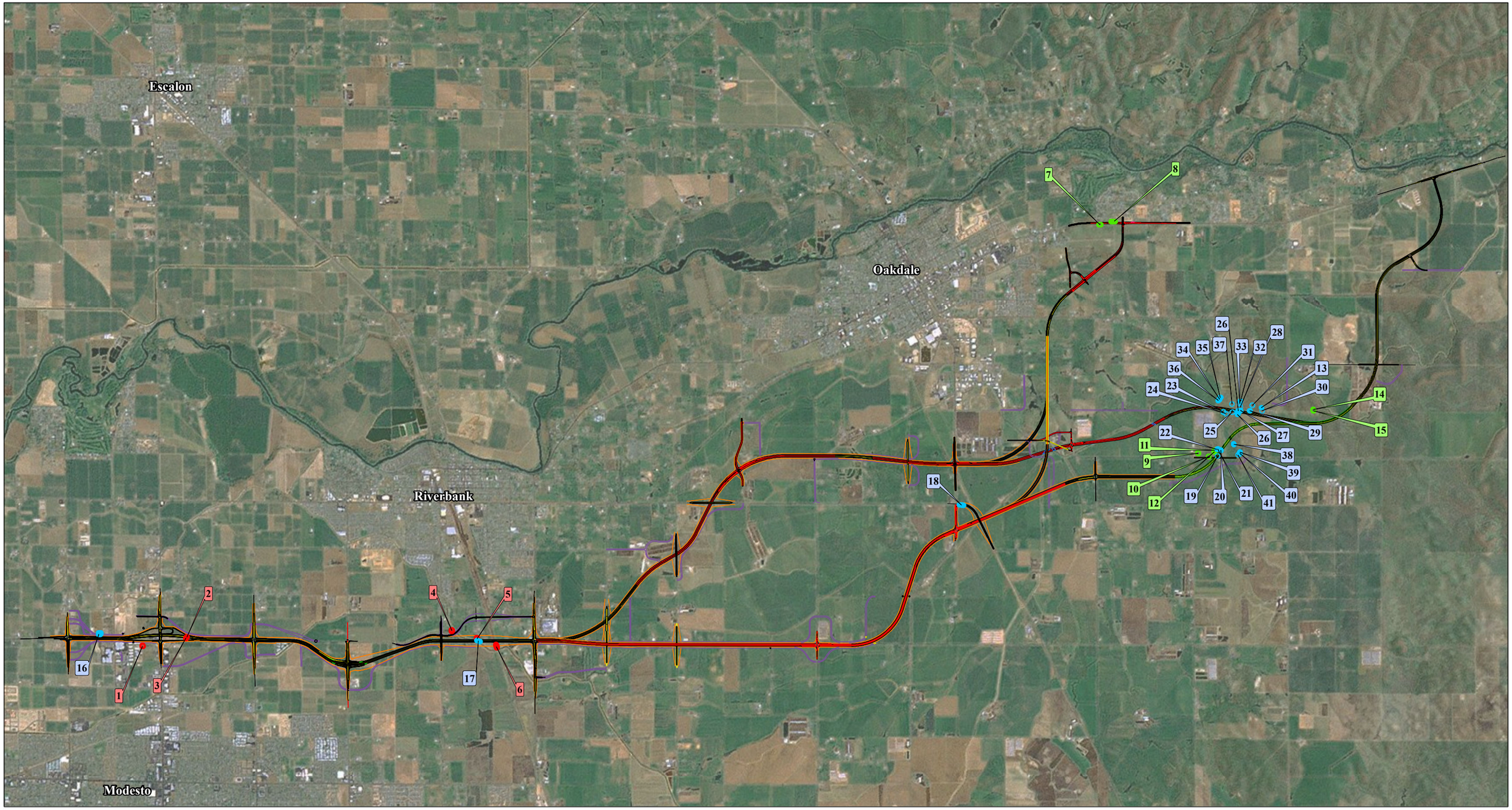
SOURCE: USGS Topo Map (San Joaquin and Stanislaus Counties)

FIGURE 2

North County Connector Project
Stanislaus County, California
EA 10-0S800

Project Vicinity

I:\Dhg1302\GIS\branchio_survey_fig2_proj_vic.mxd (3/4/2014)



Caltrans

LEGEND

Branchiopod Survey Pools - No Soil Sampled

Branchiopod Survey Pools - Soil Sampled

Positive Results

Negative Results

0 0.5 1
MILES

SOURCE: ESRI Aerial Imagery (2011)

I:\Dhg1302\GIS\branchio_survey_fig3_locs.mxd (3/4/2014)

FIGURE 3

North County Connector Project
Stanislaus County, California
EA 10-0S800

Branchiopod Dry Season Samples

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _10_/_3_/_2013 Time: _____ County: Stanislaus_____ Quad: _Riverbend__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____1_____

Township: 3 South_ Range: _10 East_ Section: __5_ UTM:_4175654_ North _676277_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County

Pool 1

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
~~#1~~	100	Branchinecta	261	
~~#2~~	100	Branchinecta	183	
~~#3~~	100	Branchinecta	79	
~~#4~~	100	Branchinecta	17	
~~#5~~	100	Branchinecta	88	
~~#6~~	100	Branchinecta	228	
~~#7~~	100	Branchinecta	47	
~~#8~~	100	Branchinecta	92	
~~#9~~	100	Branchinecta	101	
~~#10~~	100	Branchinecta	112	

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _10 / 3 / 2013 Time: _____ County: Stanislaus_____ Quad: _Riverbend__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____2_____

Township: 2 South_ Range: _10 East_ Section: __33_ UTM: _4175684 _ North _677096_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County
Pool 2

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a1	100	Ø		
b2	100	Ø		
c3	100	Branchinecta	1	
d4	100	Ø		
e5	100	Ø		
f6	100	Ø		
g7	100	Ø		
h8	100	Ø		
i9	100	Ø		
j10	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: 10 / 3 / 2013 Time: _____ County: Stanislaus_____ Quad: Riverbend__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____3_____

Township: 2 South_ Range: 10 East_ Section: __33 UTM: 4175681 _ North 677152_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County
Pool 3

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a1	100	Ø		
b2	100	Branchinecta	1	
d3	100	Ø		
d4	100	Ø		
b5	100	Ø		
b6	100	Ø		
b7	100	Ø		
b8	100	Ø		
b9	100	Ø		
b10	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _9 / 26 / 2013 Time: _____ County: Stanislaus_____ Quad: _Riverbend__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____4_____

Township: 2 South_ Range: _10 East_ Section: __36 UTM: _4175946 _ North _681752_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County

Pool 4

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
d1	100	Branchinecta	42	
d2	100	Branchinecta	33	
d3	100	Branchinecta	182	
d4	100	Branchinecta	141	
d5	100	Branchinecta	91	
d6	100	Branchinecta	97	
d7	100	Branchinecta	188	
d8	100	Branchinecta	46	
d9	100	Branchinecta	151	
d10	100	Branchinecta	55	

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _10 / 3 / 2013 Time: _____ County: Stanislaus_____ Quad: _Riverbend__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____5_____

Township: 2 South_ Range: _10 East_ Section: __36_ UTM: _4175764 _ North _682257_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County

Pool 5

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a1	100	Branchinecta	1	
b2	100	Branchinecta	42	
c3	100	Ø		
d4	100	Ø		
e5	100	Ø		
f6	100	Ø		
g7	100	Ø		
h8	100	Ø		
i9	100	Ø		
j10	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _10 / 3 / 2013 Time: _____ County: Stanislaus_____ Quad: _Riverbend__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____6_____

Township: 3 South_ Range: _10 East_ Section: __1_ UTM: _4175746 _ North _682483_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County
Pool 6

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a1	100	Branchinecta	44	
a2	100	Branchinecta	38	
a3	100	Branchinecta	28	
a4	100	Branchinecta	43	
a5	100	Branchinecta	31	
a6	100	Branchinecta	20	
a7	100	Branchinecta	19	
a8	100	Branchinecta	11	
a9	100	Branchinecta	28	
a10	100	Branchinecta	31	

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _10_/_3_/_2013 Time: _____ County: Stanislaus_____ Quad: _Oakdale__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____7_____

Township: 2 South_ Range: _10 East_ Section: __7_ UTM:_4183250 _ North _692935_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County
pool 7

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a i	100	Ø		
b 2	100	Ø		
c 3	100	Ø		
d 4	100	Ø		
e 5	100	Ø		
f 6	100	Ø		
g 7	100	Ø		
h 8	100	Ø		
i 9	100	Ø		
j 10	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _10 / 3 / 2013 Time: _____ County: Stanislaus_____ Quad: _Oakdale__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____8_____

Township: 2 South_ Range: _10 East_ Section: __7_ UTM:_4183252 _ North _692996_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County
Pool 8

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
s1	100	Ø		
s2	100	Ø		
s3	100	Ø		
s4	100	Ø		
s5	100	Ø		
s6	100	Ø		
s7	100	Ø		
s8	100	Ø		
s9	100	Ø		
s10	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _9 / 26 / 2013 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____9_____

Township: 2 South_ Range: _11 East_ Section: __20 UTM: _4180095 _ North _694838_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County
Pool 9

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
S1	100	Ø		
S2	100	Ø		
S3	100	Ø		
S4	100	Ø		
S5	100	Ø		
S6	100	Ø		
S7	100	Ø		
S8	100	Ø		
S9	100	Ø		
S10	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _9 / 26 / 2013 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____10_____

Township: 2 South_ Range: _11 East_ Section: __20_ UTM: _4180075_ North _695037_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County
Pool 10

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
1	100	Ø		
2	100	Ø		
3	100	Ø		
4	100	Ø		
5	100	Ø		
6	100	Ø		
7	100	Ø		
8	100	Ø		
9	100	Ø		
10	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _9 / 26 / 2013 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____11_____

Township: 2 South_ Range: _11 East_ Section: __20_ UTM: _4180139 _ North _695198_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County

Pool 11

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
~~1~~	100	Ø		
~~2~~	100	Ø		
~~3~~	100	Ø		
~~4~~	100	Ø		
~~5~~	100	Ø		
~~6~~	100	Ø		
~~7~~	100	Ø		
~~8~~	100	Ø		
~~9~~	100	Ø		
~~10~~	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _9 / 26 / 2013 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____12_____

Township: 2 South_ Range: _11 East_ Section: __20 UTM: _4180097 _ North _695231_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County
Pool 12

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
d1	100	Ø		
d2	100	Ø		
d3	100	Ø		
d4	100	Ø		
d5	100	Ø		
d6	100	Ø		
d7	100	Ø		
d8	100	Ø		
d9	100	Ø		
d10	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _10 / 5 / 2013 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____15_____

Township: 2 South_ Range: _11 East_ Section: __21_ UTM: _4180130_ North _696492_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County

Pool 14

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a1	100	Ø		
b2	100	Ø		
b3	100	Ø		
b4	100	Ø		
b5	100	Ø		
b6	100	Ø		
b7	100	Ø		
b8	100	Ø		
b9	100	Ø		
b10	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _10 / 5 / 2013 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __Jennifer Haire/David Muth_____ Permit #: ___TE00471/TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____14_____

Township: 2 South_ Range: _11 East_ Section: __21_ UTM: _4180152_ North _696488_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

North County

Pool 15

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
S1	100	Ø		
S2	100	Ø		
S3	100	Ø		
S4	100	Ø		
S5	100	Ø		
S6	100	Ø		
S7	100	Ø		
S8	100	Ø		
S9	100	Ø		
S10	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

CHAIN OF CUSTODY (COC) RECORD

ICF International
630 K Street, Suite 400
Sacramento, CA 95814

Project Name: North County Corridor **Project #:** 00471.09

ICF Project Manager: Claire Bromund **Task Manager/Contacts:** Jennifer Haire

Sampling Date	Pool #	# of Aliquots	Volume (L)	# of Petri Dishes per Pool
10/3/12	1	10	100mL	38
10/3/12	2	"	"	21
10/3/12	3	"	"	20
9/26/12	4	"	"	27
10/3/12	5	"	"	44
10/3/12	6	"	"	20
10/3/12	7	"	"	33 (partially done)
10/3/12	8	"	"	10 bags of soil
9/26/12	9	"	"	10 bags of soil
9/26/12	10	"	"	10 bags of soil
9/26/12	11	"	"	10 bags of soil
9/26/12	12	"	"	10 bags of soil
10/5/12	14	"	"	10 bags of soil
10/5/12	15	"	"	10 bags of soil
Total # of Pools:		**Total # of Petri Dishes:**		

	SIGNATURE	DATE	TIME:
Sampled by:	Jennifer Haire	12/10/13	AM / PM
Relinquished by:	Jennifer Haire	12/10/13	AM / PM
Received by:	[illegible]	12/10/13	AM / PM
Received by:			AM / PM
Received by:			AM / PM
Received by:			AM / PM

Instructions: ICF International personnel fills out the top portion and white cells in tables. Make two photocopies; place one in the project file and attach the other to Dry-Season Soil Sample Tracking Sheet with copies of the USFWS Vernal Pool Data Sheet Dry Season Survey. The original COC remains with the samples and the receiving laboratory. The gray cells are filled out by the receiving laboratory.

North County Corridor

DATE	INITIALS	SOIL SAMPLE #s PROCESSED	NOTES
11/5/12	JLH	1-1	
11/6/12	JH	1-2, 1-3, 1-4, 1-5, 1-6, 1-7, 1-8, 1-9, 1-10	(washed equip)
11/7/12	JH	2-1, 2-2, 2-3, 2-4, 2-5, 2-6, 2-7, 2-8, 2-9, 2-10	(washed ~~setup~~ equip)
11/8/12	JH	3-1, 3-2, 3-3, 3-4, 3-5, 3-6	
11/12/12	JH	3-7, 3-8, 3-9, 3-10 (washed equip)	emptied sink trap
		4-1, 4-2, 4-3, 4-4, 4-5	
11/19/12	JH	4-6, 4-7, 4-8, 4-9, 4-10	
11/29	JH	5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 5-7, 5-8, 5-9, 5-10	Washed equip prior to starting & after finished
12/4	JH	6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 6-8, 6-9, 6-10	emptied sink trap & washed equip after finishing
12/5	JH	7-1, 7-2, 7-3, 7-4, 7-5	

plates

Pool #1 38

Pool #2 21

Pool #3 20

Pool #4 27

Pool #5 44

Pool #6 20

Pool #7

441-531

July 18, 2013

Mr. David Kelly
Recovery Biologist/Permit Coordinator
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Subject: 90-Day Report of Findings: Wet Season Surveys for Listed Vernal Pool Branchiopods for the North County Corridor State Route 108 Project

Dear Mr. Kelly:

This report documents the findings of listed vernal branchiopod surveys conducted within and along the North County Corridor State Route (SR) 108 Project in Stanislaus County, California (U.S. Fish and Wildlife Service [USFWS] reference number 2012-TA- 0341).

Executive Summary

Forty-one aquatic habitats were surveyed during the 2012–13 wet season. No listed branchiopods were observed in any of the habitats surveyed. All pertinent materials required to comply with the terms and conditions of ICF Jones & Stokes (ICF) 10(a)(1)(A) recovery permit (TE-795934-10) are included in this report.

Project Description

Caltrans and the County of Stanislaus (County) are proposing to construct the North County Corridor SR 108 (SR 99 to SR 120) Project (project) in Stanislaus County. The project would relocate SR 108 to a new alignment. The project would begin just west of the intersection of Kiernan Avenue and McHenry Avenue (SR 108) and would extend easterly approximately 21 miles, ending along the alignment of SR 120/108, east of Oakdale (Figure 1). There are two build alternatives that have two ending alignment options. The project has been identified as a necessary improvement to accommodate regional east-west traffic and to improve north-south connectivity in Stanislaus County and southern San Joaquin County.

Methods

Coordination with U.S. Fish and Wildlife Service

On September 11, 2012, Ms. Haire submitted a request to USFWS to conduct dry season sampling within suitable habitats located within the entire proposed Project corridors, where

landowner access had been granted. Surveys were to be conducted by Ms. Haire under ICF's permit, and by ICF wildlife biologist John Howe under permit # TE-114928. Authorization to conduct dry season and subsequent wet season surveys was granted by David Kelly of the Sacramento USFWS office on September 12, 2012, via email (Attachment A).

Pool Sampling

Forty-one aquatic habitats were surveyed during the wet season (Attachment B). Part way through the wet season, it was discovered that one of the aquatic habitats (# 35) is located outside of the study area; however, monitoring of this pool continued until the end of the wet season. Aquatic habitats sampled included those within the project study area, which included a 250-foot buffer from the respective alternative alignments, where landowners gave permission to conduct surveys. Wet season sampling commenced after several storms of the 2012–2013 wet season began filling the pools. Surveys were initiated on December 11, 2012 and were conducted approximately every 2 weeks through April 18, 2013. Fifteen aquatic habitats identified during the 2012 dry season survey, and one additional retention pond where access had been obtained, were surveyed initially. Several other potential aquatic habitats were monitored for their potential to pond.

On December 11, 2012, Ms. Haire surveyed all 23 aquatic habitats identified at that time except for three, which were surveyed by Mr. Howe on December 14, 2012. Significant rain (nearly 2 inches) between December 22 and 25, 2012 resulted in additional ponding of 18 aquatic habitats that had not been previously identified. Ms. Haire conducted a survey of 27 aquatic habitats on December 28–29, 2012; 14 habitats could not be surveyed because Ms. Haire had not anticipated there being so many additional pools and ran out of daylight in which to conduct surveys. All 41 aquatic habitats ultimately identified in the study area were surveyed by Ms. Haire and/or Mr. Howe on January 9 and 11, 2013. Mr. Howe conducted further surveys on January 24, February 6 and 21, March 8 and 22, and April 2 and 3, 2013. Ms. Haire conducted the final survey on April 18, 2013.

All vernal pool branchiopod surveys were conducted in accordance with USFWS's *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a) (1) (A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods* (April 19, 1996). During each visit, portions of the pool bottom, edges and vertical water column were sampled using a fine mesh dip net or brine shrimp net appropriate for the size and depth of the habitat. Mesh sizes of the nets were smaller than 1/8 inch. Sample contents were emptied into a clear plastic bin (for the dip net) or clear plastic Petri dish (for the brine shrimp net) in order to thoroughly search for vernal pool branchiopods and other invertebrates.

Air temperature, water temperature, maximum depth, estimated surface area, and habitat condition (undisturbed/disturbed, grazed/ungrazed) for each aquatic habitat at the time of sampling were recorded on a modified/expanded version of USFWS's *Vernal Pool Data Sheet for Wet Season Surveys*. Vertebrates and invertebrates observed in the aquatic habitat were also recorded.

Results

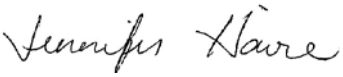
Survey Results

No listed vernal pool branchiopods were observed in the 41 aquatic habitats that were sampled. The aquatic habitats consist of five types: seasonal pool, seasonal swale, roadside seasonal pool, seasonal pond, and retention basin. The seasonal pools and swales are located mainly in the eastern portion of the study area in grazed annual grassland. The roadside pools, seasonal ponds, and retention basins are mainly located within the western portion of the study area, where more development is present. The versatile fairy shrimp (*Branchinecta lindahli*) was found in seven of the aquatic habitats surveyed (1, 4, 5, 6, 16, 17, and 18). The California fairy shrimp (*Linderiella occidentalis*) was found in three of the aquatic habitats surveyed (1, 4, and 11). A summary of the survey results is included in Table 1. The aquatic habitat type and locations (in Universal Transverse Mercator geographic coordinate system) of the habitats surveyed are included in Table 2.

There were two circumstances worth noting during the surveys. First, the area where pools 14 and 15 are located was planted with wheat prior to the start of the wet season surveys. The area was not planted when soil was collected from these pools during the dry season survey in October 2012. Second, the area where pools 2 and 3 are located was observed to be a construction staging area during the April 18, 2012 survey visit. Soil was also collected from these pools in October 2012. Processing of soil collected from these pools and other aquatic habitats within the study area was put on hold per the County's direction so results are not yet available.

Representative photographs of surveyed habitats in the study area are included in Attachment C. Copies of the completed data sheets are included in this document as Attachment D. The certification statement for these survey results is included in Attachment E. If you have any questions about these survey results, please contact me at (916) 231-9575 or by email at jennifer.haire@icfi.com.

Sincerely,



Jennifer Haire
Senior Wildlife Biologist

Attachments
Tables 1 and 2
Included on enclosed CD:
Attachment A: Correspondence with USFWS
Attachment B: Locations of Aquatic Habitats Surveyed for Vernal Pool Branchiopods

Attachment C: Representative Photographs of Pools Surveyed
Attachment D: Vernal Pool Data Sheets
Attachment E: Certification Statement

cc: Jen Schofield, Contract Biologist, Caltrans Liaison, USFWS
Claire Bromund, ICF International
Lauren Abom, Jacobs Engineering
Jim Hoyt, Jacobs Engineering

Table 1. Results of Wet Season Surveys for Listed Branchiopods for the North County Corridor State Route 108 Project

Habitat ID	Survey Dates (2012–2013)									
	12/11, 12/14	12/28–12/29	1/9, 1/11	1/24	2/6	2/21	3/8	3/22	4/2–4/3	4/18
1	IMM 100s BRLI 100s	None	LIOC 100s	Dry	Dry	None	Dry	Dry	None	Dry
2	Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
3	Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
4	IMM 100s-1,000s	IMM 100s	LIOC 1000s BRLI 1000s	BRLI 1000s	Dry	None	Dry	Dry	IMM 100s	Dry
5	BR sp. 100s-1000s	BRLI 10s-100s	BRLI 10s-100s	BRLI 100s	BRLI 100s	None	None	None	None	Dry
6	IMM 10s-low 100s	IMM 100s-1,000s	BR sp. 1,000s	BRLI 1,000s	None	IMM 10s	None	None	IMM 1000s	BRLI 100s
7	None	None	None	None	Dry	None	Dry	Dry	None	Dry
8	None	None	None	None	Dry	None	None	None	None	Dry
9	None	None	None	Dry	Dry	None	Dry	Dry	None	Dry
10	Dry	None	None	None	Dry	None	Dry	Dry	None	Dry
11	Dry	None	None	None	LIOC 100s	None	Dry	Dry	None	Dry
12	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
13	None	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
14	Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
15	Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
16	BRLI 10s	None	None	None	None	None	None	None	None	None
17	BR sp. 10s-100s BRLI <10	BRLI 100s-1,000s IMM 10s	BRLI 100s-1,000s	BRLI 100s	BRLI 10s	None	Dry	Dry	IMM 1000s	Dry
18	BRLI 10s	BRLI 10s	BRLI 10s-100s	None	BRLI 10s	None	BRLI 100s	Dry	IMM 1000s	Dry
19	NS/Dry	NS	None	None	Dry	Dry	Dry	Dry	Dry	Dry
20	NS/Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
21	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
22	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
23	None	None	None	Dry	Dry	None	Dry	Dry	Dry	Dry
24	NS/Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
25	Dry	None	None	Dry	Dry	None	Dry	Dry	Dry	Dry
26	Dry	None	None	None	Dry	None	Dry	Dry	Dry	Dry
27	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry

Table 1. Continued

Habitat ID	Survey Dates (2012–2013)									
	12/11, 12/14	12/28–12/29	1/9, 1/11	1/24	2/6	2/21	3/8	3/22	4/2–4/3	4/18
28	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
29	NS/Dry	NS	None	Dry	Dry	None	Dry	Dry	Dry	Dry
30	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
31	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
32	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
33	NS/Dry	NS	None	None	Dry	Dry	Dry	Dry	Dry	Dry
34	NS/Dry	NS	None	None	Dry	Dry	Dry	Dry	Dry	Dry
35*	NS/Dry	NS	None	None	Dry	Dry	Dry	Dry	Dry	Dry
36	NS/Dry	NS	None	None	Dry	Dry	Dry	Dry	Dry	Dry
37	NS/Dry	NS	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
38	Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
39	NS/Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry
40	Dry	None	None	None	Dry	Dry	Dry	Dry	Dry	Dry
41	NS/Dry	None	None	Dry	Dry	Dry	Dry	Dry	Dry	Dry

*Aquatic habitat 35 is located outside of the study area.

Code Descriptions

IMM = immature fairy shrimp of unknown genus present
BRLI = *Branchinecta lindahli* (versatile fairy shrimp) present
LIOC = *Linderiella occidentalis* (California fairy shrimp) present
BR sp. = *Branchinecta* of unknown species present (could not identify to species because only immature fairy shrimp present)
None = No vernal pool branchiopods observed at the time of survey
Dry = Habitat was observed dry at the time of survey
NS/Dry = Not surveyed/pool likely dry and not discovered until following survey
NS = Not surveyed; not yet identified or could not be surveyed because of lack of time/daylight.

Table 2. Types and Locations of Aquatic Habitats Surveyed for Listed Vernal Pool Branchiopods for the North County Corridor State Route 108 Project

Habitat ID	Habitat Type	UTM Northing*	UTM Easting*
1	Retention basin	4175539.86432008	676433.038132035
2	Seasonal pool	4175712.92150576	677190.910329119
3	Seasonal pool	4175693.81516457	677178.7519403
4	Retention basin	4175945.77302062	681752.060497654
5	Seasonal pond	4175821.62457551	682191.98278207
6	Roadside seasonal pool	4175697.96258409	682529.148840963
7	Seasonal pond	4183235.12418649	692729.999393696
8	Retention basin	4183296.18775039	692956.730070035
9	Seasonal swale	4179344.97144585	694528.416527434
10	Seasonal pool	4179293.00349598	694711.753393912
11	Seasonal pool	4179401.21280634	694807.233579169
12	Seasonal pool	4179375.65356204	694802.715186995
13	Seasonal pool	4180159.31095264	695595.304799603
14	Seasonal pool	4180151.32526634	696489.265683183
15	Seasonal pool	4180132.36561041	696491.897856291
16	Retention basin	4175731.84177601	675687.72546284
17	Roadside seasonal pool	4175782.02179595	682214.331410564
18	Roadside seasonal pool	4178343.22033177	690476.960042524
19	Seasonal pool	4179305.40029262	694864.445832534
20	Seasonal pool	4179405.09394474	694918.556499109
21	Seasonal pool	4179426.05686179	694861.663653476
22	Seasonal pool	4179419.60850102	694849.455593375
23	Seasonal pool	4180068.10827017	694943.147403752
24	Seasonal pool	4180039.12688116	694987.575095508
25	Seasonal pool	4180069.21949845	695098.18336266
26	Seasonal pool and swale	4180059.36552947	695191.965723463
27	Seasonal pool	4180097.14810321	695201.54418513
28	Seasonal pool	4180156.08798914	695230.516240669
29	Seasonal pool	4180099.97423837	695397.814594344
30	Seasonal pool	4180104.0867037	695609.311126586
31	Seasonal pool	4180194.90471484	695439.228900485
32	Seasonal pool	4180258.54254439	695231.565426271
33	Seasonal pool	4180219.64987324	695221.339744976
34	Seasonal pool	4180282.96329066	694870.921339534
35	Seasonal pool	4180312.71218359	694882.694940907
36	Seasonal pool	4180262.77058717	694849.209113344
37	Seasonal pool	4180209.46705459	695088.035998473
38	Seasonal pool	4179515.66086516	695137.847278117
39	Seasonal pool	4179384.3303768	695246.150269944
40	Seasonal pool	4179363.80291341	695244.23466407
41	Seasonal pool	4179334.58153669	695216.434025581

* Coordinates are in North American Datum 1983, UTM Zone 10N.

LSA ASSOCIATES, INC.
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CARLSBAD
FORT COLLINS
FRESNO
IRVINE
PALM SPRINGS
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO

August 18, 2014

David Kelly
Recovery Permit Coordinator
U. S. Fish and Wildlife Service
2800 Cottage Way, W2605
Sacramento, California, 95825

Subject: Results of 2014 Dry Season Fairy Shrimp Survey for the North County Corridor Project, Stanislaus County

Dear Mr. Kelly:

This letter provides the results of a 2014 dry season presence/absence survey for listed vernal pool crustaceans conducted by LSA Associates, Inc. (LSA). This protocol level dry season survey was conducted in partial fulfillment of full protocol level surveys documenting the presence or absence of listed vernal pool crustaceans for the proposed North County Corridor (NCC) Project, near Oakdale in Stanislaus County (Figure 1). The NCC is generally bounded by State Route (SR) 120/108 on the north, Claribel Road on the south, Tully Road on the west, and SR-120/108/Lancaster Road on the east.

The proposed project is located in Stanislaus County and would begin at the State Route 219 (Kiernan Avenue)/Tully Road intersection, extend easterly approximately 20 miles, and end along the alignment of State Route (SR) 120/108 east of the City of Oakdale. The build alternatives consist of three segments each. The western terminus of all alternatives is at the State Route 219 (Kiernan Avenue)/Tully Road intersection. Alternatives 1 and 2 proceed to the vicinity of the Claus Road/Claribel Road intersection, where they separate into two different alignments to their middle terminus. Alternatives 1 veers northeast near the Claus Road/Claribel Road intersection and passes through the southern boundary of Oakdale, and Alternative 2 continues to extend easterly along Claribel Road and turn northeastward past the intersection of Claribel Road/Bentley Road. Each of the Alternatives then breaks into two possible alignments to their eastern terminus. The eastern terminus of Alternatives 1A and 2A end along State Route 120/108 just east of the Oakdale City boundary. Alternatives 1B and 2B end further east of the Alternative 1A/2A terminus along State Route 120/108 in the vicinity of Lancaster Road.

Previous surveys for listed vernal pool branchiopods include both wet season and a dry season surveys. A wet season survey was conducted by ICF International (ICF) during the 2012-2013 wet season and sampled at 41 locations. Two unlisted species of fairy shrimp, versatile fairy shrimp (*Branchinecta lindahli*) and California fairy shrimp (*Linderiella occidentalis*), were reported as observed in six features (features 1, 4, 5, 6, 16 and 17) during this survey. An initial dry season survey was conducted by ICF and LSA on soil samples ICF collected from fourteen of the 41 wet season survey locations during the fall of 2012. Cysts of animals in the genus *Branchinecta* were recovered in six (1, 2, 3, 4, 5, and 6) of these locations. However, the initial dry season survey did not collect soil samples from all of the locations surveyed during the 2012-2013 wet season survey. Also, additional potentially suitable vernal pool crustacean habitat was been identified that was not surveyed during either of the previous efforts. This 2014 dry season survey examined soil samples collected from the all of the 2012-2013 wet season survey locations that were not included in the

previous dry season survey, as well as several additional potential habitat areas that were observed during soil collection site visits.

METHODS

The 2014 dry season surveys for the NCC were conducted by LSA senior biologist David Muth under LSA Federal 10(a)(1)(A) Permit TE-797234, in accordance with the United States Fish and Wildlife Service *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for Listed Vernal Pool Branchiopods*, dated April 19, 1996. The survey was approved by USFWS Recovery Permit Coordinator David Kelley on January 28, 2014.

Written consents to access the private properties within the proposed ESA required additional notification of some land owners. While awaiting permission for access to one property, concerns over potential rainfall made a separate visit to the adjacent properties necessary. This initial visit was made by Mr. Muth to collect material from wet season survey locations numbered 13, 27, 28, 29, 30, 32, 33, 34, 35, 36, 37, and portions of pool 26 on January 29, 2014. The second visit to collect from the remaining locations was made by Mr. Muth with assistance from LSA biologist Dayna Winchell, Dokken Engineering biologist Angela Cudiere, and Caltrans biologists Sarah Soliman and Kristen Baker, on February 6, 2014. The location of features sampled are shown in Figure 2.

No material was collected during the January 29 site visit as discussed below. Four to ten 0.1 liter samples were collected from each of the locations sampled on February 6. Collected soil samples were stored in lock-top plastic bags marked to indicate pool number and soil sample number. The location of each sample collection point was mapped using a Trimble GPS unit with sub-meter accuracy. As some soil samples were moist, the storage bags were left open to dry prior to processing.

Mr. Muth processed the soil samples on February 7, 12, 13, 16 and 17, 2014. The soil samples were processed individually by placing each in a 5-gallon bucket containing 1 to 2 gallons of water to saturate the soil. After saturating the soil sample for approximately 10 to 15 minutes, the bucket was stirred and poured through a series of three sieves with mesh sizes of 710, 355, and 212 microns (as recommended by Richard Hill of Caltrans). The sieves were stacked with the largest mesh size at the top to the smallest mesh size on the bottom. Samples were poured and washed through the set with water. Material trapped in the two smallest sieve sizes in each set was saved for analysis by washing the material into coffee filters. Material in the coffee filters was poured into a brine solution to separate mineral substrate from biological detritus. The floating biological portions were poured back into the coffee filters and left to dry.

All sieved material was examined by Mr. Muth on February 18, 20, 21, 24 and 25, 2014 using a 10 to 40 power Olympus stereo-optic scope. A reference cyst collection was available and could be used when necessary for comparison of any cysts found in the samples. Following examination, the soil material with cysts was kept in the accompanying filter paper for storage until final deposition can be arranged.

RESULTS

The property accessed for collection on January 29, 2014 had undergone a land use change from livestock grazing to vineyard. The land conversion included disking and remedial grading activities that obliterated all of the previous wet season sampling locations on the property. Consequently, it was not possible to sample locations 13, 27, 28, 29, 30, 32, 33, 34, 35, 36, 37, and portions of 26.

The property visited on February 6, 2014 was still used for grazing and the survey locations were undisturbed. Many of the numbered locations that were reportedly sampled during the 2012-2013 wet season survey were minor topographic relief depressions that showed little distinction from the surrounding grasslands. Most were vegetated in upland plant species and could only be discerned by GPS coordinates. These locations did not appear capable of providing conditions that could support any species of branchiopod. Nonetheless, soil samples were collected from each. Also during this site visit, seven seasonally pooling features (numbered 100, 101, 103, 104, 105, 106 and107) that appeared to provide conditions typical for branchiopods were observed. Samples were collected from these unrecorded features as well.

Cysts identified as those of animals in the genus *Branchinecta* were observed in samples from features 100, 101, 105, and 106. Features 101, 105 and 106 had large numbers between 400 and 1000 while feature 100 had around 70. Additional cysts identified as eggs of an unlisted genus of fairy shrimp, *Linderiella*, were found in feature 106. No cysts of tadpole shrimp (genus *Lepidurus*) were detected in any of the samples. Although no anostracan cysts were observed in locations 26, 103, 104 or 107, soils from these features contained material indicating regular seasonal pooling of water (i.e. *Isotes* spores, cladocerean ephippium, ostrocod shells, etc). The remainder of the sample locations, 19-25 and 38-41, lacked these materials. It is unlikely that these locations pool water long enough to support aquatic or hydrophytic species. Results of the dry season survey are summarized in Table A. A summary of results and sample locations are shown in Figure 2 and 3.

Table A: Characteristics of Locations Sampled and Results

Feature	Estimated Maximum Depth (cm)	Estimated Maximum Length (m) × Width (m)	Origin	Genus of Cysts Identified in Samples
19	15	5 x 5	Small borrow pit	none
20	4	3 x 4	Minor topographic relief depression	none
21	5	3 x 8	Minor topographic relief depression	none
22	6	2 x 4	Minor topographic relief depression	none
23	5	7 x 5	Minor topographic relief depression	none
24	4	5 x 6	Minor topographic relief depression	none
25	4	4 x 3	Minor topographic relief depression	none
26	10	4 x 40	Shallow swale	none

Feature	Estimated Maximum Depth (cm)	Estimated Maximum Length (m) × Width (m)	Origin	Genus of Cysts Identified in Samples
38	5	5 x 8	Minor topographic relief depression	none
39	5	3 x 4	Minor topographic relief depression	none
40	5	3 x 4	Minor topographic relief depression	none
41	5	3 x 2	Minor topographic relief depression	none
100	25	12 x 7	Vernal pool	*Branchinecta*
101	30	13 x 10	Bermed swale	*Branchinecta* *Linderiella*
103	25	12 x 10	Bermed swale	none
104	40	14 x 13	Bermed swale	none
105	25	14 × 14	Shallow scraped excavation	*Branchinecta*
106	25	14 × 8	Shallow scraped excavation	*Branchinecta*
107	10	30 × 7	Wide, shallow swale	none

DISCUSSION

The results of this dry season survey indicate that fairy shrimp in the genus *Branchinecta* occur in features (100, 101, 105 and 106). Pooling in features 103 and 104 appears very deep and these features may pool water too long to support *Branchinecta*. While features 26 and 107 appear to have hydric conditions, they are drainages and lack topography to retain pooled water. These two features and the remaining eleven locations all appear unable to pond water for the 2-3 week period necessary to support any species of branchiopod through their life cycle.

Wet season surveys that included twelve of the locations sampled during this survey (19-26 and 38-41) were conducted by ICF during the previous wet season (2012-2013). The results of wet season surveys were negative for all twelve locations. The report documenting the wet season survey, dated July 18, 2013, is attached. The results of this dry season survey conducted during the winter of 2014, taken in conjunction with the results of the 2012-2013 wet season surveys, constitute a complete survey per the USFWS protocol for those twelve locations (19-26 and 38-41). The habitat conditions and survey results indicate that no listed vernal pool brachiopods occur in these locations.

The remaining seven locations were not sampled during previous surveys. Six of these features (100, 101, 103, 104, 105, and 106) provide seasonally pooling conditions that could support branchiopods through their complete life cycle. Four were found to support the genus *Branchinecta*. Based on habitat and location, the *Branchinecta* occurring in these features could be vernal pool fairy shrimp. Additional surveys will be required to complete the protocol for these additional features.

Please contact me if you require any additional information.

Sincerely,

LSA ASSOCIATES, INC.

David Muth
Senior Herpetologist

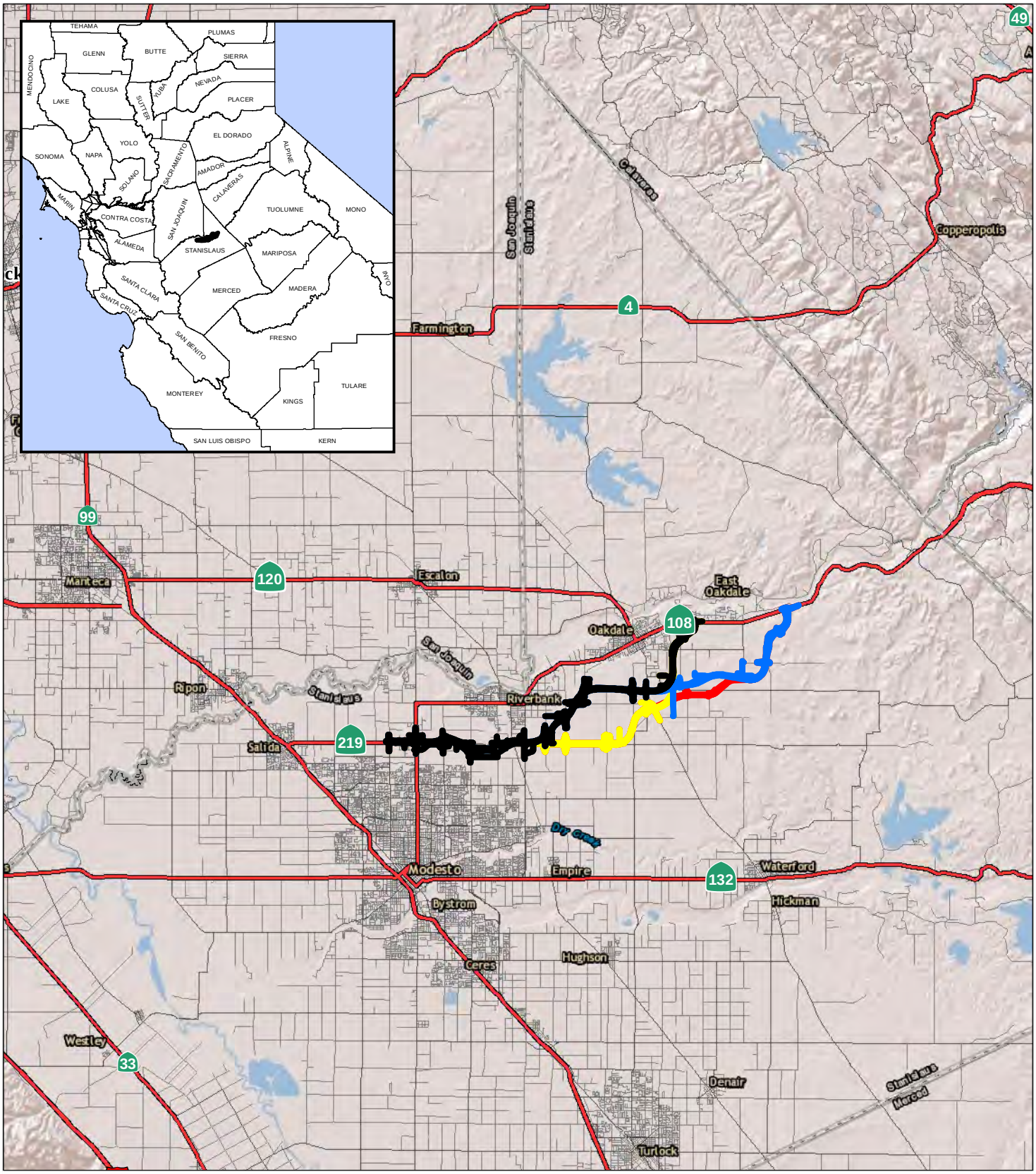
Attachments:

Figure 1: Regional Location
Figure 2: Location of Sampled Features
Figure 3: 2014 Dry Season Sampling Locations
Data Sheets
2012-2013 Wet Season Survey Report (ICF, July 18, 2013)

cc: Jennifer Schofield, U.S. Fish and Wildlife Service

I CERTIFY THAT THE INFORMATION IN THIS SURVEY REPORT AND ATTACHED EXHIBITS FULLY AND ACCURATELY REPRESENTS MY WORK:

SURVEYOR:	PERMIT NUMBER	DATE:
David Muth	TE-797234	January 21, 2014



LEGEND

- Alternative 1A
- Alternative 1B
- Alternative 2A
- Alternative 2B

0 2.5 5
MILES

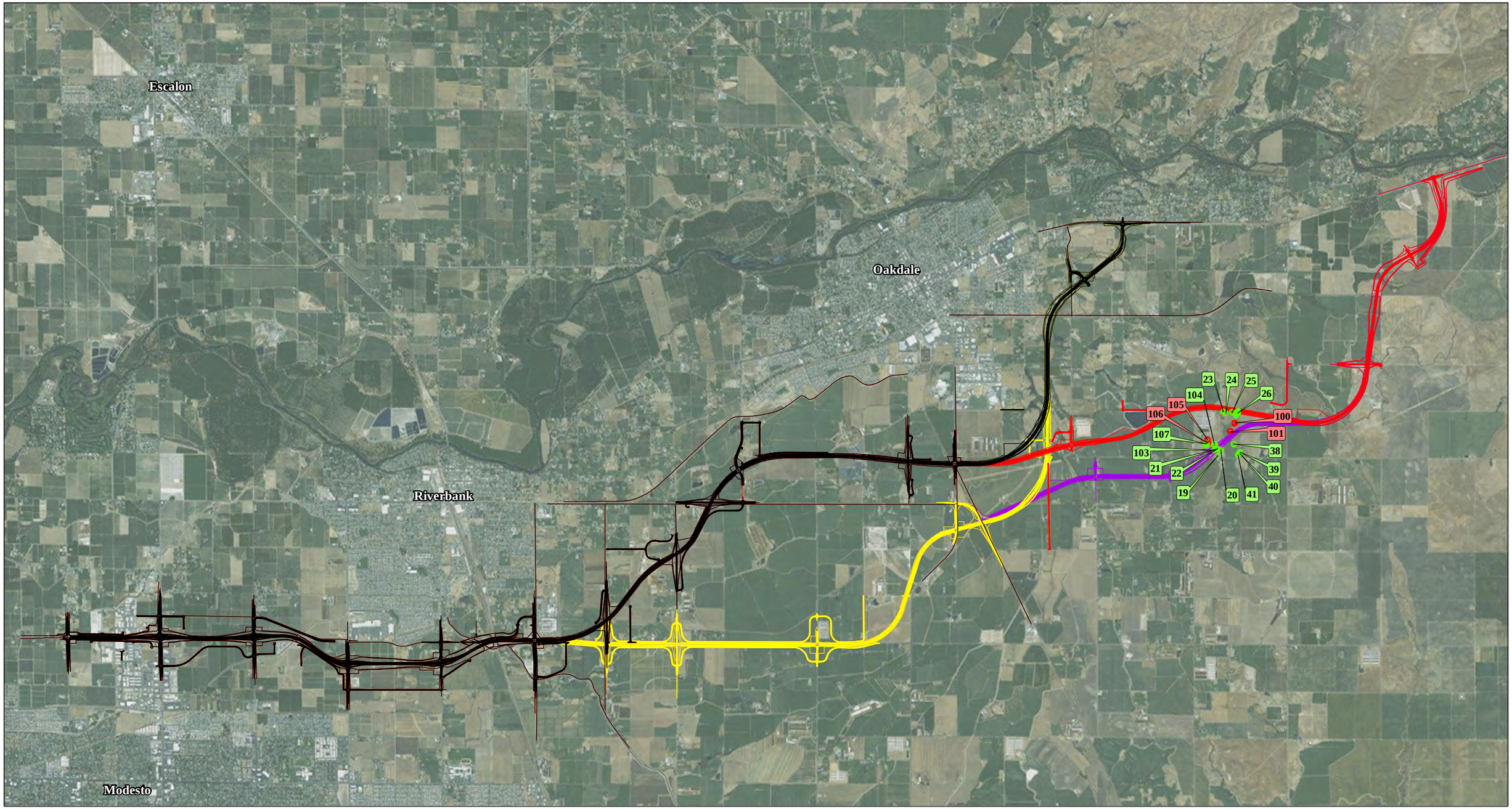
SOURCE: ESRI Imagery (4/2008)

I:\Dhg1302\GIS\Reports\2014 VP Dry\fig1_reg_loc.mxd (8/14/2014)

FIGURE 1

Regional Location
2014 Dry Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



LEGEND

Alternative 1A
Alternative 1B
Alternative 2A
Alternative 2B

Branchiopod Survey Pools (2014)

Positive Results
Negative Results

0 0.5 1
MILES

SOURCE: ESRI Aerial Imagery (2011)

I:\Dhg1302\GIS\Reports\2014 VP Dry\fig2_sample_locs.mxd (8/14/2014)

FIGURE 2

Location of Sampled Features
2014 Dry Season Sampling

EA: 10-0S800, Project ID: 1000000263
North County Corridor New State Route 108
Stanislaus County, California

LEGEND

Potential Feature Boundary

Dry Season Sample Locations

FIGURE 3a

Vernal Pool Branchiopod Protocol Surveys
2014 Dry Season Sampling

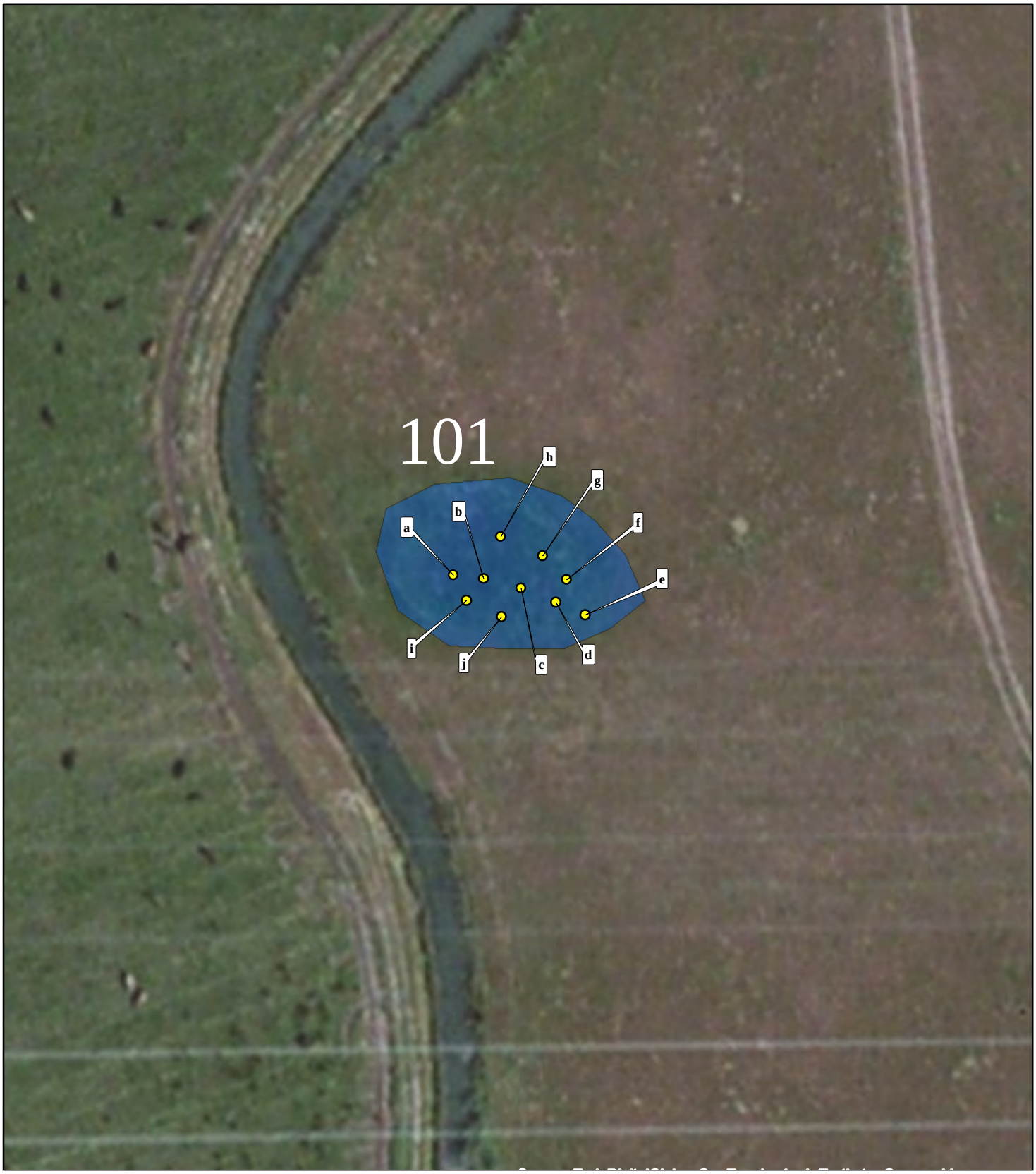
EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

N

0 25 50
FEET

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)

I:\Dhg1302\GIS\Reports\2014 VP Dry\fig3_sample_pools.mxd (8/14/2014)



LEGEND

Potential Feature Boundary

Dry Season Sample Locations

N

0 25 50

FEET

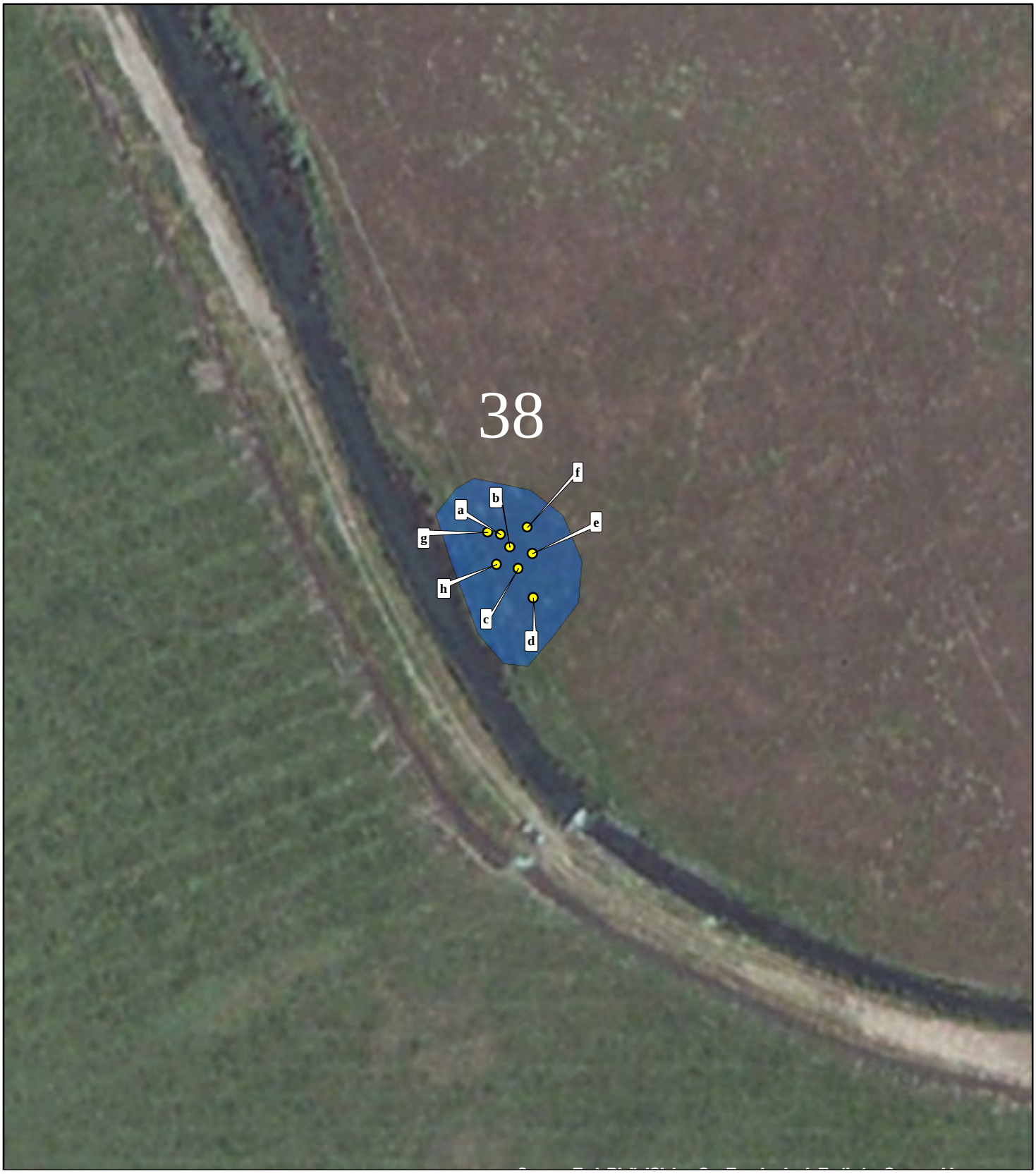
SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)

I:\Dhg1302\GIS\Reports\2014 VP Dry\fig3_sample_pools.mxd (8/14/2014)

FIGURE 3b

Vernal Pool Branchiopod Protocol Surveys
2014 Dry Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



LEGEND

Potential Feature Boundary

Dry Season Sample Locations

N

0 25 50

FEET

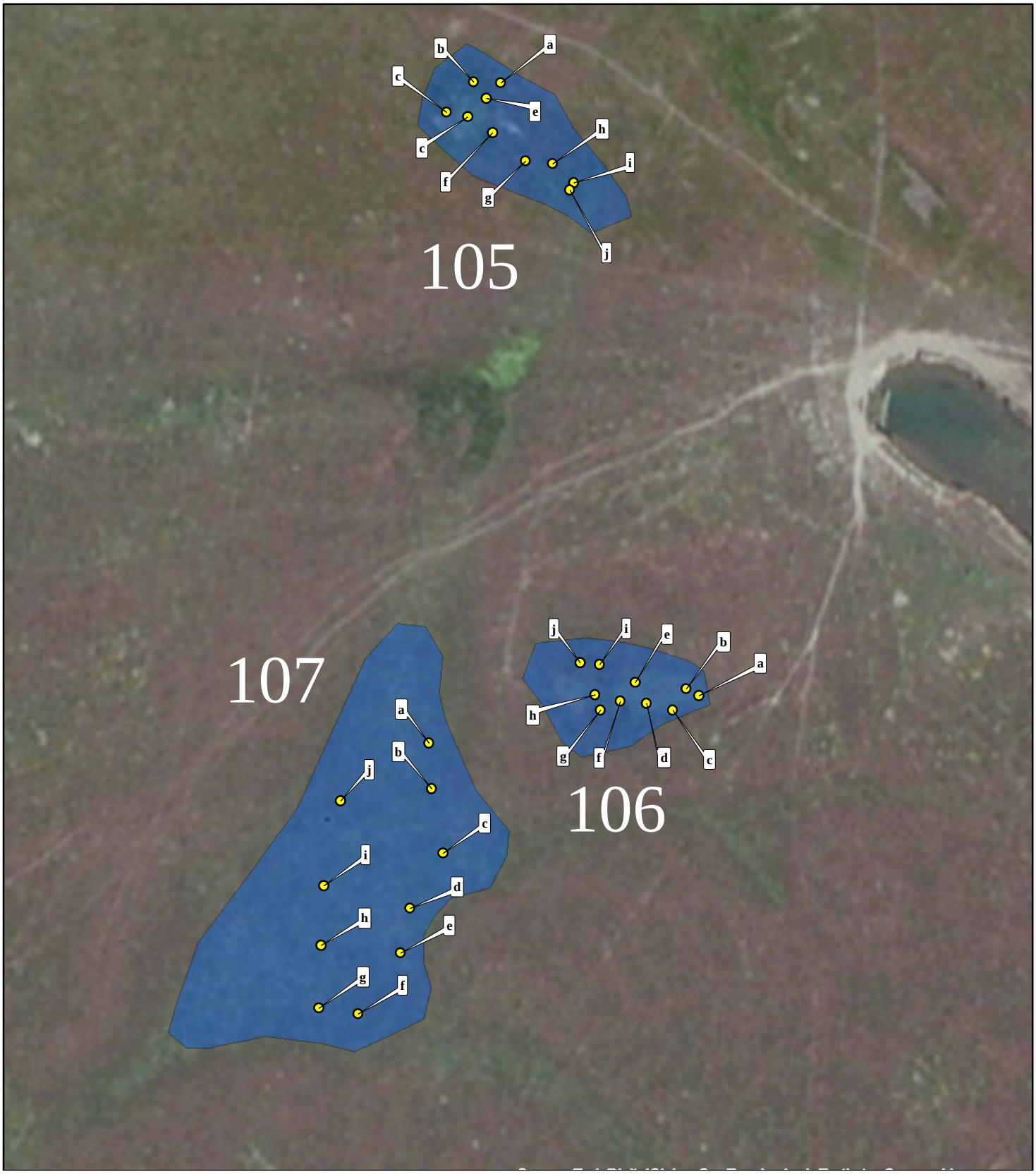
SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)

I:\Dhg1302\GIS\Reports\2014 VP Dry\fig3_sample_pools.mxd (8/14/2014)

FIGURE 3c

Vernal Pool Branchiopod Protocol Surveys
2014 Dry Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



LEGEND

Potential Feature Boundary

Dry Season Sample Locations

FIGURE 3d

Vernal Pool Branchiopod Protocol Surveys
2014 Dry Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

N

0 25 50
FEET

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)

I:\Dhg1302\GIS\Reports\2014 VP Dry\fig3_sample_pools.mxd (8/14/2014)

LEGEND

Potential Feature Boundary

Dry Season Sample Locations

FIGURE 3e

Vernal Pool Branchiopod Protocol Surveys
2014 Dry Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

N

0 25 50
FEET

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)

I:\Dhg1302\GIS\Reports\2014 VP Dry\fig3_sample_pools.mxd (8/14/2014)

LEGEND

Potential Feature Boundary

Dry Season Sample Locations

FIGURE 3f

N

0 25 50

FEET

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)

I:\Dhg1302\GIS\Reports\2014 VP Dry\fig3_sample_pools.mxd (8/14/2014)

Vernal Pool Branchiopod Protocol Surveys
2014 Dry Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

LEGEND

Potential Feature Boundary

Dry Season Sample Locations

N

0 25 50

FEET

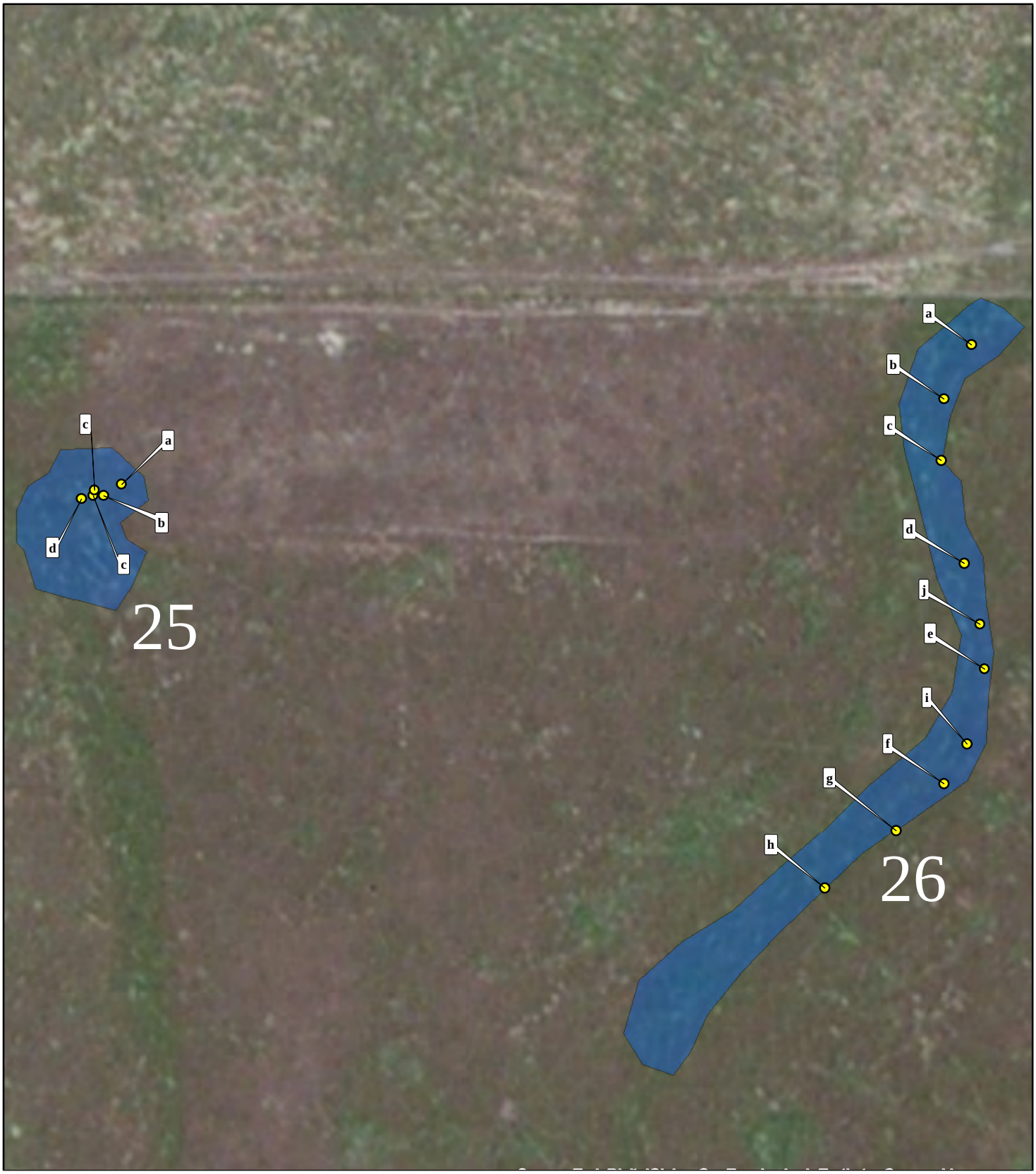
SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)

I:\Dhg1302\GIS\Reports\2014 VP Dry\fig3_sample_pools.mxd (8/14/2014)

FIGURE 3g

Vernal Pool Branchiopod Protocol Surveys
2014 Dry Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



LEGEND

Potential Feature Boundary

Dry Season Sample Locations

FIGURE 3h

Vernal Pool Branchiopod Protocol Surveys
2014 Dry Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

N

0 25 50
FEET

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)

I:\Dhg1302\GIS\Reports\2014 VP Dry\fig3_sample_pools.mxd (8/14/2014)

LEGEND

Potential Feature Boundary

Dry Season Sample Locations

FIGURE 3i

Vernal Pool Branchiopod Protocol Surveys
2014 Dry Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

N

0 25 50
FEET

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)

I:\Dhg1302\GIS\Reports\2014 VP Dry\fig3_sample_pools.mxd (8/14/2014)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____19_____

Township: 2 South_ Range: _11 East_ Section: __20 UTM:_4179436 _ North _694865_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 19

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Ø		
b	100	Ø		
c	100	Ø		
d	100	Ø		
e	100	Ø		
f	100	Ø		
g	100	Ø		
—				
—				
—				

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____20_____

Township: 2 South_ Range: _11 East_ Section: __20_ UTM: _4179404_ North _694920_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 20

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Ø		
b	100	Ø		
c	100	Ø		
d	100	Ø		
e	100	Ø		
f	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _2_/_6_/_2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____21_____

Township: 2 South_ Range: _11 East_ Section: __20 UTM: _4179427_ North _694861_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 21

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Ø		
b	100	Ø		
c	100	Ø		
d	100	Ø		
e	100	Ø		
f	100	Ø		
g	100	Ø		
h	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____22_____

Township: 2 South_ Range: _11 East_ Section: __20 UTM: _4179417_ North _694847_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 22

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Ø		
b	100	Ø		
c	100	Ø		
d	100	Ø		
e	100	Branchinecta	1	

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____23_____

Township: 2 South_ Range: _11 East_ Section: __20_ UTM:_4180067_ North _694942_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 23

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Ø		
b	100	Ø		
c	100	Ø		
d	100	Ø		
e	100	Ø		
f	100	Ø		
g	100	Ø		
h	100	Ø		
i	100	Ø		
j	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____24_____

Township: 2 South_ Range: _11 East_ Section: __20_ UTM: _4180042_ North _694989_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

Ncc 24

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Ø		
b	100	Ø		
c	100	Ø		
d	100	Ø		
e	100	Ø		
f	100	Ø		
g	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____25_____

Township: 2 South_ Range: _11 East_ Section: __20 UTM: _4180067_ North _695100_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 25

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	10	Ø		
b	10	Ø		
c	10	Ø		
d	10	Ø		
e	10	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____26_____

Township: 2 South_ Range: _11 East_ Section: __20_ UTM:_4180051_ North _695198_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 26

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	10	Ø		
b	10	Ø		
c	10	Ø		
d	10	Ø		
e	10	Ø		
f	10	Ø		
g	10	Ø		
h	10	Ø		
i	10	Ø		
j	10	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _2_/_6_/_2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____38_____

Township: 2 South_ Range: _11 East_ Section: __20 UTM:_4179515_ North _695147_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 38

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Ø		
b	100	Ø		
c	100	Ø		
d	100	Ø		
e	100	Ø		
f	100	Ø		
g	100	Ø		
h	100	Ø		
—	±			
—				

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____39_____

Township: 2 South_ Range: _11 East_ Section: __20 UTM: _4179387_ North _695248_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 39

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Ø		
b	100	Ø		
c	100	Ø		
d	100	Ø		
e	100	Ø		
f	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _2_/_6_/_2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____40_____

Township: 2 South_ Range: _11 East_ Section: __20_ UTM: _4179373_ North _695242_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 40

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Ø		
b	100	Ø		
c	100	Ø		
d	100	Ø		
e	100	Ø		
f	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____41_____

Township: 2 South_ Range: _11 East_ Section: __20_ UTM: _4179338_ North _695218_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 41

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Ø		
b	100	Ø		
c	100	Ø		
d	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _2_/_6_/_2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____100_____

Township: 2 South_ Range: _11 East_ Section: __20_ UTM:_4179876_ North _695146_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 100

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Branchinecta	6	
b	100	Ø		
c	100	Ø		
d	100	Branchinecta	10	
e	100	Branchinecta	12	
f	100	Branchinecta	33	
g	100	Branchinecta	2	
h	100	Ø		
i	100	Ø		
j	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____101_____

Township: 2 South_ Range: _11 East_ Section: __20 UTM:_4179736_ North _695070_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 101

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Lindericella Branchinecta	5 41	
b	100	Lindericella Branchinecta	11 45	
c	100	Lindericella Branchinecta	17 58	
d	100	Lindericella Branchinecta	6 49	
e	100	Lindericella Branchinecta	2 20	
f	100	Lindericella Branchinecta	6 21	
g	100	Lindericella Branchinecta	7 45	
h	100	Branchinecta	83	
i	100	Lindericella Branchinecta	10 37	
j	100	Lindericella Branchinecta	26 65	

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X___ yes

Date: _2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____103_____

Township: 2 South_ Range: _11 East_ Section: __20 UTM:_4179401_ North _694807_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 103

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100			
b	100	Ø		
c	100	Ø		
d	100	Ø		
e	100	Ø		
f	100	Ø		
g	100	Ø		
h	100	Ø		
—				
—				

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____104_____

Township: 2 South_ Range: _11 East_ Section: __20 UTM: _4179503_ North _694801_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 104

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Ø		
b	100	Ø		
c	100	Ø		
d	100	Ø		
e	100	Ø		
f	100	Ø		
g	100	Ø		
104X101 h	100	Ø (Branchinecta)	(083)	
i	100	Ø		
j	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: _2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: _Waterford__

Collector(s): __David Muth_____ Permit #: ___TE794234_____

Site/Project Name: ___North County Corridor_____ Pool #: ____105_____

Township: 2 South_ Range: _11 East_ Section: __20_ UTM:_4179579_ North _694681_ East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 105

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Branchinecta	47	
b	100	Branchinecta	255	
c	100	Branchinecta	364	
d	100	Branchinecta	243	
e	100	Branchinecta	95	
f	100	Branchinecta	438	
g	100	Branchinecta	66	
h	100	Branchinecta	106	
i	100	Branchinecta	77	
j	100	Branchinecta	134	

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: 2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: Waterford

Collector(s): David Muth_____ Permit #: TE794234_____

Site/Project Name: North County Corridor_____ Pool #: 106_____

Township: 2 South Range: 11 East Section: 20 UTM: 4179517 North 694694 East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 106

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	10	Branchinecta	32	
b	10	Branchinecta	33	
c	10	Branchinecta	20	
d	10	Branchinecta	28	
e	10	Branchinecta	44	
f	10	Branchinecta	74	
g	10	Branchinecta	80	
h	10	Branchinecta	130	
i	10	Branchinecta	38	
j	10	Branchinecta	16	

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: 2 / 6 / 2014 Time: _____ County: Stanislaus_____ Quad: Waterford

Collector(s): David Muth_____ Permit #: TE794234_____

Site/Project Name: North County Corridor_____ Pool #: 107_____

Township: 2 South Range: 11 East Section: 20 UTM: 4179501 North 694665 East.

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
- land use of habitat:			light	moderate	heavy

Pool Bottom Surface: (circle where appropriate)

hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: _____cm (estimated maximum) Surface Area: _____m2 (estimated maximum)

Sketch of pool and transects showing:

- scale
- indication of North
- sampling locations

NCC 107

U.S Fish and Wildlife Service Vernal Pool Data Sheet

Dry Season Survey

Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml
a	100	Ø		
b	100	Ø		
c	100	Ø		
d	100	Ø		
e	100	Ø		
f	100	Ø		
g	100	Ø		
h	100	Ø		
i	100	Ø		
j	100	Ø		

Voucher Specimens

Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

2013-2014 SURVEYS FOR LISTED VERNAL POOL CRUSTACEANS

NORTH COUNTY CORRIDOR NEW STATE ROUTE 108

STANISLAUS, CALIFORNIA

90-Day Report Submitted to:

U.S. Fish and Wildlife Service
San Joaquin Valley Division
2800 Cottage Way, Room W-2605
Sacramento, California 95825

Surveys Conducted for:
Stanislaus County Dept. of Public Works
1716 Morgan Road
Modesto, CA 95358

Prepared by:

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LSA Project No. DHG1302

LSA

August 2014

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INTRODUCTION

This report presents the results of the wet season survey for federally listed vernal pool crustaceans performed by LSA Associates, Inc. (LSA) during the 2013-2014 rainy season. These surveys were conducted on the North County Corridor New State Route (SR) 108 Project Site (project site) located near the Cities of Modesto, Riverbank, and Oakdale in Stanislaus County, California. There are multiple aquatic features located on the project site that provide conditions potentially suitable to support vernal pool crustaceans. The surveys were conducted in compliance with the United States Fish and Wildlife Service (USFWS) protocols to determine the presence or absence of listed vernal pool crustaceans on the project site.

The wet season survey was conducted under the authority of permit TE-797234-9 issued to LSA by the USFWS. Approval for these surveys was received from David Kelly of the Sacramento Fish and Wildlife Service Office on December 3, 2013. Preparation of this report within 90-days of the completion of surveys is required as a condition of LSA's permit.

PROJECT LOCATION

The project site is located in northern Stanislaus County in the San Joaquin Valley. The western end of the NCC begins approximately 4 miles (mi) east of SR 99 and approximately 0.75 mi north of Modesto. The NCC extends approximately 18 mi to the east and ends at SR-108 east of Oakdale.

The project site is located within portions of both sectioned and unsectioned portions of Township 2 South Ranges 9, 10, and 11E and Township 3 South Ranges 9, 10, and 11E Mount Diablo Baseline and Meridian, on the Salida, California, Riverbank, California; Waterford, California; Oakdale, California; and Knights Ferry, California 7.5 minute series United States Geological Survey (USGS) topographic maps.

The project location shown in Figure 1, located in Appendix A.

The project site and surrounding lands consists of agricultural fields and rural residences. Higher density residential and commercial development is located on the west end of the project site, in the Cities of Riverbank and Modesto.

PROPOSED PROJECT

The California Department of Transportation (Caltrans) in cooperation with the North County Corridor Transportation Expressway Authority proposes to construct the North County Corridor New State Route 108 project. The project would replace the existing SR-108, which currently runs through the City of Riverbank and south of the City of Oakdale. The project would increase roadway capacity to accommodate existing and future traffic volumes.

In response to worsening traffic conflicts and traffic congestions in the region, increasing concern over traffic safety, and the continuing inhabitation of delivering goods and services, the purpose of the

project is to improve the regional network circulation, relieve existing traffic congestion, reduce traffic delays, accommodate future traffic, increase interregional connectivity, support efficient movement of goods and services, and enhance traffic safety.

Four build and one no-build alternatives have been selected for evaluation. The four build alternatives (1A, 1B, 2A, and 2B) have the same western terminus, starting at the SR-219/Tully Road intersection, and then proceed east to the vicinity of the Claus Road/Claribel Road intersection. At this point, the project separates into two different alignments, 1 and 2. Alternatives 1A and 1B veer northeast through the southern boundary of Oakdale and Alternatives 2A and 2B continue past the Clairbel Road/Claus Road intersection and veer northeastward past Bentley Road. Each alternative then breaks into two possible alignments to their eastern terminus, just past the Oakdale-Waterford Highway. The eastern terminus of Alternatives 1A and 2A end along the SR-108/120 just east of the City of Oakdale boundary. Alternatives 1B and 1B end further east of the Alternatives 1A and 2A along SR-108/120 in the vicinity of Lancaster Road. In order to maintain access to all parcels, new and realigned local access roads will be included as part of the proposed project throughout the project site.

ENVIRONMENTAL SETTING

The project site is located between approximately 100 and 250 feet above mean sea level and is located within the Middle San Joaquin-Lower Merced-Lower Stan Watershed (Hydrologic Unit Code #18040002). There are no substantial waterways in the project site but several small waterways are present. Many of the waterways are unnamed, with only seasonal water conveyance. The northeastern and western parts of the study area drain to the north towards the Stanislaus River. The southeastern part of the project site generally drains to Dry Creek, a tributary to Tuolumne River.

Several irrigation canals also occur in the project site, these canals are part of either the Modesto Irrigation District or the Oakdale Irrigation District. The irrigation canals are concrete lined and controlled with earthen levees.

According to the Soil Survey of the Eastern Stanislaus County Area (Arkley 1964), a total of 53 soil mapping units occur within the Project area.

There were 41 features that were surveyed on and in the vicinity of the project site. Although the features are located across the project site, most of the features are on a single property near the east end of the project site. The location, average size and habitat of each feature can be found in Table 1 below. The locations and photos of the features are shown in Figures 2 and 3, in Appendix B.

Table 1: Feature Location and Description

Feature Number	UTM	Average Size (m)	Habitat Condition	Land Use
1	676428, 4175543	16 x 13	Disturbed	Pond/basin
2/3	677175, 4175692	12 x 11	Disturbed	Pond/basin
4	681757, 4175950	25 x 25	Disturbed, tire tracks, garbage	Pond/basin
5	682186, 4175821	12 x 12	Disturbed, cattle	Pond/basin
6	682524, 4175703	50 x 9	Disturbed, tire tracks, garbage	Urban
16	685670, 4175732	30 x 38	Disturbed	Pond/basin
17	682213, 4175784	35 x 4	Disturbed, tire tracks, garbage	Urban
18	690397, 4178347	9 x 0.06	Disturbed, tire tracks	Orchard
19	694865, 4179306	5 x 5	Disturbed, grazed, cattle	Cattle pasture
20	694919, 4179403	6.7 x 4.5	Disturbed, grazed, cattle	Cattle pasture
21	694865, 4179442	3 x 8	Disturbed, grazed, cattle	Cattle pasture
22	694848, 4179429	6 x 7.6	Disturbed, grazed, cattle	Cattle pasture
23	694956, 4180039	7 x 5	Disturbed, grazed, cattle	Cattle pasture
24	695036, 4180015	12 x 11	Disturbed, grazed, cattle	Cattle pasture
25	695102, 4180039	11 x 9	Disturbed, grazed, cattle	Cattle pasture
26	695196, 4180038	0.6 x 60	Disturbed, grazed, cattle	Cattle pasture
38	695130, 4179538	12.5 x 4.5	Disturbed, grazed, cattle	Cattle pasture
39	695241, 4179365	0.3 x 0.6	Disturbed, grazed, cattle	Cattle pasture
40	695243, 4179353	1.8 x 0.3	Disturbed, grazed, cattle	Cattle pasture
41	695218, 4179339	1.8 x 0.3	Disturbed, grazed, cattle	Cattle pasture
100	695145, 4179872	12 x 7	Disturbed, grazed, cattle	Cattle pasture
101	695072, 4179732	3.6 x 1.8	Disturbed, grazed, cattle	Cattle pasture
103	694806, 4179401	10.6x10.6x10.6	Disturbed, grazed, cattle	Cattle pasture
104	694799, 4179505	7.3 x 7.3	Disturbed, grazed, cattle	Cattle pasture
105	694685, 4179518	14 x 14	Disturbed, grazed, cattle	Cattle pasture
106	694685, 4179518	14 x 8	Disturbed, grazed, cattle	Cattle pasture

Feature Number	UTM	Average Size (m)	Habitat Condition	Land Use
107	694666, 4179496	30 x 7	Disturbed, grazed, cattle	Cattle pasture
110	695077, 4179788	0.3 x 0.9	Disturbed, grazed, cattle	Cattle pasture
111	695110, 4179842	60 x 25	Disturbed, grazed, cattle	Cattle pasture
112	695076, 4179686	10.6 x 5	Disturbed, grazed, cattle	Cattle pasture
113	695062, 4179770	10 x 5	Disturbed, grazed, cattle	Cattle pasture
114	694799, 4179371	6 x 4.5	Disturbed, grazed, cattle	Cattle pasture
115	694800. 4179326	6 x 4.5	Disturbed, grazed, cattle	Cattle pasture
116	694677, 4179547	10 x 15	Disturbed, grazed, cattle	Cattle pasture
117	694896, 4179431	11.5 x 5.4	Disturbed, grazed, cattle	Cattle pasture
200	697560, 4181245	7 x 15	Ungrazed	Pond/basin
201	697593, 4181230	5 x 12	Ungrazed	Pond/basin
210	676428, 4175543	6 x 13	Disturbed, garbage	Urban
211	682781, 4174973	23.4 x 10	Disturbed, tire tracks, garbage	Urban
212	682774, 4174923	4 x 11	Disturbed	Urban
213	682797, 4174928	30 x 2	Disturbed, tire tracks, garbage	Urban

PREVIOUS SURVEYS

ICF International (ICF) conducted a dry season survey in 2012 for vernal pool crustaceans. ICF collected samples from 14 potential features (features 1-15) in the project area. Cysts identified as those of animals in the genus *Branchinecta* were reported in samples from features 1-6. No cysts were observed in features 7 -15. Relatively large numbers of cysts were found in the samples from features 1, 4, and 6, suggesting that these features likely support sustaining populations of this genus.

ICF conducted a wet season survey (2012-2013) for listed vernal pool branchiopods in the project site. Reportedly, ICF sampled 41 locations during the wet season survey. Two unlisted species of fairy shrimp, versatile fairy shrimp (*Branchinecta lindahli*) and California fairy shrimp (*Linderiella occidentalis*), were reported in multiple features. Versatile fairy shrimp were observed in features 1, 4, 5, 6, 16, 17, and 18. California fairy shrimp were observed in features 1, 4, and 11.

In 2014, LSA senior biologist David Muth conducted a dry season survey of the remaining features on the project site. Much of the land in the project site had been converted to vineyards; therefore, LSA was unable to collect samples from 11 of the previously surveyed features (13, 27, 28, 29, 30, 32, 33, 34, 35, 36, and 37). Seven additional features that appeared to provide suitable habitat for vernal pool crustaceans were observed and surveyed (numbered 100-107). Cysts identified as those of animals in the genus *Branchinecta* were observed in samples from features 100, 101, 105 and 106. Additional cysts identified as eggs of an unlisted genus of fairy shrimp, *Linderiella*, were found in samples from feature 106.

There are three California Natural Diversity Database (CNDDB) occurrences for vernal pool crustaceans within 1 mile of the project site. One vernal pool fairy shrimp (*Branchinecta lynchi*) occurrence, dated 2004, and one vernal pool tadpole shrimp (*Lepidurus packardii*) occurrence, dated 2006, are located 0.4 mile south of the project site at the intersection of Plainview Road and Terminal Avenue. There is a second vernal pool tadpole shrimp occurrence, dated 1993, approximately 1 mile south of SR-120 near the intersection of Wren Road and Sierra Road.

METHODS

The 2013-2014 surveys of the project site followed the methodology outlined by the protocol presented in the *United States Fish and Wildlife Service Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for Listed Vernal Pool Branchiopods* dated April 19, 1996.

Surveys for listed vernal pool crustaceans were conducted by LSA biologist Laura Belt on February 13, March 4, March 14, March 26, April 8, and April 23, 2014.

Sampling procedures for vernal pool crustaceans consisted of two parts. The first was a visual examination of the water body to see individuals swimming in the water column and to search for shed tadpole shrimp carapace. Following visual inspection, a hand held net was pulled through the water to capture animals. The net was drawn through each sample site by holding the net mouth just above the pool bottom and walking through the sample site, moving the net through the water. The net was occasionally bumped along the pool bottom to stir up any benthic organisms. The net was periodically removed from the water and checked for presence of aquatic species. Sampling was continued until the net was pulled through a sufficient portion of the water body to capture vernal pool crustraceans or to satisfy the field researcher that these species were absent.

Four features (numbers 210, 211, 212, and 213, shown on Figure 3d) were surveyed that are not located on the project site. The features were surveyed because they are located within 0.5 mile of the project and vernal pool crustaceans have been recorded in some of these features.

RESULTS

Rainfall amounts during the 2013-2014 wet season was well under average throughout California. In Stanislaus County, there was minimal rainfall between October 2013 and January 2014, and the majority of rain fell between the months of February and April 2014 (NOAA 2014). By the March 26 survey, most of the features exhibited some ponding and were able to be surveyed.

Two unlisted fairy shrimp species, the versatile fairy shrimp and California fairy shrimp, were observed in multiple pools. Vernal pool tadpole shrimp was observed in feature 211. Vernal pool fairy shrimp were observed in features 104, 106, 116, and 210.

Table 2 shows the results from all the surveys.

The completed data sheets are shown in Appendix D.

Table 2: Results of 2013-2014 Wet Season Survey

	Survey Dates					
Feature Number	**2-13-14**	**3-4-14**	**3-14-14**	**3-26-14**	**4-8-14**	**4-23-14**
1	NS	10s IMM	10s BRLI	Dry	1000s BRLI	Dry
2/3	NS	10s IMM	Dry	Dry	Dry	Dry
4	NS	10s IMM	100s BRLI	Dry	1000s BRLI	1000s BRLI
5	Dry	10s IMM	10s BRLI	Dry	100s BRLI	Dry
6	100,000 BRLI	100s BRLI	10 BRLI	None	100 BRLI	None
16	IMM	None	None	None	None	None
17	1000s BRLI	100s BRLI	10s BRLI	None	1000s BRLI; 10s LIOC	None
18	None	IMM	10s BRLI	None	None	Dry
19	Dry	Dry	Dry	None	Dry	Dry
20	Dry	Dry	Dry	None	Dry	Dry
21	Dry	Dry	Dry	NSW	Dry	Dry
22	Dry	Dry	Dry	None	Dry	Dry
23	Dry	Dry	Dry	NSW	None	Dry
24	Dry	Dry	Dry	None	Dry	Dry
25	Dry	Dry	Dry	None	Dry	Dry
26	Dry	Dry	Dry	None	Dry	Dry
38	Dry	Dry	Dry	None	Dry	Dry
39	Dry	Dry	Dry	None	Dry	Dry
40	Dry	Dry	Dry	None	Dry	Dry
41	Dry	Dry	Dry	None	Dry	Dry
100	Dry	Dry	Dry	Dry	Dry	Dry

	Survey Dates					
Feature Number	**2-13-14**	**3-4-14**	**3-14-14**	**3-26-14**	**4-8-14**	**4-23-14**
101	Dry	Dry	Dry	None	Dry	Dry
103	Dry	Dry	Dry	None	Dry	Dry
104	None	10s BRLY	10s BRLY	10s BRLY	10s BRLY	10s BRLY
105	Dry	Dry	Dry	NSW	Dry	Dry
106	Dry	10s Imm	Imm	10s BRLY	NSW	Dry
107	Dry	Dry	Dry	NSW	Dry	Dry
110	NS/Dry	NS/Dry	NS/Dry	None	Dry	Dry
111	NS/Dry	NS/Dry	NS/Dry	None	NSW	Dry
112	NS/Dry	NS/Dry	NS/Dry	None	Dry	Dry
113	NS/Dry	NS/Dry	NS/Dry	None	Dry	Dry
114	NS/Dry	NS/Dry	NS/Dry	None	Dry	Dry
115	NS/Dry	NS/Dry	NS/Dry	None	Dry	Dry
116	NS/Dry	NS/Dry	NS/Dry	NS/Dry	10s BRLY	Dry
117	NS/Dry	NS/Dry	NS/Dry	None	Dry	Dry
200	NS/Dry	NS/Dry	None	None	None	Dry
201	NS/Dry	NS/Dry	None	None	None	Dry
210	NS/Dry	None	BRLY	Dry	100s BRLY	Dry
211	NS/Dry	LIOC	100s BRLI, 100s LIOC, 10s LEPA	BRLI, 10s LEPA, 1000s LIOC	100s LIOC; 10s LEPA	None
212	NS/Dry	Dry	Dry	Dry	Dry	Dry
213	100,000s BRLI, IMM	None	100s LIOC; IMM	100s BRLI	1000s BRLI	Dry

	Survey Dates					
Feature Number	**2-13-14**	**3-4-14**	**3-14-14**	**3-26-14**	**4-8-14**	**4-23-14**
IMM	Immature fairy shrimp of unknown genus present					
BRLI	*Branchinecta lindahli*					
LIOC	*Linderiella occidentalis*					
BR sp	*Branchinecta* of unknown species					
None	Ponded; No vernal pool fairy shrimp observed					
Dry	Habitat was observed dry					
NS/Dry	Not surveyed/pool likely dry and not discovered until following survey					
NS	Not surveyed due to right of entry issues					
NSW	Damp, no standing water					
BRLY	*Branchinecta lynchi*					
LEPA	*Lepidurus packardi*					

CONCLUSION

The 2013-2014 wet season surveys conducted for the North County Corridor New State Route 108 project resulted in positive results for vernal pool tadpole shrimp and vernal pool fairy shrimp. The pool containing vernal pool tadpole shrimp is located approximately 0.4 mi south of the project site. The vernal pool fairy shrimp were observed on two properties, one is located 0.4 mi south of the project site and the other is on the east end of the project site.

I certify that the information in this survey report and attached exhibits fully and accurately represents my work.

Laura Belt/ June 2, 2014
Permit #'s TE797234-9

REFERENCES

Arkley, R.J. 1964. Soil Survey of the Eastern Stanislaus Area, California. United States Department of Agriculture Soil Conservation Service in cooperation with University of California Agricultural Experiment Station. Washington, D.C.

California Natural Diversity Data Base (CNDDB). 2014. Query regarding listed vernal pool fairy shrimp and tadpole shrimp within Calaveras, Tuolumne, San Joaquin, and Stanislaus counties. California Department of Fish and Game, Biogeographic Data Branch, Sacramento. Accessed October 13, 2013.

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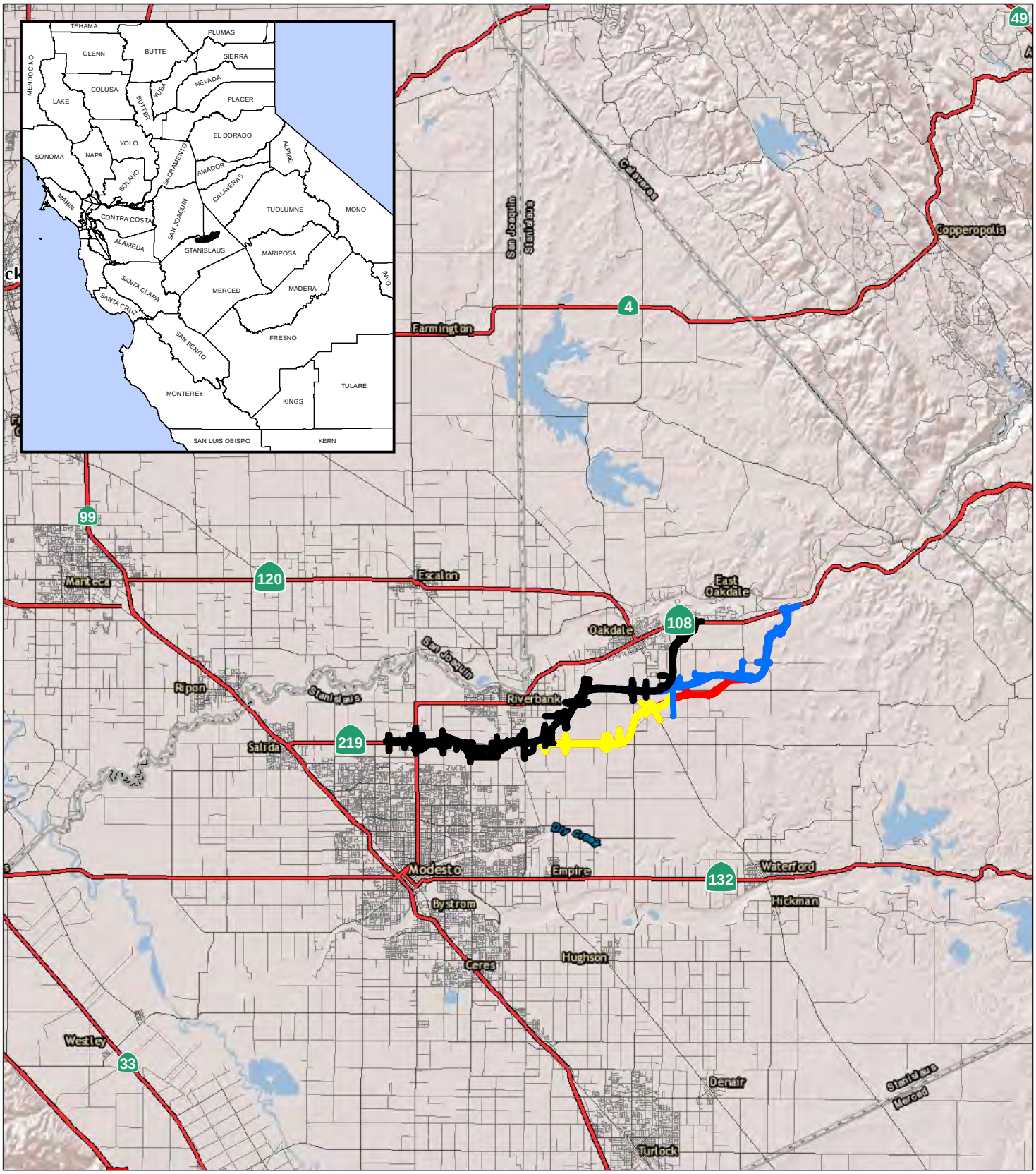
U.S. Fish and Wildlife Service. 1994. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Conservancy Fairy Shrimp, Longhorn Fairy Shrimp, and the Vernal Pool Tadpole Shrimp; and Threatened Status for the Vernal Pool Fairy Shrimp; Final Rule. Federal Register 59: 48136-48153.

U.S. Fish and Wildlife Service. 1996. United States Fish and Wildlife Service Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for Listed Vernal Pool Branchiopods. Dated April 19, 1996.

APPENDIX A
PROJECT VICINITY AND LOCATION



LEGEND

- Alternative 1A
- Alternative 1B
- Alternative 2A
- Alternative 2B

0 2.5 5
MILES

SOURCE: ESRI Imagery (4/2008)

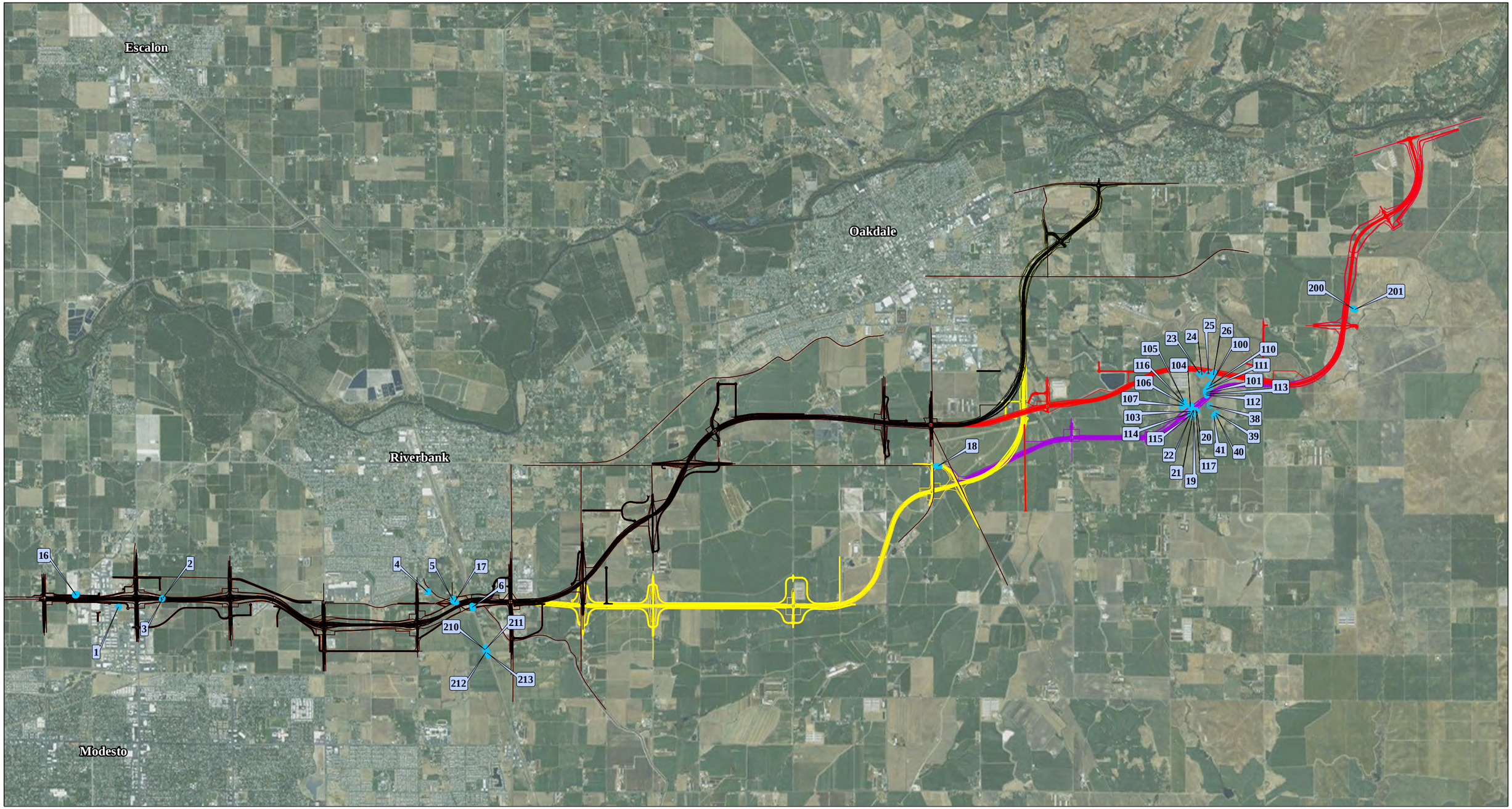
I:\Dhg1302\GIS\Reports\2014 VP Wet\fig1_reg_loc.mxd (7/14/2014)

FIGURE 1

Regional Location

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

APPENDIX B
FEATURE LOCATIONS



LEGEND

- Alternative 1A
- Alternative 1B
- Alternative 2A
- Alternative 2B
- Feature Boundary

0 0.5 1
MILES

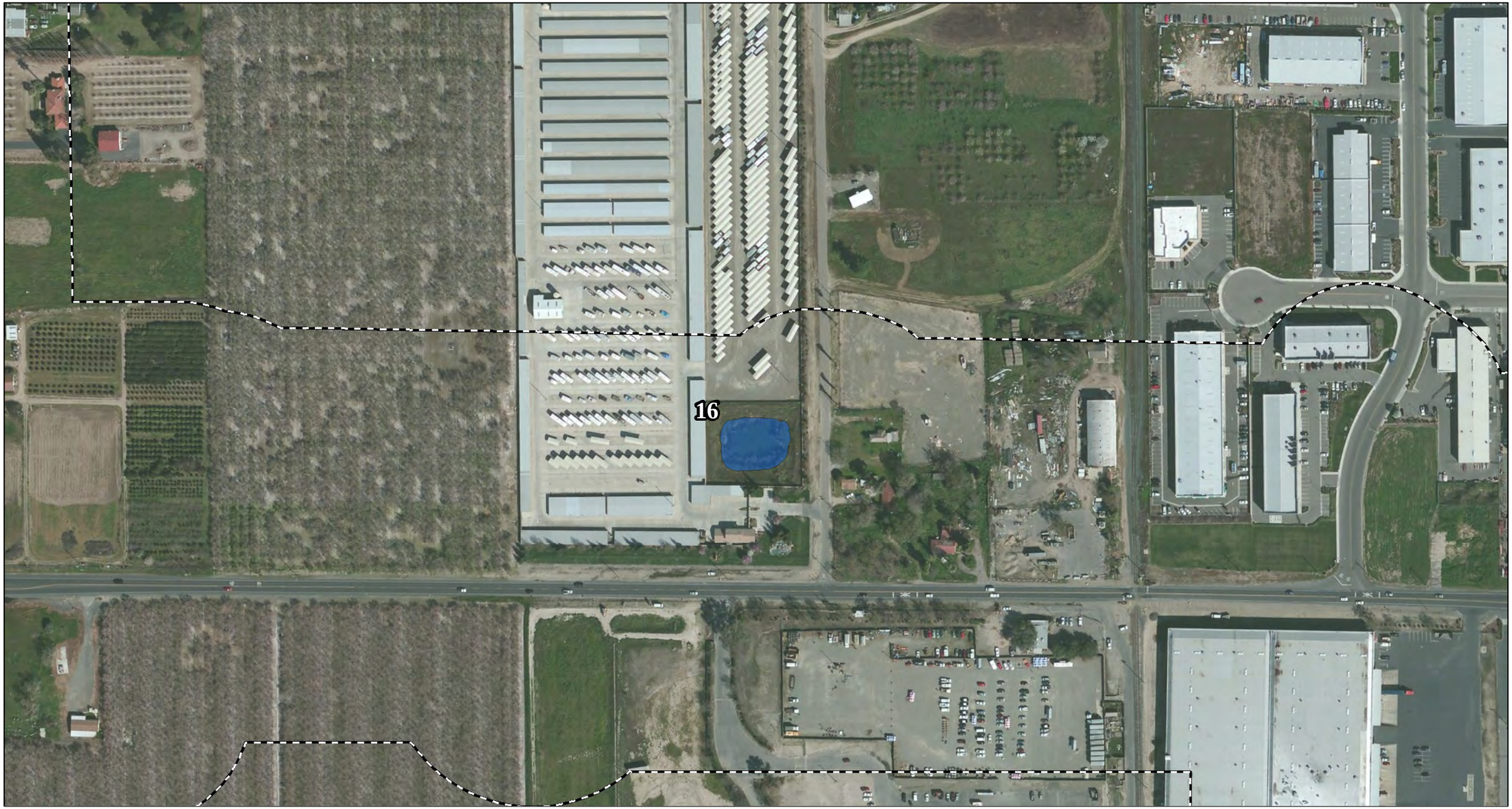
SOURCE: ESRI Aerial Imagery (2011)

I:\Dhg1302\GIS\Reports\2014 VP Wet\fig2_sample_locs.mxd (8/8/2014)

FIGURE 2

Location of Sampled Features

EA: 10-0S800, Project ID: 1000000263
North County Corridor New State Route 108
Stanislaus County, California



LEGEND

Project Site

Feature Boundary

0 100 200
FEET

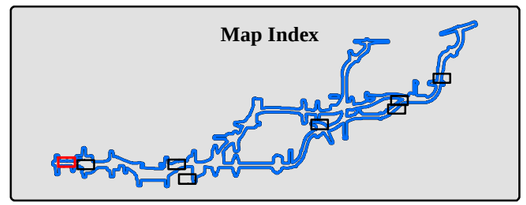


FIGURE 3a

Vernal Pool Crustacean Protocol Surveys
2014 Wet Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)
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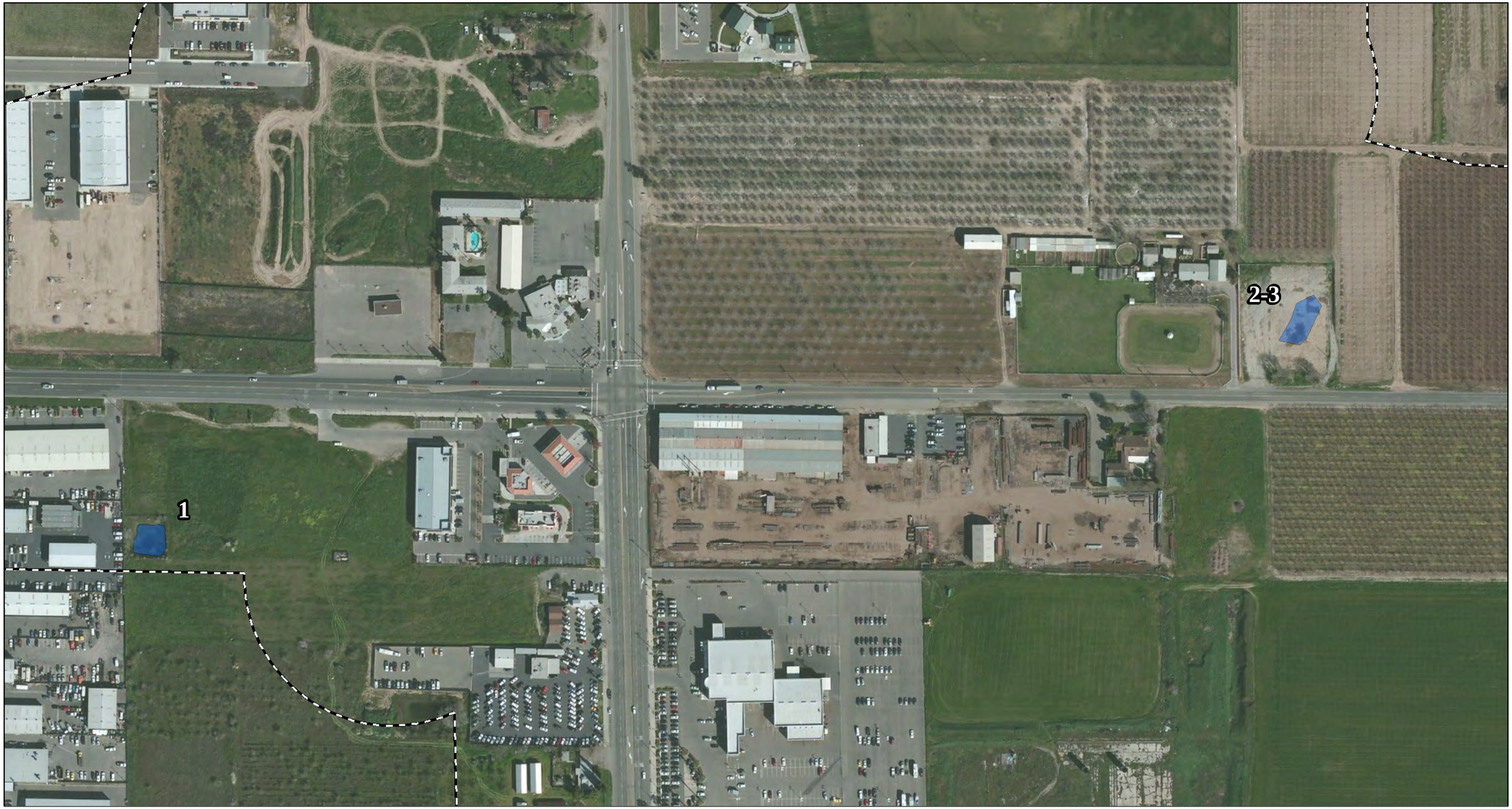

LEGEND

Project Site

Feature Boundary

0 100 200
FEET

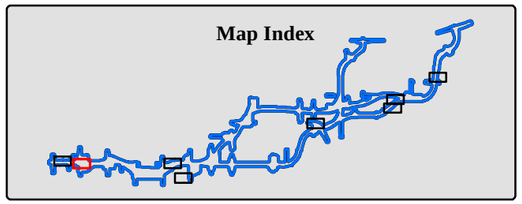

FIGURE 3b

Vernal Pool Crustacean Protocol Surveys
2014 Wet Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)
I:\Dhg1302\GIS\Reports\2014 VP Wet\fig3_sample_pools.mxd (8/8/2014)

LEGEND

Project Site

Feature Boundary

0 100 200
FEET

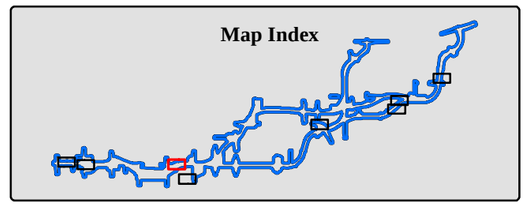

FIGURE 3c

Vernal Pool Crustacean Protocol Surveys
2014 Wet Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)
I:\Dhg1302\GIS\Reports\2014 VP Wet\fig3_sample_pools.mxd (8/8/2014)

LEGEND

Project Site

Feature Boundary

0 100 200
FEET

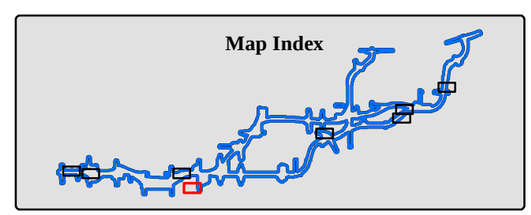

FIGURE 3d

Vernal Pool Crustacean Protocol Surveys
2014 Wet Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)

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LEGEND

Project Site

Feature Boundary

0 100 200
FEET

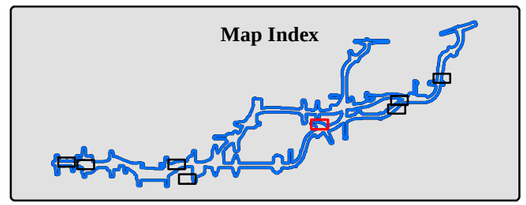

FIGURE 3e

Vernal Pool Crustacean Protocol Surveys
2014 Wet Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)
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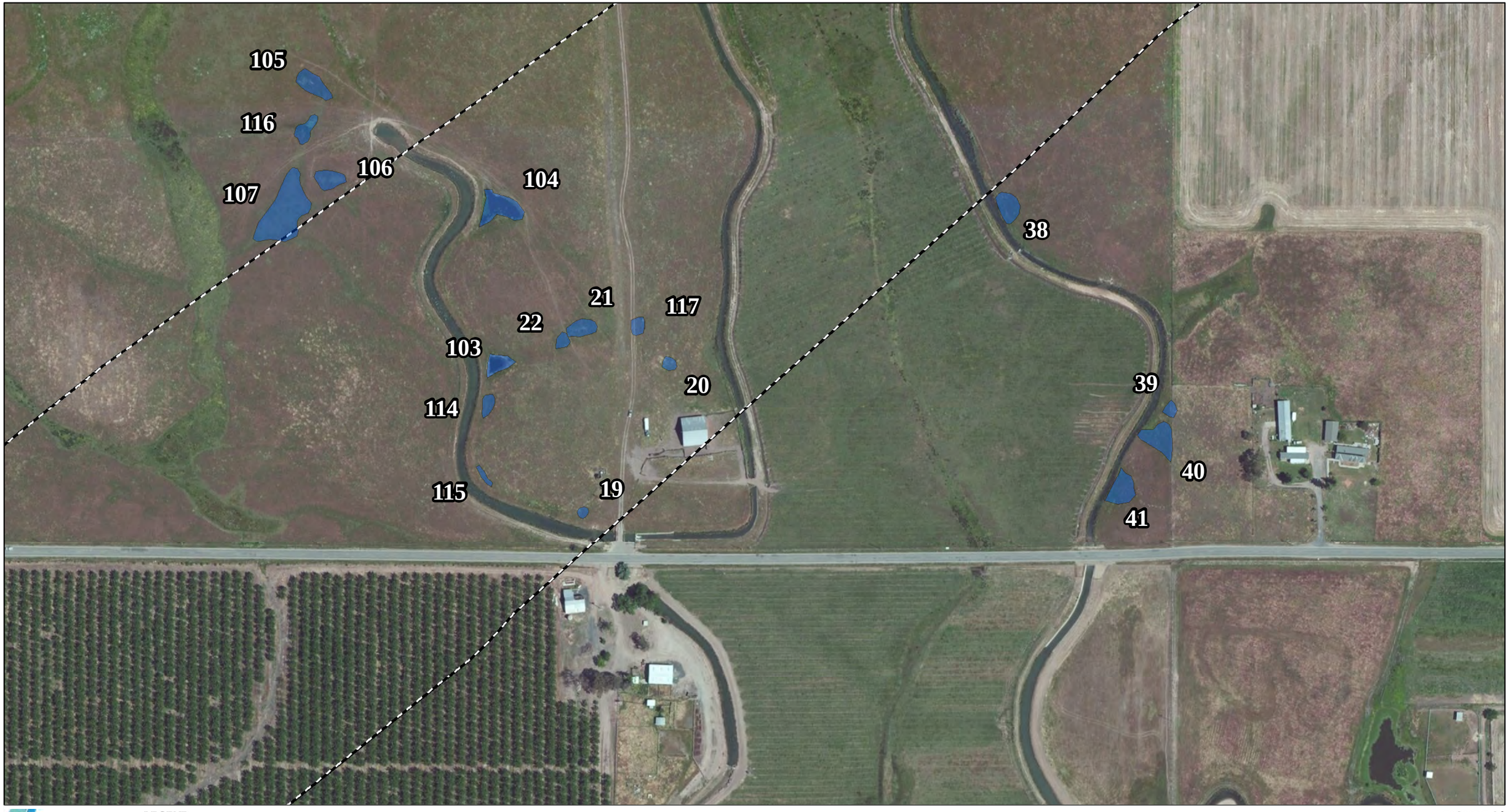


LEGEND

Project Site

Feature Boundary

0 100 200
FEET

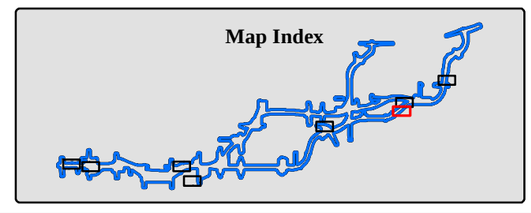
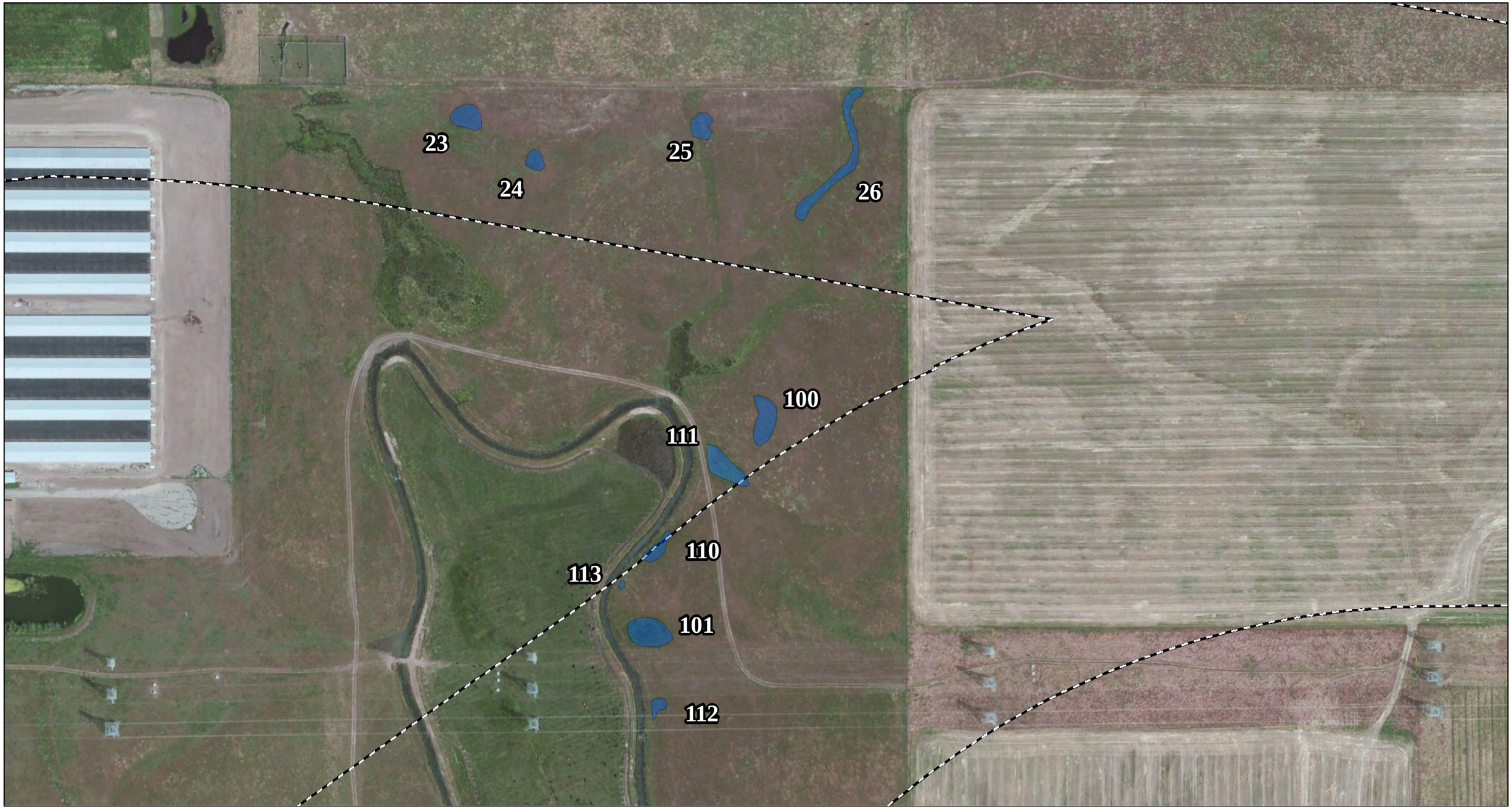


FIGURE 3f

Vernal Pool Crustacean Protocol Surveys
2014 Wet Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)
I:\Dhg1302\GIS\Reports\2014 VP Wet\fig3_sample_pools.mxd (8/8/2014)



LEGEND

Project Site

Feature Boundary

0 100 200
FEET

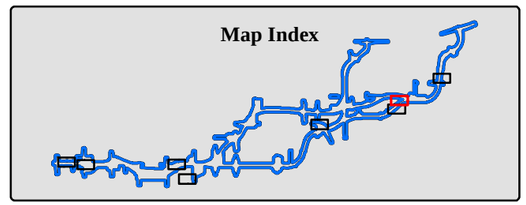


FIGURE 3g

Vernal Pool Crustacean Protocol Surveys
2014 Wet Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)
I:\Dhg1302\GIS\Reports\2014 VP Wet\fig3_sample_pools.mxd (8/8/2014)

LEGEND

Project Site

Feature Boundary

0 100 200
FEET

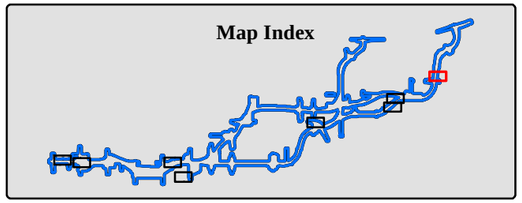


FIGURE 3h

Vernal Pool Crustacean Protocol Surveys
2014 Wet Season Sampling

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: ESRI Aerial Imagery (2010); LSA Associates, Inc. (2014)
I:\Dhg1302\GIS\Reports\2014 VP Wet\fig3_sample_pools.mxd (8/8/2014)

APPENDIX C
REPRESENTATIVE PHOTOS

Feature # 1.

Feature # 2/3.

Feature # 4.

Feature # 5.

Caltrans

Representative Photos-Page 1

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc (2014).

I:\Dhg1302\AI\2013-2014 Wet Season Report\RepresentativePhotos Page 1.ai (08/7/14)

Feature # 6.

Feature # 16.

Feature # 17.

Feature # 18.

Caltrans

Representative Photos-Page 2

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc (2014).

I:\Dhg1302\AI\2013-2014 Wet Season Report\RepresentativePhotos Page 2.ai (08/07/14)

Feature # 19.

Feature # 20.

Feature # 21 and # 22.

Feature # 22.

Caltrans

Representative Photos-Page 3

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc (2014).

I:\Dhg1302\AI\2013-2014 Wet Season Report\RepresentativePhotos Page 3.ai (08/07/14)

Feature # 23.

Feature # 25.

Feature # 26.

Feature # 38.

Caltrans

Representative Photos-Page 4

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc (2014).

I:\Dhg1302\AI\2013-2014 Wet Season Report\RepresentativePhotos Page 4.ai (08/07/14)

Feature # 41.

Feature # 100.

Feature # 101.

Feature # 103.

Caltrans

Representative Photos-Page 5

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc (2014).

I:\Dhg1302\AI\2013-2014 Wet Season Report\RepresentativePhotos Page 5.ai (08/07/14)

Feature # 114.

Feature # 104.

Feature # 212.

Feature # 211.

Caltrans

Representative Photos-Page 6

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc (2014).

I:\Dhg1302\AI\2013-2014 Wet Season Report\RepresentativePhotos Page 6.ai (08/07/14)

Feature # 213.

Feature # 201.

Feature # 112 and 113.

Feature # 110.

Caltrans

Representative Photos-Page 7

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc (2014).

I:\Dhg1302\AI\2013-2014 Wet Season Report\RepresentativePhotos Page 7.ai (08/07/14)

Feature # 24.

Feature # 200.

Caltrans

Representative Photos-Page 8

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SOURCE: LSA Associates, Inc (2014).

I:\Dhg1302\AI\2013-2014 Wet Season Report\RepresentativePhotos Page 8.ai (08/07/14)

APPENDIX D
COMPLETED DATA SHEETS

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 2 / 13 / 2014 Time: 754 pm County: Stanislaus Quad: Salida

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 1

Township: 3S Range: 9E Section: 5 UTM: 676428, 4175543

Temperature: Water: — °C Air: — °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed
- ungrazed

disturbed: tire tracks garbage discing/plowing

grazed: cattle horses sheep other_____

light moderate heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l

Dissolved NH4:____ppt or ppm

pH:_____

Salinity :_____ppt or ppm

Conductivity:_____uMHO

Dissolved Oxygen:_____ppm or mg/l

Turbidity: (secchi disc depth)_____cm or: clear to bottom _____

Total Dissolved Solids (TDS):_____ppm

Notes:

Did not access property; fenced and gated.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 2 / 13 / 2014 Time: 7:44 pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 2/ 3

Township: 2S Range: 9E Section: 33 UTM: 677175, 4175692

Temperature: Water: — °C Air: — °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: _____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed
- ungrazed

disturbed: tire tracks garbage discing/plowing

grazed: cattle horses sheep other_____

light moderate heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Two small areas of ponding, a few inches in depth. Did not have access to survey.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 2/13/2014 Time: 730pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 4

Township: 3S Range: 9E Section: 36 UTM: 681757, 4175950

Temperature: Water: — °C Air: — °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed
- ungrazed

disturbed: tire tracks garbage discing/plowing

grazed: cattle horses sheep other_____

light moderate heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l

Dissolved NH4:____ppt or ppm

pH:_____

Salinity :_____ppt or ppm

Conductivity:_____uMHO

Dissolved Oxygen:_____ppm or mg/l

Turbidity: (secchi disc depth)_____cm or: clear to bottom _____

Total Dissolved Solids (TDS):_____ppm

Notes: Two small ponded areas, a few inches in depth. Did not have access to survey.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 2 / 13 / 2014 Time: 707 pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 5

Township: 3S Range: 9E Section: 1 UTM: 682186, 4175821

Temperature: Water: — °C Air: — °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed
- ungrazed

disturbed: tire tracks garbage discing/plowing
grazed: cattle horses sheep other_____
light moderate heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 2 / 13 / 2014 Time: 653pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 6

Township: 3S Range: 9E Section: 1 UTM: 682524, 4175703

Temperature: Water: ___ °C Air: ___ °C

Pool Depth: Surface Area:

at time of sampling: 20-30 cm at time of sampling: 50 m x 7 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed
- ungrazed

disturbed: tire tracks garbage discing/plowing

grazed: cattle horses sheep other_____

light moderate heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Adult and Sub-adult B. lindahli

Water is turbid.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state ~~none or estimate~~ # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Adult and sub-adult Branchinecta lindahli

Notostracans: (note reproductive status) None

(Optional) Species Observations: Tiny aquatic invertebrates

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 2 / 13 / 2014 Time: 8:40pm County: Stanislaus Quad: Salida

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 16

Township: 2S Range: 9E Section: 32 UTM: 675670, 4175732

Temperature: Water: — °C Air: — °C

Pool Depth: Surface Area:

at time of sampling: 139 cm at time of sampling: 35 m x 35 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Water is too deep to dip-net center of feature; water is turbid.

Tiny fairy shrimp (2mm in length).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Immature. Tiny, fairy shrimp (2mm in length)

Notostracans: (note reproductive status) None

(Optional) Species Observations: Tiny aquatic invertebrates

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 2 / 13 / 2014 Time: 708 pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 17

Township: 3S Range: 9E Section: 1 UTM: 682213, 4175784

Temperature: Water: — °C Air: — °C

Pool Depth: Surface Area:

at time of sampling: 13-23 cm at time of sampling: 39 m x 2-5 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy
- land use of habitat:	Urban				

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Water is turbid; lots of tire tracks in waterfeature.

B. lindahli- subadults - 1,000's.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branchinecta lindahli

Notostracans: (note reproductive status) None

(Optional) Species Observations: very small aquatic invertebrates.

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 2 / 13 / 2014 Time: 554pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 18

Township: 2S Range: 10E Section: 26 UTM: 690397, 4178347

Temperature: Water: — °C Air: — °C

Pool Depth: Surface Area:

at time of sampling: up to 15 cm at time of sampling: 40 m x 1 m

estimated maximum:_____cm estimated maximum:_____m x_____m

West: up to 15 cm
1 m x 1 m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Orchard

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Intermittent ponding; tiny aquatic invertebrates. water is clear in larger, ponded area. water is turbid in smaller, ponded area (to the west). Tire tracks in both areas.

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations: Tiny aquatic invertebrates; unidentifiable

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 2 / 13 / 2014 Time: 449pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 19

Township: 2S Range: 11E Section: 20 UTM: 694815, 4179404

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 2 / 13 / 2014 Time: 4:46 pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 20

Township: 2S Range: 11E Section: 20 UTM: 677190, 4175719

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 2 / 13 / 2014 Time: 452 pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 21

Township: 2S Range: 11E Section: 20 UTM: 694865, 4179442

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:_____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completelyfor each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 2 / 13 / 2014 Time: 456pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 22

Township: 2S Range: 11E Section: 20 UTM: 694848, 4179429

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X__ yes

Date: 2 /13 /2014 Time: 3:00pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 23

Township: 2S Range: 11E Section: 20 UTM: 694956, 4180039

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 2 / 13 / 2014 Time: 330pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 24

Township: 2S Range: 11E Section: 20 UTM: 695036, 4180015

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 2 / 13 / 2014 Time: 3:35 pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 25

Township: 2S Range: 11E Section: 20 UTM: 695102, 4180039

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 2 / 13 / 2014 Time: 3:40pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 26

Township: 2S Range: 11E Section: 20 UTM: 695196, 4180038

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 2 /13 /2014 Time: 4:05pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 38

Township: 2S Range: 11E Section: 20 UTM: 695130, 4179538

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 2 / 13 / 2014 Time: 4PM pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 39

Township: 2S Range: 11E Section: 20 UTM: 695241, 4179365

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 2 /13 /2014 Time: 4:5pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 40

Township 2S Range: 11E Section: 20 UTM: 695243, 4179353

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 2 / 13 / 2014 Time: 420pm County: Stanislaus Quad: Waterford

Collector(s): Laura Beth Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 41

Township: 2S Range: 11E Section: 20 UTM: 695218, 4179339

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 2 / 13 / 2014 Time: 348pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 100

Township: 2S Range: 11E Section: 20 UTM: 695145, 4179872

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 2 / 13 / 2014 Time: 355pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 101

Township: 2S Range: 11E Section: 20 UTM: 695072, 4179732

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 2 / 13 / 2014 Time: 4:59 pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 103

Township: 2S Range: 11E Section: 20 UTM: 694806, 4179401

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 2 / 13 / 2014 Time: 5:12 pm County: Stanislaus Quad: Waterford

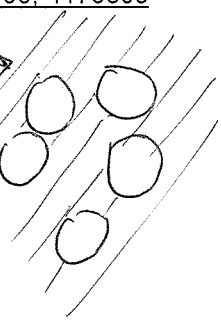
Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 104

Township: 2S Range: 11E Section: 20 UTM: 694799, 4179505

Temperature: Water: — °C Air: 18 °C

cow hoof tracks only



Pool Depth: Surface Area:

at time of sampling: 5-8 cm at time of sampling: 8-13 cm x 8-13 cm

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Water in cow hoof track depressions. Tiny ostracods observed.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations: Tiny ostracods

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 2 /13 /2014 Time: 5:21pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 105

Township: 2S Range: 11E Section: 20 UTM: 694678, 4179584

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 2 /13 /2014 Time: 532 pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 106

Township: 2S Range: 11E Section: 20 UTM: 694685, 4179518

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 2 /13 /2014 Time: 542 pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 107

Township: 2S Range: 11E Section: 20 UTM: 694666, 4179496

Temperature: Water: — °C Air: 18 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

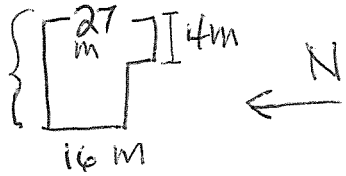
Date: 3 / 4 /2014 Time: 10:00am County: Stanislaus Quad: Salida

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 1

Township: 3S Range: 9E Section: 5 UTM: 676428, 4175543

Temperature: Water: 8 °C Air: 8 °C



Pool Depth: Surface Area:

at time of sampling: 109 cm at time of sampling: 27 m x 21 m x 16 m x 4 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: (Fruit trees, cottonwood trees and willows (small).
(Black Cat foraging here).

Water is clear to turbid (at lower depths).
Tiny fairy shrimp observed here.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Tiny, immature fairy shrimp

Notostracans: (note reproductive status) None

(Optional) Species Observations: Tiny aquatic invertebrates

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 /4 /2014 Time: 1107am County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 2/ 3

Township: 2S Range: 9E Section: 33 UTM: 677175, 4175692

Temperature: Water: 14 °C Air: 14 °C

Pool Depth: Surface Area:

at time of sampling: 17 cm at time of sampling: 27 m x 27 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Small amount of ponding; Water is clear
Tiny, immature fairy shrimp.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Tiny, immature fairy shrimp

Notostracans: (note reproductive status) None

(Optional) Species Observations: Tiny aquatic invertebrates

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 / 4 / 2014 Time: 12:00 noon County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 4

Township: 3S Range: 9E Section: 36 UTM: 681757, 4175950

Temperature: Water: 20 °C Air: 16 °C

Pool Depth: Surface Area:

at time of sampling: 41 cm at time of sampling: 55 m x 55 m x 55 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Water is turbid.
Tiny, immature fairy shrimp.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Tiny, immature fairy shrimp

Notostracans: (note reproductive status) None

(Optional) Species Observations: Tiny aquatic invertebrates

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 4 / 2014 Time: 1250pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 5

Township: 3S Range: 9E Section: 1 UTM: 682186, 4175821

Temperature: Water: 21 °C Air: 20 °C

1.6m
12m 12m

Pool Depth: Surface Area:

at time of sampling: 10 cm at time of sampling: 16 m x 12 m x 12 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Turbid water with tiny, immature fairy shrimp.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Tiny, immature fairy shrimp

Notostracans: (note reproductive status) None

(Optional) Species Observations: Tiny aquatic invertebrates.

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) horsehair worms		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 / 4 / 2014 Time: 240 pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 6

Township: 3S Range: 9E Section: 1 UTM: 682524, 4175703

Temperature: Water: 22 °C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling: 36 cm at time of sampling: 61 m x 10 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Adult B. lindahli; water is turbid.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: ~~state none~~ or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Adult Branchinecta lindahli

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 03 /04 /2014 Time: 930 am County: Stanislaus Quad: Salida

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 16

Township: 2S Range: 9E Section: 32 UTM: 675670, 4175732

Temperature: Water: 8 °C Air: 8 °C

Pool Depth: Surface Area:

at time of sampling: ↑139 cm at time of sampling: 47 m x 47 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	(disturbed:)	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Recent rain events have resulted in an increased area of ponding in detention basin. Water depth is over 5 feet (1.5 m); toodeep to dip net center. No fairy shrimp were observed.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae: adult	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 4 /2014 Time: 1:10 pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 17

Township: 3S Range: 9E Section: 1 UTM: 682213, 4175784

Temperature: Water: 20 °C Air: 17 °C // (East) water 20 °C; Air 17 °C

Pool Depth: Surface Area: // 15 cm

at time of sampling: up to 25 cm at time of sampling: 43 m x 7 m // 23 m x 6 m (East)

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy
- land use of habitat:	Urban				

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Mattress in water feature; also crushed granite shoulder backing has been placed in the limits of the ponded feature that is now isolated (East)
Water is turbid.
B. lindahli – adults and sub-adults – 100s, in bath areas.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

In both areas:

Anostracans: (note reproductive status) Branchinecta lindahli adult and subadult

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 4 / 2014 Time: 300pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 18

Township: 2S Range: 10E Section: 26 UTM: 690397, 4178347

Temperature: Water: 23 °C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling: 23 cm at time of sampling: 55 m x 5 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Orchard

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Both areas are completely inundated creating 1 large area.
Water is turbid.
Tiny, fairyshrimp and ostracods.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Very small unidentifiable fairyshrimp.

Notostracans: (note reproductive status) None

(Optional) Species Observations: very small unidentifiable aquatic invertebrates.

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 3 /4 /14 Time: 4 pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bert Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 19

Township: 2S Range: 11E Section: 20 UTM: 694815, 4179404

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 3 / 4 / 14 Time: 6pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belz Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 20

Township: 2S Range: 11E Section: 20 UTM: 677190, 4175719

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 3 /4 /14 Time: 3pm County: Stanislaus Quad: Waterford

Collector(s): Lana Beff Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 21

Township: 2S Range: 11E Section: 20 UTM: 694865, 4179442

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:_____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completelyfor each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 3 / 4 / 14 Time: 6pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 22

Township: 2S Range: 11E Section: 20 UTM: 694848, 4179429

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:
Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X__ yes

Date: 3 /4 /14 Time: 4pm County: Stanislaus Quad: Waterford

Collector(s): Lana Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 23

Township: 2S Range: 11E Section: 20 UTM: 694956, 4180039

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 /4 /14 Time: 4pm County: Stanislaus Quad: Waterford

Collector(s): Lana Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 24

Township: 2S Range: 11E Section: 20 UTM: 695036, 4180015

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 3 / 4 / 14 Time: 4pm County: Stanislaus Quad: Waterford

Collector(s): Lana Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 25

Township: 2S Range: 11E Section: 20 UTM: 695102, 4180039

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 /4 /14 Time: 330 County: Stanislaus Quad: Waterford

Collector(s): Lana Bk Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 26

Township: 2S Range: 11E Section: 20 UTM: 695196, 4180038

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 /4 /14 Time: 4pm County: Stanislaus Quad: Waterford

Collector(s): Lana Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 38

Township: 2S Range: 11E Section: 20 UTM: 695130, 4179538

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3/4/14 Time: 430 County: Stanislaus Quad: Waterford

Collector(s): Lana Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 39

Township: 2S Range: 11E Section: 20 UTM: 695241, 4179365

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 /4 /14 Time: 430 County: Stanislaus Quad: Waterford

Collector(s): Laura Betty Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 40

Township 2S Range: 11E Section: 20 UTM: 695243, 4179353

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 4 / 14 Time: 4pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 41

Township: 2S Range: 11E Section: 20 UTM: 695218, 4179339

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 4 /14 Time: 530pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 100

Township: 2S Range: 11E Section: 20 UTM: 695145, 4179872

Temperature: Water:_____°C Air: 50 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 /4 /14 Time: 5pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 101

Township: 2S Range: 11E Section: 20 UTM: 695072, 4179732

Temperature: Water:_____°C Air: 70 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 /4 /14 Time: 6pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bert Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 103

Township: 2S Range: 11E Section: 20 UTM: 694806, 4179401

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 /4 /14 Time: 445pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 104

Township: 2S Range: 11E Section: 20 UTM: 694799, 4179505

Temperature: Water: 21 °C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling: 16 cm at time of sampling: 16 m x 16 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Ponding in adjacent cow hoof tracks and pool

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

Branch lynchi

(Optional) Species Observations:

Cladocerans:	yes no	Insects: (adult or larvae)	
Conchostracans:	yes no	Anisoptera:	yes no
Copepods:	yes no	Zygoptera:	yes no
Ostracods	yes no	Hydrophilidae:	yes no
Fish	yes no	Dytiscidae:	yes no
Frogs	yes no	Corixidae:	yes no
Salamanders	yes no	Notonectidae:	yes no
Waterfowl	yes no	Belostomatidae:	yes no
		Other (specify) _____	

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 4 / 14 Time: 5 pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 105

Township: 2S Range: 11E Section: 20 UTM: 694678, 4179584

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 3 / 4 / 14 Time: 510pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 106

Township: 2S Range: 11E Section: 20 UTM: 694685, 4179518

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling: up to 15 _cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

water in cow hoof tracks to depths of 6 inches
clear and turbid

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's)

Anostracans: (note reproductive status) Tiny immature fairy shrimp

Notostracans: (note reproductive status) None

(Optional) Species Observations: Very tiny aquatic invertebrates

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3/4/14 Time: 430 County: Stanislaus Quad: Waterford

Collector(s): Laura Beth Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 107

Township: 2S Range: 11E Section: 20 UTM: 694666, 4179496

Temperature: Water:_____°C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 /4 /14 Time: 445pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 210

Township: 2S Range: 11E Section: 20 UTM 1076428, 4175543

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: 95 m x 3 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 4 / 14 Time: 445 County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 211

Township: 2S Range: 11E Section: 20 UTM: 082781, 4174973

Temperature: Water: 22 °C Air:_____°C

Pool Depth: Surface Area:

at time of sampling: 38 cm at time of sampling: 14.5 m x 18 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

10s Lindernia occidentalis

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 /4 /14 Time: 445 County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool # 212

Township: 2S Range: 11E Section: 20 UTM 1082774, 4174923

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: 8 m x 21 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 4 14 Time: 4pm County: Stanislaus Quad: Waterford

Collector(s): Laura Batt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 213

Township: 2S Range: 11E Section: 20 UTM 682797, 4174928

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: 55 m x 3 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__yes

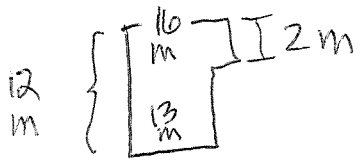
Date: 3 / 14 / 2014 Time: 800 am County: Stanislaus Quad: Salida

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 1

Township: 3S Range: 9E Section: 5 UTM: 676428, 4175543

Temperature: Water: 9 °C Air: 7 °C



Pool Depth: Surface Area:

at time of sampling: 37 cm at time of sampling: 16 m x 13 m x 12 x 2 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: The amount of water in pool is significantly reduced. Water is clear + turbid. Adult B. lindahli observed in pool with Tiny frog larvae were also observed.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Adult Branchinecta lindahli

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs (larvae)	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) very small frog larvae

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) mosquito larvae

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 /14 /2014 Time: 945 am County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 2/ 3

Township: 2S Range: 9E Section: 33 UTM: 677175, 4175692

Temperature: Water: — °C Air: 7 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: _____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Pool is dry, ponding limited to culvert outfall

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: [illegible]ate none or estimate # of individuals present in terms of an order of magnitude (e.g. [illegible], 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

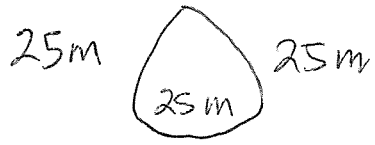
Date: 3 / 14 / 2014 Time: 10:00 am County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 4

Township: 3S Range: 9E Section: 36 UTM: 681757, 4175950

Temperature: Water: 13 °C Air: 14 °C



Pool Depth: Surface Area:

at time of sampling: 17 cm at time of sampling: 25 m x 25 m x 25 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:
Water is turbid, and the level is significantly lower. Adult B. lindahli, and very small frog larvae and eggs. Some of the adult fairy shrimp are blue-green in color.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: ~~state none~~ or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Adult and sub-adult Branchinecta lindahli

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs larvae eggs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) Small frog larvae & eggs

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

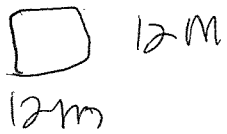
Date: 3 / 14 / 2014 Time: 210 pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 5

Township: 3S Range: 9E Section: 1 UTM: 682186, 4175821

Temperature: Water: 26 °C Air: 26 °C



Pool Depth: Surface Area:

at time of sampling: 10 cm at time of sampling: 12 m x 12 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Turbid water; adult and sub-adult B. lindahli that are "pink" in color.

(lots of cattle here.)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's)

Anostracans: (note reproductive status) Adult and sub-adult Branchinecta lindahli

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) mosquito larvae		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 /14 /2014 Time: 1300p County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 6

Township: 3S Range: 9E Section: 1 UTM: 682524, 4175703

Temperature: Water: 20 °C Air: 20 °C

Pool Depth: Surface Area:

at time of sampling: 30 cm at time of sampling: 50 m x 9 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Adult B. lindahli ; water is turbid.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Adult Branchinecta lindahli

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 /14 /2014 Time: 850 am County: Stanislaus Quad: Salida

Collector(s):_____Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 16

Township: 2S Range: 9E Section: 32 UTM: 675670, 4175732

Temperature: Water: 14 °C Air: 11 °C

Pool Depth: Surface Area:

at time of sampling: ↑139 cm at time of sampling: 30 m x 38 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	(disturbed:)	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: (Water is in direct sunlight).
The amount of water in basin is significantly lower than previous survey; however, is too deep to access center of basin.
mallards are foraging here.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
* Frogs larvae	yes	no
Salamanders	yes	no
Waterfowl mallards foraging	yes	no
* Other (specify) tiny frog tadpoles		

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) mosquito larvae bloodworms		

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 14 / 2014 Time: 2:30pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 17

Township: 3S Range: 9E Section: 1 UTM: 682213, 4175784

Temperature: Water: 26 °C Air: 26 °C // (East) water: 26 C° air: 26 °C

Pool Depth: Surface Area:

at time of sampling: 23 cm at time of sampling: 35 m x 4 m // 8 cm 6 m x 1 m (East)

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Water is turbid; new tire tracks observed. B. lindahli in both features - adult, 10s. A high number of ostracods were observed.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

In both areas:

Anostracans: (note reproductive status) Branchinecta lindahli } adults only

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
* Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____ * A high number of ostracod are present.

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 3 / 14 / 2014 Time:_____ County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 18

Township: 2S Range: 10E Section: 26 UTM: 690397, 4178347

Temperature: Water: 26 °C Air: 26 °C

Pool Depth: Surface Area: // water 26 °C; air 26 °C

at time of sampling: up to 15 cm at time of sampling: 9 m x 0.6 m

estimated maximum:_____cm estimated maximum:_____m x_____m

West: up to 15 cm

1 m x 1 m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Orchard

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: water is clear in larger ponded area. Water is turbid in smaller ponded area (to the West).

Adult B. lindahli - 10's in both areas.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Adult Branchinecta lindahli -10's

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no X yes

Date: 3 / 14 / 14 Time: 530 County: Stanislaus Quad: Waterford

Collector(s): Uhelk Permit #: TE 797234-9

Site/Project Name: Norm County corridor Pool #: 19

Township: 2S Range: 11E Section: 20 UTM: 677190, 4175719

Temperature: Water: _____ oC Air: 25 oC

Pool Depth: Surface Area:

at time of sampling: _____ cm at time of sampling: _____m x _____m

estimated maximum: _____cm estimated maximum: _____m x _____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat:
Irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:_____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:
dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completelyfor each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 3 / 14 / 14 Time: 3pm County: Stanislaus Quad: Waterford

Collector(s): UBWK Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 20

Township: 2S Range: 11E Section: 20 UTM: 677190, 4175719

Temperature: Water:_____°C Air: 25 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 /14 /14 Time: 3pm County: Stanislaus Quad: Waterford

Collector(s): [illegible] Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 21

Township: 2S Range: 11E Section: 20 UTM: 694865, 4179442

Temperature: Water:_____°C Air: 25 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:_____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

[illegible]

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completelyfor each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 3/14/14 Time: 315 County: Stanislaus Quad: Waterford

Collector(s): [illegible] Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 22

Township: 2S Range: 11E Section: 20 UTM: 694848, 4179429

Temperature: Water:_____°C Air: 25 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X__ yes

Date: 3 / 14 / 14 Time: 315 County: Stanislaus Quad: Waterford

Collector(s): LBelt Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 23

Township: 2S Range: 11E Section: 20 UTM: 694956, 4180039

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 14 / 14 Time 3:15 County: Stanislaus Quad: Waterford

Collector(s): [illegible] Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 24

Township: 2S Range: 11E Section: 20 UTM: 695036, 4180015

Temperature: Water:_____°C Air: 25 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 3 / 4 / 14 Time: 330 p.m. County: Stanislaus Quad: Waterford

Collector(s): UBelt Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 25

Township: 2S Range: 11E Section: 20 UTM: 695102, 4180039

Temperature: Water:_____°C Air: 25 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed
- ungrazed

disturbed: tire tracks garbage discing/plowing
grazed: cattle horses sheep other_____
light moderate heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 14 14 Time: 330 County: Stanislaus Quad: Waterford

Collector(s): Ubelt Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 26

Township: 2S Range: 11E Section: 20 UTM: 695196, 4180038

Temperature: Water:_____°C Air: 25 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed
- ungrazed

disturbed: tire tracks garbage discing/plowing
grazed: cattle horses sheep other_____
light moderate heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4/14/14 Time 330 County: Stanislaus Quad: Waterford

Collector(s): [illegible] Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 38

Township: 2S Range: 11E Section: 20 UTM: 695130, 4179538

Temperature: Water:_____°C Air: 25 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3/14/14 Time: 345 County: Stanislaus Quad: Waterford

Collector(s): [illegible] Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 39

Township: 2S Range: 11E Section: 20 UTM: 695241, 4179365

Temperature: Water:_____°C Air: 74 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3/14/14 Time: 345 County: Stanislaus Quad: Waterford

Collector(s): Uhent Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 40

Township 2S Range: 11E Section: 20 UTM: 695243, 4179353

Temperature: Water:_____°C Air: 24 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 2/14/14 Time: 345 _County:____Stanislaus_____Quad: __Waterford___

Collector(s): CBelt _____Permit #: ___TE797234-8_____

Site/Project Name: _____North County Corridor_____Pool #: ___41_____

Township:_____2S_____Range: ___11E____Section:_____20_____UTM: 695218, 4179339

Temperature: Water:_____°C Air: 29 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3/14/14 Time: 4pm County: Stanislaus Quad: Waterford

Collector(s): [illegible] Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 100

Township: 2S Range: 11E Section: 20 UTM: 695145, 4179872

Temperature: Water:_____°C Air: 24 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 14 / 14 Time: 4pm County: Stanislaus Quad: Waterford

Collector(s): [illegible] Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 101

Township: 2S Range: 11E Section: 20 UTM: 695072, 4179732

Temperature: Water:_____°C Air: 25 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 14 / 14 Time: 4 pm County: Stanislaus Quad: Waterford

Collector(s): Chest Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 103

Township: 2S Range: 11E Section: 20 UTM: 694806, 4179401

Temperature: Water:_____°C Air: 25 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 /14 /14 Time:_____County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 104

Township: 2S Range: 11E Section: 20 UTM: 694799, 4179505

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Ponding in cow hoof tracks and pool

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branch lynchi

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 14 / 14 Time: 415 County: Stanislaus Quad: Waterford

Collector(s): Uhlet Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 105

Township: 2S Range: 11E Section: 20 UTM: 694678, 4179584

Temperature: Water:_____°C Air: 25 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 14 / 14 Time: 415 County: Stanislaus Quad: Waterford

Collector(s): Uhelt Permit #: TE797234-6

Site/Project Name: North County Corridor Pool #: 106

Township: 2S Range: 11E Section: 20 UTM: 694685, 4179518

Temperature: Water:_____°C Air: 25 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Pool dry, ponding in deep cow hoof tracks

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Imm fairy shrimp

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 4 / 14 / 14 Time: 430 County: Stanislaus Quad: Waterford

Collector(s): [illegible] Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 107

Township: 2S Range: 11E Section: 20 UTM: 694666, 4179496

Temperature: Water:_____°C Air: 25 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: cattle pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X__ yes

Date: 3 /14 / 14 Time: 5pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 200

Township: 2S Range: 11E Section: 20 UTM 697560, 4181245

Temperature: Water. 17 °C Air:_____°C

Pool Depth: Surface Area:

at time of sampling: 20 cm at time of sampling: 21 m x 9 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X__ yes

Date:3 / 14 / 14 Time: 505pm County: Stanislaus Quad: Waterford

Collector(s): Lara Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 201

Township: 2S Range: 11E Section: 20 UTM: 697593, 4181230

Temperature: Water: 17 °C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling. 21 m x 6 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3/14/14 Time: 445pm County: Stanislaus Quad: Waterford

Collector(s): Lana Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 210

Township: 2S Range: 11E Section: 20 UTM 670428, 4175543

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: 95 m x 3 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Branchinecta lynchi

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branch. lynch

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 14 / 14 Time 1040 AM County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 211

Township: 2S Range: 11E Section: 20 UTM: 682781, 4174973

Temperature: Water: 16 °C Air: 15 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: 11 m x 26 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Small Lep. packardii.

Adult 100s Branc lindahli

Subadult Lind. occidentalis

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status) Branch lindahli, lioc, Lepacardi

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 3 / 14 / 14 Time: 4pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 212

Township: 2S Range: 11E Section: 20 UTM: 682774, 4174923

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3/14/14 Tim 1140AM County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 213

Township: 2S Range: 11E Section: 20 UTM: 0287797, 4174928

Temperature: Water: 18 °C Air: 15 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: 5 m x 3 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Sub lind occidentalis

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 /26/14 Time: 930AM County: Stanislaus Quad: Salida

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 1

Township: 3S Range: 9E Section: 5 UTM: 676428, 4175543

Temperature: Water:_____°C Air: 10 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy
- land use of habitat:	Pond/ basin				

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Raining yesterday and today

Feature is dry (photo)

Rumex crispus, polygonum sp

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 /20 / 14 Time: 1030 AM County: Stanislaus Quad: Riverbank

Collector(s): Laura Bell Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 2/ 3

Township: 2S Range: 9E Section: 33 UTM: 677175, 4175692

Temperature: Water:_____°C Air: 12 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: _____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry Rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

Roselle

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 / 25 / 2014 Time: 1103 am County: Stanislaus Quad: Riverbank

Collector(s): Corina Belt Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 4

Township: 3S Range: 9E Section: 36 UTM: 681757, 4175950

Temperature: Water:_____°C Air: 12 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
  light moderate heavy
- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Rain (yesterday and today) pond is dry (photo).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

Lett R2d – natural

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 20 / 2014 Time: 1:50pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Beck Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 5

Township: 3S Range: 9E Section: 1 UTM: 682186, 4175821

Temperature: Water: — °C Air: 11.6 °C

Pool Depth: Surface Area:

at time of sampling: — cm at time of sampling: — m x — m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry. (photo). Rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 / 26 / 2014 Time: 1250pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 6

Township: 3S Range: 9E Section: 1 UTM: 682524, 4175703

Temperature: Water: 20 °C Air: 11 °C

Pool Depth: Surface Area:

at time of sampling: 31 cm at time of sampling: 52 m x 1.4 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
  light moderate heavy
- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Rain (yesterday + today) ~~ongoing~~
just stopped, then started
No farm shrimp

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae: adult	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

- bloodworm, chironomids
- sandhoppers

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 26 / 14 Time: 9 56 AM County: Stanislaus Quad: Salida

Collector(s): Laura Bert Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 16

Township: 2S Range: 9E Section: 32 UTM: 675670, 4175732

Temperature: Water 17 °C Air: 12 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: 44 m x 30m

estimated maximum: ↑ 99 cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

water is still ↑ (turbid)

mallards (egg predated)

rain yesterday and today

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs eggs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae: adult	yes	no
Belostomatidae:	yes	no

Other (specify) _____ bloodworm

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

Water is clear
turbid in center

Utt Rd - shoulder

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3/26/2014 Time: 1500pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Beet Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 17

Township: 3S Range: 9E Section: 1 UTM: 682213, 4175784

Temperature: Water: 20 °C Air: 11 °C

Pool Depth: Surface Area:

at time of sampling: 10 cm at time of sampling: 22 m x 4 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
  light moderate heavy
- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Raining // no fairy shrimp

Rain yesterday and today

- copepods
- Seed shrimp
- Cladoceran

bloodworms

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) bloodworms

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

Oakdale / Abers / Waterford Hwy
Amarado / Claribel

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 26 2014 Time: 2:32 pm County: Stanislaus Quad: Waterford

Collector(s): Cranbeet Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 18

Township: 2S Range: 10E Section: 26 UTM: 690397, 4178347

Temperature: Water: 21 °C Air: 12 °C

Pool Depth: Surface Area:

at time of sampling: 7 cm at time of sampling: 1.2 m x 18 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Orchard

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

No fairy shrimp

rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 /20 / 14 Time: 3:45 pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bett Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 19

Township: 2S Range: 11E Section: 20 UTM: 694815, 4179404

Temperature: Water: 14.4 °C Air: 13.3 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: 2.4 m x 4.5 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

no fairy shrimp were observed

rained yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) none

Notostracans: (note reproductive status) none

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 20 2014 Time: 4:20pm County: Stanislaus Quad: Waterford

Collector(s): LB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 20

Township: 2S Range: 11E Section: 20 UTM: 677190, 4175719

Temperature: Water: 15.5 °C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling: 90 cm at time of sampling: 6.7 m x 4.5 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dirt road
also tire track ruts holding water, 38' x 12' x 23 cm depth

0 fairy shrimp were observed.

rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 26 / 14 Time: 405pm County: Stanislaus Quad: Waterford

Collector(s):_____Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 21

Township: 2S Range: 11E Section: 20 UTM: 694865, 4179442

Temperature: Water:_____°C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:_____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Damp to touch only; no standing water.

Rained yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completelyfor each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 26 / 2014 Time: 4:05 pm County: Stanislaus Quad: Waterford

Collector(s): UB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 22

Township: 2S Range: 11E Section: 20 UTM: 694848, 4179429

Temperature: Water: 14.4 °C Air: 13.3 °C

Pool Depth: Surface Area:

at time of sampling: 8 cm at time of sampling: 6 m x 7.6 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:_____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS)_____ppm

Notes:

No fairy shrimp were observed.

Rained yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 26 / 14 Time: 6 10pm County: Stanislaus Quad: Waterford

Collector(s): LB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 23

Township: 2S Range: 11E Section: 20 UTM: 694956, 4180039

Temperature: Water: — °C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed
- ungrazed

disturbed: tire tracks garbage discing/plowing
grazed: cattle horses sheep other_____
light moderate heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

damp; no standing water.

Rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 26 / 14 Time: 650 pm County: Stanislaus Quad: Waterford

Collector(s): LB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 24

Township: 2S Range: 11E Section: 20 UTM: 695036, 4180015

Temperature: Water: 15.5 Air: 13 °C

Pool Depth: Surface Area:

at time of sampling: 11 cm at time of sampling: 12 m x 11 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy
- land use of habitat:		irrigated pasture			

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

No f.s. were obs'd.

Rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 26 / 14 Time: 5 51 pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 25

Township: 2S Range: 11E Section: 20 UTM: 695102, 4180039

Temperature: Water: 15.5 °C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling: 76 cm at time of sampling: 11.2 m x 9 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Rain yesterday and today

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) none

Notostracans: (note reproductive status) none

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3/26/14 Time: ~~[illegible]~~ pm 547pm County: Stanislaus Quad: Waterford

Collector(s): LB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 26 (Swale)

Township: 2S Range: 11E Section: 20 UTM: 695196, 4180038

Temperature: Water: — °~~C~~ F Air: 13.3 °C

Pool Depth: Surface Area:

at time of sampling: 8 cm at time of sampling: 0.6 m x 60 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed (grazed:) (cattle) horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Limits of inundated in varied throughout swale limits.

No fairy shrimp were obsd.

Rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 26 / 14 Time: 4:30pm County: Stanislaus Quad: Waterford

Collector(s): UB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 38

Township: 2S Range: 11E Section: 20 UTM: 695130, 4179538

Temperature: Water: 15 °C Air: 13.3 °C

Pool Depth: Surface Area:

at time of sampling: 9 cm at time of sampling: 125 m x 4.5 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy
- land use of habitat:	irrigated pasture				

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Rain yesterday + today

(photos) (N + S)

No fairy shrimp were obsd.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 26 / 14 Time: 450pm County: Stanislaus Quad: Waterford

Collector(s): LB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 39

Township: 2S Range: 11E Section: 20 UTM: 695241, 4179365

Temperature: Water: ~~°C~~ F Air: 13 °C

Pool Depth: Surface Area:

at time of sampling: 5 cm at time of sampling: 0.6 m x 0.3 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy
- land use of habitat:	irrigated pasture				

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

No fairy shrimp were obs'd.

rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3/26/14 Time: 4:48pm County: Stanislaus Quad: Waterford

Collector(s): LB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 40

Township 2S Range: 11E Section: 20 UTM: 695243, 4179353

Temperature: Water: ~~°C~~ F Air: 13 °C

Pool Depth: Surface Area:

at time of sampling: 7.6 cm at time of sampling: 1.8 m x 0.3 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

No fairy shrimp were observed.

Rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 26 / 14 Time: 4:40 p County: Stanislaus Quad: Waterford

Collector(s): IB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 41

Township: 2S Range: 11E Section: 20 UTM: 695218, 4179339

Temperature: Water: ___ °~~C~~ F Air: 13 °C

Pool Depth: Surface Area:

at time of sampling: 5 cm at time of sampling: 1.8 x .3 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy
- land use of habitat:	irrigated pasture				

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

No fairy shrimp were observed.

Rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 26/ 14 Time: 530pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bert Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 100

Township: 2S Range: 11E Section: 20 UTM: 695145, 4179872

Temperature: Water:_____°C Air: 13.3 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

dry

Rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 3 /26/ 14 Time: 512pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 101

Township: 2S Range: 11E Section: 20 UTM: 695072, 4179732

Temperature: Water:_____°C Air: 13.3 °C

Pool Depth: Surface Area:

at time of sampling: 15.2 cm at time of sampling: 36 m x 1.8 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Water pooled in tire tracks only

Rain yesterday and today

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 /26/14 Time: 3:35 pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bert Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 103

Township: 2S Range: 11E Section: 20 UTM: 694806, 4179401

Temperature: Water: 14.4 °C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling: 10 cm at time of sampling: 10.6 m x 10.6 m x 10.6 m triangular shaped swale

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

rain yesterday and today
water is clear
no fairy shrimp

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3/20/14 Time: 330p County: Stanislaus Quad: Waterford

Collector(s): VB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 104

Township: 2S Range: 11E Section: 20 UTM: 694799, 4179505

Temperature: Water: 14.4 °C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling: 8 cm at time of sampling: 7.3 m x 7.3 m

estimated maximum:_____cm estimated maximum:_____m x_____m

mostly in cow hoof tracks

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed (grazed:) (cattle) horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Rain yesterday and today. Water is turbid.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branch. lynchi

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 3 / 26 / 2009 Time: 3:30 PM County: Stanislaus Quad: Waterford

Collector(s): [illegible] Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 105

Township: 2S Range: 11E Section: 20 UTM: 694678, 4179584

Temperature: Water: — °C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Rain yesterday and today.
Soil is damp; no standing water.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 /26/2014 Time: 3:00 County: Stanislaus Quad: Waterford

Collector(s): _____ Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 106

Township: 2S Range: 11E Section: 20 UTM: 694685, 4179518

Temperature: Water:_____°C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Rain yesterday and today.

Pool is dry, ponding in cow hoof tracks

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branch lynchi

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 3 /26 /2014 Time: 3:30pm County: Stanislaus Quad: Waterford

Collector(s): Laura Beck Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 107

Township: 2S Range: 11E Section: 20 UTM: 694666, 4179496

Temperature: Water: → °C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed (grazed:) (cattle) horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Rain yesterday and today.
Soil is damp; no standing water.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuas	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 3 /26/14 Time: 535 pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool # 110

Township: 2S Range: 11E Section: 20 UTM 695075,4179758

Temperature: Water: 15 °C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling: 15 cm at time of sampling: 60 m x 25 m pool w/a swale

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

No fairy shrimp observed

Rain yesterday and today

Plagiobothrys sp & coyote thistle

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 3 Feb / 14 Time: 5pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 111

Township: 2S Range: 11E Section: 20 UTM: 695113, 4179844

Temperature: Water:_____°C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 3/26/14 Time: ~~[illegible]~~ 506pm County: Stanislaus Quad: Waterford

Collector(s): UB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 112

Township: 2S Range: 11E Section: 20 UTM 695076, 4179688

Temperature: Water: 15 °C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling: 8 cm at time of sampling: 106 m x 5 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: * Approximately 100 feet South of pool 101
plagiobothrys sp. here
No fairy shrimp were obs'd.
rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 3/26/14 Time: 515 County: Stanislaus Quad: Waterford

Collector(s): CB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 113

Township: 2S Range: 11E Section: 20 UTM. 1095062 4179770

Temperature: Water: ~~°C~~ Air: 13.3 °C

Pool Depth: Surface Area:

at time of sampling: 22.8 cm at time of sampling: 10m x 5 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: ** Approximately 100' North of pool 100

No fairy shrimp were dbd

Rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 26 / 14 Time: 340pm County: Stanislaus Quad: Waterford

Collector(s): LB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 114

Township: 2S Range: 11E Section: 20 UTM: 694794, 4179330

Temperature: Water: 14.4 °C Air: 13.3 °C

Pool Depth: Surface Area:

at time of sampling: 8 cm at time of sampling: 6 m x 4.5 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:
* ponded area ~~just south of pool 103~~; located approximately 50 feet south of pool 103
No fairy shrimp were observed.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 3 / 26 / 14 Time: 3:45pm County: Stanislaus Quad: Waterford

Collector(s): LB Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 115

Township: 2S Range: 11E Section: 20 UTM: 694800, 4179374

Temperature: Water: 14.4 °C Air: 13.3 °C

Pool Depth: Surface Area:

at time of sampling: 8 cm at time of sampling: 6 m x 4.5 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: ** ponded area located approximately 100' south of pool 103

No fairy shrimp were observed.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 3 /26 /2013 Time: 4:16pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 117

Township: 2S Range: 11E Section: 20 UTM: 677190, 4175719

Temperature: Water: 15 °C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling: 23 cm at time of sampling: 11.5 m x 5.4 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Approximately 100'
* Northwest of pool 20
Ponding is limited to tire track ruts in dirt road.
No fairy shrimp were observed.

rain yesterday and today

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 3 / 26 / 14 Time: 530pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 200

Township: 2S Range: 11E Section: 20 UTM: 0997560, 4181245

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: 21 m x 8.2 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 3 /26 / 14 Time: 530pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 201

Township: 2S Range: 11E Section: 20 UTM 697593, 4181230

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: 21 m x 6 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__yes

Date: 3 / 26 / 14 Time: 12:15 pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 210 (Plainview NW)

Township: 3S Range: 9E Section: 1 UTM: 676428, 4175543

Temperature: Water:_____°C Air: 41 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	(disturbed:)	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Rained yesterday and today

Pool is dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 /26/ 14 Time: 1115 AM County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 211 (Plainview NE)

Township: 3S Range: 9E Section: 1 UTM 682781, 4174973

Temperature: Water: 15 °C Air: 11 °C

Pool Depth: Surface Area:

at time of sampling: 16 cm at time of sampling 234 m x 10 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Rain yesterday and today (still ongoing)
Huge B. lindahli adult Linderella occidentalis 1000's
Lepidurus packardi 10's

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's) Branchinecta lindahli - adults + subadults large + blue green

Anostracans: (note reproductive status) Linderiella occidentalis - subadults 4

Notostracans: (note reproductive status) Lepidurus packardi

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae: adult	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) bloodworms chorus frog eggs

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 /26/ 14 Time: 1255 pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 212 (Plainview SW)

Township: 3S Range: 9E Section: 1 UTM: 682774, 4174923

Temperature: Water: _____ °~~C~~ F Air: 11 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy
- land use of habitat:	Urban				

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Poured (yesterday and today) and is ongoing.

Pool is dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 3 /26/ 14 Time: 12 30pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 213 (Plainview SE)

Township: 3S Range: 9E Section: 1 UTM: 682797, 4174928

Temperature: Water: 21. °C Air: 12 °C

Pool Depth: Surface Area:

at time of sampling: 12 cm at time of sampling: 30 m x 2 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Rain yesterday and today
Ponding is limited to the wheel tracks only
Turbid

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) Branchinecta lindahli (adult + subadult)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status) none

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
Frogs	yes	no	Corixidae: adult	yes	no
Salamanders	yes	no	Notonectidae:	yes	no
Waterfowl	yes	no	Belostomatidae:	yes	no
			Other (specify) _____		

corixid

Other (specify) immature crayfish

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

Stratos

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__yes

Date: 4 /8 /2014 Time: 845a County: Stanislaus Quad: Salida

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 1

Township: 3S Range: 9E Section: 5 UTM: 676428, 4175543

Temperature: Water: 21 °C Air: 17.8 °C

Pool Depth: Surface Area:

at time of sampling: 25 cm at time of sampling: 24 m x 3.6 m (See Incl Survey)

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy
- land use of habitat:	Pond/ basin				

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Water is clear; 1,000's of B. lindahli
1,000's of dead B. lindahli in feature, too.

The older fairy shrimp that are dying are a "pink color" (photos).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branchinecta lindahli

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

MCH

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 / 8 /2014 Time: 10:00a County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 2/ 3

Township: 2S Range: 9E Section: 33 UTM: 677175, 4175692

Temperature: Water: — °C Air: 17.2 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: _____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed
- ungrazed

(disturbed:) tire tracks garbage discing/plowing

grazed: cattle horses sheep other_____

light moderate heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l

Dissolved NH4:____ppt or ppm

pH:_____

Salinity :_____ppt or ppm

Conductivity:_____uMHO

Dissolved Oxygen:_____ppm or mg/l

Turbidity: (secchi disc depth)_____cm or: clear to bottom _____

Total Dissolved Solids (TDS):_____ppm

Notes:

Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 / 8 /2014 Time: 10:15a County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 4

Township: 3S Range: 9E Section: 36 UTM: 681757, 4175950

Temperature: Water: 24 °C Air: 17.2 °C

103'3

Pool Depth: Surface Area:

at time of sampling: 30 cm at time of sampling: 31 m x 31 m x 31 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Water is semi-clear; 1,000's of B. lindahli

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branchinecta lindahli; 1,000's adults

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

Lift Rd_Pool

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 1050 am County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 5

Township: 3S Range: 9E Section: 1 UTM: 682186, 4175821

Temperature: Water: 30 °C Air: 17.2 °C

Pool Depth: Surface Area:

at time of sampling: 8 cm at time of sampling: 6.4 m x 11.8 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:
water is turbid; P.O. lindahli (adults), 100's

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branchinecta lindahli; ~~100's~~

Notostracans: (note reproductive status)

(Optional) Species Observations: None

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) bloodworms		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

RY@C

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 / 8 / 2014 Time: 1130 County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 6

Township: 3S Range: 9E Section: 1 UTM: 682524, 4175703

Temperature: Water: 27.8 °C Air: 24.4 °C

Pool Depth: Surface Area:

at time of sampling: 31 cm at time of sampling: 8.8 m x 57 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed
- ungrazed

disturbed: tire tracks garbage discing/plowing

grazed: cattle horses sheep other_____

light moderate heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l

Dissolved NH4:____ppt or ppm

pH:_____

Salinity :_____ppt or ppm

Conductivity:_____uMHO

Dissolved Oxygen:_____ppm or mg/l

Turbidity: (secchi disc depth)_____cm or: clear to bottom _____

Total Dissolved Solids (TDS):_____ppm

Notes: Water is semi-turbid; B. lindahli: 100's Adult + Subadults.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branchinecta lindahli

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) bloodworms		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 9:22am County: Stanislaus Quad: Salida

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 16

Township: 2S Range: 9E Section: 32 UTM: 675670, 4175732

Temperature: Water: 20 °C Air: 17 °C

Pool Depth: Surface Area:

at time of sampling: 99 cm at time of sampling: 26.8 m x 37 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	(disturbed:)	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

A pair of mallards foraging here.
Water is clear; lots of ostracods and cladoceran.
No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

Wet Rd shoulder

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 4 / 8 / 2014 Time: 1115a County: Stanislaus Quad: Riverbank

Collector(s): Laura Best Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 17

Township: 3S Range: 9E Section: 1 UTM: 682213, 4175784

Temperature: Water: 28 °C Air:_____°C

Pool Depth: Surface Area:

at time of sampling: 8 cm at time of sampling: 5.7 m x 38.1 m

estimated maximum:_____cm estimated maximum:_____m x_____m

x 8 cm 12' x 60' graveled shoulder ; 4 m x 18 m

100's B. lindahli

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy
- land use of habitat:	Urban				

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l

Dissolved NH4:____ppt or ppm

pH:_____

Salinity :_____ppt or ppm

Conductivity:_____uMHO

Dissolved Oxygen:_____ppm or mg/l

Turbidity: (secchi disc depth)_____cm or: clear to bottom _____

Total Dissolved Solids (TDS):_____ppm

Notes: water is turbid; more trash in water.
B. lindahli - Adult & subadults; 1,000's
Lindeniella occidentalis; Adults; 10's

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branchinecta lindahli ; 1,000's **

Notostracans: (note reproductive status) None Lindoriella occidentalis ; 10's *

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) bloodworms		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

oakdale/Water Abers.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 1:48pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 18

Township: 2S Range: 10E Section: 26 UTM: 690397, 4178347

Temperature: Water: — °C Air: 24.4 °C

Pool Depth: Surface Area:

at time of sampling: 13 cm at time of sampling: 0.6 m x 25 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Orchard

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Water is clear; Small ostracods + copepods.

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 4 / 8 / 2014 Time: 355p County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 19

Township: 2S Range: 11E Section: 20 UTM: 694815, 4179404

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry. (photo)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 4 / 8 / 2014 Time: 418p County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 20

Township: 2S Range: 11E Section: 20 UTM: 694914, 4179404

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed (grazed:) (cattle) horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry. (photo)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 407pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 21

Township: 2S Range: 11E Section: 20 UTM: 694865, 4179442

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:_____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry. (photo)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completelyfor each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 402p County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 22

Township: 2S Range: 11E Section: 20 UTM: 694848, 4179429

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry. (photo)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X__ yes

Date: 4 / 8 / 2014 Time: 6:53pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 23

Township: 2S Range: 11E Section: 20 UTM: 694956, 4180039

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling: 1-3 cm at time of sampling: 1.2 m x 1.8 m

estimated maximum:_____cm estimated maximum:_____m x_____m

in cow hoof tracks

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Holding water; turbid
No observable aquatic inverts

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 5:58pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 24

Township: 2S Range: 11E Section: 20 UTM: 695036, 4180015

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry (photos).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

MoDO
killdeer

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 5:30p County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 25

Township: 2S Range: 11E Section: 20 UTM: 695102, 4180039

Temperature: Water:_____°C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry (photo) (bones)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 20 14 Time: 538pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bert Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 26 X

Township: 2S Range: 11E Section: 20 UTM: 695196, 4180038

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry (photo).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 4:48p County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 38

Township: 2S Range: 11E Section: 20 UTM: 695130, 4179538

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry. (photo) (NO vernal pool plants here)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 4370 / 445p County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 39

Township: 2S Range: 11E Section: 20 UTM: 695241, 4179365

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed (grazed:) (cattle) horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry (photo) + Dry (photo).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 4:32pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 40

Township 2S Range: 11E Section: 20 UTM: 695243, 4179353

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry (photo).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 4:28 County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 41

Township: 2S Range: 11E Section: 20 UTM: 695218, 4179339

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry (photo).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 14 Time: 530 County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 100

Township: 2S Range: 11E Section: 20 UTM: 695145, 4179872

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry (photo).
- plagio sp
- psilocarphus sp
- lasthenia glabrata

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 5:02P County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 101

Township: 2S Range: 11E Section: 20 UTM: 695072, 4179732

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed (grazed:) (cattle) horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

• Coyote thistle • plegon-SP
• Lab glab
• Elio-SP

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry. (photo)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

• plaje

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 3:43pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 103

Township: 2S Range: 11E Section: 20 UTM: 694806, 4179401

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry. (photos) damp to touch.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 / 8 / 2014 Time: 3:19pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 104

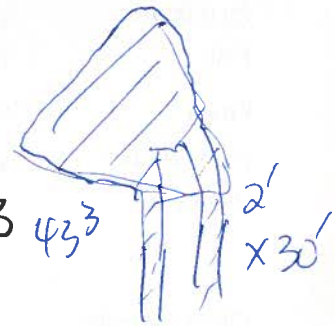
Township: 2S Range: 11E Section: 20 UTM: 694799, 4179505

Temperature: Water: 25.5 °C Air: 23.8 °C

Pool Depth: Surface Area:

at time of sampling: 31 cm at time of sampling: 13 m x 13 m x 13 43³

estimated maximum:_____cm estimated maximum:_____m x_____m



Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses ~~sheep~~ other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: water is turbid; (small & large aquatic invert's). Branchinecta lynchi

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branchinecta lynchi

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 /____Time: 3:40p County: Stanislaus Quad: Waterford

Collector(s): Laura Bert Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 105

Township: 2S Range: 11E Section: 20 UTM: 694678, 4179584

Temperature: Water: — °C Air: 23.9 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry. (cow hoof tracks are dry).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date:4 /8 /____Time:2:58 County:____Stanislaus____Quad: __Waterford___

Collector(s):Laura Burt Permit #: ___TE797234-9_____

Site/Project Name: _____North County Corridor_____Pool #: ___106____

Township:_____2S_____Range:___11E___Section:_____20_____UTM: 694685, 4179518

Temperature: Water:—_____°C Air:23.8 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Damp to touch; no water.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 2380 County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 107

Township: 2S Range: 11E Section: 20 UTM: 694666, 4179496

Temperature: Water: — °C Air: 23 ? °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 /8 /14 Time: 515pm County: Stanislaus Quad: Waterford

Collector(s): Lana Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #. 110

Township: 2S Range: 11E Section: 20 UTM: 695073, 4179789

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

** pool & swale
100's of 100

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 5:15pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 111

Township: 2S Range: 11E Section: 20 UTM 695109, 417845

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Damp only (tarhe bush)

Coyote thistle
plagio
(as glab.

Cow hoof tracks
damp only

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

*101' S of 101

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 04 Time: 1530 County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 112

Township: 2S Range: 11E Section: 20 UTM: 695002, 4179770

Temperature: Water:_____°C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry (photo) . . plegiobothrys sp. in lowest area.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

** 100' N of 101

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 5ish County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 113

Township: 2S Range: 11E Section: 20 UTM: 695078, 4179638

Temperature: Water:_____°C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry (photo). (5m out of Plaza in low area)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

* 100' S

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / ____ Time: 3:48p County: Stanislaus Quad: Waterford

Collector(s): Laura Beet Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 114

Township: 2S Range: 11E Section: 20 UTM: 694502, 4179374

Temperature: Water: ——— °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: * S 100 feet of 103

Dry (plagiobothrys sp.)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

** 200' S

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 353p County: Stanislaus Quad: Waterford

Collector(s): Lana Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 115

Township: 2S Range: 11E Section: 20 UTM: 694799, 4179327

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: ** 200' S of 103

Dry. (plagio bathyas sp.).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

* bermed area between pools 105+106

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 8 / 2014 Time: 307pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 116

Township: 2S Range: 11E Section: 20 UTM: 694679, 4179545

Temperature: Water: — °C Air: 24 °C

Pool Depth: Surface Area:

at time of sampling: up to 15 cm at time of sampling: 6 m x 9 m (approximately 18 cowhoof tracks) total area

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: B. lynchi (adults) - 10's
(Algae in water).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branchinecta lynchi

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) bloodworms		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 / 8 / 2014 Time: 412pm County: Stanislaus Quad: ~~Riverbank~~ Waterford

Collector(s): Laura Belt Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 117

Township: 2S Range: 9E Section: 33 UTM: 694 896, 4179431

Temperature: Water: — °C Air: 25.5 °C

Pool Depth: Surface Area: tire tracks

at time of sampling: 3-8 cm at time of sampling: 0.6 m x 3.6 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Detention basin - Orchard

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:
- Area NE of tiretracks Dry (photo).
- Tire tracks — very tiny ostracods only.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__yes

Date: 4 / 8 /2014 Time: 2:32pm County: Stanislaus Quad: Oakdale

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 200 (Emery west)

Township: T2S Range: 11E Section: 16 UTM: 697560, 4181245

Temperature: Water: 20 °C Air: 21 C

Pool Depth: Surface Area:

at time of sampling: 15 cm at time of sampling: 28m x 9m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
(ungrazed)	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Water is coffee colored;
Tiny ~~copepods only~~ aquatic inverts, only.
No fairy shrimp

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations: Very tiny copepods are visible, only.

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 / 8 /2014 Time: 2:45pm County: Stanislaus Quad: Oakdale

Collector(s): Laura Bolt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 201 (Emery east)

Township: T2S Range: 11E Section: 16 UTM: 697593, 4181230

Temperature: Water: 17 C Air: 21 C

Pool Depth: Surface Area:

at time of sampling: 20 cm at time of sampling: 21 m x 6 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Water is coffee colored; tiny, unidents - friable aquatic invertebrates, only.

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations: very Tiny aquatic invertebrates, mly (unidentifiable)

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 / 8 /2014 Time: 1246p County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 21D

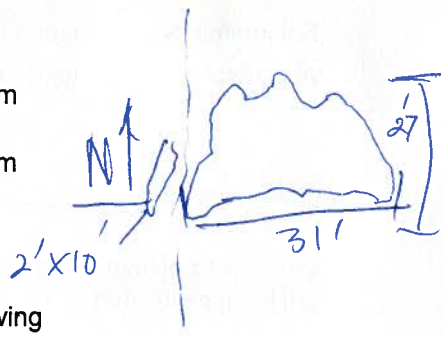
Township: 3S Range: 9E Section: 1 UTM: 676428, 4175543

Temperature: Water: 28 °C Air: 23 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m



Habitat Condition: (circle where appropriate)

- undisturbed — disturbed: — tire tracks — garbage — discing/plowing
- ungrazed — grazed: — cattle — horses — sheep — other_____
  light — moderate — heavy
- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Water is clear; can see vernal pool fairy shrimp (Branchinecta lynchi); 100's; Adults and subadults.

(Adults are a red/brown color)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branchinecta lyndi; 100s adults and subadults

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 / 8 /2014 Time: 1148a County: Stanislaus Quad: Riverbank

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 211 (Plainview NE)

Township: 3S Range: 9E Section: 1 UTM: 682781, 4174973

Temperature: Water: 25 °C Air: 23 °C

Pool Depth: Surface Area:

at time of sampling: 23 cm at time of sampling: 8 m x 37 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Semi turbid; L. occidentalis; 100's (Adults)
Lepidurus packardi; 10's
(1/2-3/4" in l.)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Linderiella Occidentalis

Notostracans: (note reproductive status) Lepidurus packerdi;

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae: adult	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) bloodworms mosquito larvae		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X__yes

Date: 4 / 8 / 2014 Time: 1238P County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 212 SW

Township: 3S Range: 9E Section: 1 UTM 682774, 4174923

Temperature: Water: — °C Air: 25 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__yes

Date: 4 / 8 / 2014 Time: 12:15p County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 213 (Plainview SE)

Township: 3S Range: 9E Section: 1 UTM: 682797, 4174928

Temperature: Water: 25 °C Air: 23 °C

Pool Depth: Surface Area:

at time of sampling: 31 cm at time of sampling: 57 m x 41 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Turbid; Can see fairy shrimp along more shallow perimeter. B. lindahli; adult & subadults; 1,000's

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branchinecta lindahli; 1000's adulted subadult.

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__yes

Date: 4 / 23 / 2014 Time: 1:30 pm County: Stanislaus Quad: Salida

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 1

Township: 3S Range: 9E Section: 5 UTM: 676428, 4175543

Temperature: Water: — °C Air: 21 °C (windy)

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4/23/2014 Time: 1:50pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 2/ 3

Township: 2S Range: 9E Section: 33 UTM: 677175, 4175692

Temperature: Water: — °C Air: 21 °C (windy)

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling: _____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 / 23 / 14 Time: 1:50 pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Bult Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 4

Township: 3S Range: 9E Section: 36 UTM: 681757, 4175950

Temperature: Water:_____°C Air: 21 °C Windy

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Overflow pipe had ponding
Pool dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branchinecta lindahli

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

Wet Rd N

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 23 / 2014 Time: 2:18 p County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-8

Site/Project Name: North County Corridor Pool #: 5

Township: 3S Range: 9E Section: 1 UTM: 682186, 4175821

Temperature: Water: — °C Air: 21 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
  light moderate heavy
- land use of habitat: Pond/ basin

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 / 23 / 2014 Time: 410pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 6

Township: 3S Range: 9E Section: 1 UTM: 682524, 4175703

Temperature: Water: 25.5 °C Air: 22.7 °C

Pool Depth: Surface Area:

at time of sampling: 80 cm at time of sampling: 11 m x 52 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Windy; up to 15 mph. Water is some turbid
fresh tire tracks in pool.

Not fairy Shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

larvae
Sand hoppers

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

Killdeer
B1 P6

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4/23/2014 Time: 1255p County: Stanislaus Quad: Salida

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 16

Township: 2S Range: 9E Section: 32 UTM: 675670, 4175732

Temperature: Water: 23.3 °C Air: 21 °C windy up to 15mph

Pool Depth: Surface Area:

at time of sampling: 28 cm at time of sampling: 22 m x 3.6 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	(disturbed:)	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy
- land use of habitat:	Pond/ basin				

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:
Chorus frog larvae and metamorphs.
No fairy shrimp -

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) chorus frog larvae + metamorphs

Insects: (adult or larvae)			
Anisoptera:		yes	no
Zygoptera:		yes	no
Hydrophilidae:	adult	yes	no
Dytiscidae:		yes	no
Corixidae:	"	yes	no
Notonectidae:	"	yes	no
Belostomatidae:		yes	no
Other (specify) bloodworms			

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

Litter Should

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 /23/2014 Time: 2:03pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 17

Township: 3S Range: 9E Section: 1 UTM: 682213, 4175784

Temperature: Water: 25.5 °C Air: 21 °C (windy) up to 15mph

Pool Depth: Surface Area: " " 2X2' X

at time of sampling: 8 cm at time of sampling:_____m x 19 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy
- land use of habitat:	Urban				

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Water is limited to tire track ruts; turbid.

No fairy shrimp observed

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) None

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae: adult	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) bloodworms, Chironomids, Sandhoppers

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 23 /____ Time: 440pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 18

Township: 2S Range: 10E Section: 26 UTM: 690397, 4178347

Temperature: Water:_____°C Air: 22.8 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Orchard

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry : Windy: upto 15mph
Fresh tire tracks through all areas of feature.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 23 / 14 Time: 759am County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 19

Township: 2S Range: 11E Section: 20 UTM: 694815, 4179404

Temperature: Water:_____°C Air: 23 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry, (windy).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 24 / 2014 Time: 805AM County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 20

Township: 2S Range: 11E Section: 20 UTM: 677190, 4175719

Temperature: Water:_____°C Air: 23 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry (upland sp.)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 23 / 14 Time: 815AM County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 21

Township: 2S Range: 11E Section: 20 UTM: 694865, 4179442

Temperature: Water:_____°C Air: 23 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:_____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completelyfor each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date:_4_/_24_/_14_ Time:_____ County:_____Stanislaus_____ Quad: __Waterford__

Collector(s):_Laura Bell_____ Permit #: ___TE797234-9_____

Site/Project Name:_____North County Corridor_____ Pool #: ___22_____

Township:_____2S_____ Range: ___11E___ Section:_____20_____ UTM: 694848, 4179429

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X__ yes

Date: 4 / 24 / 2014 Time: 840 AM County: Stanislaus Quad: Waterford

Collector(s): Laura Bet Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 23

Township: 2S Range: 11E Section: 20 UTM: 694956, 4180039

Temperature: Water:_____°C Air: 12.7 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date:____/____/____Time:_____County:___Stanislaus_____Quad: _Waterford_

Collector(s):_____Permit #: ___TE797234-9_____

Site/Project Name: _____North County Corridor_____Pool #: ___24_____

Township:_____2S_____Range: ___11E___Section:_____20_____UTM: 695036, 4180015

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed
- ungrazed

disturbed: tire tracks garbage discing/plowing
grazed: cattle horses sheep other_____
light moderate heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_ yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date:____/____/____Time:_____County:_Stanislaus_____Quad: _Waterford_

Collector(s):_____Permit #: _TE797234-9_____

Site/Project Name: _____North County Corridor_____Pool #: _25_____

Township:_____2S_____Range:_____11E_____Section:_____20_____UTM: 695102, 4180039

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 /23/14 Time: 8:37 am County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 26

Township: 2S Range: 11E Section: 20 UTM: 695196, 4180038

Temperature: Water:_____°C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 /24 /2014 Time: 815am County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 38

Township: 2S Range: 11E Section: 20 UTM: 695130, 4179538

Temperature: Water:_____°C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed (grazed:) (cattle) horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 /24 /14 Time: 9Am County: Stanislaus Quad: Waterford

Collector(s): Lara Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 39

Township: 2S Range: 11E Section: 20 UTM: 695241, 4179365

Temperature: Water:_____°C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date:4 /24 /14 Time:9Am County:___Stanislaus_____ Quad: __Waterford__

Collector(s):__LanaBelt_____ Permit #: ___TE797234-9_____

Site/Project Name: _____North County Corridor_____ Pool #: ___40_____

Township _____2S_____ Range: ___11E___ Section:_____20_____ UTM: 695243, 4179353

Temperature: Water:_____°C Air:_13_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 /24 /2014 Time: 9AM County: Stanislaus Quad: Waterford

Collector(s): Laura Bet Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 41

Township: 2S Range: 11E Section: 20 UTM: 695218, 4179339

Temperature: Water:_____°C Air: 11.6 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 24 / 2014 Time: 825am County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 100

Township: 2S Range: 11E Section: 20 UTM: 695145, 4179872

Temperature: Water:_____°C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed
- ungrazed

disturbed: tire tracks garbage discing/plowing
grazed: cattle horses sheep other_____
light moderate heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry

- 5 of 100

- pool + swale

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 /24 /13 Time: 753a County: Stanislaus Quad: Waterford

Collector(s): Lana Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 103

Township: 2S Range: 11E Section: 20 UTM: 694806, 4179401

Temperature: Water:_____°C Air: 16.5 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 / 24 / 2014 Time: 7:40am County: Stanislaus Quad: Waterford

Collector(s): Lara Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 104

Township: 2S Range: 11E Section: 20 UTM: 694799, 4179505

Temperature: Water: 12 °C Air: 10.5 °C

Pool Depth: Surface Area: 17' 3

at time of sampling: up to 23 cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Turbid;

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) Branch. lynchi

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) very small and adults.

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae: larvae	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 /24 /2014 Time: 725am County: Stanislaus Quad: Waterford

Collector(s): Lara Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 105

Township: 2S Range: 11E Section: 20 UTM: 694678, 4179584

Temperature: Water:_____°C Air: 11 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

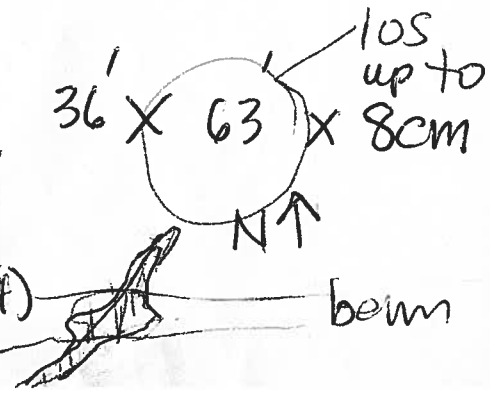
Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry : windy

Surface area: ponded + 1' berm

water is clear

· eleo mach
· juncus sp(?)
· sedges



U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 4 / 24 / 2014 Time: 7:17am County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 106

Township: 2S Range: 11E Section: 20 UTM: 694685, 4179518

Temperature: Water:_____°C Air: 11 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry (windy)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 /24 /2014 Time: 7:12am County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 107

Township: 2S Range: 11E Section: 20 UTM: 694666, 4179496

Temperature: Water:_____°C Air: 11 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 23 / 14 Time: 830Am County: Stanislaus Quad: Waterford

Collector(s): Laura Bell Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 110

Township: 2S Range: 11E Section: 20 UTM: 095077, 4179788

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 4 / 23 / 14 Time: 840AM County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 10

Township: 2S Range: 11E Section: 20 UTM 695110, 4179842

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 /24 /2014 Time: 8:20a County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 101

Township: 2S Range: 11E Section: 20 UTM: 695072, 4179732

Temperature: Water:_____°C Air: 13 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry. (Juncus butonius)

① photo of feature (Between 103 + 101) looking N

② between + this feature & 101)

③ Just S of 101, too)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X_ yes

Date: 4 / 23 / 14 Time: 845AM County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 112

Township: 2S Range: 11E Section: 20 UTM: 695075, 4179679

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 4 / 23 / 14 Time: 850AM County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 113

Township: 2S Range: 11E Section: 20 UTM: 695062 4179770

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed (grazed:) (cattle) horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
Frogs	yes	no	Corixidae:	yes	no
Salamanders	yes	no	Notonectidae:	yes	no
Waterfowl	yes	no	Belostomatidae:	yes	no
			Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 4 / 23 /14 Time: 9AM County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 114

Township: 2S Range: 11E Section: 20 UTM: 694799, 4179871

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed (grazed:) (cattle) horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X__ yes

Date:4 /23 /14 Time:9Am County:Stanislaus Quad: Waterford

Collector(s):Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 115

Township:2S Range: 11E Section: 20 UTM 694800, 4179326

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 /23 / 14 Time: 315pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 116

Township: 2S Range: 11E Section: 20 UTM: 694677, 4179547

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__ yes

Date: 4 / 23/14 Time: 5pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bott Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 117

Township: 2S Range: 11E Section: 20 UTM: 677190, 4175719

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X__yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 /23/ 14 Time: 5pm County: Stanislaus Quad: Waterford

Collector(s): Laura Bait Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 200

Township: 2S Range: 11E Section: 20 UTM: 697560, 4181215

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	(grazed:)	(cattle)	horses	sheep	other_____
			light	moderate	heavy
- land use of habitat:		irrigated pasture			

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_ yes

Date: 4 / 23 / 14 Time: 5pm County: Stanislaus Quad: Waterford

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 201

Township: 2S Range: 11E Section: 20 UTM 1097593, 4181230

Temperature: Water:_____°C Air:_____°C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other_____
light moderate heavy
- land use of habitat: irrigated pasture

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 / 23 / 2014 Time: 4:00pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 210 (Plainview NW)

Township: 3S Range: 9E Section: 1 UTM: 676428, 4175543

Temperature: Water: — °C Air: 22.7 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Windy; up to 15 mph

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no __X__yes

Required color slides and/or photographs for the project site are included:_____no __X__yes

Date: 4/23/2014 Time: 2:48p County: Stanislaus Quad: Riverbank

Collector(s): Laura Belt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 211 (Plainview NE)

Township: 3S Range: 9E Section: 1 UTM: 682781, 4174973

Temperature: Water: 25.5 °C Air: 21 °C

Pool Depth: Surface Area:

at time of sampling: up to 8 cm at time of sampling: 5.5 m x 9 m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Windy (up to 15mph). No fairy shrimp observed

Small areas of ponding; water is turbid. (lots of bird tracks).

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status) None

Notostracans: (note reproductive status) Lepidurus packardi

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae: adult	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) Chironomid bloodworms larvae

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 /23 /2014 Time: 3:50pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Beet Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 212 (Plainview SW)

Township: 3S Range: 9E Section: 1 UTM: 682774, 4174923

Temperature: Water: — °C Air: 22.7 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes: Dry (windy; up to 15mph)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report:_____no _X_yes

Required color slides and/or photographs for the project site are included:_____no _X_yes

Date: 4 / 23 / 14 Time: 308pm County: Stanislaus Quad: Riverbank

Collector(s): Laura Bolt Permit #: TE797234-9

Site/Project Name: North County Corridor Pool #: 213 (Plainview SE)

Township: 3S Range: 9E Section: 1 UTM: 682797, 4174928

Temperature: Water:_ _____°C Air: 21 °C

Pool Depth: Surface Area:

at time of sampling:_____cm at time of sampling:_____m x_____m

estimated maximum:_____cm estimated maximum:_____m x_____m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other_____
			light	moderate	heavy

- land use of habitat: Urban

(Optional) Water Chemistry Data

Alkalinity (total):_____ppm or mg/l
Dissolved NH4:____ppt or ppm
pH:_____
Salinity :_____ppt or ppm

Conductivity:_____uMHO
Dissolved Oxygen:_____ppm or mg/l
Turbidity: (secchi disc depth)_____cm or: clear to bottom _____
Total Dissolved Solids (TDS):_____ppm

Notes:

Dry

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	yes	no	Zygoptera:	yes	no
Ostracods	yes	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
			Corixidae:	yes	no
Frogs	yes	no	Notonectidae:	yes	no
Salamanders	yes	no	Belostomatidae:	yes	no
Waterfowl	yes	no	Other (specify) _____		

Other (specify) _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

Appendix G List of Plant Species Observed

Plant Species Observed in the North County Corridor Biological Study Area, Stanislaus County, California.
March 26, April 10, 2014, and July 24, 2014.

FAMILY/Species Name - scientific	FAMILY/ Common Name	Nativity
Ailanthus altissima	Chinese tree-of-heaven	no
Alnus rhombifolia	White alder	yes
Amaranthus albus	Tumbleweed	no
Amsinckia eastwoodiae	Eastwood's fiddleneck	yes
Amsinckia menziesii	Menzies' fiddleneck	yes
Anagallis arvensis	Scarlet pimpernel	no
Arundo donax	Giant reed	no
Asclepias fascicularis	Narrowleaf milkweed	yes
Avena fatua	Common wild oat	no
Avena sativa	Cultivated oat	no
Azolla filiculoides	Mosquito fern	yes
Brassica nigra	Black mustard	no
Bromus diandrus	Ripgut brome	no
Bromus hordeaceus	Soft cheatgrass	no
Callitriche sp.	Water starwort	yes
Capsella bursa-pastoris	Shepherd's purse	no
Carduus pycnocephalus	Italian thistle	no
Centaurea solstitialis	Yellow star-thistle	no
Centromadia fitchii	Spikeweed	yes
Cerastium arvense subsp. *strictum*	Field chickweed	yes
Cerastium glomeratum	Mouse-eared chickweed	no
Chenopodium album	Lambsquarters	no
Cirsium vulgare	Bull thistle	no
Clarkia unguiculata	Elegant clarkia	yes
Claytonia perfoliata	Miner's lettuce	yes
Convolvulus arvensis	Field bindweed	no
Cortaderia jubata	Pampass grass	no
Crassula connata	Sand pigmyweed	yes
Crassula tillaea	Moss pigmyweed	no
Croton setigerus	Doveweed	yes
Crypsis schoenoides	Swamp picklegrass	no
Cyerpus involucratus	Umbrella sedge	no
Cynodon dactylon	Bermuda Grass	no
Cyperus eragrostis	Tall flatsedge	yes
Cyperus involucratus	Umbrella sedge	yes
Danthonia californica	California oat grass	yes

FAMILY/Species Name - scientific	FAMILY/ Common Name	Nativity
Datura wrightii	Jimsonweed	yes
Eleocharis macrostachya	Common spikerush	yes
Eleusine tristachya	Threespike goosegrass	no
Elymus caput-medusae	Meduda head	no
Erodium botrys	Long beaked filaree	no
Erodium cicutarium	Redstem filaree	no
Eryngium vaseyi var. *vallicola*	Coyote mint	yes
Eucalyptus sp.	Eucalyptus	no
Festuca arundinacea	Tall fescue	no
Festuca myuros	Rat's-tail fescue	no
Festuca perennis	Italian ryegrass	no
Galium aparine	Goose grass	yes
Geranium dissectum	Cutleaf geranium	no
Glyceria declinata	Waxy mannagrass	no
Helianthus annuus	Sunflower	yes
Heterotheca grandiflora	Telegraph weed	yes
Hirschfeldia incana	Shortpod mustard	no
Holcus lanatus	Velvet grass	no
Holocarpha obconica	San Joaquin tarweed	yes
Hordeum marinum subsp. *gussoneanum*	Mediterranean barley	no
Hordeum murinum subsp. *leporinum*	Hare barley	no
Juglans regia	English walnut	no
Juncus balticus subsp. *ater*	Baltic rush	yes
Juncus effusus	Common rush	yes
Lactuca serriola	Prickly lettuce	no
Lamium amplexicaule	Henbit deadnettle	no
Lasthenia glaberrima	Smooth goldfields	yes
Lepidium latifolium	Perennial pepperweed	no
Lepidium nitidum	Shining peppergrass	no
Leptochloa sp.	Sprangletop	yes
Lithophragma affine	Native saxifrage	yes
Lotus corniculatus	Bird's-foot trefoil	no
Ludwigia sp.	Water primrose	both
Lupinus nanus	Sky lupine	yes
Lythrum hyssopifolia	Hyssopp loosetrife	no
Malva parviflora	Cheeses	no
Marah fabacea	Wild cucumber	yes
Marrubium vulgare	Horehound	no
Matricaria discoidea	Pineapple weed	no
Medicago polymorpha	Bur-clover	no
Micranthes californica	Greene's saxifrage	yes
Mimulus guttatus	Monkey flower	yes
Paspalum dilatatum	Dallisgrass	no
Persicaria punctata	Dotted smartweed	yes

FAMILY/Species Name - scientific	FAMILY/ Common Name	Nativity
Phalaris paradoxa	Hood canarygrass	no
Pinus pinea	Italian stone pine	no
Plagiobothrys tener var. *tener*	Slender popcornflower	yes
Plantago lanceolata	English plantain	no
Poa annua	Annual bluegrass	no
Poa bulbosa	Bulbous bluegrass	no
Polygonum aviculare	Prostrate knotweed	no
Polypogon monspeliensis	Rabbit's-foot grass	no
Populus fremontii subsp. *fremontii*	Fremont's cottonwood	yes
Prunus dulcis	Almond	no
Pseudognaphalium luteoalbum	Jersey cudweed	no
Quercus douglasii	Blue oak	yes
Quercus lobata	Valley oak	yes
Quercus wislizeni	Interior live oak	yes
Ranunculus muricatus	Spinyfruit buttercup	no
Ranunculus sceleratus	Cursed buttercup	yes
Robinia pseudoacacia	Black locust	no
Rubus armeniacus	Himalayan blackberry	yes
Rumex crispus	Curly dock	no
Rumex pulcher	Fiddledock	no
Salix exigua	Sandbar willow	yes
Salix lasiandra	Pacific willow	yes
Salsola tragus	Russian thistle	no
Sambucus nigra subs. canadensis	Blue elderberry	yes
Schoenoplectus sp.	Bulrush	yes
Sclerochloa dura	Hardgrass	no
Senecio vulgaris	Common groundsel	no
Setaria parviflora	Marsh bristlegrass	yes
Silybum marianum	Milk thistle	no
Sisymbrium irio	London rocket	no
Solanum aviculare	New Zealand nightshade	no
Soliva sessilis	Field burrweed	no
Sonchus asper	Sow thistle	no
Spergularia rubra	Red sandspurry	no
Sporobolus indicus	Smut grass	no
Stachys ajugoides	Hedgenettle	yes
Symphyotrichum chilense	California aster	yes
Taraxacum officinale	Dandelion	no
Tribulus terrestris	Puncturevine	no
Trichostema lanceolatum	Vinegarweed	yes
Trifolium repens	White clover	no
Trifolium subterraneum	Subterranean clover	no
Trifolium willdenovii	Tomcat clover	yes
Triteleia laxa	Ithuriel's spear	yes

FAMILY/Species Name - scientific	FAMILY/ Common Name	Nativity
Triticum aestivum	Common wheat	no
Typha angustifolia	Narrowleaf cattail	yes
Typha latifolia	Common cattails	yes
Urtica urens	Stinging nettle	yes
Veronica persica	Bird's eyes speedwell	no
Vitis vinifera	Cultivated grape	no
Washingtonia robusta	Washington fan palm	no
Xanthium strumarium	Smooth cocklebur	yes

Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities

State of California
CALIFORNIA NATURAL RESOURCES AGENCY
Department of Fish and Game
November 24, 2009[1]

INTRODUCTION AND PURPOSE

The conservation of special status native plants and their habitats, as well as natural communities, is integral to maintaining biological diversity. The purpose of these protocols is to facilitate a consistent and systematic approach to the survey and assessment of special status native plants and natural communities so that reliable information is produced and the potential of locating a special status plant species or natural community is maximized. They may also help those who prepare and review environmental documents determine when a botanical survey is needed, how field surveys may be conducted, what information to include in a survey report, and what qualifications to consider for surveyors. The protocols may help avoid delays caused when inadequate biological information is provided during the environmental review process; assist lead, trustee and responsible reviewing agencies to make an informed decision regarding the direct, indirect, and cumulative effects of a proposed development, activity, or action on special status native plants and natural communities; meet California Environmental Quality Act (CEQA)[2] requirements for adequate disclosure of potential impacts; and conserve public trust resources.

DEPARTMENT OF FISH AND GAME TRUSTEE AND RESPONSIBLE AGENCY MISSION

The mission of the Department of Fish and Game (DFG) is to manage California's diverse wildlife and native plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. DFG has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (Fish and Game Code §1802). DFG, as trustee agency under CEQA §15386, provides expertise in reviewing and commenting on environmental documents and makes protocols regarding potential negative impacts to those resources held in trust for the people of California.

Certain species are in danger of extinction because their habitats have been severely reduced in acreage, are threatened with destruction or adverse modification, or because of a combination of these and other factors. The California Endangered Species Act (CESA) provides additional protections for such species, including take prohibitions (Fish and Game Code §2050 *et seq.*). As a responsible agency, DFG has the authority to issue permits for the take of species listed under CESA if the take is incidental to an otherwise lawful activity; DFG has determined that the impacts of the take have been minimized and fully mitigated; and, the take would not jeopardize the continued existence of the species (Fish and Game Code §2081). Surveys are one of the preliminary steps to detect a listed or special status plant species or natural community that may be impacted significantly by a project.

DEFINITIONS

Botanical surveys provide information used to determine the potential environmental effects of proposed projects on all special status plants and natural communities as required by law (i.e., CEQA, CESA, and Federal Endangered Species Act (ESA)). Some key terms in this document appear in **bold font** for assistance in use of the document.

For the purposes of this document, **special status plants** include all plant species that meet one or more of the following criteria[3]:

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1 This document replaces the DFG document entitled "Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities."

2 http://ceres.ca.gov/ceqa/

3 Adapted from the East Alameda County Conservation Strategy available at http://www.fws.gov/sacramento/EACCS/Documents/080228_Species_Evaluation_EACCS.pdf

- Listed or proposed for listing as threatened or endangered under ESA or candidates for possible future listing as threatened or endangered under the ESA (50 CFR §17.12).

- Listed[4] or candidates for listing by the State of California as threatened or endangered under CESA (Fish and Game Code §2050 *et seq.*). A species, subspecies, or variety of plant is **endangered** when the prospects of its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, disease, or other factors (Fish and Game Code §2062). A plant is **threatened** when it is likely to become endangered in the foreseeable future in the absence of special protection and management measures (Fish and Game Code §2067).

- Listed as rare under the California Native Plant Protection Act (Fish and Game Code §1900 *et seq.*). A plant is **rare** when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901).

- Meet the definition of rare or endangered under CEQA §15380(b) and (d). Species that may meet the definition of rare or endangered include the following:

  - Species considered by the California Native Plant Society (CNPS) to be "rare, threatened or endangered in California" (Lists 1A, 1B and 2);

  - Species that may warrant consideration on the basis of local significance or recent biological information[5];

  - Some species included on the California Natural Diversity Database's (CNDDB) *Special Plants, Bryophytes, and Lichens List* (California Department of Fish and Game 2008)[6].

- Considered a **locally significant species,** that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.

Special status natural communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special status species or their habitat. The most current version of the Department's *List of California Terrestrial Natural Communities*[7] indicates which natural communities are of special status given the current state of the California classification.

Most types of wetlands and riparian communities are considered special status natural communities due to their limited distribution in California. These natural communities often contain special status plants such as those described above. These protocols may be used in conjunction with protocols formulated by other agencies, for example, those developed by the U.S. Army Corps of Engineers to delineate jurisdictional wetlands[8] or by the U.S. Fish and Wildlife Service to survey for the presence of special status plants[9].

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4 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

5 In general, CNPS List 3 plants (plants about which more information is needed) and List 4 plants (plants of limited distribution) may not warrant consideration under CEQA §15380. These plants may be included on special status plant lists such as those developed by counties where they would be addressed under CEQA §15380. List 3 plants may be analyzed under CEQA §15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a List 4 plant are significant even if individual project impacts are not. List 3 and 4 plants are also included in the California Natural Diversity Database's (CNDDB) *Special Plants, Bryophytes, and Lichens List.* [Refer to the current online published list available at: http://www.dfg.ca.gov/biogeodata.] Data on Lists 3 and 4 plants should be submitted to CNDDB. Such data aids in determining or revising priority ranking.

6 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

7 http://www.dfg.ca.gov/biogeodata/vegcamp/pdfs/natcomlist.pdf. The rare natural communities are asterisked on this list.

8 http://www.wetlands.com/regs/tlpge02e.htm

9 U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/sacramento/es/protocol.htm

BOTANICAL SURVEYS

Conduct botanical surveys prior to the commencement of any activities that may modify vegetation, such as clearing, mowing, or ground-breaking activities. It is appropriate to conduct a botanical field survey when:

- Natural (or naturalized) vegetation occurs on the site, and it is unknown if special status plant species or natural communities occur on the site, and the project has the potential for direct or indirect effects on vegetation; or
- Special status plants or natural communities have historically been identified on the project site; or
- Special status plants or natural communities occur on sites with similar physical and biological properties as the project site.

SURVEY OBJECTIVES

Conduct field surveys in a manner which maximizes the likelihood of locating special status plant species or special status natural communities that may be present. Surveys should be **floristic in nature**, meaning that every plant taxon that occurs on site is identified to the taxonomic level necessary to determine rarity and listing status. "Focused surveys" that are limited to habitats known to support special status species or are restricted to lists of likely potential species are not considered floristic in nature and are not adequate to identify all plant taxa on site to the level necessary to determine rarity and listing status. Include a list of plants and natural communities detected on the site for each botanical survey conducted. More than one field visit may be necessary to adequately capture the floristic diversity of a site. An indication of the prevalence (estimated total numbers, percent cover, density, etc.) of the species and communities on the site is also useful to assess the significance of a particular population.

SURVEY PREPARATION

Before field surveys are conducted, compile relevant botanical information in the general project area to provide a regional context for the investigators. Consult the CNDDB[10] and BIOS[11] for known occurrences of special status plants and natural communities in the project area prior to field surveys. Generally, identify vegetation and habitat types potentially occurring in the project area based on biological and physical properties of the site and surrounding ecoregion[12], unless a larger assessment area is appropriate. Then, develop a list of special status plants with the potential to occur within these vegetation types. This list can serve as a tool for the investigators and facilitate the use of reference sites; however, special status plants on site might not be limited to those on the list. Field surveys and subsequent reporting should be comprehensive and floristic in nature and not restricted to or focused only on this list. Include in the survey report the list of potential special status species and natural communities, and the list of references used to compile the background botanical information for the site.

SURVEY EXTENT

Surveys should be comprehensive over the entire site, including areas that will be directly or indirectly impacted by the project. Adjoining properties should also be surveyed where direct or indirect project effects, such as those from fuel modification or herbicide application, could potentially extend offsite. Pre-project surveys restricted to known CNDDB rare plant locations may not identify all special status plants and communities present and do not provide a sufficient level of information to determine potential impacts.

FIELD SURVEY METHOD

Conduct surveys using **systematic field techniques** in all habitats of the site to ensure thorough coverage of potential impact areas. The level of effort required per given area and habitat is dependent upon the vegetation and its overall diversity and structural complexity, which determines the distance at which plants can be identified. Conduct surveys by walking over the entire site to ensure thorough coverage, noting all plant taxa

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10 Available at http://www.dfg.ca.gov/biogeodata/cnddb

11 http://www.bios.dfg.ca.gov/

12 Ecological Subregions of California, available at http://www.fs.fed.us/r5/projects/ecoregions/toc.htm

observed. The level of effort should be sufficient to provide comprehensive reporting. For example, one person-hour per eight acres per survey date is needed for a comprehensive field survey in grassland with medium diversity and moderate terrain[13], with additional time allocated for species identification.

TIMING AND NUMBER OF VISITS

Conduct surveys in the field at the time of year when species are both evident and identifiable. Usually this is during flowering or fruiting. Space visits throughout the growing season to accurately determine what plants exist on site. Many times this may involve multiple visits to the same site (e.g. in early, mid, and late-season for flowering plants) to capture the floristic diversity at a level necessary to determine if special status plants are present[14]. The timing and number of visits are determined by geographic location, the natural communities present, and the weather patterns of the year(s) in which the surveys are conducted.

REFERENCE SITES

When special status plants are known to occur in the type(s) of habitat present in the project area, observe reference sites (nearby accessible occurrences of the plants) to determine whether those species are identifiable at the time of the survey and to obtain a visual image of the target species, associated habitat, and associated natural community.

USE OF EXISTING SURVEYS

For some sites, floristic inventories or special status plant surveys may already exist. Additional surveys may be necessary for the following reasons:

- Surveys are not current[15]; or
- Surveys were conducted in natural systems that commonly experience year to year fluctuations such as periods of drought or flooding (e.g. vernal pool habitats or riverine systems); or
- Surveys are not comprehensive in nature; or fire history, land use, physical conditions of the site, or climatic conditions have changed since the last survey was conducted[16]; or
- Surveys were conducted in natural systems where special status plants may not be observed if an annual above ground phase is not visible (e.g. flowers from a bulb); or
- Changes in vegetation or species distribution may have occurred since the last survey was conducted, due to habitat alteration, fluctuations in species abundance and/or seed bank dynamics.

NEGATIVE SURVEYS

Adverse conditions may prevent investigators from determining the presence of, or accurately identifying, some species in potential habitat of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any given year. Discuss such conditions in the report.

The failure to locate a known special status plant occurrence during one field season does not constitute evidence that this plant occurrence no longer exists at this location, particularly if adverse conditions are present. For example, surveys over a number of years may be necessary if the species is an annual plant having a persistent, long-lived seed bank and is known not to germinate every year. Visits to the site in more

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13 Adapted from U.S. Fish and Wildlife Service kit fox survey guidelines available at www.fws.gov/sacramento/es/documents/kitfox_no_protocol.pdf

14 U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/sacramento/es/protocol.htm

15 Habitats, such as grasslands or desert plant communities that have annual and short-lived perennial plants as major floristic components may require yearly surveys to accurately document baseline conditions for purposes of impact assessment. In forested areas, however, surveys at intervals of five years may adequately represent current conditions. For forested areas, refer to "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at https://r1.dfg.ca.gov/portal/Portals/12/THPBotanicalGuidelinesJuly2005.pdf

16 U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/botanicalinventories.pdf

than one year increase the likelihood of detection of a special status plant especially if conditions change. To further substantiate negative findings for a known occurrence, a visit to a nearby reference site may ensure that the timing of the survey was appropriate.

REPORTING AND DATA COLLECTION

Adequate information about special status plants and natural communities present in a project area will enable reviewing agencies and the public to effectively assess potential impacts to special status plants or natural communities[17] and will guide the development of minimization and mitigation measures. The next section describes necessary information to assess impacts. For comprehensive, systematic surveys where no special status species or natural communities were found, reporting and data collection responsibilities for investigators remain as described below, excluding specific occurrence information.

SPECIAL STATUS PLANT OR NATURAL COMMUNITY OBSERVATIONS

Record the following information for locations of each special status plant or natural community detected during a field survey of a project site.

- A detailed map (1:24,000 or larger) showing locations and boundaries of each special status species occurrence or natural community found as related to the proposed project. Mark occurrences and boundaries as accurately as possible. Locations documented by use of global positioning system (GPS) coordinates must include the datum[18] in which they were collected;
- The site-specific characteristics of occurrences, such as associated species, habitat and microhabitat, structure of vegetation, topographic features, soil type, texture, and soil parent material. If the species is associated with a wetland, provide a description of the direction of flow and integrity of surface or subsurface hydrology and adjacent off-site hydrological influences as appropriate;
- The number of individuals in each special status plant population as counted (if population is small) or estimated (if population is large);
- If applicable, information about the percentage of individuals in each life stage such as seedlings vs. reproductive individuals;
- The number of individuals of the species per unit area, identifying areas of relatively high, medium and low density of the species over the project site; and
- Digital images of the target species and representative habitats to support information and descriptions.

FIELD SURVEY FORMS

When a special status plant or natural community is located, complete and submit to the CNDDB a California Native Species (or Community) Field Survey Form[19] or equivalent written report, accompanied by a copy of the relevant portion of a 7.5 minute topographic map with the occurrence mapped. Present locations documented by use of GPS coordinates in map and digital form. Data submitted in digital form must include the datum[20] in which it was collected. If a potentially undescribed special status natural community is found on the site, document it with a Rapid Assessment or Relevé form[21] and submit it with the CNDDB form.

VOUCHER COLLECTION

Voucher specimens provide verifiable documentation of species presence and identification as well as a public record of conditions. This information is vital to all conservation efforts. Collection of voucher specimens should

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17 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata. For Timber Harvest Plans (THPs) please refer to the "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at https://r1.dfg.ca.gov/portal/Portals/12/THPBotanicalGuidelinesJuly2005.pdf

18 NAD83, NAD27 or WGS84

19 http://www.dfg.ca.gov/biogeodata

20 NAD83, NAD27 or WGS84

21 http://www.dfg.ca.gov/biogeodata/vegcamp/veg_publications_protocols.asp

be conducted in a manner that is consistent with conservation ethics, and is in accordance with applicable state and federal permit requirements (e.g. incidental take permit, scientific collection permit). Voucher collections of special status species (or suspected special status species) should be made only when such actions would not jeopardize the continued existence of the population or species.

Deposit voucher specimens with an indexed regional herbarium[22] no later than 60 days after the collections have been made. Digital imagery can be used to supplement plant identification and document habitat. Record all relevant permittee names and permit numbers on specimen labels. A collecting permit is required prior to the collection of State-listed plant species[23].

BOTANICAL SURVEY REPORTS

Include reports of botanical field surveys containing the following information with project environmental documents:

- **Project and site description**
  - A description of the proposed project;
  - A detailed map of the project location and study area that identifies topographic and landscape features and includes a north arrow and bar scale; and,
  - A written description of the biological setting, including vegetation[24] and structure of the vegetation; geological and hydrological characteristics; and land use or management history.
- **Detailed description of survey methodology and results**
  - Dates of field surveys (indicating which areas were surveyed on which dates), name of field investigator(s), and total person-hours spent on field surveys;
  - A discussion of how the timing of the surveys affects the comprehensiveness of the survey;
  - A list of potential special status species or natural communities;
  - A description of the area surveyed relative to the project area;
  - References cited, persons contacted, and herbaria visited;
  - Description of reference site(s), if visited, and phenological development of special status plant(s);
  - A list of all taxa occurring on the project site. Identify plants to the taxonomic level necessary to determine whether or not they are a special status species;
  - Any use of existing surveys and a discussion of applicability to this project;
  - A discussion of the potential for a false negative survey;
  - Provide detailed data and maps for all special plants detected. Information specified above under the headings “Special Status Plant or Natural Community Observations,” and “Field Survey Forms,” should be provided for locations of each special status plant detected;
  - Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms should be sent to the CNDDB and included in the environmental document as an Appendix. It is not necessary to submit entire environmental documents to the CNDDB; and,
  - The location of voucher specimens, if collected.

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22 For a complete list of indexed herbaria, see: Holmgren, P., N. Holmgren and L. Barnett. 1990. Index Herbariorum, Part 1: Herbaria of the World. New York Botanic Garden, Bronx, New York. 693 pp. Or: http://www.nybg.org/bsci/ih/ih.html

23 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

24 A vegetation map that uses the National Vegetation Classification System (http://biology.usgs.gov/npsveg/nvcs.html), for example *A Manual of California Vegetation*, and highlights any special status natural communities. If another vegetation classification system is used, the report should reference the system, provide the reason for its use, and provide a crosswalk to the National Vegetation Classification System.

- **Assessment of potential impacts**
  - A discussion of the significance of special status plant populations in the project area considering nearby populations and total species distribution;
  - A discussion of the significance of special status natural communities in the project area considering nearby occurrences and natural community distribution;
  - A discussion of direct, indirect, and cumulative impacts to the plants and natural communities;
  - A discussion of threats, including those from invasive species, to the plants and natural communities;
  - A discussion of the degree of impact, if any, of the proposed project on unoccupied, potential habitat of the species;
  - A discussion of the immediacy of potential impacts; and,
  - Recommended measures to avoid, minimize, or mitigate impacts.

QUALIFICATIONS

Botanical consultants should possess the following qualifications:

- Knowledge of plant taxonomy and natural community ecology;
- Familiarity with the plants of the area, including special status species;
- Familiarity with natural communities of the area, including special status natural communities;
- Experience conducting floristic field surveys or experience with floristic surveys conducted under the direction of an experienced surveyor;
- Familiarity with the appropriate state and federal statutes related to plants and plant collecting; and,
- Experience with analyzing impacts of development on native plant species and natural communities.

SUGGESTED REFERENCES

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Mueller-Dombois, D. and H. Ellenberg. 1974. Aims and methods of vegetation ecology. John Wiley and Sons, Inc., New York, NY.

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Appendix H Agency Coordination and Professional Contacts

AGENDA

North County Corridor – USFWS and CDFW Coordination Meeting

January 23, 2014, 11:00 – 12:30
1010 10th St, Modesto - Basement Training Room (B-300)

Attendees
Jeff Bray, LSA
Dayna Winchell, LSA
Sarah Holm, Dokken Engineering
Laura Peterson-Diaz, CDFW
Jen Schofield, USFWS
Scott Smith, Caltrans
Frank Meraz, Caltrans
Dena Gonzalez, Caltrans
Tamra Nunes, Caltrans
Juan Torres, Caltrans
Colt Esenwein, Stanislaus County
Matt Satow, Drake Haglan

Agenda Items
1. Introductions

2. Project Description

3. Schedule

4. Species Discussions

5. Other

Following introductions, Matt Satow provided an overview of the project description and anticipated schedule. The discussion then turned to the individual species.

<u>California Tiger Salamander (CTS)</u>
Due to the lack of rain, LSA has not been able to survey for CTS. Jeff stated that one option is to assume presence throughout the entire project site. Colt suggested that we assume presence now, and survey later (weather permitting), and then adjust the mitigation amount for the final environmental documents.

Scott noted that it is likely the entire environmental document would have to be recirculated if the mitigation for CTS is adjusted.

Matt suggested ground-truthing all 45 pools to confirm they provide suitable habitat and to determine if site conditions had changed since the pools were identified (e.g., a property with a pool is now developed). This would help refine the impacts and potentially reduce mitigation costs.
Summary of the three options that were discussed:
- Assume presence and mitigate for all habitat on the project site;

- Build an argument for no presence based on other (presumed negative) surveys that were previously conducted in the area; or
- Delay the environmental documents until we have sufficient rain for a protocol survey.

It was determined that presence will be assumed for the draft environmental document. CTS surveys will be conducted in 2015/2016, weather permitting, and the results will be included in the final document. The draft environmental document will disclose this approach. If there is no rain in 2015/2016, then the final environmental document will be prepared assuming CTS presence on the project site.

LSA asked if it would be acceptable to not dip net during the survey; Jen said it would.

Action Items:
LSA will write up the project approach for CTS and send it to USFWS and CDFW.

Caltrans (Scott) to determine if the entire environmental document would need to be recirculated if the CTS mitigation requirements are adjusted.

Vernal Pool Invertebrates
The drought has also affected vernal pool invertebrate surveys. Jeff stated that dry season sampling had been conducted in 2012 for 14 pools, and that 6 pools – all near the west end of the project site – were positive for *Branchinecta* cysts. Wet season surveys were conducted in 2012/13 for all 40+ pools identified on the project, with negative results for listed vernal pool invertebrates (*Branchinecta lindahli*, a non-listed fairy shrimp, was observed in several pools). Jeff asked if USFWS would likely approve dry season sampling during the winter in light of the low rainfall conditions. Jen said she thought it would be approved. Jeff noted that LSA would request formal approval from David Kelly at USFWS.

Jeff explained that the expected vernal pool survey scenario for known pools would be two dry season surveys: one in 2012 and one in 2014, and a wet season survey in 2013. It was discussed that, although this survey scenario is not consistent with the current protocol, it would be acceptable to USFWS. Further, if the results of these surveys are negative listed vernal pool invertebrate for a certain pool complex or specific geographical area, Jen said USFWS would likely concur that listed vernal pool invertebrates are not expected to occur in these areas. Jen stated that USFWS is making changes to the vernal pool survey protocol and the changes will likely require both wet and dry season surveys.

Jeff stated that if this year's dry season sampling is negative, then subsequent wet season surveys may be conducted for the 7 pools on the west side of the project site that were positive for *Branchinecta* cysts to determine which *Branchinecta* species is present. Another option is to hatch the cysts and grow the animals to a sufficient stage of development such that they can be identified to species.

Action Item:
USFWS will confirm that the wet season surveys from 2012-13 are valid even though there was limited rainfall.

Swainson's Hawk/Raptors
Jeff explained that, due to the large size of the project, surveys would include an early nesting survey to locate nests and then another survey during the height of the nesting season to identify active nesting. These surveys would cover the study area for all four alternatives and an approximate 0.25-mile buffer. The results of these surveys should provide sufficient information to adequately compare

the alignments during environmental review. Following completion of the environmental review and at least a couple years prior to the start of construction, a protocol Swainson's hawk survey would be conducted for the selected alternative and 0.5 mile buffer. This protocol survey will be conducted to determine if a 2081 Incidental Take Permit would be required.

Sarah asked if removing known nesting trees during the non-nesting season would be considered an impact to Swainson's hawk. Laura said it would because Swainson's hawks often reuse nests year after year. Frank indicated that Caltrans does not entirely agree with this position. This issue requires further discussions between CDFW and Caltrans prior to completion of the environmental review.

Bats
Sarah said that Dokken planned to conduct a habitat assessment for bats throughout the entire project site and conduct acoustical surveys in the most suitable habitat. Both Laura and Frank agreed with this approach.

Dokken subconsultant bat biologist identified 35 structures and multiple trees that could provide suitable roost habitat for bats. Sarah asked Laura how many acoustical surveys would be required (i.e., would it be a set number or would the number vary based on the results of the first few surveys)?

Action Item:
Laura will provide guidance on the number of acoustical surveys.

Burrowing Owl
Jeff explained that, similar to the approach for Swainson's hawk, the proposed approach for burrowing owls is to conduct a habitat assessment for the study area for all four alternatives. The results of these surveys should provide sufficient information to adequately compare the alignments during environmental review. Following completion of the environmental review and at least a couple years prior to the start of construction, a protocol burrowing owl survey will be conducted for the selected alternative. The protocol survey would extend 500 feet beyond the project limits. Laura agreed with this approach.

San Joaquin Kit Fox and Giant Garter Snake
Based on previous correspondence with USFWS, it neither species is expected to occur in the project area and no surveys are proposed for these species. Both Laura and Jen agreed concurred.

Plants
LSA proposes to conduct focused plant species surveys during the normal blooming period for target species. Surveys would only be conducted in areas of suitable habitat for the target species. Both Jen and Laura agreed with this approach.

Trees
Sarah explained the Dokken proposed to conduct a tree count using a high quality aerial combined with a field tree survey for the dense areas. Laura said this was fine but requested that tree impacts be differentiated by species (e.g., oaks, cottonwoods).

Appendix I List of Wildlife Species Observed

Wildlife Species Observed at North County Corridor, Stanislaus County, California

Scientific Name	Common Name
Mammals	
Canis latrans	Coyote
Mephitis mephitis	Striped skunk
Odocoileus hemionus	Mule deer (dead)
Ondatra zibethicus	Muskrat
Otospermophilus beecheyi	California ground squirrel
Procyon lotor	Northern raccoon (tracks)
Sylvilagus audubonii	Audubon's cottontail
Thomomys sp.	Pocket gopher
***Bird**s*	
Accipiter striatus	Sharp-shinned hawk
Ageliaus phoeniceus	Red-winged blackbird
Ageliaus tricolor	Tricolored blackbird
Anas cyanoptera	Cinnamon teal
Anas discors	Blue-winged teal
Anas platyrhynchos	Mallard
Aphelocoma californica	Western scrub jay
Accipirter cooperii	Cooper's hawk
Ardea alba	Great egret
Aredea herodias	Great blue heron
Bubo virginianus	Great horned owl
Buteo jamaicensis	Red-tailed hawk
Buteo lineatus	Red-shouldered hawk
Buteo swainsoni	Swainson's hawk
Calidris alpine	Dunlin
Cathartes aura	Turkey vulture
Charadrius vociferous	Killdeer
Cistothorus palustris	Marsh wren
Circus cyaneus	Northern harrier
Colaptes auratus	Northern Flicker
Columbia livia	Rock dove
Corvus brachyrhynchos	American crow
Corvus corax	Common raven
Elanus leucurus	White-tailed kite
Euphagus cyanocephalus	Brewer's blackbird
Falco mexicanus	Prairie falcon
Falco sparverius	American kestrel
Gallinago delicate	Wilson's snipe
Fulica Americana	American coot
Lanius iudovicianus	Loggerhead shrike
Melopiza melodia	Song sparrow
Mimus polyglottos	Northern mockingbird
Pandion haliaetus	Osprey
Passer domesticus	House sparrow

Phasianus colchicus	Ring-necked pheasant
Pica nuttalli	Yellow-billed magpie
Sayornis nigricans	Black Phoebe
Setophaga coronate	Yellow-rumped warbler
Sturnella neglecta	Western meadowlark
Streptopelia decaocto	Eurasian collared-dove
Sturnus vulgaris	European starling
Zenaida macroura	Mourning dove
Zonotrichia leucophrys	White-crowned sparrow
Reptiles	
Crotalus oreganus oreganus	Northern Pacific rattlesnake
Pituophis catenifer	Gopher snake (dead)
Amphibians	
Lithobates catesbeianus	American bullfrog
Pseudacris regilla	Pacific chorus frog
Invertebrate	
Branchinecta lindahli	Versatile fairy shrimp
Branchinecta lynchi	Vernal pool fairy shrimp
Lepidurus packardi	Vernal pool tadpole shrimp
Linderiella occidentalis	California linderella
Fish	
	Minnows

Appendix J CDFW Staff Report on Burrowing Owl Mitigation

Staff Report on Burrowing Owl Mitigation

State of California

Natural Resources Agency

Department of Fish and Game

March 7, 2012[1]

[1] This document replaces the Department of Fish and Game 1995 Staff Report On Burrowing Owl Mitigation.

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INTRODUCTION AND PURPOSE

Maintaining California's rich biological diversity is dependent on the conservation of species and their habitats. The California Department of Fish and Game (Department) has designated certain species as "species of special concern" when their population viability and survival is adversely affected by risk factors such as precipitous declines or other vulnerability factors (Shuford and Gardali 2008). Preliminary analyses of regional patterns for breeding populations of burrowing owls (*Athene cunicularia*) have detected declines both locally in their central and southern coastal breeding areas, and statewide where the species has experienced modest breeding range retraction (Gervais et al. 2008). In California, threat factors affecting burrowing owl populations include habitat loss, degradation and modification, and eradication of ground squirrels resulting in a loss of suitable burrows required by burrowing owls for nesting, protection from predators, and shelter (See Appendix A).

The Department recognized the need for a comprehensive conservation and mitigation strategy for burrowing owls, and in 1995 directed staff to prepare a report describing mitigation and survey recommendations. This report, "1995 Staff Report on Burrowing Owl Mitigation," (Staff Report) (CDFG 1995), contained Department-recommended burrowing owl and burrow survey techniques and mitigation measures intended to offset the loss of habitat and slow or reverse further decline of this species. Notwithstanding these measures, over the past 15+ years, burrowing owls have continued to decline in portions of their range (DeSante et al. 2007, Wilkerson and Siegel, 2010). The Department has determined that reversing declining population and range trends for burrowing owls will require implementation of more effective conservation actions, and evaluating the efficacy of the Department's existing recommended avoidance, minimization and mitigation approaches for burrowing owls.

The Department has identified three main actions that together will facilitate a more viable, coordinated, and concerted approach to conservation and mitigation for burrowing owls in California. These include:

1. Incorporating burrowing owl comprehensive conservation strategies into landscape-based planning efforts such as Natural Community Conservation Plans (NCCPs) and multi-species Habitat Conservation Plans (HCPs) that specifically address burrowing owls.
2. Developing and implementing a statewide conservation strategy (Burkett and Johnson, 2007) and local or regional conservation strategies for burrowing owls, including the development and implementation of a statewide burrowing owl survey and monitoring plan.
3. Developing more rigorous burrowing owl survey methods, working to improve the adequacy of impacts assessments; developing clear and effective avoidance and minimization measures; and developing mitigation measures to ensure impacts to the species are effectively addressed at the project, local, and/or regional level (the focus of this document).

This Report sets forth the Department's recommendations for implementing the third approach identified above by revising the 1995 Staff Report, drawing from the most relevant and current knowledge and expertise, and incorporating the best scientific information

available pertaining to the species. It is designed to provide a compilation of the best available science for Department staff, biologists, planners, land managers, California Environmental Quality Act (CEQA) lead agencies, and the public to consider when assessing impacts of projects or other activities on burrowing owls.

This revised Staff Report takes into account the California Burrowing Owl Consortium's Survey Protocol and Mitigation Guidelines (CBOC 1993, 1997) and supersedes the survey, avoidance, minimization and mitigation recommendations in the 1995 Staff Report. Based on experiences gained from implementing the 1995 Staff Report, the Department believes revising that report is warranted. This document also includes general conservation goals and principles for developing mitigation measures for burrowing owls.

DEPARTMENT ROLE AND LEGAL AUTHORITIES

The mission of the Department is to manage California's diverse fish, wildlife and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. The Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitats necessary to maintain biologically sustainable populations of those species (Fish and Game Code (FGC) §1802). The Department, as trustee agency pursuant to CEQA (See CEQA Guidelines, §15386), has jurisdiction by law over natural resources, including fish and wildlife, affected by a project, as that term is defined in Section 21065 of the Public Resources Code. The Department exercises this authority by reviewing and commenting on environmental documents and making recommendations to avoid, minimize, and mitigate potential negative impacts to those resources held in trust for the people of California.

Field surveys designed to detect the presence of a particular species, habitat element, or natural community are one of the tools that can assist biologists in determining whether a species or habitat may be significantly impacted by land use changes or disturbance. The Department reviews field survey data as well as site-specific and regional information to evaluate whether a project's impacts may be significant. This document compiles the best available science for conducting habitat assessments and surveys, and includes considerations for developing measures to avoid impacts or mitigate unavoidable impacts.

CEQA

CEQA requires public agencies in California to analyze and disclose potential environmental impacts associated with a project that the agency will carry out, fund, or approve. Any potentially significant impact must be mitigated to the extent feasible. Project-specific CEQA mitigation is important for burrowing owls because most populations exist on privately owned parcels that, when proposed for development or other types of modification, may be subject to the environmental review requirements of CEQA.

Take

Take of individual burrowing owls and their nests is defined by FGC section 86, and prohibited by sections 3503, 3503.5 and 3513. Take is defined in FGC Section 86 as "hunt, pursue, catch, capture or kill, or attempt to hunt, pursue, catch, capture or kill."

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the United States and Canada, Japan, Mexico, and Russia for the protection of migratory birds, including the burrowing owl (50 C.F.R. § 10). The MBTA protects migratory bird nests from possession, sale, purchase, barter, transport, import and export, and collection. The other prohibitions of the MBTA - capture, pursue, hunt, and kill - are inapplicable to nests. The regulatory definition of take, as defined in Title 50 C.F.R. part 10.12, means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to hunt, shoot, wound, kill, trap, capture, or collect. Only the verb "collect" applies to nests. It is illegal to collect, possess, and by any means transfer possession of any migratory bird nest. The MBTA prohibits the destruction of a nest when it contains birds or eggs, and no possession shall occur during the destruction (see Fish and Wildlife Service, Migratory Bird Permit Memorandum, April 15, 2003). Certain exceptions to this prohibition are included in 50 C.F.R. section 21. Pursuant to Fish & Game Code section 3513, the Department enforces the Migratory Bird Treaty Act consistent with rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act.

Regional Conservation Plans

Regional multiple species conservation plans offer long-term assurances for conservation of covered species at a landscape scale, in exchange for biologically appropriate levels of incidental take and/or habitat loss as defined in the approved plan. California's NCCP Act (FGC §2800 et seq.) governs such plans at the state level, and was designed to conserve species, natural communities, ecosystems, and ecological processes across a jurisdiction or a collection of jurisdictions. Complementary federal HCPs are governed by the Endangered Species Act (7 U.S.C. § 136, 16 U.S.C.§ 1531 et seq.) (ESA). Regional conservation plans (and certain other landscape-level conservation and management plans), may provide conservation for unlisted as well as listed species. Because the geographic scope of NCCPs and HCPs may span many hundreds of thousands of acres, these planning tools have the potential to play a significant role in conservation of burrowing owls, and grasslands and other habitats.

Fish and Game Commission Policies

There are a number of Fish and Game Commission policies (see FGC §2008) that can be applied to burrowing owl conservation. These include policies on: Raptors, Cooperation, Endangered and Threatened Species, Land Use Planning, Management and Utilization of Fish and Wildlife on Federal Lands, Management and Utilization of Fish and Wildlife on Private Lands, and Research.

GUIDING PRINCIPLES FOR CONSERVATION

Unless otherwise provided in a statewide, local, or regional conservation strategy, surveying and evaluating impacts to burrowing owls, as well as developing and implementing avoidance, minimization, and mitigation and conservation measures incorporate the following principles. These principles are a summary of Department staff expert opinion and were used to guide the preparation of this document.

1. Use the Precautionary Principle (Noss et al.1997), by which the alternative of increased conservation is deliberately chosen in order to buffer against incomplete knowledge of burrowing owl ecology and uncertainty about the consequences to burrowing owls of potential impacts, including those that are cumulative.
2. Employ basic conservation biology tenets and population-level approaches when determining what constitutes appropriate avoidance, minimization, and mitigation for impacts. Include mitigation effectiveness monitoring and reporting, and use an adaptive management loop to modify measures based on results.
3. Protect and conserve owls in wild, semi-natural, and agricultural habitats (conserve is defined at FGC §1802).
4. Protect and conserve natural nest burrows (or burrow surrogates) previously used by burrowing owls and sufficient foraging habitat and protect auxiliary "satellite" burrows that contribute to burrowing owl survivorship and natural behavior of owls.

CONSERVATION GOALS FOR THE BURROWING OWL IN CALIFORNIA

It is Department staff expert opinion that the following goals guide and contribute to the short and long-term conservation of burrowing owls in California:

1. Maintain size and distribution of extant burrowing owl populations (allowing for natural population fluctuations).
2. Increase geographic distribution of burrowing owls into formerly occupied historical range where burrowing owl habitat still exists, or where it can be created or enhanced, and where the reason for its local disappearance is no longer of concern.
3. Increase size of existing populations where possible and appropriate (for example, considering basic ecological principles such as carrying capacity, predator-prey relationships, and inter-specific relationships with other species at risk).
4. Protect and restore self-sustaining ecosystems or natural communities which can support burrowing owls at a landscape scale, and which will require minimal long-term management.
5. Minimize or prevent unnatural causes of burrowing owl population declines (e.g., nest burrow destruction, chemical control of rodent hosts and prey).
6. Augment/restore natural dynamics of burrowing owl populations including movement and genetic exchange among populations, such that the species does not require future listing and protection under the California Endangered Species Act (CESA) and/or the federal Endangered Species Act (ESA).
7. Engage stakeholders, including ranchers; farmers; military; tribes; local, state, and federal agencies; non-governmental organizations; and scientific research and education communities involved in burrowing owl protection and habitat management.

ACTIVITIES WITH THE POTENTIAL TO TAKE OR IMPACT BURROWING OWLS

The following activities are examples of activities that have the potential to take burrowing owls, their nests or eggs, or destroy or degrade burrowing owl habitat: grading, disking, cultivation, earthmoving, burrow blockage, heavy equipment compacting and crushing burrow tunnels, levee maintenance, flooding, burning and mowing (if burrows are impacted), and operating wind turbine collisions (collectively hereafter referred to as "projects" or "activities"

whether carried out pursuant to CEQA or not). In addition, the following activities may have impacts to burrowing owl populations: eradication of host burrowers; changes in vegetation management (i.e. grazing); use of pesticides and rodenticides; destruction, conversion or degradation of nesting, foraging, over-wintering or other habitats; destruction of natural burrows and burrow surrogates; and disturbance which may result in harassment of owls at occupied burrows.

PROJECT IMPACT EVALUATIONS

The following three progressive steps are effective in evaluating whether projects will result in impacts to burrowing owls. The information gained from these steps will inform any subsequent avoidance, minimization and mitigation measures. The steps for project impact evaluations are: 1) habitat assessment, 2) surveys, and 3) impact assessment. Habitat assessments are conducted to evaluate the likelihood that a site supports burrowing owl. Burrowing owl surveys provide information needed to determine the potential effects of proposed projects and activities on burrowing owls, and to avoid take in accordance with FGC sections 86, 3503, and 3503.5. Impact assessments evaluate the extent to which burrowing owls and their habitat may be impacted, directly or indirectly, on and within a reasonable distance of a proposed CEQA project activity or non-CEQA project. These three site evaluation steps are discussed in detail below.

Biologist Qualifications

The current scientific literature indicates that only individuals meeting the following minimum qualifications should perform burrowing owl habitat assessments, surveys, and impact assessments:

1. Familiarity with the species and its local ecology;
2. Experience conducting habitat assessments and non-breeding and breeding season surveys, or experience with these surveys conducted under the direction of an experienced surveyor;
3. Familiarity with the appropriate state and federal statutes related to burrowing owls, scientific research, and conservation;
4. Experience with analyzing impacts of development on burrowing owls and their habitat.

Habitat Assessment Data Collection and Reporting

A habitat assessment is the first step in the evaluation process and will assist investigators in determining whether or not occupancy surveys are needed. Refer to Appendix B for a definition of burrowing owl habitat. Compile the detailed information described in Appendix C when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report.

Surveys

Burrowing owl surveys are the second step of the evaluation process and the best available scientific literature recommends that they be conducted whenever burrowing owl habitat or sign (see Appendix B) is encountered on or adjacent to (within 150 meters) a project site

(Thomsen 1971, Martin 1973). Occupancy of burrowing owl habitat is confirmed at a site when at least one burrowing owl, or its sign at or near a burrow entrance, is observed within the last three years (Rich 1984). Burrowing owls are more detectable during the breeding season with detection probabilities being highest during the nestling stage (Conway et al. 2008). In California, the burrowing owl breeding season extends from 1 February to 31 August (Haug et al. 1993, Thompsen 1971) with some variances by geographic location and climatic conditions. Several researchers suggest three or more survey visits during daylight hours (Haug and Diduik 1993, CBOC 1997, Conway and Simon 2003) and recommend each visit occur at least three weeks apart during the peak of the breeding season, commonly accepted in California as between 15 April and 15 July (CBOC 1997). Conway and Simon (2003) and Conway et al. (2008) recommended conducting surveys during the day when most burrowing owls in a local area are in the laying and incubation period (so as not to miss early breeding attempts), during the nesting period, and in the late nestling period when most owls are spending time above ground.

Non-breeding season (1 September to 31 January) surveys may provide information on burrowing owl occupancy, but do not substitute for breeding season surveys because results are typically inconclusive. Burrowing owls are more difficult to detect during the non-breeding season and their seasonal residency status is difficult to ascertain. Burrowing owls detected during non-breeding season surveys may be year-round residents, young from the previous breeding season, pre-breeding territorial adults, winter residents, dispersing juveniles, migrants, transients or new colonizers. In addition, the numbers of owls and their pattern of distribution may differ during winter and breeding seasons. However, on rare occasions, non-breeding season surveys may be warranted (i.e., if the site is believed to be a wintering site only based on negative breeding season results). Refer to Appendix D for information on breeding season and non-breeding season survey methodologies.

Survey Reports

Adequate information about burrowing owls present in and adjacent to an area that will be disturbed by a project or activity will enable the Department, reviewing agencies and the public to effectively assess potential impacts and will guide the development of avoidance, minimization, and mitigation measures. The survey report includes but is not limited to a description of the proposed project or proposed activity, including the proposed project start and end dates, as well as a description of disturbances or other activities occurring on-site or nearby. Refer to Appendix D for details included in a survey report.

Impact Assessment

The third step in the evaluation process is the impact assessment. When surveys confirm occupied burrowing owl habitat in or adjoining the project area, there are a number of ways to assess a project's potential significant impacts to burrowing owls and their habitat. Richardson and Miller (1997) recommended monitoring raptor behavior prior to developing management recommendations and buffers to determine the extent to which individuals have been sensitized to human disturbance. Monitoring results will also provide detail necessary for developing site-specific measures. Postovit and Postovit (1987) recommended an analytical approach to mitigation planning: define the problem (impact), set goals (to guide mitigation development), evaluate and select mitigation methods, and monitor the results.

Define the problem. The impact assessment evaluates all factors that could affect burrowing owls. Postovit and Postovit (1987) recommend evaluating the following in assessing impacts to raptors and planning mitigation: type and extent of disturbance, duration and timing of disturbance, visibility of disturbance, sensitivity and ability to habituate, and influence of environmental factors. They suggest identifying and addressing all potential direct and indirect impacts to burrowing owls, regardless of whether or not the impacts will occur during the breeding season. Several examples are given for each impact category below; however, examples are not intended to be used exclusively.

Type and extent of the disturbance. The impact assessment describes the nature (source) and extent (scale) of potential project impacts on occupied, satellite and unoccupied burrows including acreage to be lost (temporary or permanent), fragmentation/edge being created, increased distance to other nesting and foraging habitat, and habitat degradation. Discuss any project activities that impact either breeding and/or non-breeding habitat which could affect owl home range size and spatial configuration, negatively affect onsite and offsite burrowing owl presence, increase energetic costs, lower reproductive success, increase vulnerability to predation, and/or decrease the chance of procuring a mate.

Duration and timing of the impact. The impact assessment describes the amount of time the burrowing owl habitat will be unavailable to burrowing owls (temporary or permanent) on the site and the effect of that loss on essential behaviors or life history requirements of burrowing owls, the overlap of project activities with breeding and/or non-breeding seasons (timing of nesting and/or non-breeding activities may vary with latitude and climatic conditions, which should be considered with the timeline of the project or activity), and any variance of the project activities in intensity, scale and proximity relative to burrowing owl occurrences.

Visibility and sensitivity. Some individual burrowing owls or pairs are more sensitive than others to specific stimuli and may habituate to ongoing visual or audible disturbance. Site-specific monitoring may provide clues to the burrowing owl's sensitivities. This type of assessment addresses the sensitivity of burrowing owls within their nesting area to humans on foot, and vehicular traffic. Other variables are whether the site is primarily in a rural versus urban setting, and whether any prior disturbance (e.g., human development or recreation) is known at the site.

Environmental factors. The impact assessment discusses any environmental factors that could be influenced or changed by the proposed activities including nest site availability, predators, prey availability, burrowing mammal presence and abundance, and threats from other extrinsic factors such as human disturbance, urban interface, feral animals, invasive species, disease or pesticides.

Significance of impacts. The impact assessment evaluates the potential loss of nesting burrows, satellite burrows, foraging habitat, dispersal and migration habitat, wintering habitat, and habitat linkages, including habitat supporting prey and host burrowers and other essential habitat attributes. This assessment determines if impacts to the species will result in significant impacts to the species locally, regionally and range-wide per CEQA Guidelines §15382 and Appendix G. The significance of the impact to habitat depends on the extent of habitat disturbed and length of time the habitat is unavailable (for example: minor – several days, medium – several weeks to months, high - breeding season affecting juvenile survival,

or over winter affecting adult survival).

Cumulative effects. The cumulative effects assessment evaluates two consequences: 1) the project's proportional share of reasonably foreseeable impacts on burrowing owls and habitat caused by the project or in combination with other projects and local influences having impacts on burrowing owls and habitat, and 2) the effects on the regional owl population resulting from the project's impacts to burrowing owls and habitat.

Mitigation goals. Establishing goals will assist in planning mitigation and selecting measures that function at a desired level. Goals also provide a standard by which to measure mitigation success. Unless specifically provided for through other FGC Sections or through specific regulations, take, possession or destruction of individual burrowing owls, their nests and eggs is prohibited under FGC sections 3503, 3503.5 and 3513. Therefore, a required goal for all project activities is to avoid take of burrowing owls. Under CEQA, goals would consist of measures that would avoid, minimize and mitigate impacts to a less than significant level. For individual projects, mitigation must be roughly proportional to the level of impacts, including cumulative impacts, in accordance with the provisions of CEQA (CEQA Guidelines, §§ 15126.4(a)(4)(B), 15064, 15065, and 16355). In order for mitigation measures to be effective, they must be specific, enforceable, and feasible actions that will improve environmental conditions. As set forth in more detail in Appendix A, the current scientific literature supports the conclusion that mitigation for permanent habitat loss necessitates replacement with an equivalent or greater habitat area for breeding, foraging, wintering, dispersal, presence of burrows, burrow surrogates, presence of fossorial mammal dens, well drained soils, and abundant and available prey within close proximity to the burrow.

MITIGATION METHODS

The current scientific literature indicates that any site-specific avoidance or mitigation measures developed should incorporate the best practices presented below or other practices confirmed by experts and the Department. The Department is available to assist in the development of site-specific avoidance and mitigation measures.

Avoiding. A primary goal is to design and implement projects to seasonally and spatially avoid negative impacts and disturbances that could result in take of burrowing owls, nests, or eggs. Other avoidance measures may include but not be limited to:

- Avoid disturbing occupied burrows during the nesting period, from 1 February through 31 August.
- Avoid impacting burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls.
- Avoid direct destruction of burrows through chaining (dragging a heavy chain over an area to remove shrubs), disking, cultivation, and urban, industrial, or agricultural development.
- Develop and implement a worker awareness program to increase the on-site worker's recognition of and commitment to burrowing owl protection.
- Place visible markers near burrows to ensure that farm equipment and other machinery does not collapse burrows.
- Do not fumigate, use treated bait or other means of poisoning nuisance animals in areas where burrowing owls are known or suspected to occur (e.g., sites observed with nesting

owls, designated use areas).

- Restrict the use of treated grain to poison mammals to the months of January and February.

Take avoidance (pre-construction) surveys. Take avoidance surveys are intended to detect the presence of burrowing owls on a project site at a fixed period in time and inform necessary take avoidance actions. Take avoidance surveys may detect changes in owl presence such as colonizing owls that have recently moved onto the site, migrating owls, resident burrowing owls changing burrow use, or young of the year that are still present and have not dispersed. Refer to Appendix D for take avoidance survey methodology.

Site surveillance. Burrowing owls may attempt to colonize or re-colonize an area that will be impacted; thus, the current scientific literature indicates a need for ongoing surveillance at the project site during project activities is recommended. The surveillance frequency/effort should be sufficient to detect burrowing owls if they return. Subsequent to their new occupancy or return to the site, take avoidance measures should assure with a high degree of certainty that take of owls will not occur.

Minimizing. If burrowing owls and their habitat can be protected in place on or adjacent to a project site, the use of buffer zones, visual screens or other measures while project activities are occurring can minimize disturbance impacts. Conduct site-specific monitoring to inform development of buffers (see Visibility and sensitivity above). The following general guidelines for implementing buffers should be adjusted to address site-specific conditions using the impact assessment approach described above. The CEQA lead agency and/or project proponent is encouraged to consult with the Department and other burrowing owl experts for assistance in developing site-specific buffer zones and visual screens.

Buffers. Holroyd et al. (2001) identified a need to standardize management and disturbance mitigation guidelines. For instance, guidelines for mitigating impacts by petroleum industries on burrowing owls and other prairie species (Scobie and Faminow, 2000) may be used as a template for future mitigation guidelines (Holroyd et al. 2001). Scobie and Faminow (2000) developed guidelines for activities around occupied burrowing owl nests recommending buffers around low, medium, and high disturbance activities, respectively (see below).

Recommended restricted activity dates and setback distances by level of disturbance for burrowing owls (Scobie and Faminow 2000).

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

* meters (m)

Based on existing vegetation, human development, and land uses in an area, resource managers may decide to allow human development or resource extraction closer to these area/sites than recommended above. However, if it is decided to allow activities closer than

the setback distances recommended, a broad-scale, long-term, scientifically-rigorous monitoring program ensures that burrowing owls are not detrimentally affected by alternative approaches.

Other minimization measures include eliminating actions that reduce burrowing owl forage and burrowing surrogates (e.g. ground squirrel), or introduce/facilitate burrowing owl predators. Actions that could influence these factors include reducing livestock grazing rates and/or changing the timing or duration of grazing or vegetation management that could result in less suitable habitat.

Burrow exclusion and closure. Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls, or permanently exclude burrowing owls and close burrows after verifying burrows are empty by site monitoring and scoping. Exclusion in and of itself is not a take avoidance, minimization or mitigation method. Eviction of burrowing owls is a potentially significant impact under CEQA.

The long-term demographic consequences of these techniques have not been thoroughly evaluated, and the fate of evicted or excluded burrowing owls has not been systematically studied. Because burrowing owls are dependent on burrows at all times of the year for survival and/or reproduction, evicting them from nesting, roosting, and satellite burrows may lead to indirect impacts or take. Temporary or permanent closure of burrows may result in significant loss of burrows and habitat for reproduction and other life history requirements. Depending on the proximity and availability of alternate habitat, loss of access to burrows will likely result in varying levels of increased stress on burrowing owls and could depress reproduction, increase predation, increase energetic costs, and introduce risks posed by having to find and compete for available burrows. Therefore, exclusion and burrow closure are not recommended where they can be avoided. The current scientific literature indicates consideration of all possible avoidance and minimization measures before temporary or permanent exclusion and closure of burrows is implemented, in order to avoid take.

The results of a study by Trulio (1995) in California showed that burrowing owls passively displaced from their burrows were quickly attracted to adjacent artificial burrows at five of six passive relocation sites. The successful sites were all within 75 meters (m) of the destroyed burrow, a distance generally within a pair's territory. This researcher discouraged using passive relocation to artificial burrows as a mitigation measure for lost burrows without protection of adjacent foraging habitat. The study results indicated artificial burrows were used by evicted burrowing owls when they were approximately 50-100 m from the natural burrow (Thomsen 1971, Haug and Oliphant 1990). Locating artificial or natural burrows more than 100 m from the eviction burrow may greatly reduce the chances that new burrows will be used. Ideally, exclusion and burrow closure is employed only where there are adjacent natural burrows and non-impacted, sufficient habitat for burrowing owls to occupy with permanent protection mechanisms in place. Any new burrowing owl colonizing the project site after the CEQA document has been adopted may constitute changed circumstances that should be addressed in a re-circulated CEQA document.

The current scientific literature indicates that burrow exclusion should only be conducted by qualified biologists (meeting the Biologist's Qualifications above) during the non-breeding

season, before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and/or scoping. The literature also indicates that when temporary or permanent burrow exclusion and/or burrow closure is implemented, burrowing owls should not be excluded from burrows unless or until:

- A Burrowing Owl Exclusion Plan (see Appendix E) is developed and approved by the applicable local DFG office;
- Permanent loss of occupied burrow(s) and habitat is mitigated in accordance with the Mitigating Impacts sections below. Temporary exclusion is mitigated in accordance with the item #1 under Mitigating Impacts below.
- Site monitoring is conducted prior to, during, and after exclusion of burrowing owls from their burrows sufficient to ensure take is avoided. Conduct daily monitoring for one week to confirm young of the year have fledged if the exclusion will occur immediately after the end of the breeding season.
- Excluded burrowing owls are documented using artificial or natural burrows on an adjoining mitigation site (if able to confirm by band re-sight).

Translocation (Active relocation offsite >100 meters). At this time, there is little published information regarding the efficacy of translocating burrowing owls, and additional research is needed to determine subsequent survival and breeding success (Klute et al. 2003, Holroyd et al. 2001). Study results for translocation in Florida implied that hatching success may be decreased for populations of burrowing owls that undergo translocation (Nixon 2006). At this time, the Department is unable to authorize the capture and relocation of burrowing owls except within the context of scientific research (FGC §1002) or a NCCP conservation strategy.

Mitigating impacts. Habitat loss and degradation from rapid urbanization of farmland in the core areas of the Central and Imperial valleys is the greatest of many threats to burrowing owls in California (Shuford and Gardali, 2008). At a minimum, if burrowing owls have been documented to occupy burrows (see Definitions, Appendix B) at the project site in recent years, the current scientific literature supports the conclusion that the site should be considered occupied and mitigation should be required by the CEQA lead agency to address project-specific significant and cumulative impacts. Other site-specific and regionally significant and cumulative impacts may warrant mitigation. The current scientific literature indicates the following to be best practices. If these best practices cannot be implemented, the lead agency or lead investigator may consult with the Department to develop effective mitigation alternatives. The Department is also available to assist in the identification of suitable mitigation lands.

1. Where habitat will be temporarily disturbed, restore the disturbed area to pre-project condition including decompacting soil and revegetating. Permanent habitat protection may be warranted if there is the potential that the temporary impacts may render a nesting site (nesting burrow and satellite burrows) unsustainable or unavailable depending on the time frame, resulting in reduced survival or abandonment. For the latter potential impact, see the permanent impact measures below.
2. Mitigate for permanent impacts to nesting, occupied and satellite burrows and/or burrowing owl habitat such that the habitat acreage, number of burrows and burrowing owls impacted are replaced based on the information provided in Appendix A. Note: A

minimum habitat replacement recommendation is not provided here as it has been shown to serve as a default, replacing any site-specific analysis and discounting the wide variation in natal area, home range, foraging area, and other factors influencing burrowing owls and burrowing owl population persistence in a particular area.

3. Mitigate for permanent impacts to nesting, occupied and satellite burrows and burrowing owl habitat with (a) permanent conservation of similar vegetation communities (grassland, scrublands, desert, urban, and agriculture) to provide for burrowing owl nesting, foraging, wintering, and dispersal (i.e., during breeding and non-breeding seasons) comparable to or better than that of the impact area, and (b) sufficiently large acreage, and presence of fossorial mammals. The mitigation lands may require habitat enhancements including enhancement or expansion of burrows for breeding, shelter and dispersal opportunity, and removal or control of population stressors. If the mitigation lands are located adjacent to the impacted burrow site, ensure the nearest neighbor artificial or natural burrow clusters are at least within 210 meters (Fisher et al. 2007).
4. Permanently protect mitigation land through a conservation easement deeded to a non-profit conservation organization or public agency with a conservation mission, for the purpose of conserving burrowing owl habitat and prohibiting activities incompatible with burrowing owl use. If the project is located within the service area of a Department-approved burrowing owl conservation bank, the project proponent may purchase available burrowing owl conservation bank credits.
5. Develop and implement a mitigation land management plan to address long-term ecological sustainability and maintenance of the site for burrowing owls (see Management Plan and Artificial Burrow sections below, if applicable).
6. Fund the maintenance and management of mitigation land through the establishment of a long-term funding mechanism such as an endowment.
7. Habitat should not be altered or destroyed, and burrowing owls should not be excluded from burrows, until mitigation lands have been legally secured, are managed for the benefit of burrowing owls according to Department-approved management, monitoring and reporting plans, and the endowment or other long-term funding mechanism is in place or security is provided until these measures are completed.
8. Mitigation lands should be on, adjacent or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls present.
9. Where there is insufficient habitat on, adjacent to, or near project sites where burrowing owls will be excluded, acquire mitigation lands with burrowing owl habitat away from the project site. The selection of mitigation lands should then focus on consolidating and enlarging conservation areas located outside of urban and planned growth areas, within foraging distance of other conserved lands. If mitigation lands are not available adjacent to other conserved lands, increase the mitigation land acreage requirement to ensure a selected site is of sufficient size. Offsite mitigation may not adequately offset the biological and habitat values impacted on a one to one basis. Consult with the Department when determining offsite mitigation acreages.
10. Evaluate and select suitable mitigation lands based on a comparison of the habitat attributes of the impacted and conserved lands, including but not limited to: type and structure of habitat being impacted or conserved; density of burrowing owls in impacted and conserved habitat; and significance of impacted or conserved habitat to the species range-wide. Mitigate for the highest quality burrowing owl habitat impacted first and foremost when identifying mitigation lands, even if a mitigation site is located outside of

a lead agency's jurisdictional boundary, particularly if the lead agency is a city or special district.

11. Select mitigation lands taking into account the potential human and wildlife conflicts or incompatibility, including but not limited to, human foot and vehicle traffic, and predation by cats, loose dogs and urban-adapted wildlife, and incompatible species management (i.e., snowy plover).
12. Where a burrowing owl population appears to be highly adapted to heavily altered habitats such as golf courses, airports, athletic fields, and business complexes, permanently protecting the land, augmenting the site with artificial burrows, and enhancing and maintaining those areas may enhance sustainability of the burrowing owl population onsite. Maintenance includes keeping lands grazed or mowed with weed-eaters or push mowers, free from trees and shrubs, and preventing excessive human and human-related disturbance (e.g., walking, jogging, off-road activity, dog-walking) and loose and feral pets (chasing and, presumably, preying upon owls) that make the environment uninhabitable for burrowing owls (Wesemann and Rowe 1985, Millsap and Bear 2000, Lincer and Bloom 2007). Items 4, 5 and 6 also still apply to this mitigation approach.
13. If there are no other feasible mitigation options available and a lead agency is willing to establish and oversee a Burrowing Owl Mitigation and Conservation Fund that funds on a competitive basis acquisition and permanent habitat conservation, the project proponent may participate in the lead agency's program.

Artificial burrows. Artificial burrows have been used to replace natural burrows either temporarily or long-term and their long-term success is unclear. Artificial burrows may be an effective addition to in-perpetuity habitat mitigation if they are augmenting natural burrows, the burrows are regularly maintained (i.e., no less than annual, with biennial maintenance recommended), and surrounding habitat patches are carefully maintained. There may be some circumstances, for example at airports, where squirrels will not be allowed to persist and create a dynamic burrow system, where artificial burrows may provide some support to an owl population.

Many variables may contribute to the successful use of artificial burrows by burrowing owls, including pre-existence of burrowing owls in the area, availability of food, predators, surrounding vegetation and proximity, number of natural burrows in proximity, type of materials used to build the burrow, size of the burrow and entrance, direction in which the burrow entrance is facing, slope of the entrance, number of burrow entrances per burrow, depth of the burrow, type and height of perches, and annual maintenance needs (Belthoff and King 2002, Smith et al. 2005, Barclay et al. 2011). Refer to Barclay (2008) and (2011) and to Johnson et al. 2010 (unpublished report) for guidance on installing artificial burrows including recommendations for placement, installation and maintenance.

Any long-term reliance on artificial burrows as natural burrow replacements must include semi-annual to annual cleaning and maintenance and/or replacement (Barclay et al. 2011, Smith and Conway 2005, Alexander et al. 2005) as an ongoing management practice. Alexander et al. (2005), in a study of the use of artificial burrows found that all of 20 artificial burrows needed some annual cleaning and maintenance. Burrows were either excavated by predators, blocked by soil or vegetation, or experienced substrate erosion forming a space beneath the tubing that prevented nestlings from re-entering the burrow.

Mitigation lands management plan. Develop a Mitigation Lands Management Plan for projects that require off-site or on-site mitigation habitat protection to ensure compliance with and effectiveness of identified management actions for the mitigation lands. A suggested outline and related vegetation management goals and monitoring success criteria can be found in Appendix E.

Mitigation Monitoring and Reporting

Verify the compliance with required mitigation measures, the accuracy of predictions, and ensure the effectiveness of all mitigation measures for burrowing owls by conducting follow-up monitoring, and implementing midcourse corrections, if necessary, to protect burrowing owls. Refer to CEQA Guidelines Section 15097 and the CEQA Guidelines for additional guidance on mitigation, monitoring and reporting. Monitoring is qualitatively different from site surveillance; monitoring normally has a specific purpose and its outputs and outcomes will usually allow a comparison with some baseline condition of the site before the mitigation (including avoidance and minimization) was undertaken. Ideally, monitoring should be based on the Before-After Control-Impact (BACI) principle (McDonald et al. 2000) that requires knowledge of the pre-mitigation state to provide a reference point for the state and change in state after the project and mitigation have been implemented.

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Appendix A. Burrowing Owl Natural History and Threats

Diet

Burrowing owl diet includes arthropods, small rodents, birds, amphibians, reptiles, and carrion (Haug et al. 1993).

Breeding

In California, the breeding season for the burrowing owl typically occurs between 1 February and 31 August although breeding in December has been documented (Thompson 1971, Gervais et al. 2008); breeding behavior includes nest site selection by the male, pair formation, copulation, egg laying, hatching, fledging, and post-fledging care of young by the parents. The peak of the breeding season occurs between 15 April and 15 July and is the period when most burrowing owls have active nests (eggs or young). The incubation period lasts 29 days (Coulombe 1971) and young fledge after 44 days (Haug et al. 1993). Note that the timing of nesting activities may vary with latitude and climatic conditions. Burrowing owls may change burrows several times during the breeding season, starting when nestlings are about three weeks old (Haug et al. 1993).

Dispersal

The following discussion is an excerpt from Gervais et al (2008):

> "The burrowing owl is often considered a sedentary species (e.g., Thomsen 1971). A large proportion of adults show strong fidelity to their nest site from year to year, especially where resident, as in Florida (74% for females, 83% for males; Millsap and Bear 1997). In California, nest-site fidelity rates were 32%–50% in a large grassland and 57% in an agricultural environment (Ronan 2002, Catlin 2004, Catlin et al. 2005). Differences in these rates among sites may reflect differences in nest predation rates (Catlin 2004, Catlin et al. 2005). Despite the high nest fidelity rates, dispersal distances may be considerable for both juveniles (natal dispersal) and adults (postbreeding dispersal), but this also varied with location (Catlin 2004, Rosier et al. 2006). Distances of 53 km to roughly 150 km have been observed in California for adult and natal dispersal, respectively (D. K. Rosenberg and J. A. Gervais, unpublished data), despite the difficulty in detecting movements beyond the immediate study area (Koenig et al. 1996)."

Habitat

The burrowing owl is a small, long-legged, ground-dwelling bird species, well-adapted to open, relatively flat expanses. In California, preferred habitat is generally typified by short, sparse vegetation with few shrubs, level to gentle topography and well-drained soils (Haug et al. 1993). Grassland, shrub steppe, and desert are naturally occurring habitat types used by the species. In addition, burrowing owls may occur in some agricultural areas, ruderal grassy fields, vacant lots and pastures if the vegetation structure is suitable and there are useable burrows and foraging habitat in proximity (Gervais et al 2008). Unique amongst North

American raptors, the burrowing owl requires underground burrows or other cavities for nesting during the breeding season and for roosting and cover, year round. Burrows used by the owls are usually dug by other species termed host burrowers. In California, California ground squirrel (*Spermophilus beecheyi*) and round-tailed ground squirrel (*Citellus tereticaudus*) burrows are frequently used by burrowing owls but they may use dens or holes dug by other fossorial species including badger (*Taxidea taxus*), coyote (*Canis latrans*), and fox (e.g., San Joaquin kit fox, *Vulpes macrotis mutica*; Ronan 2002). In some instances, owls have been known to excavate their own burrows (Thompson 1971, Barclay 2007). Natural rock cavities, debris piles, culverts, and pipes also are used for nesting and roosting (Rosenberg et al. 1998). Burrowing owls have been documented using artificial burrows for nesting and cover (Smith and Belthoff, 2003).

Foraging habitat. Foraging habitat is essential to burrowing owls. The following discussion is an excerpt from Gervais et al. (2008):

> "Useful as a rough guide to evaluating project impacts and appropriate mitigation for burrowing owls, adult male burrowing owls home ranges have been documented (calculated by minimum convex polygon) to comprise anywhere from 280 acres in intensively irrigated agroecosystems in Imperial Valley (Rosenberg and Haley 2004) to 450 acres in mixed agricultural lands at Lemoore Naval Air Station, CA (Gervais et al. 2003), to 600 acres in pasture in Saskatchewan, Canada (Haug and Oliphant 1990). But owl home ranges may be much larger, perhaps by an order of magnitude, in non-irrigated grasslands such as at Carrizo Plain, California (Gervais et al. 2008), based on telemetry studies and distribution of nests. Foraging occurs primarily within 600 m of their nests (within approximately 300 acres, based on a circle with a 600 m radius) during the breeding season."

Importance of burrows and adjacent habitat. Burrows and the associated surrounding habitat are essential ecological requisites for burrowing owls throughout the year and especially during the breeding season. During the non-breeding season, burrowing owls remain closely associated with burrows, as they continue to use them as refuge from predators, shelter from weather and roost sites. Resident populations will remain near the previous season's nest burrow at least some of the time (Coulombe 1971, Thomsen 1971, Botelho 1996, LaFever et al. 2008).

In a study by Lutz and Plumpton (1999) adult males and females nested in formerly used sites at similar rates (75% and 63%, respectively) (Lutz and Plumpton 1999). Burrow fidelity has been reported in some areas; however, more frequently, burrowing owls reuse traditional nesting areas without necessarily using the same burrow (Haug et al. 1993, Dechant et al. 1999). Burrow and nest sites are re-used at a higher rate if the burrowing owl has reproduced successfully during the previous year (Haug et al. 1993) and if the number of burrows isn't limiting nesting opportunity.

Burrowing owls may use "satellite" or non-nesting burrows, moving young at 10-14 days, presumably to reduce risk of predation (Desmond and Savidge 1998) and possibly to avoid nest parasites (Dechant et al. 1999). Successful nests in Nebraska had more active satellite burrows within 75 m of the nest burrow than unsuccessful nests (Desmond and Savidge

1999). Several studies have documented the number of satellite burrows used by young and adult burrowing owls during the breeding season as between one and 11 burrows with an average use of approximately five burrows (Thompsen 1984, Haug 1985, Haug and Oliphant 1990). Supporting the notion of selecting for nest sites near potential satellite burrows, Ronan (2002) found burrowing owl families would move away from a nest site if their satellite burrows were experimentally removed through blocking their entrance.

Habitat adjacent to burrows has been documented to be important to burrowing owls. Gervais et al. (2003) found that home range sizes of male burrowing owls during the nesting season were highly variable within but not between years. Their results also suggested that owls concentrate foraging efforts within 600 meters of the nest burrow, as was observed in Canada (Haug and Oliphant 1990) and southern California (Rosenberg and Haley 2004). James et al. (1997), reported habitat modification factors causing local burrowing owl declines included habitat fragmentation and loss of connectivity.

In conclusion, the best available science indicates that essential habitat for the burrowing owl in California must include suitable year-round habitat, primarily for breeding, foraging, wintering and dispersal habitat consisting of short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey within close proximity to the burrow.

Threats to Burrowing Owls in California

Habitat loss. Habitat loss, degradation, and fragmentation are the greatest threats to burrowing owls in California. According to DeSante et al. (2007), “the vast majority of burrowing owls [now] occur in the wide, flat lowland valleys and basins of the Imperial Valley and Great Central Valley [where] for the most part,...the highest rates of residential and commercial development in California are occurring.” Habitat loss from the State’s long history of urbanization in coastal counties has already resulted in either extirpation or drastic reduction of burrowing owl populations there (Gervais et al. 2008). Further, loss of agricultural and other open lands (such as grazed landscapes) also negatively affect owl populations. Because of their need for open habitat with low vegetation, burrowing owls are unlikely to persist in agricultural lands dominated by vineyards and orchards (Gervais et al. 2008).

Control of burrowing rodents. According to Klute et al. (2003), the elimination of burrowing rodents through control programs is a primary factor in the recent and historical decline of burrowing owl populations nationwide. In California, ground squirrel burrows are most often used by burrowing owls for nesting and cover; thus, ground squirrel control programs may affect owl numbers in local areas by eliminating a necessary resource.

Direct mortality. Burrowing owls suffer direct losses from a number of sources. Vehicle collisions are a significant source of mortality especially in the urban interface and where owls nest alongside roads (Haug et al. 1993, Gervais et al. 2008). Road and ditch maintenance, modification of water conveyance structures (Imperial Valley) and discing to control weeds in fallow fields may destroy burrows (Rosenberg and Haley 2004, Catlin and Rosenberg 2006) which may trap or crush owls. Wind turbines at Altamont Pass Wind Resource Area are known to cause direct burrowing owl mortality (Thelander et al. 2003). Exposure to

pesticides may pose a threat to the species but is poorly understood (Klute et al. 2003, Gervais et al. 2008).

Appendix B. Definitions

Some key terms that appear in this document are defined below.

Adjacent habitat means burrowing owl habitat that abuts the area where habitat and burrows will be impacted and rendered non-suitable for occupancy.

Breeding (nesting) season begins as early as 1 February and continues through 31 August (Thomsen 1971, Zarn 1974). The timing of breeding activities may vary with latitude and climatic conditions. The breeding season includes pairing, egg-laying and incubation, and nestling and fledging stages.

Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls or permanently exclude burrowing owls and excavate and close burrows after confirming burrows are empty.

Burrowing owl habitat generally includes, but is not limited to, short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey.

Burrow surrogates include culverts, piles of concrete rubble, piles of soil, burrows created along soft banks of ditches and canals, pipes, and similar structures.

Civil twilight - Morning civil twilight begins when the geometric center of the sun is 6 degrees below the horizon (civil dawn) and ends at sunrise. Evening civil twilight begins at sunset and ends when the geometric center of the sun reaches 6 degrees below the horizon (civil dusk). During this period there is enough light from the sun that artificial sources of light may not be needed to carry on outdoor activities. This concept is sometimes enshrined in laws, for example, when drivers of automobiles must turn on their headlights (called lighting-up time in the UK); when pilots may exercise the rights to fly aircraft. Civil twilight can also be described as the limit at which twilight illumination is sufficient, under clear weather conditions, for terrestrial objects to be clearly distinguished; at the beginning of morning civil twilight, or end of evening civil twilight, the horizon is clearly defined and the brightest stars are visible under clear atmospheric conditions.

Conservation for burrowing owls may include but may not be limited to protecting remaining breeding pairs or providing for population expansion, protecting and enhancing breeding and essential habitat, and amending or augmenting land use plans to stabilize populations and other specific actions to avoid the need to list the species pursuant to California or federal Endangered Species Acts.

Contiguous means connected together so as to form an uninterrupted expanse in space.

Essential habitat includes nesting, foraging, wintering, and dispersal habitat.

Foraging habitat is habitat within the estimated home range of an occupied burrow, supports suitable prey base, and allows for effective hunting.

Host burrowers include ground squirrels, badgers, foxes, coyotes, gophers etc.

Locally significant species is a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or occurring in a unique habitat type.

Non-breeding season is the period of time when nesting activity is not occurring, generally September 1 through January 31, but may vary with latitude and climatic conditions.

Occupied site or occupancy means a site that is assumed occupied if at least one burrowing owl has been observed occupying a burrow within the last three years (Rich 1984). Occupancy of suitable burrowing owl habitat may also be indicated by owl sign including its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance or perch site.

Other impacting activities may include but may not be limited to agricultural practices, vegetation management and fire control, pest management, conversion of habitat from rangeland or natural lands to more intensive agricultural uses that could result in “take”. These impacting activities may not meet the definition of a project under CEQA.

Passive relocation is a technique of installing one-way doors in burrow openings to temporarily or permanently evict burrowing owls and prevent burrow re-occupation.

Peak of the breeding season is between 15 April and 15 July.

Sign includes its tracks, molted feathers, cast pellets (defined as 1-2” long brown to black regurgitated pellets consisting of non-digestible portions of the owls’ diet, such as fur, bones, claws, beetle elytra, or feathers), prey remains, egg shell fragments, owl white wash, nest burrow decoration materials (e.g., paper, foil, plastic items, livestock or other animal manure, etc.), possible owl perches, or other items.

Appendix C. Habitat Assessment and Reporting Details

Habitat Assessment Data Collection and Reporting

Current scientific literature indicates that it would be most effective to gather the data in the manner described below when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report:

1. Conduct at least one visit covering the entire potential project/activity area including areas that will be directly or indirectly impacted by the project. Survey adjoining areas within 150 m (Thomsen 1971, Martin 1973), or more where direct or indirect effects could potentially extend offsite. If lawful access cannot be achieved to adjacent areas, surveys can be performed with a spotting scope or other methods.
2. Prior to the site visit, compile relevant biological information for the site and surrounding area to provide a local and regional context.
3. Check all available sources for burrowing owl occurrence information regionally prior to a field inspection. The CNDDB and BIOS (see References cited) may be consulted for known occurrences of burrowing owls. Other sources of information include, but are not limited to, the Proceedings of the California Burrowing Owl Symposium (Barclay et al. 2007), county bird atlas projects, Breeding Bird Survey records, eBIRD (http://ebird.org), Gervais et al. (2008), local reports or experts, museum records, and other site-specific relevant information.
4. Identify vegetation and habitat types potentially supporting burrowing owls in the project area and vicinity.
5. Record and report on the following information:
   a. A full description of the proposed project, including but not limited to, expected work periods, daily work schedules, equipment used, activities performed (such as drilling, construction, excavation, etc.) and whether the expected activities will vary in location or intensity over the project's timeline;
   b. A regional setting map, showing the general project location relative to major roads and other recognizable features;
   c. A detailed map (preferably a USGS topo 7.5' quad base map) of the site and proposed project, including the footprint of proposed land and/or vegetation-altering activities, base map source, identifying topography, landscape features, a north arrow, bar scale, and legend;
   d. A written description of the biological setting, including location (Section, Township, Range, baseline and meridian), acreage, topography, soils, geographic and hydrologic characteristics, land use and management history on and adjoining the site (i.e., whether it is urban, semi-urban or rural; whether there is any evidence of past or current livestock grazing, mowing, disking, or other vegetation management activities);
   e. An analysis of any relevant, historical information concerning burrowing owl use or occupancy (breeding, foraging, over-wintering) on site or in the assessment area;
   f. Vegetation type and structure (using Sawyer et al. 2009), vegetation height, habitat types and features in the surrounding area plus a reasonably sized (as supported with logical justification) assessment area; (Note: use caution in discounting habitat based on grass height as it can be a temporary condition variable by season and conditions (such as current grazing regime) or may be distributed as a mosaic).

g. The presence of burrowing owl individuals or pairs or sign (see Appendix B);
h. The presence of suitable burrows and/or burrow surrogates (>11 cm in diameter (height and width) and >150 cm in depth) (Johnson et al. 2010), regardless of a lack of any burrowing owl sign and/or burrow surrogates; and burrowing owls and/or their sign that have recently or historically (within the last 3 years) been identified on or adjacent to the site.

Appendix D. Breeding and Non-breeding Season Surveys and Reports

Current scientific literature indicates that it is most effective to conduct breeding and non-breeding season surveys and report in the manner that follows:

Breeding Season Surveys

Number of visits and timing. Conduct 4 survey visits: 1) at least one site visit between 15 February and 15 April, and 2) a minimum of three survey visits, at least three weeks apart, between 15 April and 15 July, with at least one visit after 15 June. Note: many burrowing owl migrants are still present in southwestern California during mid-March, therefore, exercise caution in assuming breeding occupancy early in the breeding season.

Survey method. Rosenberg et al. (2007) confirmed walking line transects were most effective in smaller habitat patches. Conduct surveys in all portions of the project site that were identified in the Habitat Assessment and fit the description of habitat in Appendix A. Conduct surveys by walking straight-line transects spaced 7 m to 20 m apart, adjusting for vegetation height and density (Rosenberg et al. 2007). At the start of each transect and, at least, every 100 m, scan the entire visible project area for burrowing owls using binoculars. During walking surveys, record all potential burrows used by burrowing owls as determined by the presence of one or more burrowing owls, pellets, prey remains, whitewash, or decoration. Some burrowing owls may be detected by their calls, so observers should also listen for burrowing owls while conducting the survey.

Care should be taken to minimize disturbance near occupied burrows during all seasons and not to “flush” burrowing owls especially if predators are present to reduce any potential for needless energy expenditure or burrowing owl mortality. Burrowing owls may flush if approached by pedestrians within 50 m (Conway et al. 2003). If raptors or other predators are present that may suppress burrowing owl activity, return at another time or later date for a follow-up survey.

Check all burrowing owls detected for bands and/or color bands and report band combinations to the Bird Banding Laboratory (BBL). Some site-specific variations to survey methods discussed below may be developed in coordination with species experts and Department staff.

Weather conditions. Poor weather may affect the surveyor’s ability to detect burrowing owls, therefore, avoid conducting surveys when wind speed is >20 km/hr, and there is precipitation or dense fog. Surveys have greater detection probability if conducted when ambient temperatures are >20º C, <12 km/hr winds, and cloud cover is <75% (Conway et al. 2008).

Time of day. Daily timing of surveys varies according to the literature, latitude, and survey method. However, surveys between morning civil twilight and 10:00 AM and two hours before sunset until evening civil twilight provide the highest detection probabilities (Barclay pers. comm. 2012, Conway et al. 2008).

Alternate methods. If the project site is large enough to warrant an alternate method, consult current literature for generally accepted survey methods and consult with the Department on the proposed survey approach.

Additional breeding season site visits. Additional breeding season site visits may be necessary, especially if non-breeding season exclusion methods are contemplated. Detailed information, such as approximate home ranges of each individual or of family units, as well as foraging areas as related to the proposed project, will be important to document for evaluating impacts, planning avoidance measure implementation and for mitigation measure performance monitoring.

Adverse conditions may prevent investigators from determining presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owls in any given year. Any such conditions should be identified and discussed in the survey report. Visits to the site in more than one year may increase the likelihood of detection. Also, visits to adjacent known occupied habitat may help determine appropriate survey timing.

Given the high site fidelity shown by burrowing owls (see Appendix A, Importance of burrows), conducting surveys over several years may be necessary when project activities are ongoing, occur annually, or start and stop seasonally. (See Negative surveys).

Non-breeding Season Surveys

If conducting non-breeding season surveys, follow the methods described above for breeding season surveys, but conduct at least four (4) visits, spread evenly, throughout the non-breeding season. Burrowing owl experts and local Department staff are available to assist with interpreting results.

Negative Surveys

Adverse conditions may prevent investigators from documenting presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owl in any given year. Discuss such conditions in the Survey Report. Visits to the site in more than one year increase the likelihood of detection and failure to locate burrowing owls during one field season does not constitute evidence that the site is no longer occupied, particularly if adverse conditions influenced the survey results. Visits to other nearby known occupied sites can affirm whether the survey timing is appropriate.

Take Avoidance Surveys

Field experience from 1995 to present supports the conclusion that it would be effective to complete an initial take avoidance survey no less than 14 days prior to initiating ground disturbance activities using the recommended methods described in the Detection Surveys section above. Implementation of avoidance and minimization measures would be triggered by positive owl presence on the site where project activities will occur. The development of avoidance and minimization approaches would be informed by monitoring the burrowing owls.

Burrowing owls may re-colonize a site after only a few days. Time lapses between project activities trigger subsequent take avoidance surveys including but not limited to a final survey conducted within 24 hours prior to ground disturbance.

Survey Reports

Report on the survey methods used and results including the information described in the Summary Report and include the reports within the CEQA documentation:

1. Date, start and end time of surveys including weather conditions (ambient temperature, wind speed, percent cloud cover, precipitation and visibility);
2. Name(s) of surveyor(s) and qualifications;
3. A discussion of how the timing of the survey affected the comprehensiveness and detection probability;
4. A description of survey methods used including transect spacing, point count dispersal and duration, and any calls used;
5. A description and justification of the area surveyed relative to the project area;
6. A description that includes: number of owls or nesting pairs at each location (by nestlings, juveniles, adults, and those of an unknown age), number of burrows being used by owls, and burrowing owl sign at burrows. Include a description of individual markers, such as bands (numbers and colors), transmitters, or unique natural identifying features. If any owls are banded, request documentation from the BBL and bander to report on the details regarding the known history of the banded burrowing owl(s) (age, sex, origins, whether it was previously relocated) and provide with the report if available;
7. A description of the behavior of burrowing owls during the surveys, including feeding, resting, courtship, alarm, territorial defense, and those indicative of parents or juveniles;
8. A list of possible burrowing owl predators present and documentation of any evidence of predation of owls;
9. A detailed map (1:24,000 or closer to show details) showing locations of all burrowing owls, potential burrows, occupied burrows, areas of concentrated burrows, and burrowing owl sign. Locations documented by use of global positioning system (GPS) coordinates must include the datum in which they were collected. The map should include a title, north arrow, bar scale and legend;
10. Signed field forms, photos, etc., as appendices to the field survey report;
11. Recent color photographs of the proposed project or activity site; and
12. Original CNDDB Field Survey Forms should be sent directly to the Department's CNDDB office, and copies should be included in the environmental document as an appendix. (http://www.dfg.ca.gov/bdb/html/cnddb.html).

Appendix E. Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans

Whereas the Department does not recommend exclusion and burrow closure, current scientific literature and experience from 1995 to present, indicate that the following example components for burrowing owl artificial burrow and exclusion plans, combined with consultation with the Department to further develop these plans, would be effective.

Artificial Burrow Location

If a burrow is confirmed occupied on-site, artificial burrow locations should be appropriately located and their use should be documented taking into consideration:

1. A brief description of the project and project site pre-construction;
2. The mitigation measures that will be implemented;
3. Potential conflicting site uses or encumbrances;
4. A comparison of the occupied burrow site(s) and the artificial burrow site(s) (e.g., vegetation, habitat types, fossorial species use in the area, and other features);
5. Artificial burrow(s) proximity to the project activities, roads and drainages;
6. Artificial burrow(s) proximity to other burrows and entrance exposure;
7. Photographs of the site of the occupied burrow(s) and the artificial burrows;
8. Map of the project area that identifies the burrow(s) to be excluded as well as the proposed sites for the artificial burrows;
9. A brief description of the artificial burrow design;
10. Description of the monitoring that will take place during and after project implementation including information that will be provided in a monitoring report.
11. A description of the frequency and type of burrow maintenance.

Exclusion Plan

An Exclusion Plan addresses the following including but not limited to:

1. Confirm by site surveillance that the burrow(s) is empty of burrowing owls and other species preceding burrow scoping;
2. Type of scope and appropriate timing of scoping to avoid impacts;
3. Occupancy factors to look for and what will guide determination of vacancy and excavation timing (one-way doors should be left in place 48 hours to ensure burrowing owls have left the burrow before excavation, visited twice daily and monitored for evidence that owls are inside and can't escape i.e., look for sign immediately inside the door).
4. How the burrow(s) will be excavated. Excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow);
5. Removal of other potential owl burrow surrogates or refugia on site;
6. Photographing the excavation and closure of the burrow to demonstrate success and sufficiency;

7. Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take;
8. How the impacted site will continually be made inhospitable to burrowing owls and fossorial mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until development is complete.

Appendix F. Mitigation Management Plan and Vegetation Management Goals

Mitigation Management Plan

A mitigation site management plan will help ensure the appropriate implementation and maintenance for the mitigation site and persistence of the burrowing owls on the site. For an example to review, refer to Rosenberg et al. (2009). The current scientific literature and field experience from 1995 to present indicate that an effective management plan includes the following:

1. Mitigation objectives;
2. Site selection factors (including a comparison of the attributes of the impacted and conserved lands) and baseline assessment;
3. Enhancement of the conserved lands (enhancement of reproductive capacity, enhancement of breeding areas and dispersal opportunities, and removal or control of population stressors);
4. Site protection method and prohibited uses;
5. Site manager roles and responsibilities;
6. Habitat management goals and objectives:
    a. Vegetation management goals,
        i. Vegetation management tools:
            1. Grazing
            2. Mowing
            3. Burning
            4. Other
    b. Management of ground squirrels and other fossorial mammals,
    c. Semi-annual and annual artificial burrow cleaning and maintenance,
    d. Non-natives control – weeds and wildlife,
    e. Trash removal;
7. Financial assurances:
    a. Property analysis record or other financial analysis to determine long-term management funding,
    b. Funding schedule;
8. Performance standards and success criteria;
9. Monitoring, surveys and adaptive management;
10. Maps;
11. Annual reports.

Vegetation Management Goals

- Manage vegetation height and density (especially in immediate proximity to burrows). Suitable vegetation structure varies across sites and vegetation types, but should generally be at the average effective vegetation height of 4.7 cm (Green and Anthony 1989) and <13 cm average effective vegetation height (MacCracken et al. 1985*a)*.
- Employ experimental prescribed fires (controlled, at a small scale) to manage vegetation structure;

- Vegetation reduction or ground disturbance timing, extent, and configuration should avoid take. While local ordinances may require fire prevention through vegetation management, activities like disking, mowing, and grading during the breeding season can result in take of burrowing owls and collapse of burrows, causing nest destruction. Consult the take avoidance surveys section above for pre-management avoidance survey recommendations;
- Promote natural prey distribution and abundance, especially in proximity to occupied burrows; and
- Promote self-sustaining populations of host burrowers by limiting or prohibiting lethal rodent control measures and by ensuring food availability for host burrowers through vegetation management.

Refer to Rosenberg et al. (2009) for a good discussion of managing grasslands for burrowing owls.

Mitigation Site Success Criteria

In order to evaluate the success of mitigation and management strategies for burrowing owls, monitoring is required that is specific to the burrowing owl management plan. Given limited resources, Barclay et al. (2011) suggests managers focus on accurately estimating annual adult owl populations rather than devoting time to estimating reproduction, which shows high annual variation and is difficult to accurately estimate. Therefore, the key objective will be to determine accurately the number of adult burrowing owls and pairs, and if the numbers are maintained. A frequency of 5-10 years for surveys to estimate population size may suffice if there are no changes in the management of the nesting and foraging habitat of the owls.

Effective monitoring and evaluation of off-site and on-site mitigation management success for burrowing owls includes (Barclay, pers. comm.):

- Site tenacity;
- Number of adult owls present and reproducing;
- Colonization by burrowing owls from elsewhere (by band re-sight);
- Evidence and causes of mortality;
- Changes in distribution; and
- Trends in stressors.

Appendix K Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley and Staff Report Regarding Mitigation for Impacts to Swainson's Hawk in the Central Valley of California

RECOMMENDED TIMING AND METHODOLOGY FOR SWAINSON'S HAWK NESTING SURVEYS IN CALIFORNIA'S CENTRAL VALLEY

Swainson's Hawk Technical Advisory Committee

May 31, 2000

This set of survey recommendations was developed by the Swainson's Hawk Technical Advisory Committee (TAC) to maximize the potential for locating nesting Swainson's hawks, and thus reducing the potential for nest failures as a result of project activities/disturbances. The combination of appropriate surveys, risk analysis, and monitoring has been determined to be very effective in reducing the potential for project-induced nest failures. As with most species, when the surveyor is in the right place at the right time, Swainson's hawks may be easy to observe; but some nest sites may be very difficult to locate, and even the most experienced surveyors have missed nests, nesting pairs, mis-identified a hawk in a nest, or believed incorrectly that a nest had failed. There is no substitute for specific Swainson's hawk survey experience and acquiring the correct search image.

METHODOLOGY

Surveys should be conducted in a manner that maximizes the potential to observe the adult Swainson's hawks, as well as the nest/chicks second. To meet the California Department of Fish and Game's (CDFG) recommendations for mitigation and protection of Swainson's hawks, surveys should be conducted for a ½ mile radius around all project activities, and if active nesting is identified within the ½ mile radius, consultation is required. In general, the TAC recommends this approach as well.

Minimum Equipment

Minimum survey equipment includes a high-quality pair of binoculars and a high quality spotting scope. Surveying even the smallest project area will take hours, and poor optics often result in eye-strain and difficulty distinguishing details in vegetation and subject birds. Other equipment includes good maps, GPS units, flagging, and notebooks.

Walking vs Driving

Driving (car or boat) or "windshield surveys" are usually preferred to walking if an adequate roadway is available through or around the project site. While driving, the observer can typically approach much closer to a hawk without causing it to fly. Although it might appear that a flying bird is more visible, they often fly away from the observer using trees as screens; and it is difficult to determine from where a flying bird came. Walking surveys are useful in locating a nest after a nest territory is identified, or when driving is not an option.

Angle and Distance to the Tree

Surveying subject trees from multiple angles will greatly increase the observer's chance of detecting a nest or hawk, especially after trees are fully leafed and when surveying multiple trees

in close proximity. When surveying from an access road, survey in both directions. Maintaining a distance of 50 meters to 200 meters from subject trees is optimal for observing perched and flying hawks without greatly reducing the chance of detecting a nest/young: Once a nesting territory is identified, a closer inspection may be required to locate the nest.

Speed
Travel at a speed that allows for a thorough inspection of a potential nest site. Survey speeds should not exceed 5 miles per hour to the greatest extent possible. If the surveyor must travel faster than 5 miles per hour, stop frequently to scan subject trees.

Visual and Aural Ques
Surveys will be focused on both observations and vocalizations. Observations of nests, perched adults, displaying adults, and chicks during the nesting season are all indicators of nesting Swainson's hawks. In addition, vocalizations are extremely helpful in locating nesting territories. Vocal communication between. hawks is frequent during territorial displays; during courtship and mating; through the nesting period as mates notify each other that food is available or that a threat exists; and as older chicks and fledglings beg for food.

Distractions
Minimize distractions while surveying. Although two pairs of eyes may be better than one pair at times, conversation may limit focus. Radios should be off, not only are they distracting, they may cover a hawk's call.

Notes and Species Observed
Take thorough field notes. Detailed notes and maps of the location of observed Swainson's hawk nests are essential for filling gaps in the Natural Diversity Data Base; please report all observed nest sites. Also document the occurrence of nesting great homed owls, red-tailed hawks, red-shouldered hawks and other potentially competitive species. These species will infrequently nest within 100 yards of each other, so the presence of one species will not necessarily exclude another.

TIMING

To meet **the minimum level** of protection for the species, surveys should be completed for **at least** the two survey periods immediately prior to a project's initiation. For example, if a project is scheduled to begin on June 20, you should complete 3 surveys in Period III and 3 surveys in Period V. However, it is always recommended that surveys be completed in Periods II, III and V. **Surveys should not be conducted in Period IV.**

The survey periods are defined by the timing of migration, courtship, and nesting in a "typical" year for the majority of Swainson's hawks from San Joaquin County to Northern Yolo County. Dates should be adjusted in consideration of early and late nesting seasons, and geographic differences (northern nesters tend to nest slightly later, etc). If you are not sure, contact a TAC member or CDFG biologist.

Survey dates **Justification and search image**	**Survey time**	**Number of Surveys**
I. *January-March 20 (recommended optional)*	*All day*	*1*

Prior to Swainson's hawks returning, it may be helpful to survey the project site to determine potential nest locations. Most nests are easily observed from relatively long distances, giving the surveyor the opportunity to identify potential nest sites, as well as becoming familiar with the project area. It also gives the surveyor the opportunity to locate and map competing species nest sites such as great homed owls from February on, and red-tailed hawks from March on. After March 1, surveyors are likely to observe Swainson's hawks staging in traditional nest territories.

II. *March 20 to April 5*	*Sunrise to 1000* *1600 to sunset*	*3*

Most Central Valley Swainson's hawks return by April 1, and immediately begin occupying their traditional nest territories. For those few that do not return by April 1, there are often hawks ("floaters") that act as place-holders in traditional nest sites; they are birds that do not have mates, but temporarily attach themselves to traditional territories and/or one of the site's "owners." Floaters are usually displaced by the territories' owner(s) if the owner returns.

Most trees are leafless and are relatively transparent; it is easy to observe old nests, staging birds, and competing species. The hawks are usually in their territories during the survey hours, but typically soaring and foraging in the mid-day hours. Swainson's hawks may often be observed involved in territorial and courtship displays, and circling the nest territory. Potential nest sites identified by the observation of staging Swainson's hawks will usually be active territories during that season, although the pair may not successfully nest/reproduce that year.

III. *April 5 to April 20*	*Sunrise to 1200* *1630 to Sunset*	***3***

Although trees are much less transparent at this time, 'activity at the nest site increases significantly. Both males and females are actively nest building, visiting their selected site frequently. Territorial and courtship displays are increased, as is copulation. The birds tend to vocalize often, and nest locations are most easily identified. This period may require a great deal of "sit and watch" surveying.

IV. *April 21 to June 10*	*Monitoring known nest sites only* ***Initiating Surveys is not recommended***	

Nests are extremely difficult to locate this time of year, and even the most experienced surveyor will miss them, especially if the previous surveys have not been done. During this phase of nesting, the female Swainson's hawk is in brood position, very low in the nest, laying eggs, incubating, or protecting the newly hatched and vulnerable chicks; her head may or may not be visible. Nests are often well-hidden, built into heavily vegetated sections of trees or in clumps of mistletoe, making them all but invisible. Trees are usually not viewable from all angles, which may make nest observation impossible.

Following the male to the nest may be the only method to locate it, and the male will spend hours away from the nest foraging, soaring, and will generally avoid drawing attention to the nest site. Even if the observer is fortunate enough to see a male returning with food for the female, if the female determines it is not safe she will not call the male in, and he will not approach the nest; this may happen if the observer, or others, are too close to the nest or if other threats, such as rival hawks, are apparent to the female or male.

V. ***June 10 to JuIy 30 (post-fledging)*** ***Sunrise to 1200*** ***3***
1600 to sunset

Young are active and visible, and relatively safe without parental protection. Both adults make numerous trips to the nest and are often soaring above, or perched near or on the nest tree. The location and construction of the nest may still limit visibility of the nest, young, ‘and adults.

DETERMINING A PROJECT'S POTENTIAL
FOR IMPACTING SWAINSON'S HAWKS

LEVEL OF RISK	REPRODUCTIVE SUCCESS (Individuals)	LONGTERM SURVIVABILITY (Population)	NORMAL SITE CHARACTERISTICS (Daily Average)	NEST MONI-TORING
HIGH	Direct physical contact with the nest tree while the birds are on eggs or protecting young. (Helicopters in close proximity)	Loss of available foraging area. Loss of nest trees.	Little human-created noise, little human use: nest is well away from dwellings, equipment yards, human access areas, etc. *Do not include general cultivation practices in evaluation.*	MORE
	Loss of nest tree after nest building is begun prior to laying eggs.	Loss of potential nest trees.		
	Personnel within 50 yards of nest tree (out of vehicles) for extended periods while birds are on eggs or protecting young that are < 10 days old.	Cumulative: Multi-year, multi-site projects with substantial noise/personnel disturbance.		
	Initiating construction activities (machinery and personnel) within 200 yards of the nest after eggs are laid and before young are > 10 days old.	Cumulative: Single-season projects with substantial noise/personnel disturbance that is greater than or significantly different from the daily norm.		
	Heavy machinery only working within 50 yards of nest.		Substantial human-created noise and occurrence: nest is near roadways, well-used waterways, active airstrips, areas that have high human use. *Do not include general cultivation practices in evaluation.*	
	Initiating construction activities within 200 yards of nest before nest building begins or after young > 10 days old.	Cumulative: Single-season projects with activities that "blend" well with site's "normal' activities.		
LOW	All project activities (personnel and machinery) greater than 200 yards from nest.			LESS

State of California

Nongame Bird and Mammal Section Report #94.18

Memorandum

To : Div. Chiefs - IFD, BDD, NHD, WMD
Reg. Mgrs. - Regions 1, 2, 3, 4

Date : November 8, 1994

From : Department of Fish and Game

Subject : Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California

I am hereby transmitting the Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California for your use in reviewing projects (California Environmental Quality Act [CEQA] and others) and in developing 2081 Management Authorizations and 2090 Biological Opinions which may affect Swainson's hawk habitat in the Central Valley. The staff report has been developed during the last 18 months by the Environmental Services Division (ESD) in cooperation with the Wildlife Management Division (WMD) and Regions 1, 2, and 4. It has been sent out for public review on several occasions and redrafted as appropriate.

Either the mitigation measures in the staff report may be used or project specific measures may be developed. Alternative project specific mitigation measures proposed by the Department Divisions/Regions or by project sponsors will also be considered. However, such mitigation measures must be submitted to ESD for review. The review process will focus on the consistency of the proposed measure with Department, Fish and Game Commission, and legislative policy and with laws regarding raptors and listed species. ESD will coordinate project specific mitigation measure review with WMD.

If you have any questions regarding the report, please contact Mr. Ron Rempel, Program Supervisor, Habitat Conservation Planning and Endangered Species Permitting, Environmental Services Division at (916) 654-9980.

COPY Original signed by
A. Petrovich, Jr.
For
Boyd Gibbons
Direction

Enclosure

cc: Mr. Ron Rempel
Department of Fish and Game
Sacramento

file; d, exfile, esd, chron
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Staff Report regarding Mitigation
for Impacts to Swainson's Hawks (*Buteo swainsoni*)
in the Central Valley of California

INTRODUCTION

The Legislature and the Fish and Game Commission have developed the policies, standards and regulatory mandates which, if implemented, are intended to help stabilize and reverse dramatic population declines of threatened and endangered species. In order to determine how the Department of Fish and Game (Department) could judge the adequacy of mitigation measures designed to offset impacts to Swainson's hawks in the Central Valley, Staff (WMD, ESD and Regions) has prepared this report. To ensure compliance with legislative and Commission policy, mitigation requirements which are consistent with this report should be incorporated into: (1) Department comments to Lead Agencies and project sponsors pursuant to the California Environmental Quality Act (CEQA); (2) Fish and Game Code Section 2081 Management Authorizations (Management Authorizations); and (3) Fish and Game Code Section 2090 Consultations with State CEQA Lead Agencies.

The report is designed to provide the Department (including regional offices and divisions), CEQA Lead Agencies and project proponents the context in which the Environmental Services Division (ESD) will review proposed project specific mitigation measures. This report also includes "model" mitigation measures which have been judged to be consistent with policies, standards and legal mandates of the Legislature and Fish and Game Commission. Alternative mitigation measures, tailored to specific projects, may be developed if consistent with this report. Implementation of mitigation measures consistent with this report are intended to help achieve the conservation goals for the Swainson's hawk and should complement multi-species habitat conservation planning efforts currently underway.

The Department is preparing a recovery plan for the species and it is anticipated that this report will be revised to incorporate recovery plan goals. It is anticipated that the recovery plan will be completed by the end of 1995. The Swainson's hawk recovery plan will establish criteria for species recovery through preservation of existing habitat, population expansion into former habitat, recruitment of young into the population, and other specific recovery efforts.

During project review the Department should consider whether a proposed project will adversely affect suitable foraging habitat within a ten (10) mile radius of an active (used during one or more of the last 5 years) Swainson's hawk nest(s). Suitable Swainson's hawk foraging habitat will be those habitats and crops identified in Bechard (1983), Bloom (1980), and Estep (1989). The following vegetation types/agricultural crops are considered small mammal and insect foraging habitat for Swainson's hawks:

- alfalfa
- fallow fields
- beet, tomato, and other low-growing row or field crops
- dry-land and irrigated pasture

- rice land (when not flooded)
- cereal grain crops (including corn after harvest)

The ten mile radius standard is the flight distance between active (and successful) nest sites and suitable foraging habitats, as documented in telemetry studies (Estep 1989, Babcock 1993). Based on the ten mile radius, new development projects which adversely modify nesting and/or foraging habitat should mitigate the project's impacts to the species. The ten mile foraging radius recognizes a need to strike a balance between the biological needs of reproducing pairs (including eggs and nestlings) and the economic benefit of developments) consistent with Fish and Game Code Section 2053.

Since over 95% of Swainson's hawk nests occur on private land, the Department's mitigation program should include incentives that preserve agricultural lands used for the production of crops, which are compatible with Swainson's hawk foraging needs, while providing an opportunity for urban development and other changes in land use adjacent to existing urban areas.

LEGAL STATUS

Federal

The Swainson's hawk is a migratory bird species protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in Section 50 of the Code of Federal Regulations (C.F.R.) Part 10, including feathers or other parts, nests, eggs or products, except as allowed by implementing regulations (50 C.F.R. 21).

State

The Swainson's hawk has been listed as a threatened species by the California Fish and Game Commission pursuant to the California Endangered Species Act (CESA), see Title 14, California Code of Regulations, Section 670.5(b)(5)(A).

LEGISLATIVE AND COMMISSION POLICIES, LEGAL MANDATES AND STANDARDS

The FGC policy for threatened species is, in part, to: "Protect and preserve all native species ... and their habitats...." This policy also directs the Department to work with all interested persons to protect and preserve sensitive resources and their habitats. Consistent with this policy and direction, the Department is enjoined to implement measures that assure protection for the Swainson's hawk.

The California State Legislature, when enacting the provisions of CESA, made the following findings and declarations in Fish and Game Code Section 2051:

> a) "Certain species of fish, wildlife, and plants have been rendered extinct as a consequence of man's activities, untempered by adequate concern and conservation";
>
> b) "Other species of fish, wildlife, and plants are in danger of, or threatened with, extinction because their habitats are threatened with destruction, adverse modification, or severe curtailment because of overexploitation, disease, predation, or other factors (emphasis added)";and
>
> c) "These species of fish, wildlife, and plants are of ecological, educational, historical, recreational, esthetic, economic, and scientific value to the people of this state, and the conservation, protection, and enhancement of these species and their habitat is of statewide concern" (emphasis added).

The Legislature also proclaimed that it "is the policy of the state to conserve, protect, restore, and enhance any endangered or threatened species and its habitat and that it is the intent of the Legislature, consistent with conserving the species, to acquire lands for habitat for these species" (emphasis added).

Section 2053 of the Fish and Game Code states, in part, "it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species and or its habitat which would prevent jeopardy" (emphasis added).

Section 2054 states "The Legislature further finds and declares that, in the event specific economic, social, and or other conditions make infeasible such alternatives, individual projects may be approved if appropriate mitigation and enhancement measures are provided" (emphasis added).

Loss or alteration of foraging habitat or nest site disturbance which results in:

(1) nest abandonment; (2) loss of young; (3) reduced health and vigor of eggs and/or nestlings (resulting in reduced survival rates), may ultimately result in the take (killing) of nestling or fledgling Swainson's hawks incidental to otherwise lawful activities. The taking of Swainson's hawks in this manner can be, a violation of Section 2080 of the Fish and Game Code. This interpretation of take has been judicially affirmed by the landmark appellate court decision pertaining to CESA (DFG v. ACID, 8 CA App.4, 41554). The essence of the decision emphasized that the intent and purpose of CESA applies to all activities that take or kill endangered or threatened species, even when the taking is incidental to otherwise legal activities. To avoid potential violations of Fish and Game Code Section 2080, the Department recommends and encourages project sponsors to obtain 2081 Management Authorizations for their projects.

Although this report has been prepared to assist the Department in working with the development community, the prohibition against take (Fish and Game Code Section 2080) applies to all persons, including those engaged in agricultural activities and routine maintenance of facilities. In addition, sections 3503, 3503.5, and 3800 of the Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs.

To avoid potential violation of Fish and Game Code Section 2080 (i.e. killing of a listed species), project-related disturbance at active Swainson's hawk nesting sites should be reduced or eliminated during critical phases of the nesting cycle (March 1 - September 15 annually). Delineation of specific activities which could cause nest abandonment (take) of Swainson's hawk during the nesting period should be done on a case-by-case basis.

CEQA requires a mandatory findings of significance if a project's impacts to threatened or endangered species are likely to occur (Sections 21001 (c), 21083, Guidelines Sections 15380, 15064, 15065). Impacts must be avoided or mitigated to less than significant levels unless the CEQA Lead Agency makes and supports findings of Overriding Consideration. The CEQA Lead Agency's Findings of Overriding Consideration does not eliminate the project sponsor's obligation to comply with Fish and Game Code Section 2080.

NATURAL HISTORY

The Swainson's hawk (Buteo swainsoni) is a large, broad winged buteo which frequents open country. They are about the same size as a red-tailed hawk (Buteo jatnaicensis), but trimmer, weighing approximately 800-1100 grams (1.75 - 2 lbs). They have about a 125 cm. (4+foot) wingspan. The basic body plumage may be highly variable and is characterized by several color morphs - light, dark, and rufous. In dark phase birds, the entire body of the bird may be sooty black. Adult birds generally have dark backs. The ventral or underneath sections may be light with a characteristic dark, wide "bib" from the lower throat down to the upper breast, light colored wing linings and pointed wing tips. The tail is gray ventrally with a subterminal dusky band, and narrow, less conspicuous barring proximally. The sexes are similar in appearance; females however, are slightly larger and heavier than males, as is the case in most sexually dimorphic raptors. There are no recognized subspecies (Palmer 1988).

The Swainson's hawk is a long distance migrator. The nesting grounds occur in northwestern Canada, the western U.S., and Mexico and most populations migrate to wintering grounds in the open pampas and agricultural areas of South America (Argentina, Uruguay, southern Brazil). The species is included among the group of birds known as "neotropical migrants". Some individuals or small groups (20-30 birds) may winter in the U.S., including California (Delta Islands). This round trip journey may exceed 14,000 miles. The birds return to the nesting grounds and establish nesting territories in early March.

Swainson's hawks are monogamous and remain so until the loss of a mate (Palmer 1988). Nest construction and courtship continues through April. The clutch (commonly 3-4 eggs) is generally laid in early April to early May, but may occur later. Incubation lasts 34-35 days, with both parents participating in the brooding of eggs and young. The young fledge (leave the nest) approximately 42-44 days after hatching and remain with their parents until they depart in the fall. Large groups (up to 100+ birds) may congregate in holding areas in the fall and may exhibit a delayed migration depending upon forage availability. The specific purpose of these congregation areas is as yet unknown, but is likely related to: increasing energy reserves for migration; the timing of migration; aggregation into larger migratory groups (including assisting the young in learning migration routes); and providing a pairing and courtship opportunity for unattached adults.

Foraging Requirements

Swainson's hawk nests in the Central Valley of California are generally found in scattered trees or along riparian systems adjacent to agricultural fields or pastures. These open fields and pastures are the primary foraging areas. Major prey items for Central Valley birds include: California voles (*Microtus californicus*), valley pocket gophers (*Thomomys bottae*), deer mice (*Peromyscus maniculatus*), California ground squirrels (*Spermophilus beecheyi*), mourning doves (*Zenaida macroura*), ring-necked pheasants (*Phasianus colchicus*), meadowlarks (*Sturnella neglecta*), other passerines, grasshoppers (*Conocephalinae sp*.), crickets (*Gryllidae sp*.), and beetles (Estep 1989). Swainson's hawks generally search for prey by soaring in open country and agricultural fields similar to northern hariers (*Circus cyaneus*) and ferruginous hawks (*Buteo regalis*). Often several hawks may be seen foraging together following tractors or other farm equipment capturing prey escaping from farming operations. During the breeding season, Swainson's hawks eat mainly vertebrates (small rodents and reptiles), whereas during migration vast numbers of insects are consumed (Palmer 1988).

Department funded research has documented the importance of suitable foraging habitats (e.g., annual grasslands, pasture lands, alfalfa and other hay crops, and combinations of hay, grain and row crops) within an energetically efficient flight distance from active Swainson's hawk nests (Estep pers. comm.). Recent telemetry studies to determine foraging requirements have shown that birds may use in excess of 15,000 acres of habitat or range up to 18.0 miles from the nest in search of prey (Estep 1989, Babcock 1993). The prey base (availability and abundance) for the species is highly variable from year to year, with major prey population (small mammals and insects) fluctuations occurring based on rainfall patterns, natural cycles and agricultural cropping and harvesting patterns. Based on these variables, significant acreages of potential foraging habitat (primarily agricultural lands) should be preserved per nesting pair (or aggregation of

nesting pairs) to avoid jeopardizing existing populations. Preserved foraging areas should be adequate to allow additional Swainson's hawk nesting pairs to successfully breed and use the foraging habitat during good prey production years.

Suitable foraging habitat is necessary to provide an adequate energy source for breeding adults, including support of nestlings and fledglings. Adults must achieve an energy balance between the needs of themselves and the demands of nestlings and fledglings, or the health and survival of both may be jeopardized. If prey resources are not sufficient, or if adults must hunt long distances from the nest site, the energetics of the foraging effort may result in reduced nestling vigor with an increased likelihood of disease and/or starvation. In more extreme cases, the breeding pair, in an effort to assure their own existence, may even abandon the nest and young (Woodbridge 1985).

Prey abundance and availability is determined by land and farming patterns including crop types, agricultural practices and harvesting regimes. Estep (1989) found that 73.4% of observed prey captures were in fields being harvested, disced, mowed, or irrigated. Preferred foraging habitats for Swainson's hawks include:

- alfalfa;
- fallow fields;
- beet, tomato, and other low-growing row or field crops;
- dry-land and irrigated pasture;
- rice land (during the non-flooded period); and
- cereal grain crops (including corn after harvest).

Unsuitable foraging habitat types include crops where prey species (even if present) are not available due to vegetation characteristics (e.g. vineyards, mature orchards, and cotton fields, dense vegetation).

Nesting Requirements

Although the Swainson's hawk's current nesting habitat is fragmented and unevenly distributed, Swainson's hawks nest throughout most of the Central Valley floor. More than 85% of the known nests in the Central Valley are within riparian systems in Sacramento, Sutter, Yolo, and San Joaquin counties. Much of the potential nesting habitat remaining in this area is in riparian forests, although isolated and roadside trees are also used. Nest sites are generally adjacent to or within easy flying distance to alfalfa or hay fields or other habitats or agricultural crops which provide an abundant and available prey source. Department research has shown that valley oaks (Quercus lobata), Fremont's cottonwood (Populus fremontii), willows (Salix spp.), sycamores (Platanus spp.), and walnuts (juglans spp.) are the preferred nest trees for Swainson's hawks (Bloom 1980, Schlorff and Bloom 1983, Estep 1989).

Fall and Winter Migration Habitats

During their annual fall and winter migration periods, Swainson's hawks may congregate in large groups (up to 100+ birds). Some of these sites may be used during delayed migration periods lasting up to three months. Such sites have been identified in Yolo, Tulare, Kern and San Joaquin counties and protection is needed for these critical foraging areas which support birds during their long migration.

Historical and Current Population Status

The Swainson's hawk was historically regarded as one of the most common and numerous raptor species in the state, so much so that they were often not given special mention in field notes. The breeding population has declined by an estimated 91% in California since the turn of the century (Bloom 1980). The historical Swainson's hawk population estimates are based on current densities and extrapolated based on the historical amount of available habitat. The historical population estimate is 4,284-17,136 pairs (Bloom 1980). In 1979, approximately 375 (± 50) breeding pairs of Swainson's hawks were estimated in California, and 280 (75%) of those pairs were estimated to be in the Central Valley (Bloom 1980). In 1988, 241 active breeding pairs were found in the Central Valley, with an additional 78 active pairs known in northeastern California. The 1989 population estimate was 430 pairs for the Central Valley and 550 pairs statewide (Estep, 1989). This difference in population estimates is probably a result of increased survey effort rather than an actual population increase.

Reasons for decline

The dramatic Swainson's hawk population decline has been attributed to loss of native nesting and foraging habitat, and more recently to the loss of suitable nesting trees and the conversion of agricultural lands. Agricultural lands have been converted to urban land uses and incompatible crops. In addition, pesticides, shooting, disturbance at the nest site, and impacts on wintering areas may have contributed to their decline. Although losses on the wintering areas in South America may occur, they are not considered significant since breeding populations outside of California are stable. The loss of nesting habitat within riparian areas has been accelerated by flood control practices and bank stabilization programs. Smith (1977) estimated that in 1850

over 770,000 acres of riparian habitat were present in the Sacramento Valley. By the mid-1980s, Warner and Hendrix (1984) estimated that there was only 120,000 acres of riparian habitat remaining in the Central Valley (Sacramento and San Joaquin Valleys combined). Based on Warner and Hendrix's estimates approximately 93% of the San Joaquin Valley and 73% of the Sacramento Valley riparian habitat has been eliminated since 1850.

MANAGEMENT STRATEGIES

Management and mitigation strategies for the Central Valley population of the Swainson's hawk should ensure that:

- suitable nesting habitat continues to be available (this can be accomplished by protecting existing nesting habitat from destruction or disturbance and by increasing the number of suitable nest trees); and

- foraging habitat is available during the period of the year when Swainson's hawks are present in the Central Valley (this should be accomplished by maintaining or creating adequate and suitable foraging habitat in areas of existing and potential nest sites and along migratory routes within the state).

A key to the ultimate success in meeting the Legislature's goal of maintaining habitat sufficient to preserve this species is the implementation of these management strategies in cooperation with project sponsors and local, state and federal agencies.

DEPARTMENT'S ROLES AND RESPONSIBILITIES IN PROJECT CONSULTATION AND ADMINISTRATION OF CEQA AND THE FISH AND GAME CODE

The Department, through its administration of the Fish and Game Code and its trust responsibilities, should continue its efforts to minimize further habitat destruction and should seek mitigation to offset unavoidable losses by (1) including the mitigation measures in this document in CEQA comment letters and/or as management conditions in Department issued Management Authorizations or (2) by developing project specific mitigation measures (consistent with the Commission's and the Legislature's mandates) and including them in CEQA comment letters and/or as management conditions in Fish and Game Code Section 2081 Management Authorizations issued by the Department and/or in Fish and Game Code Section 2090 Biological Opinions.

The Department should submit comments to CEQA Lead Agencies on all projects which adversely affect Swainson's hawks. CEQA requires a mandatory findings of significance if a project's impacts to threatened or endangered species are likely to occur (Sections 21001 fc), 21083. Guidelines 15380, 15064, 15065). Impacts must be: (1) avoided; or (2) appropriate mitigation must be provided to reduce impacts to less than significant levels; or (3) the lead agency must make and support findings of overriding consideration. If the CEQA Lead Agency makes a Finding of Overriding Consideration, it does not eliminate the project sponsor's obligation to comply with the take prohibitions of Fish and Game Code Section 2080. Activities

which result in (1) nest abandonment; (2) starvation of young; and/or (3) reduced health and vigor of eggs and nestlings may result in the take (killing) of Swainson's hawks incidental to otherwise lawful activities (urban development, recreational activities, agricultural practices, levee maintenance and similar activities. The taking of Swainson's hawk in this manner may be a violation of Section 2080 of the Fish and Game Code. To avoid potential violations of Fish and Game Code Section 2080, the Department should recommend and encourage project sponsors to obtain 2081 Management Authorizations.

In aggregate, the mitigation measures incorporated into CEQA comment letters and/or 2081 Management Authorizations for a project should be consistent with Section 2053 and 2054 of the Fish and Game Code. Section 2053 states, in part, "it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of'any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species and or its habitat which would prevent jeopardy" - Section 2054 states: "The Legislature further finds and declares that, in the event specific economic, social, and or other conditions make infeasible such alternatives, individual projects may be approved if appropriate mitigation and enhancement measures are provided."

State lead agencies are required to consult with the Department pursuant to Fish and Game Code Section 2090 to ensure that any action authorized, funded, or carried out by that state agency will not jeopardize the continued existence of any threatened or endangered species. Comment letters to State Lead Agencies should also include a reminder that the State Lead Agency has the responsibility to consult with the Department pursuant to Fish and Game Code Section 2090 and obtain a written findings (Biological Opinion). Mitigation measures included in Biological Opinions issued to State Lead Agencies must be consistent with Fish and Game Code Sections 2051-2054 and 2091-2092.

NEST SITE AND HABITAT LOCATION INFORMATION SOURCES

The Department's Natural Diversity Data Base (NDDB) is a continually updated, computerized inventory of location information on the State's rarest plants, animals, and natural communities. Department personnel should encourage project proponents and CEQA Lead Agencies, either directly or through CEQA comment letters, to purchase NDDB products for information on the locations of Swainson's hawk nesting areas as well as other sensitive species. The Department's Nongame Bird and Mammal Program also maintains information on Swainson's hawk nesting areas and may be contacted for additional information on the species.

Project applicants and CEQA Lead Agencies may also need to conduct site specific surveys (conducted by qualified biologists at the appropriate time of the year using approved protocols) to determine the status (location of nest sites, foraging areas, etc.) of listed species as part of the CEQA and 2081 Management Authorization process. Since these studies may require multiple years to complete, the Department shall identify any needed studies at the earliest possible time in the project review process. To facilitate project review and reduce the potential for costly

project delays, the Department should make it a standard practice to advise developers or others planning projects that may impact one or more Swainson's hawk nesting or foraging areas to initiate communication with the Department as early as possible .

MANAGEMENT CONDITIONS

Staff believes the following mitigation measures (nos. 1-4) are adequate to meet the Commission's and Legislature's policy regarding listed species and are considered as preapproved for incorporation into any Management Authorizations for the Swainson's hawk issued by the Department. The incorporation of measures 1-4 into a CEQA document should reduce a project's impact to a Swainson's hawk(s) to less than significant levels. Since these measures are Staff recommendations, a project sponsor or CEQA Lead agency may choose to negotiate project specific mitigation measures which differ. In such cases, the negotiated Management Conditions must be consistent with Commission and Legislative policy and be submitted to the ESD for review and approval prior to reaching agreement with the project sponsor or CEQA Lead Agency.

Staff recommended Management Conditions are:

1. No intensive new disturbances (e.g. heavy equipment operation associated with construction, use of cranes or draglines, new rock crushing activities) or other project related activities which may cause nest abandonment or forced fledging, should be initiated within 1/4 mile (buffer zone) of an active nest between March 1 - September 15 or until August 15 if a Management Authorization or Biological Opinion is obtained for the project. The buffer zone should be increased to ½ mile in nesting areas away from urban development (i.e. in areas where disturbance [e.g. heavy equipment operation associated with construction, use of cranes or draglines, new rock crushing activities] is not a normal occurrence during the nesting season). Nest trees should not be removed unless there is no feasible way of avoiding it. If a nest tree must be removed, a Management Authorization (including conditions to off-set the loss of the nest tree) must be obtained with the tree removal period specified in the Management Authorization, generally between October 1- February 1. If construction or other project related activities which may cause nest abandonment or forced fledging are necessary within the buffer zone, monitoring of the nest site (funded by the project sponsor) by a qualified biologist (to determine if the nest is abandoned) should be required . If it is abandoned and if the nestlings are still alive, the project sponsor shall fund the recovery and hacking (controlled release of captive reared young) of the nestling(s). Routine disturbances such as agricultural activities, commuter traffic, and routine facility maintenance activities within 1/4 mile of an active nest should not be prohibited.

2. Hacking as a substitute for avoidance of impacts during the nesting period may be used in unusual circumstances after review and approval of a hacking plan by ESD and WMD. Proponents who propose using hacking will be required to fund the full costs of the effort, including any telemetry work specified by the

Department.

3. To mitigate for the loss of foraging habitat (as specified in this document), the Management Authorization holder/project sponsor shall provide Habitat Management (HM) lands to the Department based on the following ratios:

(a) Projects within I mile of an active nest tree shall provide:

- one acre of HM land (at least 10% of the HM land requirements shall be met by fee title acquisition or a conservation easement allowing for the active management of the habitat, with the remaining 90% of the HM lands protected by a conservation easement [acceptable to the Department] on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk) for each acre of development authorized (1:1 ratio); or

- One-half acre of HM land (all of the HM land requirements shall be met by fee title acquisition or a conservation easement [acceptable to the Department) which allows for the active management of the habitat for prey production on-the HM lands) for each acre of development authorized (0.5:1 ratio).

(b) Projects within 5 miles of an active nest tree but greater than 1 mile from the nest tree shall plovide 0.75 acres of HM land for each acre of urban development authorized (0-75:1 ratio). All HM lands protected under this requirement may be protected through fee title acquisition or conservation easement (acceptable to the Department) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk.

(c) Projects within 10 miles of an active nest tree but gleater than 5 miles from an active nest tree shall provide 0.5 acres of HM land for each acre of urban development authorized (0.5:1 ratio). All HM lands- protected under this requirement may be protected through fee title acquisition or a conservation easement (acceptable to the Department) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk.

4. Management Authorization holders/project sponsors shall provide for the long-term management of the HM lands by funding a management endowment (the interest on which shall be used for managing the HM lands) at the rate of $400 per HM land acre (adjusted annually for inflation and varying interest rates).

Some project sponsors may desire to provide funds to the Department for HM land protection. This option is acceptable to the extent the proposal is consistent with Department policy regarding acceptance of funds for land acquisition. All HM lands should be located in areas which are consistent with a multi-species habitat conservation focus. Management

Authorization holders/project sponsors who are willing to establish a significant mitigation bank (> 900 acres) should be given special consideration such as 1.1 acres of mitigation credit for each acre preserved.

PROJECT SPECIFIC MITIGATION MEASURES

Although this report includes recommended Management Measures, the Department should encourage project proponents to propose alternative mitigation strategies that provide equal or greater protection of the species and which also expedite project environmental review or issuance of a CESA Management Authorization. The Department and sponsor may choose to conduct cooperative, multi-year field studies to assess the site's habitat value and determine its use by nesting and foraging Swainson's hawk. Study plans should include clearly defined criteria for judging the project's impacts on Swainson's hawks and the methodologies (days of monitoring, foraging effort/efficiency, etc.) that will be used.

The study plans should be submitted to the Wildlife Management Division and ESD for review. Mitigation measures developed as a result of the study.must be reviewed by ESD (for consistency with the policies of the Legislature and Fish and Game Commission) and approved by the Director.

EXCEPTIONS

Cities, counties and project sponsors should be encouraged to focus development on open lands within already urbanized areas. Since small disjunct parcels of habitat seldom provide foraging habitat needed to sustain the reproductive effort of a Swainson's hawk pair, Staff does not recommend requiring mitigation pursuant to CEQA nor a Management Authorization by the Department for infill (within an already urbanized area) projects in areas which have less than 5 acres of foraging habitat and are surrounded by existing urban development, unless the project area is within 1/4 mile of an active nest tree.

REVIEW

Staff should revise this report at least annually to determine if the proposed mitigation strategies should be retained, modified or if additional mitigation strategies should be included as a result of new scientific information.

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Appendix L USFWS Conservation Guidelines for Valley Elderberry Longhorn Beetle

United States Department of the Interior

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

Conservation Guidelines for the
Valley Elderberry Longhorn Beetle
9 July 1999

The following guidelines have been issued by the U.S. Fish and Wildlife Service (Service) to assist Federal agencies and non-federal project applicants needing incidental take authorization through a section 7 consultation or a section 10(a)(1)(B) permit in developing measures to avoid and minimize adverse effects on the valley elderberry longhorn beetle. The Service will revise these guidelines as needed in the future. The most recently issued version of these guidelines should be used in developing all projects and habitat restoration plans. The survey and monitoring procedures described below are designed to avoid any adverse effects to the valley elderberry longhorn beetle. Thus a recovery permit is not needed to survey for the beetle or its habitat or to monitor conservation areas. If you are interested in a recovery permit for research purposes please call the Service's Regional Office at (503) 231-2063.

Background Information

The valley elderberry longhorn beetle (Desmocerus californicus dimorphus), was listed as a threatened species on August 8, 1980 (Federal Register 45: 52803-52807). This animal is fully protected under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). The valley elderberry longhorn beetle (beetle) is completely dependent on its host plant, elderberry (Sambucus species), which is a common component of the remaining riparian forests and adjacent upland habitats of California's Central Valley. Use of the elderberry by the beetle, a wood borer, is rarely apparent. Frequently, the only exterior evidence of the elderberry's use by the beetle is an exit hole created by the larva just prior to the pupal stage. The life cycle takes one or two years to complete. The animal spends most of its life in the larval stage, living within the stems of an elderberry plant. Adult emergence is from late March through June, about the same time the elderberry produces flowers. The adult stage is short-lived. Further information on the life history, ecology, behavior, and distribution of the beetle can be found in a report by Barr (1991) and the recovery plan for the beetle (USFWS 1984).

Surveys

Proposed project sites within the range of the valley elderberry longhorn beetle should be surveyed for the presence of the beetle and its elderberry host plant by a qualified biologist. The beetle's range extends throughout California's Central Valley and associated foothills from about the 3,000-foot elevation contour on the east and the watershed of the Central Valley on the west (Figure 1). All or portions of 31 counties are included: Alameda, Amador, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Madera, Mariposa, Merced, Napa, Nevada, Placer, Sacramento, San Benito, San Joaquin, San Luis Obispo, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba.

If elderberry plants with one or more stems measuring 1.0 inch or greater in diameter at ground level occur on or adjacent to the proposed project site, or are otherwise located where they may be directly or indirectly affected by the proposed action, minimization measures which include planting replacement habitat (conservation planting) are required (Table 1).

All elderberry shrubs with one or more stems measuring 1.0 inch or greater in diameter at ground level that occur on or adjacent to a proposed project site must be thoroughly searched for beetle exit holes (external evidence of beetle presence). In addition, all elderberry stems one inch or greater in diameter at ground level must be tallied by diameter size class (Table 1). As outlined in Table 1, the numbers of elderberry seedlings/cuttings and associated riparian native trees/shrubs to be planted as replacement habitat are determined by stem size class of affected elderberry shrubs, presence or absence of exit holes, and whether a proposed project lies in a riparian or non-riparian area.

Elderberry plants with no stems measuring 1.0 inch or greater in diameter at ground level are unlikely to be habitat for the beetle because of their small size and/or immaturity. Therefore, no minimization measures are required for removal of elderberry plants with no stems measuring 1.0 inch or greater in diameter at ground level with no exit holes. Surveys are valid for a period of two years.

Avoid and Protect Habitat Whenever Possible

Project sites that do not contain beetle habitat are preferred. If suitable habitat for the beetle occurs on the project site, or within close proximity where beetles will be affected by the project, these areas must be designated as avoidance areas and must be protected from disturbance during the construction and operation of the project. When possible, projects should be designed such that avoidance areas are connected with adjacent habitat to prevent fragmentation and isolation of beetle populations. Any beetle habitat that cannot be avoided as described below should be considered impacted and appropriate minimization measures should be proposed as described below.

Avoidance: Establishment and Maintenance of a Buffer Zone

Complete avoidance (i.e., no adverse effects) may be assumed when a 100-foot (or wider) buffer is established and maintained around elderberry plants containing stems measuring 1.0 inch or greater in diameter at ground level. Firebreaks may not be included in the buffer zone. In buffer areas construction-related disturbance should be minimized, and any damaged area should be promptly restored following construction. The Service must be consulted before any disturbances within the buffer area are considered. In addition, the Service must be provided with a map identifying the avoidance area and written details describing avoidance measures.

Protective Measures

1. Fence and flag all areas to be avoided during construction activities. In areas where encroachment on the 100-foot buffer has been approved by the Service, provide a minimum setback of at least 20 feet from the dripline of each elderberry plant.

2. Brief contractors on the need to avoid damaging the elderberry plants and the possible penalties for not complying with these requirements.

3. Erect signs every 50 feet along the edge of the avoidance area with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 feet, and must be maintained for the duration of construction.

4. Instruct work crews about the status of the beetle and the need to protect its elderberry host plant.

Restoration and Maintenance

1. Restore any damage done to the buffer area (area within 100 feet of elderberry plants) during construction. Provide erosion control and re-vegetate with appropriate native plants.

2. Buffer areas must continue to be protected after construction from adverse effects of the project. Measures such as fencing, signs, weeding, and trash removal are usually appropriate.

3. No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant should be used in the buffer areas, or within 100 feet of any elderberry plant with one or more stems measuring 1.0 inch or greater in diameter at ground level.

4. The applicant must provide a written description of how the buffer areas are to be restored, protected, and maintained after construction is completed.

5. Mowing of grasses/ground cover may occur from July through April to reduce fire hazard. No mowing should occur within five (5) feet of elderberry plant stems. Mowing must be done in a manner that avoids damaging plants (e.g., stripping away bark through careless use of mowing/trimming equipment).

Transplant Elderberry Plants That Cannot Be Avoided

Elderberry plants must be transplanted if they can not be avoided by the proposed project. All elderberry plants with one or more stems measuring 1.0 inch or greater in diameter at ground level must be transplanted to a conservation area (see below). At the Service's discretion, a plant that is unlikely to survive transplantation because of poor condition or location, or a plant that would be extremely difficult to move because of access problems, may be exempted from transplantation. In cases where transplantation is not possible the minimization ratios in Table 1 may be increased to offset the additional habitat loss.

Trimming of elderberry plants (e.g., pruning along roadways, bike paths, or trails) with one or more stems 1.0 inch or greater in diameter at ground level, may result in take of beetles. Therefore, trimming is subject to appropriate minimization measures as outlined in Table 1.

1. Monitor. A qualified biologist (monitor) must be on-site for the duration of the transplanting of the elderberry plants to insure that no unauthorized take of the valley elderberry longhorn beetle occurs. If unauthorized take occurs, the monitor must have the authority to stop work until corrective measures have been completed. The monitor must immediately report any unauthorized take of the beetle or its habitat to the Service and to the California Department of Fish and Game.

2. Timing. Transplant elderberry plants when the plants are dormant, approximately November through the first two weeks in February, after they have lost their leaves. Transplanting during the non-growing season will reduce shock to the plant and increase transplantation success.

3. Transplanting Procedure.

    a. Cut the plant back 3 to 6 feet from the ground or to 50 percent of its height (whichever is taller) by removing branches and stems above this height. The trunk and all stems measuring 1.0 inch or greater in diameter at ground level should be replanted. Any leaves remaining on the plant should be removed.

b. Excavate a hole of adequate size to receive the transplant.

c. Excavate the plant using a Vemeer spade, backhoe, front end loader, or other suitable equipment, taking as much of the root ball as possible, and replant immediately at the conservation area. Move the plant only by the root ball. If the plant is to be moved and transplanted off site, secure the root ball with wire and wrap it with burlap. Dampen the burlap with water, as necessary, to keep the root ball wet. Do not let the roots dry out. Care should be taken to ensure that the soil is not dislodged from around the roots of the transplant. If the site receiving the transplant does not have adequate soil moisture, pre-wet the soil a day or two before transplantation.

d. The planting area must be at least 1,800 square feet for each elderberry transplant. The root ball should be planted so that its top is level with the existing ground. Compact the soil sufficiently so that settlement does not occur. As many as five (5) additional elderberry plantings (cuttings or seedlings) and up to five (5) associated native species plantings (see below) may also be planted within the 1,800 square foot area with the transplant. The transplant and each new planting should have its own watering basin measuring at least three (3) feet in diameter. Watering basins should have a continuous berm measuring approximately eight (8) inches wide at the base and six (6) inches high.

e. Saturate the soil with water. Do not use fertilizers or other supplements or paint the tips of stems with pruning substances, as the effects of these compounds on the beetle are unknown.

f. Monitor to ascertain if additional watering is necessary. If the soil is sandy and well-drained, plants may need to be watered weekly or twice monthly. If the soil is clayey and poorly-drained, it may not be necessary to water after the initial saturation. However, most transplants require watering through the first summer. A drip watering system and timer is ideal. However, in situations where this is not possible, a water truck or other apparatus may be used.

Plant Additional Seedlings or Cuttings

Each elderberry stem measuring 1.0 inch or greater in diameter at ground level that is adversely affected (i.e., transplanted or destroyed) must be replaced, in the conservation area, with elderberry seedlings or cuttings at a ratio ranging from 1:1 to 8:1 (new plantings to affected stems). Minimization ratios are listed and explained in Table 1. Stock of either seedlings or cuttings should be obtained from local sources. Cuttings may be obtained from the plants to be transplanted if the project site is in the vicinity of the conservation area. If the Service determines that the elderberry plants on the proposed project site are unsuitable candidates for

transplanting, the Service may allow the applicant to plant seedlings or cuttings at higher than the stated ratios in Table 1 for each elderberry plant that cannot be transplanted.

Plant Associated Native Species

Studies have found that the beetle is more abundant in dense native plant communities with a mature overstory and a mixed understory. Therefore, a mix of native plants associated with the elderberry plants at the project site or similar sites will be planted at ratios ranging from 1:1 to 2:1 [native tree/plant species to each elderberry seedling or cutting (see Table 1)]. These native plantings must be monitored with the same survival criteria used for the elderberry seedlings (see below). Stock of saplings, cuttings, and seedlings should be obtained from local sources. If the parent stock is obtained from a distance greater than one mile from the conservation area, approval by the Service of the native plant donor sites must be obtained prior to initiation of the revegetation work. Planting or seeding the conservation area with native herbaceous species is encouraged. Establishing native grasses and forbs may discourage unwanted non-native species from becoming established or persisting at the conservation area. Only stock from local sources should be used.

Examples

Example 1

The project will adversely affect beetle habitat on a vacant lot on the land side of a river levee. This levee now separates beetle habitat on the vacant lot from extant Great Valley Mixed Riparian Forest (Holland 1986) adjacent to the river. However, it is clear that the beetle habitat located on the vacant lot was part of a more extensive mixed riparian forest ecosystem extending farther from the river's edge prior to agricultural development and levee construction. Therefore, the beetle habitat on site is considered riparian. A total of two elderberry plants with at least one stem measuring 1.0 inch or greater in diameter at ground level will be affected by the proposed action. The two plants have a total of 15 stems measuring over 1.0 inch. No exit holes were found on either plant. Ten of the stems are between 1.0 and 3.0 inches in diameter and five of the stems are greater than 5.0 inches in diameter. The conservation area is suited for riparian forest habitat. Associated natives adjacent to the conservation area are box elder (Acer negundo californica), walnut (Juglans californica var. hindsii), sycamore (Platanus racemosa), cottonwood (Populus fremontii), willow (Salix gooddingii and S. laevigata), white alder (Alnus rhombifolia), ash (Fraxinus latifolia), button willow (Cephalanthus occidentalis), and wild grape (Vitis californica).

Minimization (based on ratios in Table 1):

• Transplant the two elderberry plants that will be affected to the conservation area.

• Plant 40 elderberry rooted cuttings (10 affected stems compensated at 2:1 ratio and 5 affected stems compensated at 4:1 ratio, cuttings planted:stems affected)

• Plant 40 associated native species (ratio of associated natives to elderberry plantings is 1:1 in areas with no exit holes):

5 saplings each of box elder, sycamore, and cottonwood
5 willow seedlings
5 white alder seedlings
5 saplings each of walnut and ash
3 California button willow
2 wild grape vines
Total: 40 associated native species

• Total area required is a minimum of 1,800 sq. ft. for one to five elderberry seedlings and up to 5 associated natives. Since, a total of 80 plants must be planted (40 elderberries and 40 associated natives), a total of 0.33 acre (14,400 square feet) will be required for conservation plantings. The conservation area will be seeded and planted with native grasses and forbs, and closely monitored and maintained throughout the monitoring period.

Example 2

The project will adversely affect beetle habitat in Blue Oak Woodland (Holland 1986). One elderberry plant with at least one stem measuring 1.0 inch or greater in diameter at ground level will be affected by the proposed action. The plant has a total of 10 stems measuring over 1.0 inch. Exit holes were found on the plant. Five of the stems are between 1.0 and 3.0 inches in diameter and five of the stems are between 3.0 and 5.0 inches in diameter. The conservation area is suited for elderberry savanna (non-riparian habitat). Associated natives adjacent to the conservation area are willow (Salix species), blue oak (Quercus douglasii), interior live oak (Q. wislizenii), sycamore, poison oak (Toxicodendron diversilobum), and wild grape.

Minimization (based on ratios in Table 1):

• Transplant the one elderberry plant that will be affected to the conservation area.

• Plant 30 elderberry seedlings (5 affected stems compensated at 2:1 ratio and 5 affected stems compensated at 4:1 ratio, cuttings planted:stems affected)

• Plant 60 associated native species (ratio of associated natives to elderberry plantings is 2:1 in areas with exit holes):

20 saplings of blue oak, 20 saplings of sycamore, and 20 saplings of willow, and seed and plant with a mixture of native grasses and forbs

• Total area required is a minimum of 1,800 sq. ft. for one to five elderberry seedlings and up to 5 associated natives. Since, a total of 90 plants must be planted (30 elderberries and 60 associated natives), a total of 0.37 acre (16,200 square feet) will be required for conservation plantings. The conservation area will be seeded and planted with native grasses and forbs, and closely monitored and maintained throughout the monitoring period.

Conservation Area—Provide Habitat for the Beetle in Perpetuity

The conservation area is distinct from the avoidance area (though the two may adjoin), and serves to receive and protect the transplanted elderberry plants and the elderberry and other native plantings. The Service may accept proposals for off-site conservation areas where appropriate.

1. Size. The conservation area must provide at least 1,800 square feet for each transplanted elderberry plant. As many as 10 conservation plantings (i.e., elderberry cuttings or seedlings and/or associated native plants) may be planted within the 1800 square foot area with each transplanted elderberry. An additional 1,800 square feet shall be provided for every additional 10 conservation plants. Each planting should have its own watering basin measuring approximately three feet in diameter. Watering basins should be constructed with a continuous berm measuring approximately eight inches wide at the base and six inches high.

   The planting density specified above is primarily for riparian forest habitats or other habitats with naturally dense cover. If the conservation area is an open habitat (i.e., elderberry savanna, oak woodland) more area may be needed for the required plantings. Contact the Service for assistance if the above planting recommendations are not appropriate for the proposed conservation area.

   No area to be maintained as a firebreak may be counted as conservation area. Like the avoidance area, the conservation area should connect with adjacent habitat wherever possible, to prevent isolation of beetle populations.

   Depending on adjacent land use, a buffer area may also be needed between the conservation area and the adjacent lands. For example, herbicides and pesticides are

often used on orchards or vineyards. These chemicals may drift or runoff onto the conservation area if an adequate buffer area is not provided.

2. Long-Term Protection. The conservation area must be protected in perpetuity as habitat for the valley elderberry longhorn beetle. A conservation easement or deed restrictions to protect the conservation area must be arranged. Conservation areas may be transferred to a resource agency or appropriate private organization for long-term management. The Service must be provided with a map and written details identifying the conservation area; and the applicant must receive approval from the Service that the conservation area is acceptable prior to initiating the conservation program. A true, recorded copy of the deed transfer, conservation easement, or deed restrictions protecting the conservation area in perpetuity must be provided to the Service before project implementation.

   Adequate funds must be provided to ensure that the conservation area is managed in perpetuity. The applicant must dedicate an endowment fund for this purpose, and designate the party or entity that will be responsible for long-term management of the conservation area. The Service must be provided with written documentation that funding and management of the conservation area (items 3-8 above) will be provided in perpetuity.

3. Weed Control. Weeds and other plants that are not native to the conservation area must be removed at least once a year, or at the discretion of the Service and the California Department of Fish and Game. Mechanical means should be used; herbicides are prohibited unless approved by the Service.

4. Pesticide and Toxicant Control. Measures must be taken to insure that no pesticides, herbicides, fertilizers, or other chemical agents enter the conservation area. No spraying of these agents must be done within one 100 feet of the area, or if they have the potential to drift, flow, or be washed into the area in the opinion of biologists or law enforcement personnel from the Service or the California Department of Fish and Game.

5. Litter Control. No dumping of trash or other material may occur within the conservation area. Any trash or other foreign material found deposited within the conservation area must be removed within 10 working days of discovery.

6. Fencing. Permanent fencing must be placed completely around the conservation area to prevent unauthorized entry by off-road vehicles, equestrians, and other parties that might damage or destroy the habitat of the beetle, unless approved by the Service. The applicant must receive written approval from the Service that the fencing is acceptable prior to initiation of the conservation program. The fence must be maintained in perpetuity, and must be repaired/replaced within 10 working days if it is found to be damaged. Some conservation areas may be made available to the public for appropriate recreational and educational opportunities with written approval from the Service. In

these cases appropriate fencing and signs informing the public of the beetle's threatened status and its natural history and ecology should be used and maintained in perpetuity.

7. Signs. A minimum of two prominent signs must be placed and maintained in perpetuity at the conservation area, unless otherwise approved by the Service. The signs should note that the site is habitat of the federally threatened valley elderberry longhorn beetle and, if appropriate, include information on the beetle's natural history and ecology. The signs must be approved by the Service. The signs must be repaired or replaced within 10 working days if they are found to be damaged or destroyed.

Monitoring

The population of valley elderberry longhorn beetles, the general condition of the conservation area, and the condition of the elderberry and associated native plantings in the conservation area must be monitored over a period of either ten (10) consecutive years or for seven (7) years over a 15-year period. The applicant may elect either 10 years of monitoring, with surveys and reports every year; or 15 years of monitoring, with surveys and reports on years 1, 2, 3, 5, 7, 10, and 15. The conservation plan provided by the applicant must state which monitoring schedule will be followed. No change in monitoring schedule will be accepted after the project is initiated. If conservation planting is done in stages (i.e., not all planting is implemented in the same time period), each stage of conservation planting will have a different start date for the required monitoring time.

Surveys. In any survey year, a minimum of two site visits between February 14 and June 30 of each year must be made by a qualified biologist. Surveys must include:

1. A population census of the adult beetles, including the number of beetles observed, their condition, behavior, and their precise locations. Visual counts must be used; mark-recapture or other methods involving handling or harassment must not be used.

2. A census of beetle exit holes in elderberry stems, noting their precise locations and estimated ages.

3. An evaluation of the elderberry plants and associated native plants on the site, and on the conservation area, if disjunct, including the number of plants, their size and condition.

4. An evaluation of the adequacy of the fencing, signs, and weed control efforts in the avoidance and conservation areas.

5. A general assessment of the habitat, including any real or potential threats to the beetle and its host plants, such as erosion, fire, excessive grazing, off-road vehicle use, vandalism, excessive weed growth, etc.

The materials and methods to be used in the monitoring studies must be reviewed and approved by the Service. All appropriate Federal permits must be obtained prior to initiating the field studies.

Reports. A written report, presenting and analyzing the data from the project monitoring, must be prepared by a qualified biologist in each of the years in which a monitoring survey is required. Copies of the report must be submitted by December 31 of the same year to the Service (Chief of Endangered Species, Sacramento Fish and Wildlife Office), and the Department of Fish and Game (Supervisor, Environmental Services, Department of Fish and Game, 1416 Ninth Street, Sacramento, California 95814; and Staff Zoologist, California Natural Diversity Data Base, Department of Fish and Game, 1220 S Street, Sacramento, California 95814). The report must explicitly address the status and progress of the transplanted and planted elderberry and associated native plants and trees, as well as any failings of the conservation plan and the steps taken to correct them. Any observations of beetles or fresh exit holes must be noted. Copies of original field notes, raw data, and photographs of the conservation area must be included with the report. A vicinity map of the site and maps showing where the individual adult beetles and exit holes were observed must be included. For the elderberry and associated native plants, the survival rate, condition, and size of the plants must be analyzed. Real and likely future threats must be addressed along with suggested remedies and preventative measures (e.g. limiting public access, more frequent removal of invasive non-native vegetation, etc.).

A copy of each monitoring report, along with the original field notes, photographs, correspondence, and all other pertinent material, should be deposited at the California Academy of Sciences (Librarian, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118) by December 31 of the year that monitoring is done and the report is prepared. The Service's Sacramento Fish and Wildlife Office should be provided with a copy of the receipt from the Academy library acknowledging receipt of the material, or the library catalog number assigned to it.

Access. Biologists and law enforcement personnel from the California Department of Fish and Game and the Service must be given complete access to the project site to monitor transplanting activities. Personnel from both these agencies must be given complete access to the project and the conservation area to monitor the beetle and its habitat in perpetuity.

Success Criteria

A minimum survival rate of at least 60 percent of the elderberry plants and 60 percent of the associated native plants must be maintained throughout the monitoring period. Within one year of discovery that survival has dropped below 60 percent, the applicant must replace failed plantings to bring survival above this level. The Service will make any determination as to the

applicant's replacement responsibilities arising from circumstances beyond its control, such as plants damaged or killed as a result of severe flooding or vandalism.

Service Contact

These guidelines were prepared by the Endangered Species Division of the Service's Sacramento Fish and Wildlife Office. If you have questions regarding these guidelines or to request a copy of the most recent guidelines, telephone (916) 414-6600, or write to:

U.S. Fish and Wildlife Service
Ecological Services
2800 Cottage Way, W-2605
Sacramento, CA 95825

Figure 1: Range of the Valley Elderberry Longhorn Beetle

Literature Cited

Barr, C. B. 1991. The distribution, habitat, and status of the valley elderberry longhorn beetle Desmocerus californicus dimorphus. U.S. Fish and Wildlife Service; Sacramento, California.

Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Unpublished Report. State of California, The Resources Agency, Department of Fish and Game, Natural Heritage Division, Sacramento, California.

USFWS. 1980. Listing the valley elderberry longhorn beetle as a threatened species with critical habitat. Federal Register 45:52803-52807.

USFWS. 1984. Recovery plan for the valley elderberry longhorn beetle. U.S. Fish and Wildlife Service, Endangered Species Program; Portland, Oregon.

Table 1: Minimization ratios based on location (riparian vs. non-riparian), stem diameter of affected elderberry plants at ground level, and presence or absence of exit holes.

Location	Stems (maximum diameter at ground level)	Exit Holes on Shrub Y/N (quantify)[1]	Elderberry Seedling Ratio[2]	Associated Native Plant Ratio[3]
non-riparian	stems > = 1" & = < 3"	No:	1:1	1:1
		Yes:	2:1	2:1
non-riparian	stems > 3" & < 5"	No:	2:1	1:1
		Yes:	4:1	2:1
non-riparian	stems >= 5"	No:	3:1	1:1
		Yes:	6:1	2:1
riparian	stems > = 1" & = < 3"	No:	2:1	1:1
		Yes:	4:1	2:1
riparian	stems > 3" & < 5"	No:	3:1	1:1
		Yes:	6:1	2:1
riparian	stems > = 5"	No:	4:1	1:1
		Yes:	8:1	2:1

[1] All stems measuring one inch or greater in diameter at ground level on a single shrub are considered occupied when exit holes are present anywhere on the shrub.

[2] Ratios in the *Elderberry Seedling Ratio* column correspond to the number of cuttings or seedlings to be planted per elderberry stem (one inch or greater in diameter at ground level) affected by a project.

[3] Ratios in the *Associated Native Plant Ratio* column correspond to the number of associated native species to be planted per elderberry (seedling or cutting) planted.

Appendix M California Tiger Salamander Reports

BERKELEY
CARLSBAD
FRESNO
IRVINE
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO

October 26, 2016

Sarah Markegard
Recovery Branch
U.S. Fish and Wildlife Service
2800 Cottage Way, West 2605
Sacramento, CA 95825

Subject: Results of 2014 Wet Season Survey for California Tiger Salamander at the North County Corridor New State Route 108 Project, Stanislaus County

Dear Sarah:

This letter documents the results of LSA Associates, Inc. (LSA) surveys for California tiger salamanders (CTS) conducted at the North County Corridor New State Route 108 project (project) during the 2014-2015 breeding season. The purpose of the survey was to determine if CTS were present at the project site or in the vicinity of the project.

Authorization for the 2014-2015 surveys was provided by you on January 28, 2015 in accordance with the terms of LSAs permit TE-0797234-9.1 (Attached).

PROJECT DESCRIPTION

The proposed project is located within portions of the Oakdale, Riverbank, and Modesto communities, in northern Stanislaus County, California. The North County Corridor New State Route (SR) 108 Project will connect SR-219 near Modesto, CA to SR-120 near Oakdale, CA (see attached Figures 1 and 2). The proposed project consists of four Build Alternatives (1A, 1B, 2A, and 2B) and the No-Build Alternative.

The western terminus of all alternatives is at the SR-219 (Kiernan Avenue)/Tully Road intersection. The alternatives proceed to the vicinity of the Claus Road/Claribel Road intersection, where Segment 2 begins and the alternatives separate into two different alignments (A and B). In Segment 2, Alternatives 1A and 1B veer northeast near the Claus Road/Claribel Road intersection and pass through the southern boundary of Oakdale, and Alternatives 2A and 2B continue easterly along Claribel Road and turn northeastward past the intersection of Claribel Road/Bentley Road.

Each of the alternatives then breaks into two possible alignments to their eastern terminus in Segment 3, just past the Oakdale-Waterford Highway. The eastern terminus of Alternatives 1A and 2A end along SR-108/120 just east of the City of Oakdale boundary. Alternatives 1B and 2B end farther east of the Alternatives 1A and 2A terminus, and are located on SR-108/120 in the vicinity of Lancaster Road. The proposed project improvements include:

- At grade intersection improvements

4200 Rocklin Road, Suite 11B, Rocklin, California 95677 916.630.4600 www.lsa.net

- Grade separation structures at major roadway and railway crossings
- Structures at various waterway crossings, such as the Hetch Hetchy Aqueduct, Modesto Irrigation District (MID) and Oakdale Irrigation District (OID) canals
- County roadway improvements at various intersections

The four alternatives would consist of two to three 12-foot-wide through lanes with 5-foot to 10-foot-wide left and right shoulders in each direction. The east-bound and west-bound alignments would be separated by a 46 to 70-foot-wide median, including the 5-foot to 19-foot-wide shoulders and 26-foot to 60-foot-wide graded, unpaved median area. Drainage swales would be located along either side of the new roadway.

As the proposed roadway would function as a freeway/expressway with controlled access, new and realigned local access roads are needed to provide continued access to existing properties. This would involve construction of a discontinuous local roadway system, which would provide a 12-foot-wide through lane and an 8-foot-wide shoulder, in each direction. Up to a 12-foot-wide area would be provided between the right-of-way limit and the edge of pavement to allow for drainage ditches. Where required, turn lanes would provide connections to cross roads. Each of the four build alternatives includes these proposed local access roads.

Elevated roadways, separated grade crossings, single point urban interchanges, signalized intersections, and roundabouts would be needed for each of the four alternatives. A Class 2 bike lane would also be constructed within the road shoulder from Claus Road to the eastern terminus at SR-108/120.

Various utilities exist throughout the project area that would need to be relocated. These include electric, telephone, water, sewer, and irrigation lines. At the time of this report, the exact locations to which the impacted utilities would be relocated are unknown, but relocation would take place within the currently defined project area.

Permanent right-of-way and temporary construction easements would also be required for the proposed project.

BACKGROUND

Project Site

The project site is located in northern Stanislaus County within portions of Township 2 South Ranges 9, 10, and 11E and Township 3 South Ranges 9, 10, and 11E Mount Diablo Baseline and Meridian, on the Salida, California, Riverbank, California; Waterford, California; Oakdale, California; and Knights Ferry, California 7.5 minute series USGS topographic maps. The primary land uses within the project site consist of agricultural, residential, commercial, and natural/open space.

The location of potentially suitable aquatic habitat for CTS is depicted in Figure 3, attached.

Five CNDDB records for CTS occur within 5 miles of the northeast corner of the project area. The closest documented occurrence (#175) from April 1993 is located on the south side of SR-120, approximately 8 miles east of Oakdale, and approximately 2 miles northeast of the project. The occurrence included the observation of an unknown number of CTS larvae in two small temporary ponds surrounded by grazed annual grasslands.

Reference Site

In addition to the project site, LSA also visually surveyed a reference site known to provide suitable aquatic habitat for CTS, with attributes similar to some of the seasonally inundated features that occur at the project site. The reference site is located at the SR-120 McKinley Avenue Interchange Study Area, in southern San Joaquin County, California, located approximately 20 miles west of the project (Figure 4, attached). The reference site is situated south of the City of Lathrop on the north and south side of SR-120. Representative photos of the reference site are included in Figure 5, attached.

The suitable aquatic habitat for CTS is comprised of two depressional features located southwest of the McKinley Avenue overpass. The features are locally isolated, shallow depressions that abut the SR-120 fill slopes. The adjacent properties to the south are irrigated and non-irrigated pastureland that provides suitable upland habitat with aestivation sites for CTS.

METHODS

Project Site

Two types of surveys were conducted on the project site: early season habitat assessments/egg mass surveys (2 total) and aquatic habitat surveys (4 total).

The purpose of the early season habitat assessment/egg mass surveys was to identify aquatic features that appeared to hold sufficient water to provide suitable aquatic habitat for CTS. Data collected for each feature included the approximate area and depth of ponding. In addition, these aquatic features were visually surveyed for the presence of CTS egg masses, which are more likely to be observed early in the season. The early season habitat assessments/egg mass surveys were conducted in December 2014 and January 2015, by LSA wildlife biologists Laura Belt and Dayna Winchell.

For the aquatic habitat surveys, survey and sampling methods used followed those outlined in the *United States Fish and Wildlife Service* (*USFWS) Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander*, dated October 2013. Data sheets were completed for each feature that was surveyed. Surveys were conducted using a 10 foot by 4 foot nylon seine with one-eighth inch mesh. For each pull of the seine, the length of the pull, and the depth of the feature through which the seine was pulled was recorded. If CTS were captured, the number of individuals was recorded, in addition to any other amphibians or aquatic invertebrates that were captured in the seine, or were observed in the feature. If the feature was too shallow to adequately seine (i.e., less than 3 inches in depth), a dip-net was used to sample the feature.

The aquatic habitat surveys were conducted by Laura Belt and Dayna Winchell in January, February, March, and April 2015.

Due to property access issues, LSA was unable to survey feature 2 during any of the surveys. During the February 17 and 18 survey, feature 1 was temporarily inaccessible and was not surveyed. Feature 1 was not surveyed in April as a result of the property access being revoked. As a result of significant inundations of over 4 feet in depth, features 6 and 7 were too deep to seine; instead, the features were sampled from the edge of the water using a dip-net.

Reference Site

LSA wildlife biologists Laura Belt and Dayna Winchell visually surveyed known suitable CTS aquatic habitat at the reference site on January 29, 2015 and February 18, 2015.

RAINFALL AND PRECIPITATION

The amount of rainfall during the 2014-2015 rainy season was lower than average; the Oakdale/Modesto area received approximately 78 percent of the normal rainfall for the year. Table A shows the precipitation amount (in inches) per month through May 2015, along with the total amount of precipitation, and the percent average precipitation during that period.

Table A. Precipitation (inches) for the 2014-2015 Water Year (WY) through May

	MONTH										
LOCATION	**OCT**	**NOV**	**DEC**	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**WY to Date**	**% Avg to Date**	
Modesto	0.68	1.05	5.67	0.00	1.76	0.19	0.63	0.27	10.25	78	

Source: National Weather Service California Nevada River Forecast Center
http://www.cnrfc.noaa.gov/monthly_precip.php

RESULTS

Project Site

A total of 19 features were identified from aerial imagery prior to the fieldwork being conducted during the habitat assessment/egg mass surveys in December 2014 and January 2015, as summarized in Table B. Of the features that were identified, biologists were unable to collect data from seven. These features were either completely dry or were located on property that biologists were denied access to by land owners. As a result, there was no data collected at these features.

Table B: Results of the 2014-2015 Wet Season Habitat Assessment and Survey for California Tiger Salamander

Date of Survey	Habitat Assessment December 17, 2014																		
Water Feature	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Area of Ponding (Feet)	155x24	N/A	90x60	100x 50	10x70	350x50	75x50	100x50	100x100 x75	500x25	50x50	175x100	--	N/A	N/A	N/A	N/A	N/A	N/A
Water Depth (Inches)	48	N/A	N/A	N/A	N/A	> 60	>60	4	12	Up to 42	12	N/A	--	N/A	N/A	N/A	N/A	N/A	N/A
CTS Egg Mass(es) Observed	0	N/A	0	0	0	0	0	0	0	0	0	0	--	N/A	N/A	N/A	N/A	N/A	N/A

Date of Survey	Habitat Assessment January 15 and 16, 2015																		
Water Feature	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Area of Ponding (Feet)	190x190	N/A	60x50	125x 150	10x 70	350x50	75x50	50x50x50	75x75x56	600x30	50x50x40	55x25 60x50	--	N/A	N/A	N/A	N/A	N/A	N/A
Water Depth (Inches)	24	N/A	12	24	24	> 60	> 60	12	12	Up to 42	12	Up to 6	--	N/A	N/A	N/A	N/A	N/A	N/A
CTS Egg Mass(es) Observed	0	N/A	0	0	0	0	0	0	0	0	0	0	--	N/A	N/A	N/A	N/A	N/A	N/A

Date of Survey	Aquatic Habitat Survey January 29 and 30, 2015													
Water Feature	1	2	3	4	5	6	7	8	9	10	11	12	13	14*
Area of Ponding (Feet)	100x50	N/A	60x25	75x40	60x40	350x30	72x50	100x75x75	100x100x100	500x25	40x40	Dry	--	--
Water Depth (Inches)	48	N/A	54	24	12	> 60	> 48	24	18	54	12	-	--	--
Number of Pulls with Seine	10	N/A	8	12	4	DP edge	DP edge	4	4	8	6	-	--	--
Total Number of CTS Egg Mass(es)/Larvae Captured	0	N/A	0	0	0	0	0	0	0	0	0	-	--	--

Date of Survey	Aquatic Habitat Survey February 17 and 18, 2015													
Water Feature	1	2	3	4	5	6	7	8	9	10	11	12	13	14*
Area of Ponding (Feet)	50x50	N/A	24x16	60x40	80x12	350x50	65x50	80x70x70	80x75x65	450x60	52x52	6x4	40x40x 40	185x40
Water Depth (Inches)	~24	N/A	Up to 21	24	12	> 60	> 48	11	18	24	40	Up to 2	6	36
Number of Pulls with Seine	TI	N/A	6	8	5DP	DP edge	DP edge	4	5	8	6	Visually Surveyed	6	3
Total Number of CTS Egg Mass(es)/Larvae Captured	TI	N/A	0	0	0	0	0	0	0	0	0	0	0	0

Date of Survey	Aquatic Habitat Survey March 11 and 12, 2015													
Water feature	1	2	3	4	5	6	7	8	9	10	11	12	13	14*
Area of Ponding (Feet)	40x40	N/A	3x2	40x40	70x10	350x50	65x50	60x60x50	70x70x60	450x60	40x40x40	Dry	Dry	170x30
Water Depth (Inches)	36	N/A	3-6	24	22	> 60	> 48	8	18	48	18	-	-	18
Number of Pulls with Seine	DP	N/A	1	6	2	DP edge	DP edge	4	6	10	6	-	-	2
Total Number of CTS Larvae Captured	0	N/A	0	0	0	0	0	0	0	0	0	0	0	0

Date of Survey	Aquatic Habitat Survey April 6, 2015													
Water Feature	1	2	3	4	5	6	7	8	9	10	11	12	13	14*
Area of Ponding (Feet)	70x60	N/A	40x20	6x2	70x10	350x50	65x50	Dry	40x40x40	128x30	Dry	140x120	Dry	Dry
Water Depth (Inches)	N/A	N/A	14	1	22	> 60	> 48	-	4	7	-	> 48	-	-
Number of Pulls with Seine	-	N/A	2	2	3	DP edge	DP edge	-	3	3	-	-	-	-
Total Number of CTS Larvae Captured	-	N/A	0	0	0	0	0	0	0	0	0	0	0	0

Notes:
14*New Site Feature
--Not surveyed, N/A - No Access, TI – Temporarily Inaccessible, Dry – No water was observed, DP - Dip-netted

As a result of the initial site assessment surveys, LSA identified 12 aquatic features within the project area as potentially providing suitable aquatic habitat for CTS. In February 2015, during the course of the surveys, LSA identified two additional features as potentially providing suitable aquatic habitat. These two features were not originally identified on aerial imagery prior to fieldwork being conducted; during the initial habitat assessment they were not inundated with water. Per the USFWS survey requirements, all potentially suitable features should be surveyed. As a result, the two features were added to the list of potential CTS habitat. Figure 3 depicts the location of the 14 aquatic features. Representative photos and a description of the attributes of each feature are shown in Attachment 7.

No CTS, CTS eggs, or CTS larvae were observed during the early season assessment/surveys or the during the breeding season aquatic habitat surveys. The results of the assessment and surveys are summarized Table B, and a narrative is provided below.

During the January 16, 2015 assessment survey, mature vernal pool fairy shrimp (*Branchinecta lynchi*) and California fairy shrimp (*Linderiella occidentalis*) were observed in features 8 and 9.

During the January 29 and 30, 2015 survey, when all of the features except for feature 12 were holding water, mosquito fish (*Gambusia* sp.) and juvenile and adult red swamp cray fish (*Procambarus clarkii*) were observed in features 3 and 5. Adult Pacific chorus frogs (*Pseudacris sierra*) were observed along the perimeter of features 10 and 12, and metamorph Pacific tree frogs were observed in feature 8; chorus frog eggs were also observed attached to submerged vegetation in feature 10. Vernal pool fairy shrimp were observed in feature 9, and vernal pool fairy shrimp and California fairy shrimp were observed in feature 8.

All of the project features continued to hold water through February and into March 2015, with the exception of feature 12 that was then dry by the March survey. No CTS, CTS eggs, or larvae were observed in the features. During the February 17 and 18 survey, Pacific chorus frogs, larvae, and eggs were observed in features 4, 8, 10, and 11. LSA heard chorus frogs vocalizing from vegetation along the perimeter of feature 12. Mosquito fish and bullfrog larvae (*Lithobates catesbianna*) were observed in feature 5, and red swamp crayfish were observed in feature 3. During the March 11 and 12, 2015 survey, Pacific chorus frogs were observed in features 8, 10, and 11. Mosquito fish and bullfrog larvae persisted in feature 5, as well as red swamp crayfish in feature 3.

Most of the water features held considerably less water during the April 6, 2015 survey. Features 3 and 12 held more water, as a result of supplemental irrigation water. Features 2, 8, 11 and 13 were dry. Mosquito fish persisted in feature 3, and Pacific chorus frog larvae were observed in feature 10. Mosquito fish, adult bullfrogs, and red swamp crayfish were observed in feature 5.

Reference Site

Multiple CTS eggs and emergent larvae were observed in both features during the January 9, 2015 site visit. During the February 18, 2015 site visit, multiple CTS larvae were observed that measured up to 1.5 inches in length. Figure 5 depicts the site conditions during the January 9, 2015 site visit.

CONCLUSION

No CTS, CTS larvae, or CTS eggs were observed during the 2014- 2015 breeding season surveys conducted at the North County Corridor State Route 108 project site. Although the Central Valley experienced lower than average rainfall amounts during the 2014 -2015 CTS breeding season, the timing and the amount of inundation of the features at the project were sufficient for a successful reproduction season for Pacific chorus frogs and bull frogs which require approximately the same duration of inundation for successful breeding as CTS. Therefore, if CTS were present at the project site, the heavy rains in early December 2014 would have provided enough water to fill the project features and, with the help of occasional subsequent rain events, maintain a sufficient amount of water in most of the features for a sufficient duration for CTS to successfully reproduce. In addition, anecdotal evidence from the reference site, where CTS were observed during the during January and February 2015 site visits, suggests that regional conditions were suitable for CTS reproduction. Therefore, based on this information, the negative results for CTS surveys at the North County Corridor State Route 108 project site should be considered valid.

Please let me know if you have any questions.

Sincerely,

LSA ASSOCIATES, INC.

Laura Belt
Senior Wildlife Biologist

Attachments:

USFWS Authorization to Conduct CTS Surveys 2014-2015
Figure 1 Regional Location
Figure 2 Location of Potential Habitat in Proximity to Alignment Alternatives
Figure 3 Location of Potential Habitat in Proximity to Biological Study Area
Figure 4 SR-70/McKinley Avenue Study Area – Reference Site
Figure 5 Representative Photos of reference Site - SR-70/McKinley Avenue Biological Study Area
Representative Photos of Potentially Suitable CTS Aquatic Habitat

LSA ASSOCIATES, INC.
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ROCKLIN, CALIFORNIA 95677
916.630.4600 TEL
916.630.4603 FAX
BERKELEY
CARLSBAD
FRESNO
IRVINE
PALM SPRINGS
PT. RICHMOND
RIVERSIDE
SAN LUIS OBISPO

January 27, 2015

David Kelly
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Subject: Request for Authorization to Conduct Protocol Aquatic Larval Surveys for California Tiger Salamander at the North County Corridor State Route 108 Project, Stanislaus County

Dear Mr. Kelly:

On behalf of the County of Stanislaus (County), LSA Associates, Inc. (LSA), in accordance with the terms of permit TE-0797234-9.1, would like to request authorization to conduct protocol larval surveys for California tiger salamander (*Ambystoma californiense*) (CTS).

The County is proposing to construct the North County Corridor State Route (SR) 108 project (project) in Stanislaus County. The project is proposed to begin near the McHenry Avenue and Claribel Road intersection, north of the City of Modesto, and extend east for approximately 15 miles, ending along the alignment of SR 120/108, east of the City of Oakdale (Figures 1 and 2, attached). Four alternatives are currently being considered for the project. There are no documented occurrences in the California Natural Diversity Database for CTS in the project site. However, there are five documented occurrences within 5 miles of the project.

The project site consists of agricultural lands, residential, commercial, and natural/open spaces. LSA proposes to survey approximately 14 aquatic features that were identified within the project area as potentially providing suitable aquatic habitat for CTS (Figure 3). Table 1, attached, includes photos and attributes of each feature. LSA is also requesting authorization to survey additional features not currently identified as potential aquatic habitat for CTS.

The surveys would be conducted using dipnets and seins in accordance with U.S. Fish and Wildlife Service and California Department of Fish and Wildlife's *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander*.

The CTS surveys will be conducted by LSA biologists Laura Belt and Dayna Winchell. Resumes for both biologists are attached behind Table 1. Surveys will begin immediately following your authorization.

Sincerely,

LSA ASSOCIATES, INC.

Laura Belt
Senior Biologist

FIGURE 1

Caltrans

0 5 10
MILES

Project Vicinity

EA: 10-0S800, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California

SOURCE: ESRI 2008; Dokken Engineering 5/8/2014.
I:\DHG1302\AI\Project Description\Figure 1.ai (7/14/14)

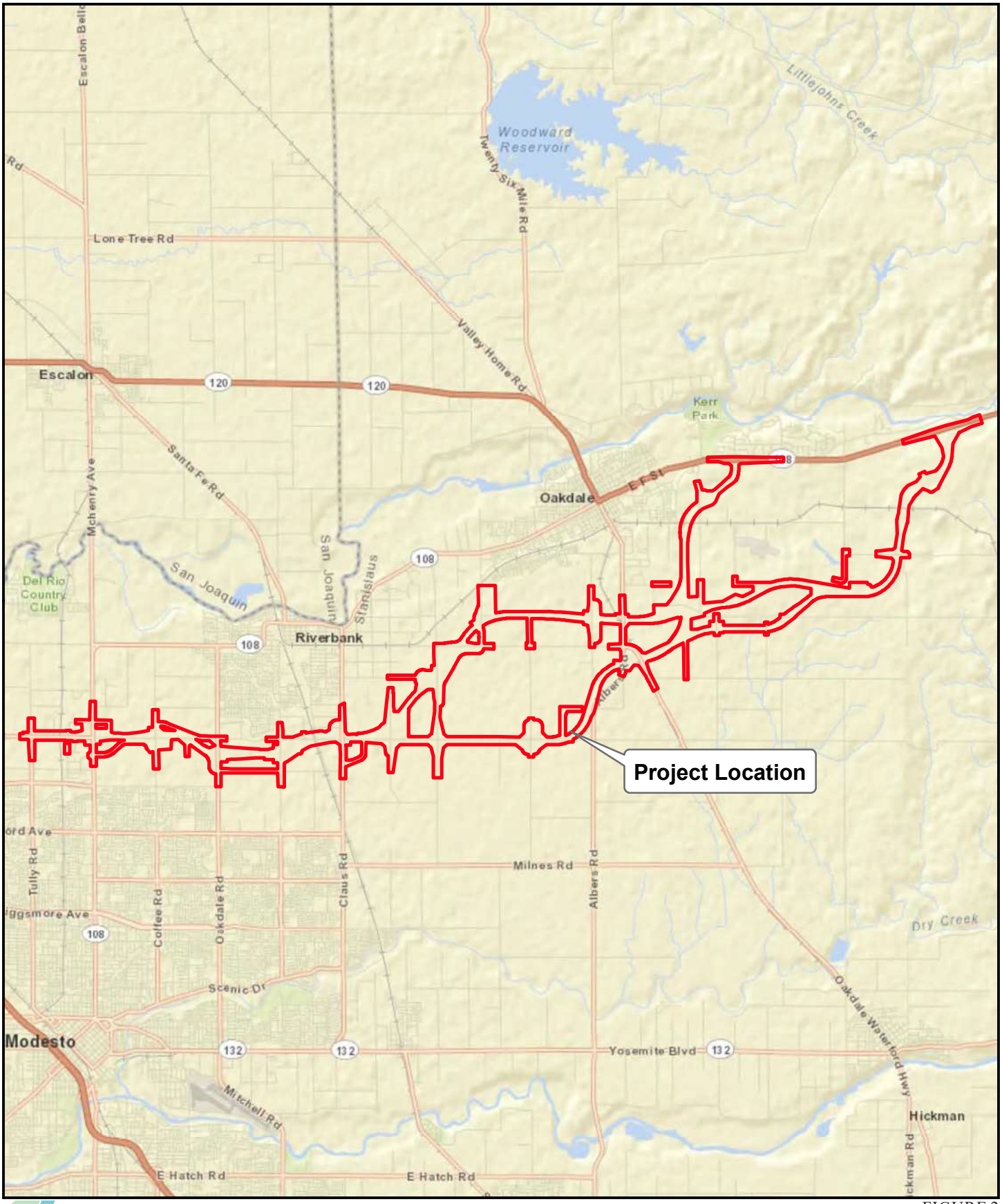


FIGURE 2

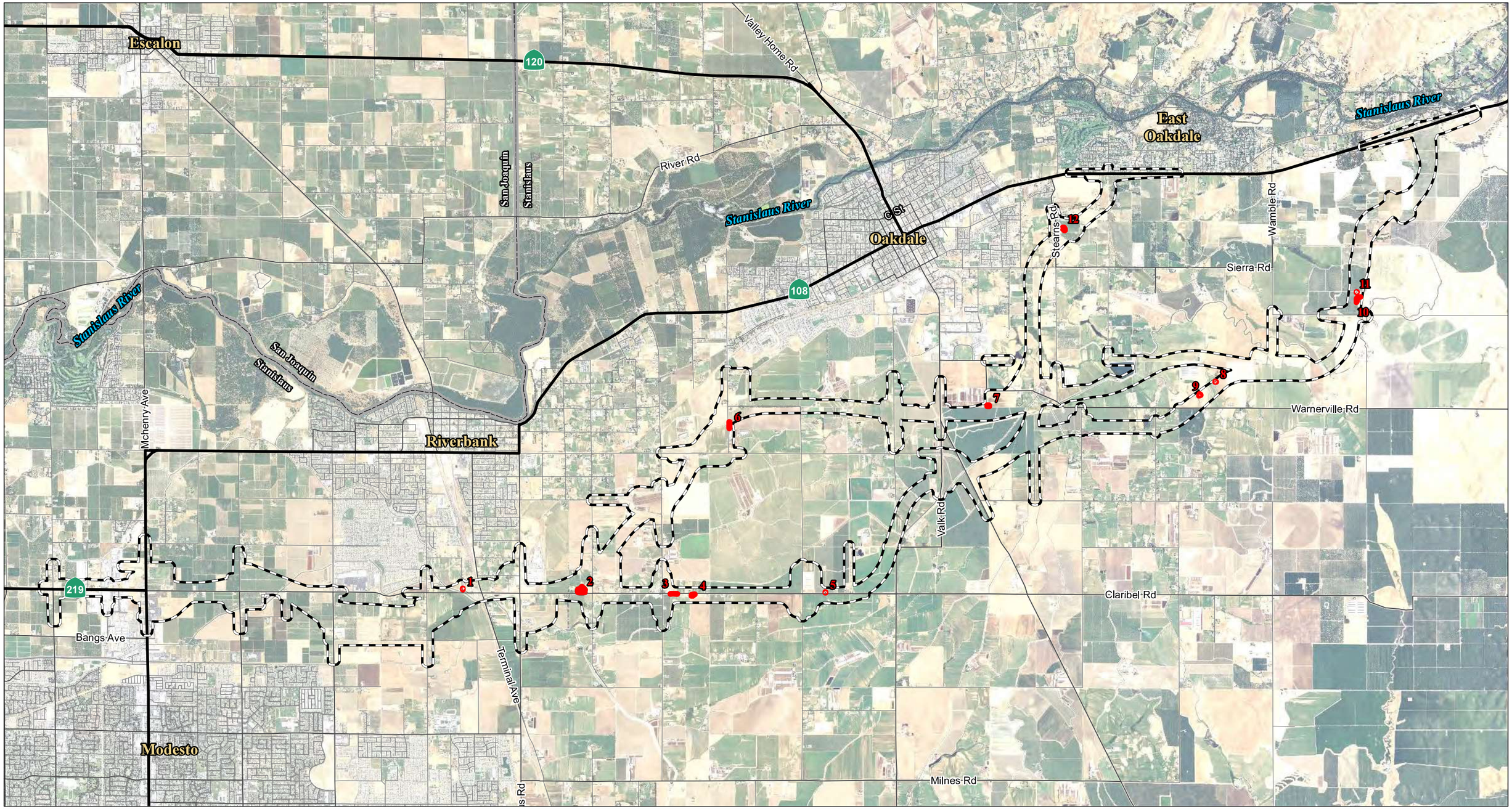
Caltrans

0 2.5 5
MILES

Project Location

EA: 10-0S800, Project ID # 1000000263 North County Corridor State Route 108 Project
Stanislaus County, California

SOURCE: World Street Map; Dokken Engineering 5/8/2014.
I:\DHG1302\AI\Project Description\Figure 2.ai (7/14/14)



LEGEND

Biological Study Area

CTS Survey Features

0 0.5 1
MILES

SOURCE: NAIP (2012); Mapping - LSA Associates, Inc. (2014)

I:\Dhg1302\GIS\cts_auth-Fig3.mxd (1/22/2015)

FIGURE 3

CTS Wet Season Survey Features

EA: 10-0S800, Project ID # 1000000263

North County Corridor New State Route 108 Project

Stanislaus County, California

Table 1. North County Corridor State Route 108 Project Potential CTS Aquatic Habitat

Feature Number	Feature Photo	Attributes
1		- The feature is located in a ruderal field - Water source is canal overflow and roadside drainage - Few suitable burrows were observed in the upland habitat; including in the levee across Litt Road - As of January 15, 2015, this feature was approximately 190' x 90'; up to 2' deep
2		- Feature is located within irrigated pasture - Water source is rainwater and agriculture runoff - Suitable burrows were observed in the upland habitat - As of January 15, 2015, this feature was approximately 205' x 285'

Feature Number	Feature Photo	Attributes
3		- Feature is located in irrigated pasture - Water source is rainwater and runoff from irrigated pasture - Suitable burrows were observed in the upland habitat - As of January 15, 2015, the feature was approximately 60’ x 50’; up to 1’ deep
4		- Feature is located in irrigated pasture - Water source is rainwater and runoff from irrigated pasture - Suitable burrows were observed the upland habitat - As of January 15, 2015, the feature was approximately 150’ x 125’; up to 1’ deep

Feature Number	Feature Photo	Attributes
5		- Small pond located within orchards - Water source is rainwater - Suitable burrows were observed in the upland habitat - As of January 15, 2015, the feature was approximately 10’ x 70; up to 2’deep - This feature drains under Claribel Road and into a pond south of the road - Mosquito fish were observed in the water
6		- Basin located adjacent to irrigated pasture and a dairy farm - Water source is runoff from the adjacent irrigated pasture and a dairy farm - Suitable burrows were observed in the upland habitat - As of January 15, 2015, the feature was approximately 350’ x 50’ - Fish were observed within the basin

Feature Number	Feature Photo	Attributes
7		- Feature is a pond located within irrigated pasture - Water source is runoff from the irrigated pasture and adjacent dairy pond - Suitable burrows were observed in the upland habitat - As of January 15, 2015, it was approximately 74’ x 50’;up to 3 ft. deep - Algal growth was observed on the top of the water and in the water column
8		- Feature is located within grazed annual grasslands - Water source is rainwater and canal overflow - Burrows were observed in the upland habitat - As of January 15, 2015, the pool was approximately 50’ x 50’ x 50’ - Water is clear - *Branchinecta lynchi* and *Linderiella occidentalis* were previous observed in this feature during the 2013-2014 wet season survey for vernal pool crustaceans

Feature Number	Feature Photo	Attributes
9		- Feature is located within annual grasslands - Water source is rainfall and canal overflow - Suitable burrows were observed in the upland habitat - As of January 15, 2015, the feature was approximately 75' x 75' x 56'; up to 1'deep - Water was tea colored as of January 2015 - *Branchinecta lynchi* was previously observed in this feature during the 2013-2014 wet season survey for vernal pool crustaceans
10		- Feature is located in ruderal grassland that is surrounded by orchards and agricultural fields - Water source is rain water and runoff from adjacent agricultural fields - Suitable burrows were observed in the upland habitat - As of January 15, 2015, the feature was approximately 475' x 20'; up to 2' deep

Feature Number	Feature Photo	Attributes
11		- Feature is located in an area of ruderal grassland and is surrounded by agricultural fields and orchards. - Water source is rainwater and runoff from adjacent agricultural fields - Many burrows were observed in the upland habitat - As of January 15, 2014, the feature was approximately 50’ x 50’ x 40’; up to 1’ deep - Some algal growth was observed in the water - Water is tea colored
12		- Feature is located within an orchard and is used as supplemental water for the orchard - Water source is rainfall - Few suitable burrows observed in the upland habitat - The large feature has dried up to two small feature approximately 55’ x 25’ and 60’ x 50’; approximately 6 inches deep - Possible *Anaxyrus boreas* eggs were observed around the edge of the feature

LAURA BELT

SENIOR WILDLIFE BIOLOGIST

EXPERTISE

Wildlife Surveys

Endangered Species Surveys

Construction Monitoring

Environmental Assessment

EDUCATION

California State University, Bakersfield. Bachelor of Science Degree in General Biology, 1989.

CERTIFICATIONS AND TRAINING

U.S. Fish and Wildlife Service Permit #TE-797234-9.1: Authorization to handle listed vernal pool crustaceans and California tiger salamander. State of California Department of Fish and Game Scientific Collecting Permit #7839. Authorization to conduct "capture and release" of wildlife for identification and enumeration purposes.

Trained to conduct protocol surveys for vernal pool branchiopods, Valley elderberry longhorn beetle, California red-legged frog, foothill yellow-legged frog, western spade foot frog, California tiger salamander, San Francisco garter snake, giant garter snake, Pacific pond turtle, western burrowing owl, Swainson's hawk, Mohave ground squirrel, and San Joaquin kit fox.

PROFESSIONAL RESPONSIBILITIES

Ms. Belt has a diverse background as a wildlife field biologist, which includes over 20 years of experience in conducting habitat and wildlife surveys throughout the state. Ms. Belt is responsible for conducting biological surveys and construction monitoring of projects including road work and bridge replacement and development projects.

The following highlights some of her survey and construction monitoring experience with California tiger salamander, vernal pool crustaceans, and other special status species.

PROJECT EXPERIENCE

Potrero Hills Landfill Study Site – Suisun City, Solano County. Conducted protocol wet season surveys (2005-2011) for listed vernal pool crustaceans, conducted non-protocol surveys for California tiger salamander (CTS) at the 1,400 acre Potrero Hills Landfill Study Site. Identified *Branchinecta lynchi, Linderiella occidenatilis, B. conservatio* and *Lepidurus packardi* in the seasonal ponds and vernal pools on the mitigation site, and CTS in the seasonal ponds on the landfill site during the course of annual wet season surveys. CTS life stages that were observed included: egg stage, larvae emergence from eggs, larvae measuring 1.0 cm to 10.0 cm in length, and mature male and female CTS that measured up to 25.0 cm in length.

State Route 26 Road Improvements Project, Valley Springs, San Joaquin/Calaveras Counties. Conducted preconstruction and construction monitoring for California tiger salamander associated with 3.0 mile road realignment and widening in the vicinity of seasonal wetlands. Documented the occurrence of western spade foot frog on the site and relocated a total of 4 CTS to suitable burrows outside of project limits.

Markeley Lane Road Extension Project - Fairfield, Solano County. Conducted preconstruction and construction monitoring for road extension project in the vicinity of vernal pools for Contra Costa goldfields, vernal pool fairy shrimp, vernal pool tadpole shrimp, CTS, and associated habitat. Conducted Employee Awareness Training for all protected species.

State Highway 41 Quarry Site – Madera County. Mapped suitable habitat for vernal pool branchiopods and CTS at 300 acre property located at the intersection of Highway 41 and Highway 45. CTS eggs were observed in deep vernal pools and mature *B. lynchi* were observed in shallow vernal pools.

PROJECT EXPERIENCE (CONTINUED)

John Smith Road Realignment Project - San Benito County. Conducted bi-monthly protocol dip net and seining surveys to determine presence of CTS and vernal pool branchiopods in seasonal wetland features located in new alignment (6 months).

Winters Ranch Property – Winters, Yolo County. Conducted a protocol wet season survey for listed vernal pool crustaceans on a 10 acre property converted from an almond orchard to grassland habitat. A shallow depression on the site supported a seasonal wetland; *B. lynchi* were observed in the seasonal wetland.

Triangle Rock Vernal Pool Preserve Property – Sacramento County. Conducted protocol and non-protocol wet season surveys (2004-2011) for listed vernal pool crustaceans at the 110 acre Preserve Property as part of habitat mitigation. *B. lynchi, B. mesovallensis, Linderiella occidenatilis,* and *Lepidurus packardi* were observed in the reference and created pools.

State Route 68 and San Benancio Road Improvements Project – Monterey County. Conducted day and night-time preconstruction surveys, and construction monitoring for bridge widening and intersection improvement project in the vicinity of suitable habitat for California red-legged frog and CTS.

Rockwell Ranch Property – Lincoln, Placer County. Conducted protocol wet season survey for vernal pool crustaceans on a 515 acre property. The survey was conducted to evaluate the property as a mitigation site for listed vernal pool invertebrates for the California Department of Transportation Route 65 Lincoln Bypass project. Surveys were conducted for *B. lynchi* and *Lepidurus packardi*. Both federally listed species were observed during the survey.

Route 65 Lincoln Bypass Project – Placer County, California. 2000 to Present. Working with Caltrans, conducted environmental studies and obtained permits for a 13 mile freeway bypass in western Placer County. The project includes construction of 17 bridges across creeks and sloughs in habitats that support woodlands and vernal pool grassland habitats; the project area also supports federally listed vernal pool branchiopods.

Perform biological monitoring tasks that include preconstruction surveys for nesting Swainson's hawks (and other nesting birds), employee awareness training, monitoring fencing for ESAs to ensure compliance with project permits, and monitoring general construction activities for environmental compliance.

DAYNA WINCHELL

BIOLOGIST

EXPERTISE

Wildlife and Sensitive Species Surveys

Biological Construction Monitoring and Auditing

Environmental Assessment

EDUCATION

University of Queensland, Australia. Masters of Science Degree in Conservation Biology, 2012.

California State University, San Marcos. B.S. in General Biology, 2009.

CERTIFICATIONS AND TRAINING

Certified in Basic and Advanced Wildlife Handling and First Aid Techniques

Trained in Northern California Bird Species and Identifying Techniques

PROFESSIONAL AFFILIATES

The Wildlife Society

Defenders of Wildlife

PROFESSIONAL RESPONSIBILITIES

Ms. Winchell is a general biologist at LSA with a variety of experience in the wildlife and environmental field. This experience includes conducting full ecological evaluations and assessment and animal behavior surveys. Additional experience includes coordinating special species trapping, surveying and relocation projects as well as studying long term human impacts on flora and fauna. Ms. Winchell is experienced in ensuring legislation compliance on the local, state and federal levels.

Ms. Winchell is skilled in conducting biological surveys and construction monitoring of projects including road and bridge construction, bridge replacement, and development projects. Construction monitoring experience includes listed species such as; Swainson's hawk, California red-legged frog, giant garter snake, burrowing owl, foothill yellow legged frog and California tiger salamander.

The following summarizes her work involving construction monitoring and surveying of special status species.

PROJECT EXPERIENCE

Potrero Hills California Tiger Salamander Relocation
Suisun City, Solano County, California
Ms. Winchell assisted in the trapping and relocation of California Tiger Salamanders. Duties included assisting in checking traps and determining the health and age of salamanders prior to relocation. Ms. Winchell also assisted with seining the stock ponds for CTS larvae.

Habitat Assessments for Bridge Construction at Old Hernandez Road, San Benito County, California
Ms. Winchell conducted a habitat assessment for bridge construction in San Benito County to determine the presence of listed species. The assessment included surveying for San Joaquin kit fox, California red-legged frog, and California tiger salamander. Assessment included identifying suitable habitat in the vicinity for the listed species.

San Juan Highway Bike Lane Project, San Juan Bautista
San Benito County, California
Ms. Winchell conducted a post construction habitat assessment to determine the success of the revegetation restoration effort in California red-legged frog and CTS habitat, along the San Juan Highway near San Juan Bautista.

Panoche Bridge Replacement, San Benito County, California
Conducted a focused tree survey at the bridge replacement site on Panoche Road at Tres Pinos Creek. Also assessed suitable habitat of Tres Pinos Creek for CTS and California red-legged frog.

DAYNA WINCHELL

BIOLOGIST

PROFESSIONAL EXPERIENCE

Biologist, LSA Associates Inc., Rocklin and Pt. Richmond, CA. 2012-present.

Ecologist, James Warren & Associate Ecological Consultants, Brisbane, Australia. 2012.

Researcher, University of Queensland, Brisbane Australia. 2011-2012

Animal Behavior Researcher, San Diego Wild Animal Park, Escondido, CA. 2008-2009

Aquarist Assistant, Birch Aquarium, La Jolla, CA 2008-2009

Expedition Member, Global Vision International, Kenyan Coast, 2007.

Cook Riolo Bridge Replacement, Roseville
Placer County, California
Ms. Winchell conducted nesting bird surveys, before and after the start of nesting season. State and federally listed species, such as the Swainson's hawk were present near the project site. Surveys also included aging the nests, (i.e., nest stage) of nesting birds to determine the time when young would fledge.

State Route 65/Lincoln Bypass Project
Lincoln, Placer County, California
Conducted construction monitoring of construction project creating new State Highway and 17 bridges over land and water features. Monitoring tasks include: surveying for Swainson's hawks and other nesting birds, before and during the nesting season; mapping and monitoring all active nests within the alignment; and monitoring construction activities for compliance with project permits.

Western Placerville Interchange Project Placerville, El Dorado County, California
Conducted construction monitoring during vegetation removal for the Placerville Interchange Project near SR-50. Monitoring focused on the presence/absence of California red-legged frog and foothill yellow legged frog.

From:	Laura Belt
To:	Jeff Bray; Dayna Winchell
Cc:	Tim Lacy; David Muth
Subject:	Fwd: North County Corridor/ SR-108 Project - Request for Authorization to Conduct Non-Protocol Aquatic Survey for California Tiger Salamander
Date:	Wednesday, January 28, 2015 8:08:59 AM

Sent from my iPhone

Begin forwarded message:

From: "Kelly, David" <david_kelly@fws.gov>
Date: January 28, 2015 at 7:51:54 AM PST
To: Laura Belt <Laura.Belt@lsa-assoc.com>
Cc: Jennifer Schofield <jen_schofield@fws.gov>, Thomas Leeman <thomas_leeman@fws.gov>
Subject: Re: North County Corridor/ SR-108 Project - Request for Authorization to Conduct Non-Protocol Aquatic Survey for California Tiger Salamander

Laura Belt,
By this email message you are authorized to conduct wet season surveys (2015) for federally-listed California tiger salamanders, per the conditions of your recovery permit TE-797234 and as specified in your letter request with maps dated January 27, 2015. The surveys will be conducted at the following site as described in your request letter and attached maps:

1. CalTrans North County Corridor SR 99 to SR 120 Project, Stanislaus County SR 108 Widening (Service Reference Number 2011-TA-0066)

Surveys may be conducted within all seasonally inundated wetlands identified on-site that may provide suitable tiger salamander habitat. Suitable habitat not previously identified on the project site may also be sampled under this authorization.

Please remember to carry a copy of your permit while doing the work, and to follow the terms and conditions of the permit and the survey guidelines, including the reporting requirements. In your report, please include which surveys were authorized, the names of all persons involved in the surveys, their recovery permit numbers, if applicable, and the date of this

authorization, to help ensure that we correctly record the fulfillment of the reporting requirement under this authorization. Please let us know if the surveys are not performed as authorized, or if they are done by a different permittee under a separate authorization. This authorization does not include access to the property which must be arranged with the landowner or manager.

Please send one electronic and one hard copy of the report(s) to David Kelly, of our Recovery Branch, and send a separate hard copy to Jen Schofield, biologist of the San Joaquin Valley Division. We ask that you use UTM coordinates for all spatial data and that you use the Service reference number above in future correspondence regarding these surveys.

To ensure the accuracy and data integrity of your project, it is requested that you provide spatial information (boundaries, study areas, parcels, point locations, etc.) in the form of an ESRI shape file with projection, a GPS file with projection, or locations in an Excel spreadsheet with projection information . The preferred projection is UTM, Zone 10S, NAD83; the Sacramento Fish and Wildlife Office (SFWO) standard. FGDC compliant metadata must accompany each file. Please include any USFWS File Numbers associated with the data in your documentation. For additional information regarding metadata standards refer tohttp://www.fgdc.gov. For more information regarding spatial data please contact: Cheryl L. Hickam, GIS Branch Chief, U.S. Fish and Wildlife Service, 2800 Cottage Way, Suite W-2605, Sacramento, Ca 95825-1846, office: 916-414-6708.

On Tue, Jan 27, 2015 at 9:43 AM, Laura Belt <Laura.Belt@lsa-assoc.com> wrote:

> Hi David,
>
> Per our conversation, LSA requests authorization to conduct non-protocol aquatic (wet season) surveys for California tiger salamander at the North County Corridor/ SR-108 project, in accordance with the terms of permit TE-797234-9.1 issued to LSA Associates, Inc. , please see attached request, including tables and figures.
>
> The aquatic survey for California tiger salamander will be conducted by LSA biologist Laura Belt, who is authorized under the LSA permit to survey for California tiger salamanders. LSA biologist Dayna Winchell will be assisting Ms. Belt. Ms. Winchell has previous supervised experience with California tiger salamander, and is in the process of requesting to be added to LSA's list of authorized individuals. Ms. Belt is also authorized under the LSA permit to survey for vernal pool crustaceans, should these species be encountered during the aquatic surveys for California tiger salamander. The surveys will follow the appropriate protocols, including disinfecting sampling and field gear. No specimens will be collected unless specifically requested by the USFWS.

Please contact me if you have any questions.

Thank you, David

Laura Belt

Senior Wildlife Biologist

LSA Associates, Inc.

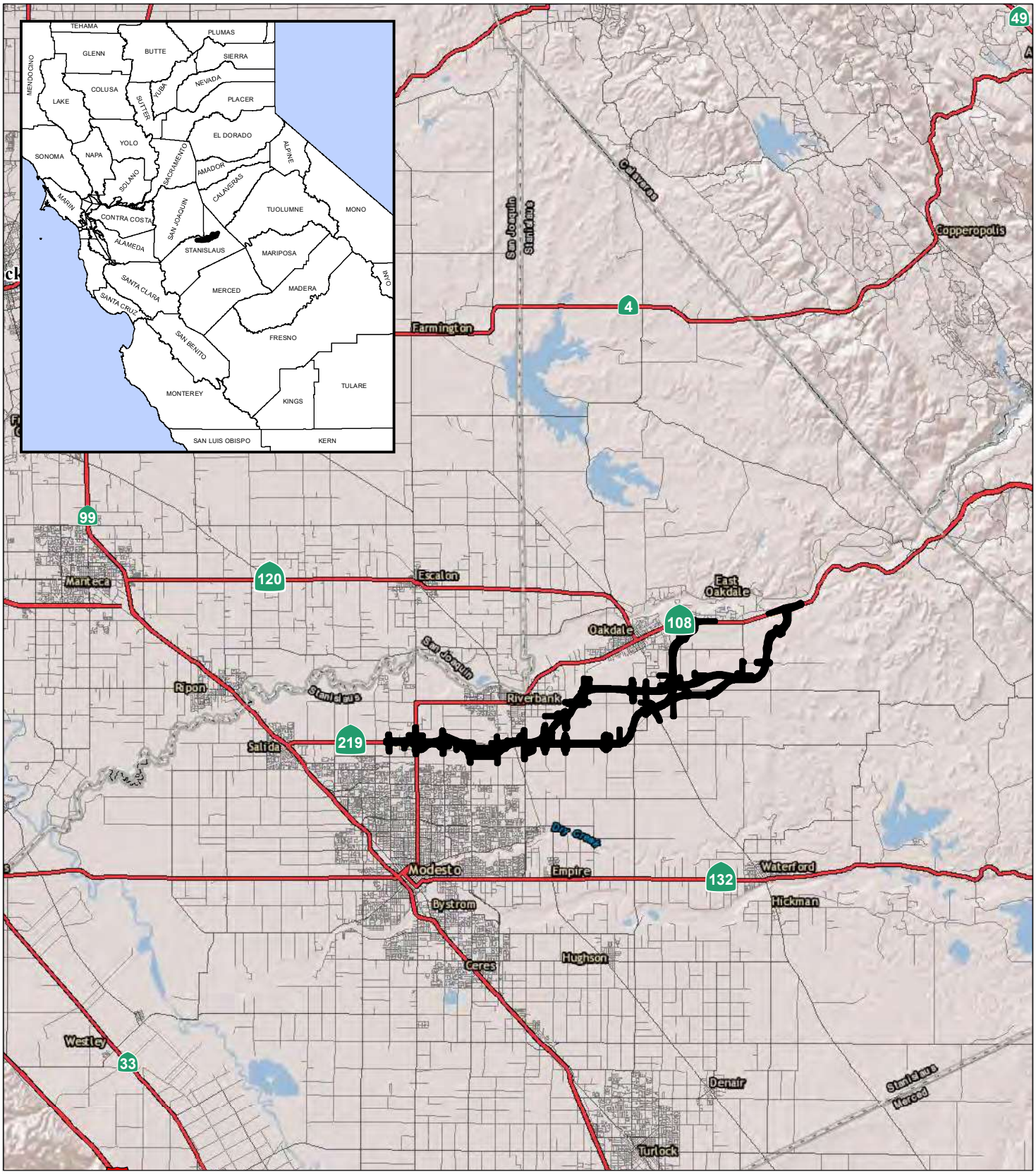
(916) 630-4600 Ext: 148

(916) 804-9182 (field cell)

laura.belt@lsa-assoc.com

--

David Lee Kelly
Recovery Biologist
Sacramento Fish and Wildlife Office
2800 Cottage Way W-2605
Sacramento, California 95825-1888
Phone:916-414-6492



LEGEND

Study Area

FIGURE 1

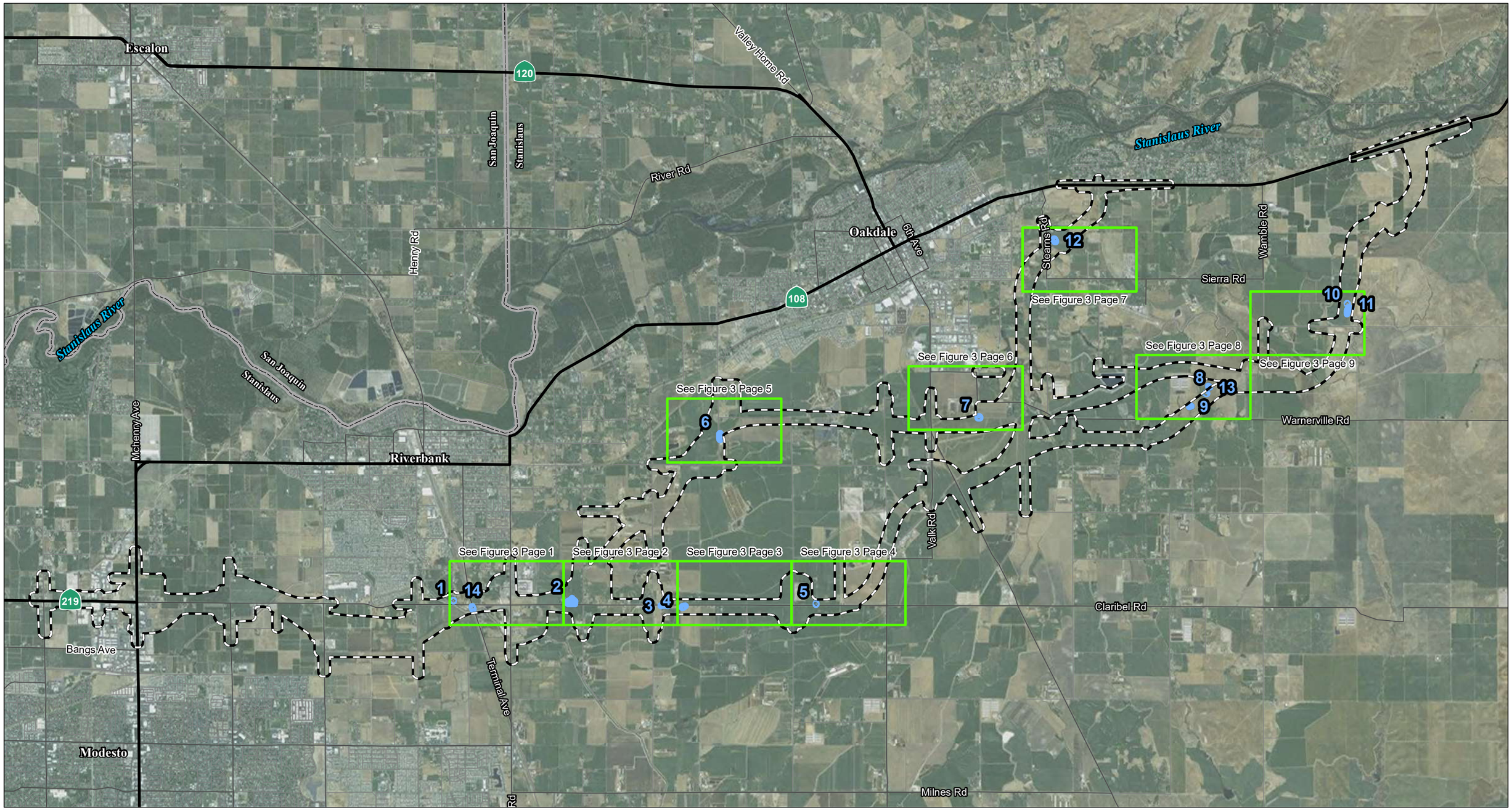
Regional Location

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

0 2.5 5
MILES

SOURCE: ESRI Imagery (4/2008)

I:\Dhg1302\GIS\Reports\Delin\fig1_reg_loc.mxd (7/14/2014)



LEGEND

Biological Study Area

CTS 2014 - 2015 Survey Feature

FIGURE 2

0 0.5 1
MILES

SOURCE: ESRI Aerial Imagery (2011)

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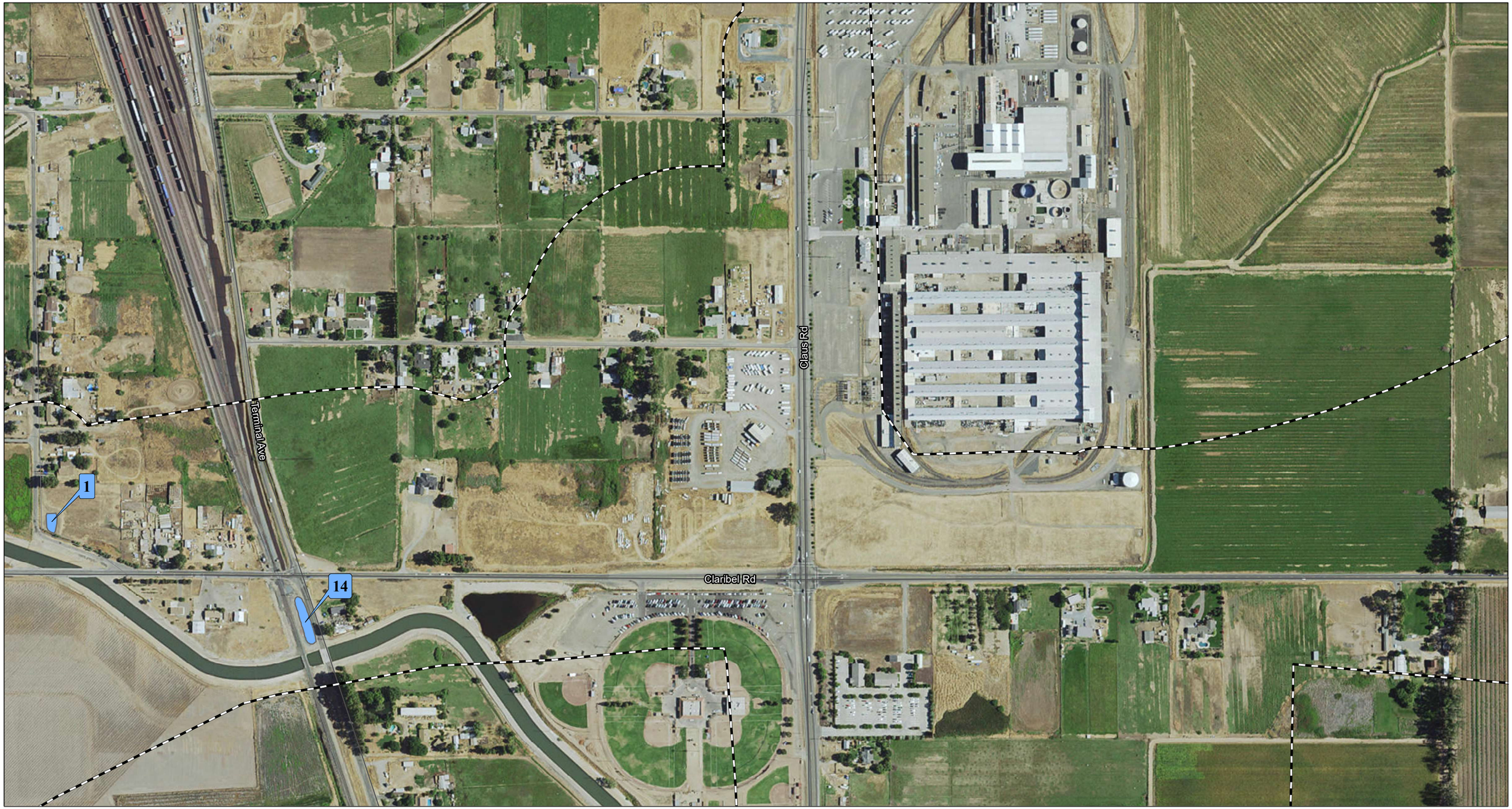
California Tiger Salamander Wet Season Survey 2014-2015
Location of Potential Habitat in Proximity to Alignment Alternatives

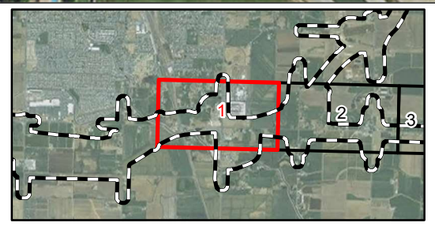
EA: 10-0S800, Project ID: 1000000263
North County Corridor New State Route 108
Stanislaus County, California



LEGEND

Biological Study Area

CTS 2014 - 2015 Survey Feature



0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/2010); Mapping - LSA Associates, Inc. (2014)

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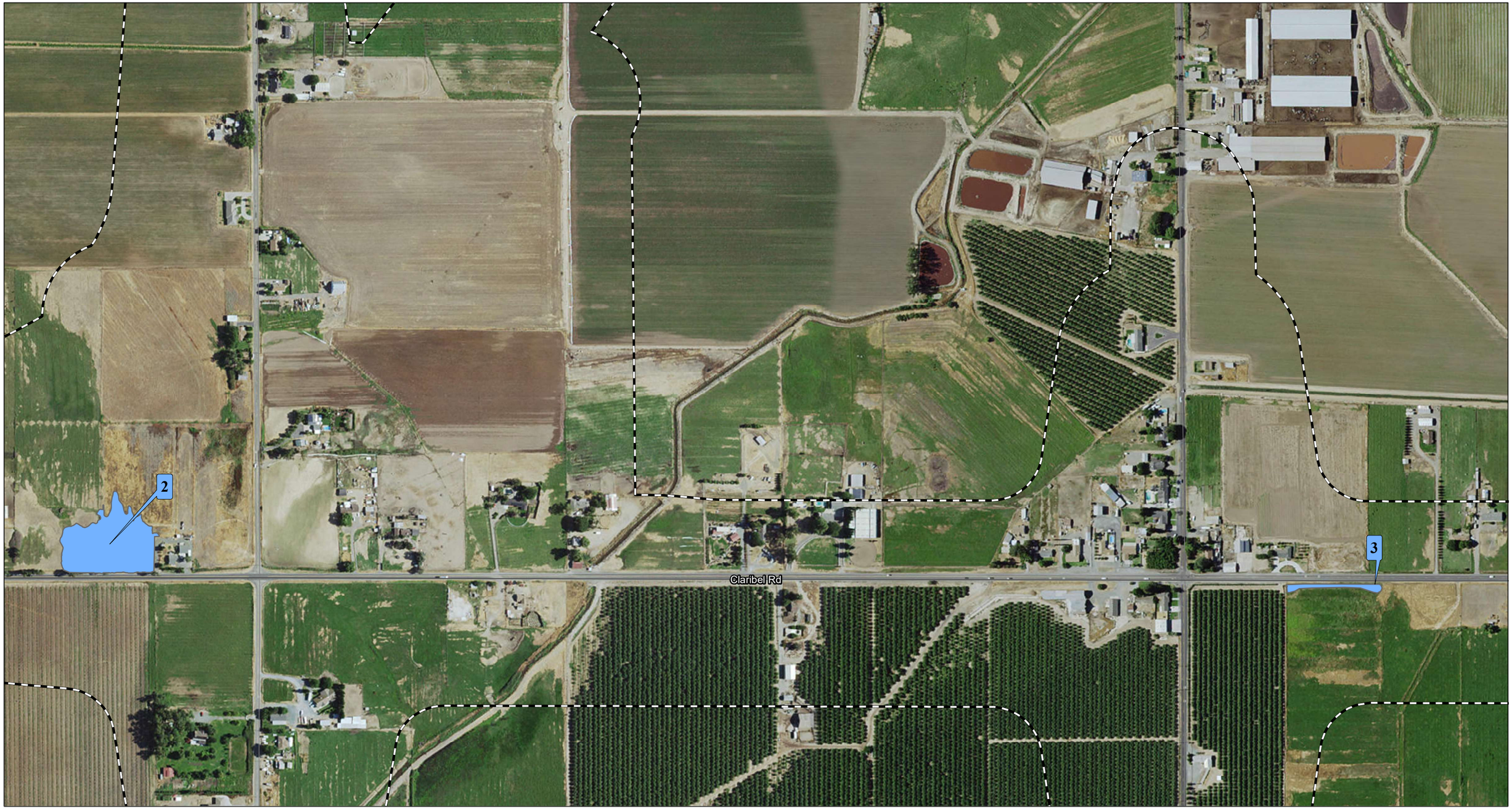
FIGURE 3
Page 1 of 9

California Tiger Salamander Wet Season Survey 2014-2015
Location of Potential Habitat in Proximity to Biological Study Area

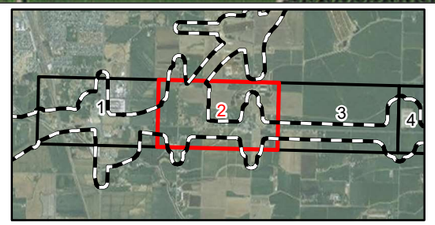
EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



LEGEND

Biological Study Area

CTS 2014 - 2015 Survey Feature



0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/2010); Mapping - LSA Associates, Inc. (2014)

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FIGURE 3
Page 2 of 9

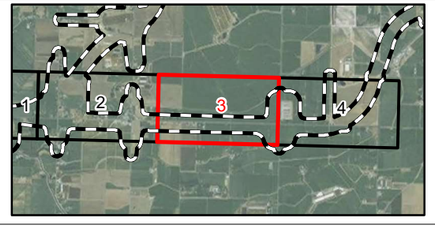
California Tiger Salamander Wet Season Survey 2014-2015
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

LEGEND

Biological Study Area

CTS 2014 - 2015 Survey Feature



0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/2010); Mapping - LSA Associates, Inc. (2014)

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FIGURE 3
Page 3 of 9

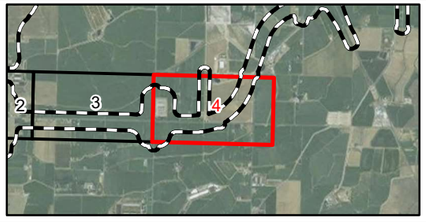
California Tiger Salamander Wet Season Survey 2014-2015
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

LEGEND

Biological Study Area

CTS 2014 - 2015 Survey Feature



0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/2010); Mapping - LSA Associates, Inc. (2014)

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FIGURE 3
Page 4 of 9

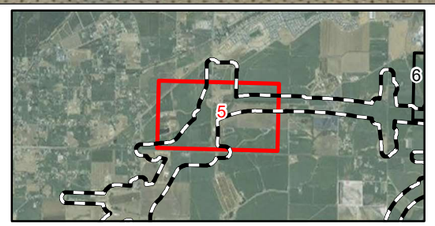
California Tiger Salamander Wet Season Survey 2014-2015
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

LEGEND

Biological Study Area

CTS 2014 - 2015 Survey Feature



0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/2010); Mapping - LSA Associates, Inc. (2014)

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FIGURE 3
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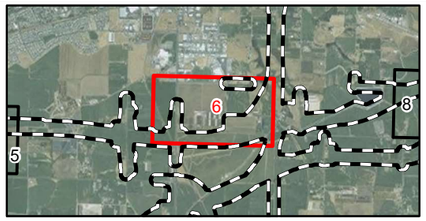
California Tiger Salamander Wet Season Survey 2014-2015
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

LEGEND

Biological Study Area

CTS 2014 - 2015 Survey Feature



0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/2010); Mapping - LSA Associates, Inc. (2014)

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FIGURE 3
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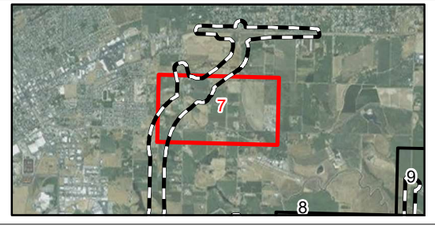
California Tiger Salamander Wet Season Survey 2014-2015
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

LEGEND

Biological Study Area

CTS 2014 - 2015 Survey Feature



0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/2010); Mapping - LSA Associates, Inc. (2014)

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FIGURE 3
Page 7 of 9

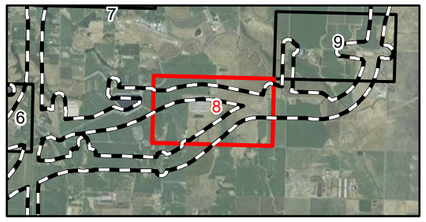
California Tiger Salamander Wet Season Survey 2014-2015
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

LEGEND

Biological Study Area

CTS 2014 - 2015 Survey Feature



0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/2010); Mapping - LSA Associates, Inc. (2014)

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FIGURE 3
Page 8 of 9

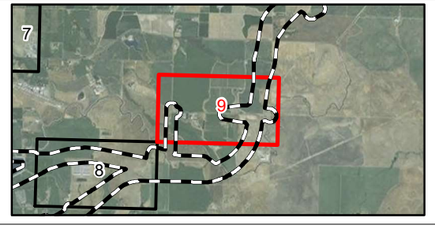
California Tiger Salamander Wet Season Survey 2014-2015
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

LEGEND

Biological Study Area

CTS 2014 - 2015 Survey Feature



0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/2010); Mapping - LSA Associates, Inc. (2014)

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FIGURE 3
Page 9 of 9

California Tiger Salamander Wet Season Survey 2014-2015
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

Caltrans

LEGEND

SR-120/McKinley Avenue Biological Study Area

FIGURE 4

N

0 1500 3000

FEET

SOURCE: NAIP (2014)

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SR-120/McKinley Avenue Interchange Vicinity

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Table 1. Representative Photos of Potentially Suitable CTS Aquatic Habitat

Feature Number	Feature Photo	Attributes
1		- Feature is located in a ruderal field - Water source is canal overflow and roadside drainage - Few suitable burrows were observed in the upland habitat; including in the levee across Litt Road - As of January 15, 2015, this feature was approximately 190' x 90'; up to 2' deep
2		- Feature is located within irrigated pasture - Water source is rainwater and agriculture runoff - Suitable burrows were observed in the upland habitat - As of January 15, 2015, this feature was approximately 205' x 285'

Feature Number	Feature Photo	Attributes
3		- Feature is located in irrigated pasture - Water source is rainwater and runoff from irrigated pasture - Suitable burrows were observed in the upland habitat - As of January 15, 2015, the feature was approximately 60’ x 50’; up to 1’ deep
4		- Feature is located in irrigated pasture - Water source is rainwater and runoff from irrigated pasture - Suitable burrows were observed the upland habitat - As of January 15, 2015, the feature was approximately 150’ x 125’; up to 1’ deep

Feature Number	Feature Photo	Attributes
5		- Small pond located within orchards - Water source is rainwater - Suitable burrows were observed in the upland habitat - As of January 15, 2015, the feature was approximately 10’ x 70; up to 2’deep - This feature drains under Claribel Road and into a pond south of the road - Mosquito fish were observed in the water
6		- Basin located adjacent to irrigated pasture and a dairy farm - Water source is runoff from the adjacent irrigated pasture and a dairy farm - Suitable burrows were observed in the upland habitat - As of January 15, 2015, the feature was approximately 350’ x 50’ - Fish were observed within the basin

Feature Number	Feature Photo	Attributes
7		- Feature is a pond located within irrigated pasture - Water source is runoff from the irrigated pasture and adjacent dairy pond - Suitable burrows were observed in the upland habitat - As of January 15, 2015, it was approximately 74’ x 50’;up to 3 ft. deep - Algal growth was observed on the top of the water and in the water column
8		- Feature is located within grazed annual grasslands - Water source is rainwater and canal overflow - Burrows were observed in the upland habitat - As of January 15, 2015, the pool was approximately 50’ x 50’ x 50’ - Water is clear - *Branchinecta lynchi* and *Linderiella occidentalis* were previous observed in this feature during the 2013-2014 wet season survey for vernal pool crustaceans

Feature Number	Feature Photo	Attributes
9		- Feature is located within annual grasslands - Water source is rainfall and canal overflow - Suitable burrows were observed in the upland habitat - As of January 15, 2015, the feature was approximately 75' x 75' x 56'; up to 1'deep - Water was tea colored as of January 2015 - *Branchinecta lynchi* was previously observed in this feature during the 2013-2014 wet season survey for vernal pool crustaceans
10		- Feature is located in ruderal grassland that is surrounded by orchards and agricultural fields - Water source is rain water and runoff from adjacent agricultural fields - Suitable burrows were observed in the upland habitat - As of January 15, 2015, the feature was approximately 475' x 20'; up to 2' deep

Feature Number	Feature Photo	Attributes
11		- Feature is located in an area of ruderal grassland and is surrounded by agricultural fields and orchards. - Water source is rainwater and runoff from adjacent agricultural fields - Many burrows were observed in the upland habitat - As of January 15, 2014, the feature was approximately 50’ x 50’ x 40’; up to 1’ deep - Some algal growth was observed in the water - Water is tea colored
12		- Feature is located within an orchard and is used as supplemental water for the orchard - Water source is rainfall - Few suitable burrows observed in the upland habitat - The large feature has dried up to two small feature approximately 55’ x 25’ and 60’ x 50’; approximately 6 inches deep - Possible *Anaxyrus boreas* eggs were observed around the edge of the feature

Feature Number	Feature Photo	Attributes
13		- Feature is located within annual grasslands - Water source is rainfall and canal overflow - Suitable burrows were observed in the upland habitat - As of February17, 2015, the feature was approximately 40' x 40' x 40'; up to 6"deep - Water was tea colored.
14		- The feature is located next to railroad tracks - Water source is rainfall and road side run-off - Several suitable burrows were observed in the upland habitat on the west side of the railroad tracks; - As of February18, 2015, this feature was approximately 185' x 40'; up to 3' deep

BERKELEY
CARLSBAD
FRESNO
IRVINE
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO

October 31, 2016

Sarah Markegard
Recovery Branch
U.S. Fish and Wildlife Service
2800 Cottage Way, West 2605
Sacramento, CA 95825

Subject: Results of 2016 Wet Season Survey for California Tiger Salamander at the North County Corridor New State Route 108 Project, Stanislaus County

Dear Sarah:

This letter documents the results of LSA Associates, Inc. (LSA) surveys for California tiger salamanders (CTS) conducted at the North County Corridor New State Route 108 project (project) during the 2015-2016 breeding season. The purpose of the survey was to determine if CTS were present at the project site or in the vicinity of the project.

Authorization for the 2015-2016 surveys was provided by you on December 23, 2015 in accordance with the terms of LSAs permit TE-0797234-9.1 (Attached).

PROJECT DESCRIPTION

The proposed project is located within portions of the Oakdale, Riverbank, and Modesto communities, in northern Stanislaus County, California. The North County Corridor New State Route (SR) 108 Project will connect SR-219 near Modesto, CA to SR-120 near Oakdale, CA (see attached Figures 1 and 2). The proposed project consists of four Build Alternatives (1A, 1B, 2A, and 2B) and the No-Build Alternative.

The western terminus of all alternatives is at the SR-219 (Kiernan Avenue)/Tully Road intersection. The alternatives proceed to the vicinity of the Claus Road/Claribel Road intersection, where Segment 2 begins and the alternatives separate into two different alignments (A and B). In Segment 2, Alternatives 1A and 1B veer northeast near the Claus Road/Claribel Road intersection and pass through the southern boundary of Oakdale, and Alternatives 2A and 2B continue easterly along Claribel Road and turn northeastward past the intersection of Claribel Road/Bentley Road.

4200 Rocklin Road, Suite 11B, Rocklin, California 95677 916.630.4600 www.lsa.net

Each of the alternatives then breaks into two possible alignments to their eastern terminus in Segment 3, just past the Oakdale-Waterford Highway. The eastern terminus of Alternatives 1A and 2A end along SR-108/120 just east of the City of Oakdale boundary. Alternatives 1B and 2B end farther east of the Alternatives 1A and 2A terminus, and are located on SR-108/120 in the vicinity of Lancaster Road. The proposed project improvements include:

- At grade intersection improvements
- Grade separation structures at major roadway and railway crossings
- Structures at various waterway crossings, such as the Hetch Hetchy Aqueduct, Modesto Irrigation District (MID) and Oakdale Irrigation District (OID) canals
- County roadway improvements at various intersections

The four alternatives would consist of two to three 12-foot-wide through lanes with 5-foot to 10-foot-wide left and right shoulders in each direction. The east-bound and west-bound alignments would be separated by a 46 to 70-foot-wide median, including the 5-foot to 19-foot-wide shoulders and 26-foot to 60-foot-wide graded, unpaved median area. Drainage swales would be located along either side of the new roadway.

As the proposed roadway would function as a freeway/expressway with controlled access, new and realigned local access roads are needed to provide continued access to existing properties. This would involve construction of a discontinuous local roadway system, which would provide a 12-foot-wide through lane and an 8-foot-wide shoulder, in each direction. Up to a 12-foot-wide area would be provided between the right-of-way limit and the edge of pavement to allow for drainage ditches. Where required, turn lanes would provide connections to cross roads. Each of the four build alternatives includes these proposed local access roads.

Elevated roadways, separated grade crossings, single point urban interchanges, signalized intersections, and roundabouts would be needed for each of the four alternatives. A Class 2 bike lane would also be constructed within the road shoulder from Claus Road to the eastern terminus at SR-108/120.

Various utilities exist throughout the project area that would need to be relocated. These include electric, telephone, water, sewer, and irrigation lines. At the time of this report, the exact locations to which the impacted utilities would be relocated are unknown, but relocation would take place within the currently defined project area.

Permanent right-of-way and temporary construction easements would also be required for the proposed project.

BACKGROUND

Project Site

The project site is located in northern Stanislaus County within portions of Township 2 South Ranges 9, 10, and 11E and Township 3 South Ranges 9, 10, and 11E Mount Diablo Baseline and Meridian, on the Salida, California, Riverbank, California; Waterford, California; Oakdale, California; and Knights Ferry, California 7.5 minute series USGS topographic maps. The primary land uses within the project site consist of agricultural, residential, commercial, and natural/open space.

The location of potentially suitable aquatic habitat for CTS is depicted in Figure 3, attached.

Five CNDDB records for CTS occur within 5 miles of the northeast corner of the project area. The closest documented occurrence (#175) from April 1993 is located on the south side of SR-120, approximately 8 miles east of Oakdale, and approximately 2 miles northeast of the project. The occurrence included the observation of an unknown number of CTS larvae in two small temporary ponds surrounded by grazed annual grasslands.

Reference Site

During the 2015-2016 survey season, in addition to the project site, LSA also visually surveyed a reference site known to provide suitable aquatic habitat for CTS, with attributes similar to some of the seasonally inundated features that occur at the project site. The reference site is located at the SR-120 McKinley Avenue Interchange Study Area, in southern San Joaquin County, California, located approximately 20 miles west of the project (Figure 4, attached). The reference site is situated south of the City of Lathrop on the north and south side of SR-120. Representative photos of the reference site are included in Figure 5, attached.

The suitable aquatic habitat for CTS is comprised of two depressional features located southwest of the McKinley Avenue overpass. The features are locally isolated, shallow depressions that abut the SR-120 fill slopes. The adjacent properties to the south are irrigated and non-irrigated pastureland that provides suitable upland habitat with aestivation sites for CTS.

METHODS

Project Site

Similar to the 2014-2015 survey, during the 2015-2016 survey season, two types of surveys were conducted on the project site: early season habitat assessments/egg mass surveys (2 total) and aquatic habitat surveys (3 total).

The purpose of the early season habitat assessment/egg mass surveys was to identify aquatic features that appeared to hold sufficient water to provide suitable aquatic habitat for CTS. Data collected for each feature included the approximate area and depth of ponding. In addition, these aquatic features were visually surveyed for the presence of CTS egg masses, which are more likely to be observed early in the season. The early season habitat assessments/egg mass surveys were conducted in January and February 2016, by LSA wildlife biologists Laura Belt and Stefan de Barros.

For the aquatic habitat surveys, survey and sampling methods used followed those outlined in the *United States Fish and Wildlife Service* (*USFWS) Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander*, dated October 2013. Data sheets were completed for each feature that was surveyed. Surveys were conducted using a 10 foot by 4 foot nylon seine with one-eighth inch mesh. For each pull of the seine, the length of the pull, and the depth of the feature through which the seine was pulled was recorded. If CTS were captured, the number of individuals was recorded, in addition to any other amphibians or aquatic invertebrates that were captured in the seine, or were observed in the feature. If the feature was too shallow to adequately seine (i.e., less than 3 inches in depth), a dip-net was used to sample the feature.

The aquatic habitat surveys were conducted by Laura Belt and Stefan de Barros in January, February, March, April, and May 2016.

For the 2015-2016 survey, access was granted to survey suitable sites that were previously identified during the 2014-2015 survey season but were not accessible. These sites included features 2, 15, 16, 17, 18, 19, 20, 21, 22, 23, and 24, and are depicted in Figure 3, attached. During the first surveys conducted in January and February 2016, feature 23 was filled in with large rocks and no longer provided suitable aquatic habitat. Feature 24 was completely inundated with cattails (*Typha* sp.). The density of the cattails in the feature created a physical barrier that obstructed access to the aquatic site. These features were surveyed throughout the season; however the unsuitable aquatic habitat condition of each feature remained the same for the duration of the survey season.

During the first surveys, features 5 and 15 were not accessible; the property owners were not present at the time of the surveys. Similarly, during the March 15 and 16 survey, the property owners were not at the properties at the time of the surveys, and as a result, features 2 and 4 were not accessible and were not surveyed. As a result of significant inundations of over 5 feet in depth, features 6 and 7 were too deep to seine; for safety purposes, the features were sampled from the edge of the water using a dip-net.

Reference Site

LSA wildlife biologists Laura Belt and Stefan de Barros visually surveyed known suitable CTS aquatic habitat at the reference site on January 21, 2016, February 11, 2016, April 13, 2016, and May 4, 2016.

RAINFALL AND PRECIPITATION

The amount of rainfall during the 2015-2016 rainy season was above average; the Oakdale/Modesto area received approximately 122 percent of the normal rainfall for the year. Table A shows the precipitation amount (in inches) per month through May 2016, along with the total amount of precipitation, and the percent average precipitation during that period.

Table A. Precipitation (inches) for the 2015-2016 Water Year (WY) through May

	MONTH									
LOCATION	**OCT**	**NOV**	**DEC**	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**WY to Date**	**Percent Average to Date**
Modesto	0.20	2.22	1.99	5.03	.55	3.81	1.57	0.24	15.61	122

Source: National Weather Service California Nevada River Forecast Center
http://www.cnrfc.noaa.gov/monthly_precip.ph

RESULTS

Project Site

A total of 24 features were identified from aerial imagery prior to the fieldwork being conducted during the habitat assessment/egg mass surveys in January and February 2016, as summarized in Table B. Of the features that were identified, biologists were unable to collect data from two. These features were determined to be unsuitable for CTS, as a result of the fill of feature with rocks, and inundation of a feature by cattails. As a result, there was no data collected at these features.

As a result of the initial site assessment surveys, LSA identified 22 of the 24 aquatic features within the project area as potentially providing suitable aquatic habitat for CTS. Figure 3 attached, depicts the location of the 24 features identified during the pre-survey review. Representative photos and a description of the attributes of each feature are shown in Attachment 3.

No CTS, CTS eggs, or CTS larvae were observed during the early season assessment/surveys or the during the breeding season aquatic habitat surveys. The results of the assessment and surveys are summarized Table B, and a narrative is provided below.

During the January 15 and January 22, 2016 survey, and similar to the 2014-2015 season survey, mosquito fish (*Gambusia* sp.) and adult bull frogs (*Lithobates catesbianna*) were observed in feature 5. Adult pacific chorus frogs (*Pseudacris sierra*), and pacific chorus frog eggs were observed in feature 11. Mature vernal pool fairy shrimp (*Branchinecta lynchi*) were observed in feature 9 and versatile fairy shrimp (*Branchinecta lindahli*) were observed in feature 14. During the February 10, 2016 survey, adult pacific chorus frogs and pacific chorus frog eggs were observed in features 10 and 16; bull frog larvae and mosquito fish were observed in feature 18. No CTS, CTS eggs or larvae were observed in the features.

Similar to the 2014-2015 survey season, during the March 15 and 16, 2016 survey, all of the features except for feature 12 were holding water. Mosquito fish persisted in feature 18, and bull frogs and mosquito fish persisted in feature 5. Pacific chorus frog eggs were observed in features 10, 11 and 16, and Pacific chorus frog larvae were observed in features 9, 10, and 13. Vernal pool fairy shrimp and California fairy shrimp (*Linderiella occidentalis*) were observed in feature 8. No CTS, CTS eggs, or larvae were observed in the features.

Table B: Results of the 2015-2016 Wet Season Habitat Assessment and Survey for California Tiger Salamander

Date of Survey	**January 15 and 22, and February 10, 2016**																							
Water Feature	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Area of Ponding (Feet)	40x20	324x189	200x3 30 inches x 30 inches	258x150	72x10	400x90	100x95	100x80	100x100 x105	700x50	100x63	106x84	150x40	160x30	TI	63x54	105x60	50x25	100x70	Dry	40x15	Dry	Filled In	Cattails
Water Depth (Inches)	Up to 36	Up to 24	Up to 24	Up to 36	N/A	>60	>60	9	14	Up to 36	Up to 42	Up to 30	8	24	-	8	18	42	10	-	10	-	-	-
Number of Pulls with Seine	0	12	8	12	-	DP from edge	DP from edge	12	12	12 Seines & 20 DP	4	10DP	12	10	-	6DP	10DP	12	12DP	-	8DP	-	-	-
Total Number of CTS Larvae Captured	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0
Date of Survey	**March 15 and 16, 2016**																							
Water feature	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Area of Ponding (Feet)	100x100 30x10	TI	10x3 30x30	TI	90x30	400x90	100x75	150x80	240x240 x318	700x50	150x60	Dry	80x40	180x40	91x70x59	80x70	100x100x100	100x20	115x45	40x20	120x30	52x32	Filled In	Cattails
Water Depth (Inches)	Up to 48	-	Up to 24	-	>36	>60	>60	24	30	Up to & >48	>48	-	12	22	30	18	Up to 24	32	12	6	8	8	-	-
Number of Pulls with Seine	6	-	2	-	1DP	DP from edge	DP from edge	12	15	10	10	-	10	3	8	6DP	10DP	12DP	12DP	4DP	8DP	8DP	-	-
Total Number of CTS Larvae Captured	0	-	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Date of Survey	**April 13, 14 and 15, 2016**																							
Water feature	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Area of Ponding (Feet)	100x100	450x400	5x4	200x150	90x20	450x90	100x75	96x72	180x160	750x100	100x90	200x100	85x40	150x80	60x60x50	Dry	100x90	90x20	75x20	Dry	40x20	Dry	Filled In	Cattails
Water Depth (Inches)	Up to 36	Up to 36	11	40	Up to 36	>60	>60	12	36	37	48	2	15	14	18	-	11	48	Up to 12	-	Up to 6	-	-	-
Number of Pulls	10	30	1	20	4DP	DP from edge	DP from edge	3	10	15	10	6DP	7	12	8	-	8	10	6	-	4	-	-	-
Total Number of CTS Larvae Captured	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Date of Survey	**May 18 and 19, 2016**																							
Water feature	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Area of Ponding (Feet)	80x30	400x400	60x30	60x30	70x12	150x80	120x90	Dry	100x100x170	500x30	110x100	200x100	Dry	30x15 20x10	Dry	Dry	Dry	70x30	Dry	Dry	Dry	Dry	Filled In	Cattails
Water Depth (Inches)	20	24	30	14	>36	>60	>60	-	38	28	Up to 32	36	-	10	-	-	-	40	-	-	-	-	-	-
Number of Pulls with Seine	4	12	4	4	1	DP from edge	DP from edge	-	12	10	6	14	-	4	-	-	-	2	-	-	-	-	-	-
Total Number of CTS Larvae Captured	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes:
--Not surveyed, N/A - No Access, TI – Temporarily Inaccessible, Dry – No water was observed, DP - Dip-netted

During April 2016, with the exception of features 16, 20 and 22 that were dry, the majority of the features continued to hold water. No CTS, CTS eggs or larvae were observed in the features. During the April 13, 14 and 15, 2016 survey, Pacific chorus frogs, chorus frog eggs, chorus frog larvae and chorus frog metamorphs were observed in features 2, 4, 8, 9, 10, 11 and 12. Bull frog larvae were observed in features 5, 10, and 18, and mosquito fish were observed in features 5 and 18. Similar to the May 2015 survey, most of the water features held considerably less water during the May 18 and 19, 2016 survey. During the May survey, California western toad (*Anaxyrus boreas halophilus*) larvae were observed in feature 1, and Pacific chorus frogs were observed in features 2, 3, 11, and 12. Bull frogs persisted in feature 5, and bull frogs and mosquito fish persisted in feature 18. Similar to the 2014-2015 season survey, features 3 and 12 held more water, as a result of supplemental irrigation water. Features 15, 16, 17, 19, 20, 21 and 22 were dry. No CTS, CTS eggs or CTS larvae were observed in the features.

Reference Site

The two suitable features at the McKinley Avenue Site were visually surveyed on January 21, 2016, February 11, 2016, April 13, 2016 and May 4, 2016. During the January 21, 2016 survey at both features, multiple CTS eggs and emergent larvae were observed. During the February 11 survey at both features, multiple CTS larvae measuring up to 1.5 inches in length were observed. During the April 13 survey, multiple CTS metamorphs were observed that measured up to 5 inches in length. During the May 4, 2016 survey, all of the features were dry. Figures 5, 6, and 7 (attached) depict the site conditions during the January, February, and April site visits.

CONCLUSION

No CTS, CTS larvae, or CTS eggs were observed during the 2015- 2016 breeding season surveys conducted at the North County Corridor State Route 108 project site. The Central Valley experienced above average rainfall amounts during the 2015 -2016 CTS breeding season. The timing and the amount of inundation of the features at the project provided enough time for a successful reproduction season for Pacific chorus frogs and bull frogs which require approximately the same duration of inundation for successful breeding as CTS. Therefore, if CTS were present at the project site, the heavy rains in early December 2015 would have provided enough water to fill the project features and, with the help of subsequent rain events in January and March, maintain a sufficient amount of water in most of the features for a sufficient duration for CTS to successfully reproduce. In addition, anecdotal evidence from the McKinley Avenue reference site, where CTS eggs, and CTS larvae were observed during the 2013-2014 and 2014-2015 breeding season, and CTS eggs, larvae and metamorphs were observed during the 2015-2016 breeding season, suggests that regional conditions were suitable for CTS reproduction. Therefore, based on this information, the negative results for CTS surveys at the North County Corridor State Route 108 project site should be considered valid.

Please let me know if you have any questions.

Sincerely,

LSA ASSOCIATES, INC.

Laura Belt
Senior Wildlife Biologist

Attachments:

USFWS Authorization to Conduct CTS Surveys 2015-2016
Figure 1: Regional Location
Figure 2: Location of Potential Habitat in Proximity to Alignment Alternatives
Figure 3: Location of Potential Habitat in Proximity to Biological Study Area
Figure 4: SR-120/McKinley Avenue Study Area – Reference Site
Figure 5: Representative Photos of Reference Site - SR-120/McKinley Avenue Biological Study Area, January 21, 2016
Figure 6: Representative Photos of Reference Site - SR-120/McKinley Avenue Biological Study Area, February 11, 2016
Figure 7: Representative Photos of Reference Site - SR-120/McKinley Avenue Biological Study Area, April 13, 2016
Attachment 3 - Representative Photos of Potentially Suitable CTS Aquatic Habitat

LSA

LSA ASSOCIATES, INC.
4200 ROCKLIN ROAD, SUITE 11B
ROCKLIN, CALIFORNIA 95677

916.630.4600 TEL
916.630.4603 FAX

BERKELEY
CARLSBAD
FRESNO
IRVINE
PALM SPRINGS
PT. RICHMOND
RIVERSIDE
SAN LUIS OBISPO

December 21, 2015

David Kelly
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Subject: Request for Authorization to Conduct Protocol Aquatic Larval Surveys for California Tiger Salamander at the North County Corridor State Route 108 Project, Stanislaus County (Service Reference Number 2011- TA-0066)

Dear Mr. Kelly:

On behalf of the County of Stanislaus (County), LSA Associates, Inc. (LSA), in accordance with the terms of permit TE-0797234-9.1, would like to request authorization to conduct a second protocol larval survey for California tiger salamander (*Ambystoma californiense*) (CTS). The results of the 2014/2015 wet season survey of the project site were negative for the presence of CTS. The report that documents the negative results is currently under review. As soon as the final report is available, LSA will submit one electronic and one hard copy of the report(s) to you and a separate hard copy to Jen Schofield, at the San Joaquin Valley Division.

As documented in last year's request, the County is proposing to construct the North County Corridor State Route (SR) 108 project (project) in Stanislaus County. The project is proposed to begin near the McHenry Avenue and Claribel Road intersection, north of the City of Modesto, and extend east for approximately 15 miles, ending along the alignment of SR 120/108, east of the City of Oakdale (Figures 1 and 2, attached). Four alternatives are currently being considered for the project. There are no documented occurrences in the California Natural Diversity Database for CTS in the project site. However, there are five documented occurrences within 5 miles of the project.

The project site consists of agricultural lands, residential, commercial, and natural/open spaces. LSA proposes to survey the 14 aquatic features that were identified within the project area as potentially providing suitable aquatic habitat for CTS (Figure 2). Table 1, attached, includes photos and attributes of each feature. LSA is also requesting authorization to survey additional features not currently identified as potential aquatic habitat for CTS.

The surveys would be conducted using dip nets and seins in accordance with U.S. Fish and Wildlife Service and California Department of Fish and Wildlife's *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander*.

The CTS surveys will be conducted by LSA biologists Laura Belt and Stefan de Barros. Resumes for both biologists are attached behind Table 1.

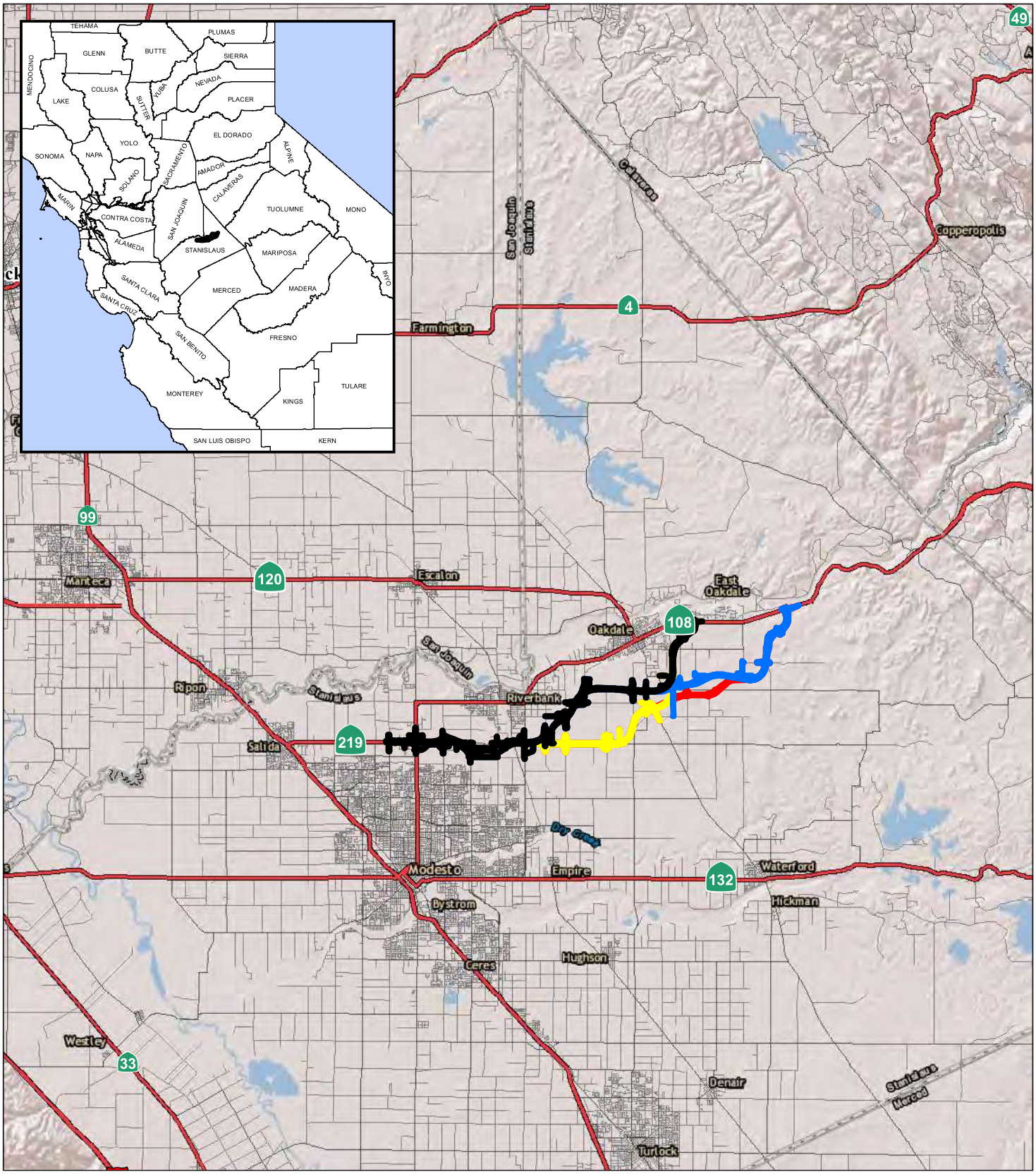
Sincerely,

LSA ASSOCIATES, INC.

Laura Belt

Laura Belt, Senior Wildlife Biologist

12/21/15 (P:\DHG1302\tech studies\biology\CTS\CTS Survey Request (2)\CTS Request for Auth (2)_2015_2016.docx)



LEGEND

- Alternative 1A
- Alternative 1B
- Alternative 2A
- Alternative 2B

0 2.5 5
MILES

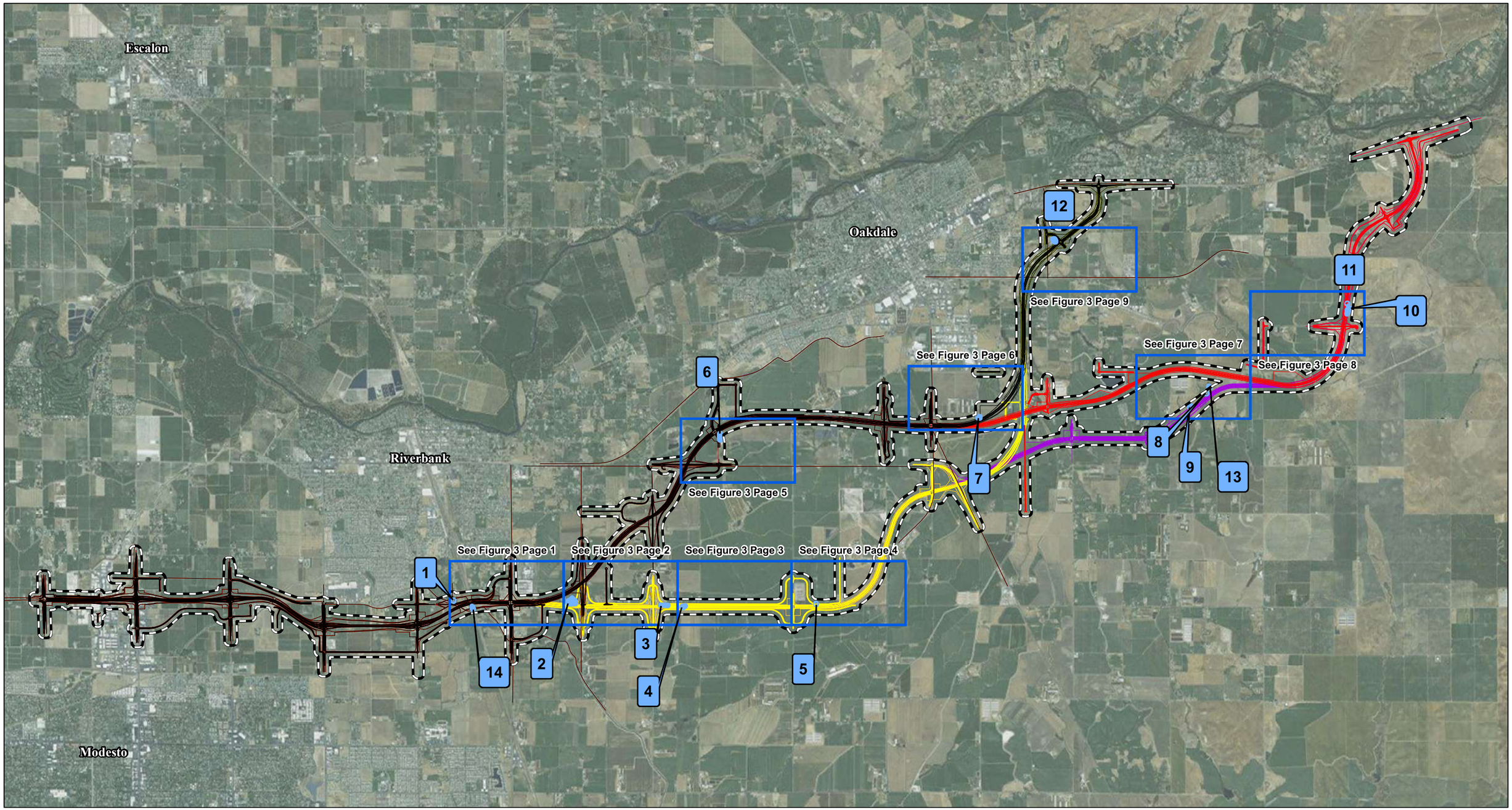
SOURCE: ESRI Imagery (4/2008)

I:\Dhg1302\GIS\Reports\2014 VP Wet\fig1_reg_loc.mxd (7/14/2014)

FIGURE 1

Regional Location

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



LEGEND

- Biological Study Area
- Feature Boundary
- Alternative 1A
- Alternative 1B
- Alternative 2A
- Alternative 2B

0 0.5 1
MILES

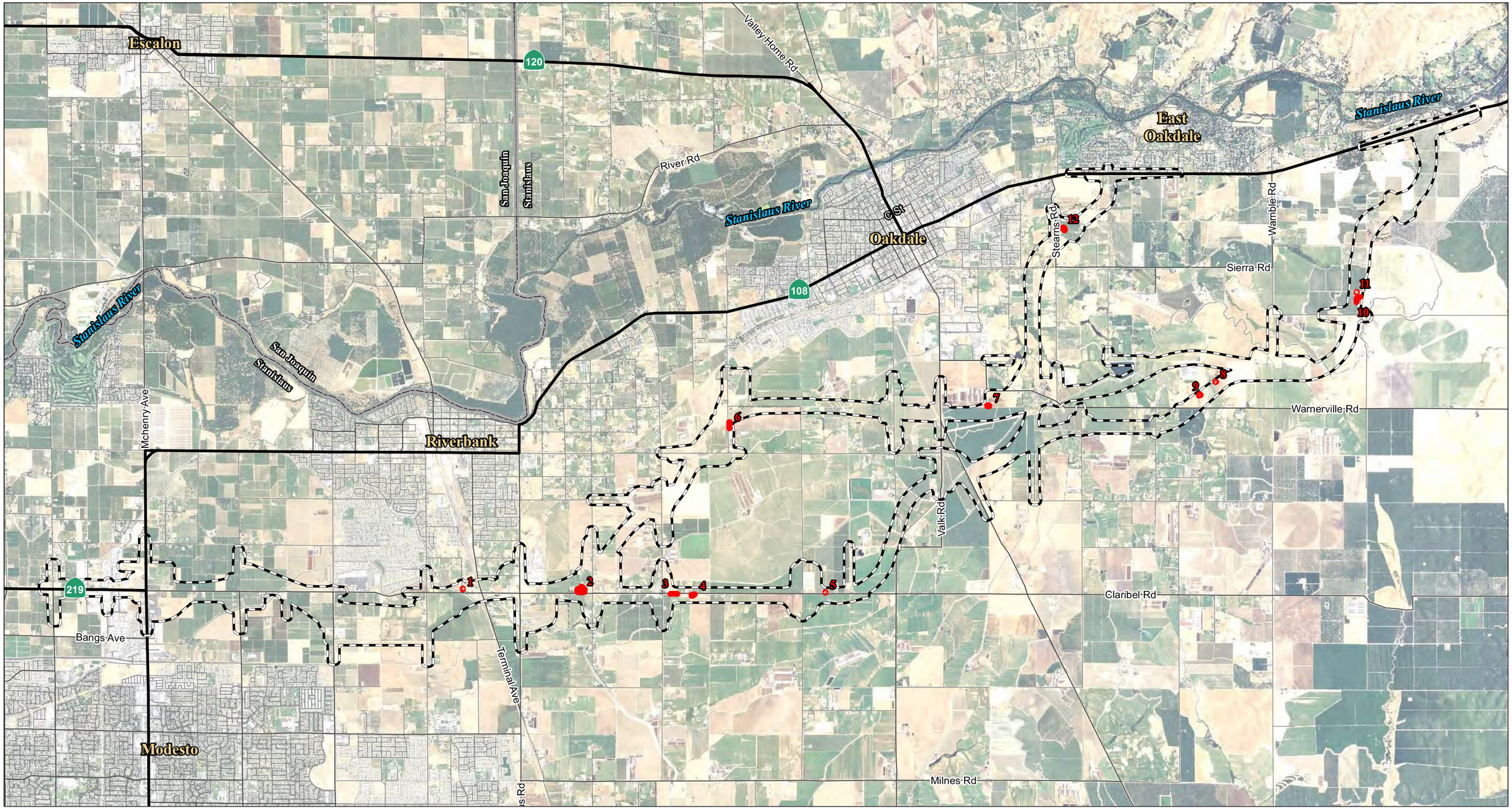
SOURCE: ESRI Aerial Imagery (2011)

I:\Dhg1302\GIS\Reports\CTS\fig2_sample_locs.mxd (11/3/2015)

FIGURE 2

California Tiger Salamander Wet Season Survey 2014-2015
Location of Potential Habitat in Proximity to Alignment Alternatives

EA: 10-0S800, Project ID: 1000000263
North County Corridor New State Route 108
Stanislaus County, California



LEGEND

Biological Study Area

CTS Survey Features

0 0.5 1
MILES

SOURCE: NAIP (2012); Mapping - LSA Associates, Inc. (2014)

I:\Dhg1302\GIS\cts_auth-Fig3.mxd (1/22/2015)

FIGURE 3

CTS Wet Season Survey Features

EA: 10-0S800, Project ID # 1000000263

North County Corridor New State Route 108 Project

Stanislaus County, California

Table 1. Representative Photos of Potentially Suitable CTS Aquatic Habitat

Feature Number	Feature Photo	Attributes
1		- Feature is located in ruderal field adjacent to Litt Road - Water source is canal overflow and roadside drainage - Few suitable burrows were observed in the upland habitat; including the levee next to Litt Road - Last year following significant rain events, this feature measured approximately 190 feet x 90 feet, and up to 2 feet in depth
2		- Feature is located within irrigated pasture - Water source is rainwater and agriculture runoff - Suitable burrows were observed in the upland habitat - Last year following significant rain events, this feature measured approximately 205 feet x 285 feet (the depth was unknown)

Feature Number	Feature Photo	Attributes
3		- Feature is located in irrigated pasture - Water source is rainwater and runoff from irrigated pasture - Suitable burrows were observed in the upland habitat - Last year following significant rain events, this feature measured approximately 60 feet x 50 feet, and up to 2 feet in depth
4		- Feature is located in irrigated pasture - Water source is rainwater and runoff from irrigated pasture - Suitable burrows were observed the upland habitat - Last year following significant rain events, this feature measured approximately 150 feet x 125 feet, and up to 2 feet in depth

Feature Number	Feature Photo	Attributes
5		- Small pond located within orchard - Water source is rainwater - This feature drains under Claribel Road and into a pond south of the road - Suitable burrows were observed in the upland habitat - Last year following significant rain events, this feature measured approximately 10 feet x 70 feet, and up to 2 feet in depth
6		- Basin located adjacent to irrigated pasture and a dairy farm - Water source is runoff from the adjacent irrigated pasture and dairy farm - Suitable burrows were observed in the upland habitat - Last year following significant rain events, this feature measured approximately 350 feet x 50 feet, and over 4 feet in depth

Feature Number	Feature Photo	Attributes
7		- Feature is a pond located within irrigated pasture - Water source is runoff from the irrigated pasture and adjacent dairy pond - Suitable burrows were observed in the upland habitat - Last year following significant rain events, this feature measured approximately 75 feet x 50 feet, and up to 3 feet in depth
8		- Feature is located within grazed annual grasslands - Water source is rainwater and canal overflow - Burrows were observed in the upland habitat - Last year following significant rain events, this feature measured approximately 50 feet x 50 feet x 50 feet, and up to 1 foot in depth - *Branchinecta lynchi* and *Linderiella occidentalis* were previously observed in this feature during the 2013-2014 wet season survey for vernal pool branchiopods

Feature Number	Feature Photo	Attributes
9		- Feature is located within annual grasslands - Water source is rainfall and canal overflow - Suitable burrows were observed in the upland habitat - Last year following significant rain events, this feature measured approximately 75 feet x 75 feet x 56 feet, and up to 1 foot in depth - *Branchinecta lynchi* was previously observed in this feature during the 2013-2014 wet season survey for vernal pool branchiopods
10		- Feature is located in ruderal grassland that is surrounded by orchards and agricultural fields - Water source is rain water and runoff from adjacent agricultural fields - Suitable burrows were observed in the upland habitat - Last year following significant rain events, this feature measured approximately 475 feet x 20 feet, and up to 3 feet in depth

Feature Number	Feature Photo	Attributes
11		- Feature is located in an area of ruderal grassland and is surrounded by agricultural fields and orchards. - Water source is rainwater and runoff from adjacent agricultural field - Many burrows were observed in the upland habitat - Last year following significant rain events, this feature measured approximately 50 feet x 50 feet x 40 feet, and up to 1 foot in depth
12		- Feature is located within an orchard and is used as supplemental water for the orchard - Main water source is rainfall, but is also supplemented by another water source - Few suitable burrows observed in the upland habitat - Last year following significant rain events, this feature measured approximately 125 feet x 60 feet, and up to 2 feet in depth

Feature Number	Feature Photo	Attributes
13		- Feature is located within annual grasslands - Water source is rainfall and canal overflow - Suitable burrows were observed in the upland habitat - Last year following significant rain events, this feature measured approximately 75 feet x 50 feet, and up to 9 inches in depth
14		- The feature is located next to railroad tracks on the south side of Claribel Road - Water source is rainfall and road side run-off - Several suitable burrows were observed in the upland habitat on the west side of the railroad tracks; - Last year following significant rain events, this feature measured approximately 185 feet x 50 feet, and up to 3 feet in depth

LAURA BELT

SENIOR WILDLIFE BIOLOGIST

LSA

EXPERTISE

Wildlife Surveys

Endangered Species Surveys

Construction Monitoring

Environmental Assessment

EDUCATION

California State University, Bakersfield. Bachelor of Science Degree in General Biology, 1989.

CERTIFICATIONS AND TRAINING

U.S. Fish and Wildlife Service Permit #TE-797234-9.1: Authorization to handle listed vernal pool crustaceans and California tiger salamander. State of California Department of Fish and Game Scientific Collecting Permit #7839. Authorization to conduct "capture and release" of wildlife for identification and enumeration purposes.

Trained to conduct protocol surveys for vernal pool branchiopods, valley elderberry longhorn beetle, California red-legged frog, foothill yellow-legged frog, western spade foot, California tiger salamander, San Francisco garter snake, giant garter snake, Pacific pond turtle, western burrowing owl, Swainson's hawk,

PROFESSIONAL RESPONSIBILITIES

Ms. Belt has a diverse background as a wildlife field biologist, which includes over 20 years of experience in conducting habitat and wildlife surveys throughout the state. Ms. Belt is responsible for conducting biological surveys and construction monitoring of projects including road work and bridge replacement and development projects.

The following highlights some of her survey and construction monitoring experience with California tiger salamander, vernal pool crustaceans, and other special status species.

PROJECT EXPERIENCE

Potrero Hills Landfill Study Site – Suisun City, Solano County. Conducted protocol wet season surveys (2005-2011) for listed vernal pool crustaceans, conducted non-protocol surveys for California tiger salamander (CTS) at the 1,400 acre Potrero Hills Landfill Study Site. Identified vernal pool fairy shrimp (*Branchinecta lynchi),* California fairy shrimp *(Linderiella occidentalis),*conservancy shrimp *(Branchinecta conservatio)* and vernal pool tadpole shrimp (*Lepidurus packardi)* in the seasonal ponds and vernal pools on the mitigation site, and CTS in the seasonal ponds on the landfill site during the annual wet season surveys. Observed CTS at: egg stage, larvae emergence from eggs, larvae measuring 1.0 cm to 10.0 cm in length, and mature male and female CTS that measured up to 25.0 cm in length.

California High Speed Rail – Fresno to Bakersfield, Kern County. LSA provided general biological surveys for nesting birds and wildlife and focused surveys for San Joaquin kit fox, burrowing owls and vernal pool branchiopods (in ponded features along the alignment).

Delta Diablo Plant – Antioch, Contra Costa County. Assisted in conducting dry season surveys and the identification of vernal pool branchiopods, within an extensive vernal pool complex where both listed branchiopods and California tiger salamanders are known to inhabit.

State Route 26 Road Improvements Project, Valley Springs, San Joaquin/Calaveras Counties. Conducted preconstruction and construction monitoring for California tiger salamander associated with 3.0 mile road realignment and widening in the vicinity of seasonal wetlands. Documented the occurrence of western spade foot frog on the site and relocated a total of 4 CTS to suitable burrows outside of project limits.

State Highway 41 Quarry Site – Madera County. Mapped suitable habitat for vernal pool branchiopods and CTS at 300 acre property located at the intersection of Highway 41 and Highway 45. CTS eggs were observed in deep vernal pools and mature vernal pool fairy shrimp were observed in shallow vernal pools.

Mohave ground squirrel, and San Joaquin kit fox.

PROJECT EXPERIENCE (CONTINUED)

Hollister 53 Property – San Benito County. Conducted multiple wet season non-protocol surveys for CTS at a cattle ranch in Hollister to determine if the site provided suitable breeding habitat for CTS. All life stages of CTS were observed in the water feature, including a metamorph located just outside of the pond.

John Smith Road Realignment Project - San Benito County. Conducted bi-monthly protocol dip net and seining surveys to determine presence of CTS and vernal pool branchiopods in seasonal wetland features located in new road alignment in Hollister. Observed vernal pool fairy shrimp in water feature.

State Route 68 and San Benancio Road Improvements Project – Monterey County. Conducted day and night-time preconstruction surveys, and construction monitoring for bridge widening and intersection improvement project in the vicinity of suitable habitat for California red-legged frog and CTS. Conducted Employee
Awareness Training for all protected species.

Triangle Rock Vernal Pool Preserve and Laguna Creek Enhancement Sites – Sacramento County. Conducted protocol and non-protocol wet season surveys (2004-2011) for listed vernal pool crustaceans at the 110 acre Preserve Property and 27 acre Enhancement site as part of habitat mitigation. Vernal pool fairy and tadpole shrimp, mid-valley fairy shrimp and California fairy shrimp were observed in the reference and created pools.

Rockwell Ranch Property – Lincoln, Placer County. Conducted protocol wet season survey for vernal pool crustaceans on a 515 acre property. The survey was conducted to evaluate the property as a mitigation site for listed vernal pool invertebrates for the California Department of Transportation Route 65 Lincoln Bypass project. Surveys were conducted for vernal pool fairy shrimp and vernal pool tadpole shrimp. Both listed species were observed during the survey.

Route 65 Lincoln Bypass Project – Placer County, California. 2000 to 2014. Working with Caltrans, conducted environmental studies and obtained permits for a 13 mile freeway bypass in western Placer County. The project included construction of 17 bridges across creeks and sloughs in habitats that support woodlands and grasslands with vernal pools; the project area also supports listed vernal pool branchiopods.

Performed biological monitoring tasks that include preconstruction surveys for nesting Swainson's hawks (and other nesting birds), employee awareness training, monitoring fencing for ESAs to ensure compliance with project permits, and monitoring general construction activities for environmental compliance.

STEFAN DE BARROS
ASSISTANT BIOLOGIST

LSA

EXPERTISE

Biological Assessments

Compliance Monitoring

Rare, Threatened, and Endangered Species Surveys

Jurisdictional Delineations

EDUCATION

B. S., Biology (Botany)
2010
San Francisco State University

CONTINUING EDUCATION

Fairy Shrimp of California
Rocklin, CA
December 2015

Lizards and Snakes of the East Mojave Desert
May 2013

Desert Tortoise Workshop
November 2012

Hydrogeology Monitoring Ground Water Flow and Contamination
SFSU
January-May 2011

PROFESSIONAL EXPERIENCE

Assistant Biologist
LSA Associates, Inc.
April 2012-Present

Mycologist, National Science Foundation, Chiang Mai, Thailand, June-August 2010

PROFESSIONAL AFFILIATIONS

California Department of Fish and Wildlife Scientific Collecting Permit SCP-13355

Desert Tortoise Council

PROFESSIONAL RESPONSIBILITIES

As an Assistant Biologist, Mr. de Barros is responsible primarily for conducting focused surveys for special-status species and construction and compliance monitoring. He has specific experience in large-scale construction monitoring, ensuring regulatory compliance, coordinating with contractors and subcontractors, and preparing associated reports and documents. His experience includes biological resources assessments, special-status species surveys, and jurisdictional delineations. He has conducted specific special status surveys and biological monitoring for vernal pool branchiopods, San Joaquin kit fox, desert tortoise, Coachella Valley fringe-toed lizard, burrowing owl, nesting birds, and a variety of special status plant species.

PROJECT EXPERIENCE

California High Speed Rail – Fresno to Bakersfield Section, Kern County, California
LSA provided general biological surveys for nesting birds and wildlife and focused surveys for San Joaquin kit fox, burrowing owls and vernal pool branchiopods (in ponded features along the alignment).

Delta Diablo Plant – Antioch, Contra Costa County, California
Assisted in conducting dry season surveys and the identification of vernal pool branchiopods, within an extensive vernal pool complex where both listed branchiopods and California tiger salamanders are known to inhabit.

Potrero Hills/Tu Lang Ranch, Suisun, Solano County, California
Mr. de Barros was responsible for conducting dry season sampling of branchiopod cysts and identification within an extensive vernal pool complex where both listed branchiopods and California tiger salamander are known to inhabit.

Cosumnes River Boulevard/I-5 Interchange and Extension Project, Sacramento County, California
LSA provided The Hanna Group with biological monitoring for nesting birds and giant garter snake located within the project footprint. Mr. de Barros was responsible for conducting nesting bird surveys and ensure project activities were in compliance with mitigation measures. He was also responsible for ensuring giant garter snake exclusionary fence was functioning properly and that a buffer surrounding a burrowing owl nest was maintained.

Southern California Edison On-Call Projects
Riverside and San Bernardino Counties, California
LSA has an on-call services contract with Southern California Edison (SCE) that includes biological assessments, sensitive species surveys, deteriorated pole assessments, preconstruction surveys, construction monitoring, post construction monitoring, and permitting. Mr. de Barros conducts biological surveys and monitoring for these deteriorated pole

California Native Plants Society

Mycological Society of San Francisco

PROJECT EXPERIENCE (CONTINUED)

removal and replacement projects. He has conducted in-field employee environmental training as well as pre-construction surveys and habitat suitability assessments for Coachella Valley milkvetch, desert tortoise, Coachella Valley fringe-toed lizard, nesting birds, California gnatcatcher, and burrowing owl, for pole-related construction projects located on both private and public lands throughout Southern California, southwestern Nevada, and western Arizona.

SCE Devers-Mirage 115 kV Subtransmission System Split Project
Riverside County, California
LSA provided preconstruction surveys and biological monitoring to SCE for the Devers-Mirage 115 kV Subtransmission Split Project. Mr. de Barros conducted surveys for Coachella Valley milkvetch, Coachella Valley fringe-toed lizard, burrowing owls and nesting birds, as well as providing monitoring expertise for the project per requirements of the Biological Opinion. Specifically, Mr. de Barros coordinated with contractors and subcontractors to ensure that species of concern were not impacted by the project activities. Mr. de Barros was responsible for creating project-specific Environmentally Sensitive Areas (ESAs) and making sure they were clear and visible to all construction personnel. Mr. de Barros was approved by the USFWS as an Authorized Biologist for this project to handle and independently relocate the federal/State listed as endangered Coachella Valley fringe-toed lizard, and he monitored a pair of burrowing owls during construction activities.

SCE, West of Devers Upgrade Project
Riverside and San Bernardino Counties, California
Mr. de Barros conducted burrowing owl surveys and a jurisdictional assessment of waters within the project's alignment, and provided biological monitoring and GPS mapping for the geotechnical and underground utility location services for SCE's transmission line upgrade project through nearly 50 miles of public and private lands in Riverside and San Bernardino Counties.

Sand Fencing Research Project
Whitewater Floodplain Conservation Area
Riverside County, California
LSA provided biological monitoring to the Coachella Valley Conservation Commission for the installation of chain link fence to facilitate the deposition of sand and to increase habitat quality for sand dune-associated species covered under the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP). Mr. de Barros was approved by the USFWS as an Authorized Biologist for this project to independently handle and relocate the federal/State listed as endangered Coachella Valley fringe-toed lizard.

PROJECT EXPERIENCE (CONTINUED)

I-10 Bypass Project, Riverside County, California
For this ongoing transportation project, Mr. de Barros conducts focused desert tortoise and burrowing owl surveys, and assists with the biological assessment, jurisdictional delineation, and vegetation mapping. He also conducted a MSHCP Narrow and Endemic Plant Species Survey (NEPSSA) for many-stemmed dudleya and Yucaipa onion.

SCE El Dorado Substation Road Grading Project, California and Nevada
For this large road-grading project, Mr. de Barros performed preconstruction surveys for the desert tortoise and flagged all desert tortoise sign for avoidance. Additionally, Mr. de Barros provided desert tortoise environmental awareness training to SCE road-grading crews, and monitored the road grading to ensure impacts to the desert tortoise were avoided.

SCE AR545 and AR538 Switch Center Repair Project
Riverside County, California
As a project-approved USFWS Authorized Biologist for Coachella Valley fringe-toed lizard, Mr. de Barros conducted in-field employee environmental training and biological monitoring for this SCE project in Coachella Valley fringe- toed lizard habitat.

SCE CPV Sentinel Generation Tie-In Project
Riverside County, California
Mr. de Barros provides SCE transmission crews with proper mitigation measures for onsite work. Services include biological monitoring, preconstruction surveys for desert tortoise, burrowing owls, and other special-status species.

From:	Markegard, Sarah
To:	Laura Belt
Cc:	Stefan De Barros; Jeff Bray; John Digregoria
Subject:	Re: North County Corridor/ SR-108 Project - Request for Authorization to Conduct Non-Protocol Aquatic Survey for California Tiger Salamander
Date:	Wednesday, December 23, 2015 7:38:01 AM

Laura Belt,

By this email message you are authorized to conduct protocol-level wet-season surveys (2015-2016) for federally-listed California tiger salamanders, per the conditions of your recovery permit TE-797234-10.1 and as specified in your letter request with maps dated December 21, 2015. The surveys will be conducted at the following site:

1. CalTrans North County Corridor SR 108 Project, Stanislaus County (Service Reference Number 2011-TA-0066)

Surveys may be conducted within all seasonally inundated wetlands identified on-site that may provide suitable tiger salamander habitat. Suitable habitat not previously identified on the project site may also be sampled under this authorization. Surveys will be conducted by Laura Belt with Stefan de Barros assisting. Stefan de Barros must be accompanied by a permitted biologist at all times, as he is not included on the List of Authorized Individuals for the permit.

Please remember to carry a copy of your permit while doing the work, and to follow the terms and conditions of the permit and the survey guidelines, including the reporting requirements. In your report, please include which surveys were authorized, the names of all persons involved in the surveys, their recovery permit numbers, if applicable, and the date of this authorization, to help ensure that we correctly record the fulfillment of the reporting requirement under this authorization. Let us know if the surveys are not performed as authorized, or if they are done by a different permittee under a separate authorization. This authorization does not include access to the property which must be arranged with the landowner or manager.

Please send electronic copies of the report(s) to Sarah Markegard, of our Recovery Branch and John DiGregoria, Transportation Liaison for District 10. We ask that you use UTM coordinates for all spatial data and that you use the Service reference number above in future correspondence regarding these surveys.

To ensure the accuracy and data integrity of your project, it is requested that you provide spatial information (boundaries, study areas, parcels, point locations, etc.) in the form of an ESRI shape file with projection, a GPS file with projection, or locations in an Excel spreadsheet with projection information . The preferred projection is UTM, Zone 10S, NAD83; the Sacramento Fish and Wildlife Office (SFWO) standard. FGDC compliant metadata must accompany each file. Please include any USFWS File Numbers associated with the data in your documentation. For additional information regarding metadata standards refer tohttp://www.fgdc.gov. For more information regarding spatial data please contact: Cheryl L. Hickam, GIS Branch Chief, U.S. Fish and Wildlife Service, 2800 Cottage Way, Suite W-2605, Sacramento, Ca 95825-1846, office: 916-414-6708.

On Tue, Dec 22, 2015 at 7:08 AM, Kelly, David <david_kelly@fws.gov> wrote:

---------- Forwarded message ----------
From: **Laura Belt** <Laura.Belt@lsa-assoc.com>
Date: Mon, Dec 21, 2015 at 6:28 PM
Subject: North County Corridor/ SR-108 Project - Request for Authorization to Conduct Non-Protocol Aquatic Survey for California Tiger Salamander
To: "David_Kelly@fws.gov" <David_Kelly@fws.gov>
Cc: Jeff Bray <Jeff.Bray@lsa-assoc.com>, Stefan De Barros <Stefan.DeBarros@lsa-assoc.com>

Dear David,

Attached please find a copy of LSA Associates Inc. (LSA) Request for Authorization to Conduct Non-Protocol Aquatic Surveys for California Tiger Salamander (CTS) at the North County Corridor/ SR-108 project, in accordance with the terms of permit TE-797234-9.1 issued to LSA. This will be the second aquatic survey for CTS conducted at the project site.

The aquatic survey for CTS will be conducted by LSA biologist Laura Belt, who is authorized under the LSA permit to survey for CTS independently. Ms. Belt is also authorized under the LSA permit to survey for vernal pool branchiopods, should these species be encountered during the aquatic surveys for CTS. LSA biologist Stefan de Barros will be assisting Ms. Belt. Mr. de Barros has supervised experience in suitable CTS and vernal pool branchiopod habitat, and has recently completed Mary Belk's vernal pool branchiopod identification course and passed the identification test.

The surveys will follow the appropriate protocols, including disinfecting the sampling and field gear. No specimens will be collected unless specifically requested by the USFWS. Your e-mail authorization to conduct last season's survey is attached.

Please contact me if you have any questions.

Thank you, David

Laura Belt

Senior Wildlife Biologist

LSA Associates, Inc.

(916) 630-4600 Ext: 148

(916) 804-9182 (field cell)

laura.belt@lsa-assoc.com

From: Laura Belt
Sent: Wednesday, January 28, 2015 8:13 AM
To: Kelly, David
Subject: Re: North County Corridor/ SR-108 Project - Request for Authorization to Conduct Non-Protocol Aquatic Survey for California Tiger Salamander

Thank you, David.

Laura

916-804-9182

Sent from my iPhone

On Jan 28, 2015, at 7:52 AM, Kelly, David <david_kelly@fws.gov> wrote:

> Laura Belt,
>
> By this email message you are authorized to conduct wet season surveys (2015) for federally-listed California tiger salamanders, per the conditions of your recovery permit TE-797234 and as specified in your letter request with maps dated January 27, 2015. The surveys will be conducted at the following site as described in your request letter and attached maps:
>
> 1. CalTrans North County Corridor SR 99 to SR 120 Project, Stanislaus County SR 108 Widening (Service Reference Number 2011-TA-0066)
>
> Surveys may be conducted within all seasonally inundated wetlands identified on-site that may provide suitable tiger salamander habitat.

Suitable habitat not previously identified on the project site may also be sampled under this authorization.

Please remember to carry a copy of your permit while doing the work, and to follow the terms and conditions of the permit and the survey guidelines, including the reporting requirements. In your report, please include which surveys were authorized, the names of all persons involved in the surveys, their recovery permit numbers, if applicable, and the date of this authorization, to help ensure that we correctly record the fulfillment of the reporting requirement under this authorization. Please let us know if the surveys are not performed as authorized, or if they are done by a different permittee under a separate authorization. This authorization does not include access to the property which must be arranged with the landowner or manager.

Please send one electronic and one hard copy of the report(s) to David Kelly, of our Recovery Branch, and send a separate hard copy to Jen Schofield, biologist of the San Joaquin Valley Division. We ask that you use UTM coordinates for all spatial data and that you use the Service reference number above in future correspondence regarding these surveys.

To ensure the accuracy and data integrity of your project, it is requested that you provide spatial information (boundaries, study areas, parcels, point locations, etc.) in the form of an ESRI shape file with projection, a GPS file with projection, or locations in an Excel spreadsheet with projection information . The preferred projection is UTM, Zone 10S, NAD83; the Sacramento Fish and Wildlife Office (SFWO) standard.

FGDC compliant metadata must accompany each file. Please include any USFWS File Numbers associated with the data in your documentation. For additional information regarding metadata standards refer to http://www.fgdc.gov. For more information regarding spatial data please contact: Cheryl L. Hickam, GIS Branch Chief, U.S. Fish and Wildlife Service, 2800 Cottage Way, Suite W-2605, Sacramento, Ca 95825-1846, office: 916-414-6708.

On Tue, Jan 27, 2015 at 9:43 AM, Laura Belt <Laura.Belt@lsa-assoc.com> wrote:

Hi David,

Per our conversation, LSA requests authorization to conduct non-protocol aquatic (wet season) surveys for California tiger salamander at the North County Corridor/ SR-108 project, in accordance with the terms of permit TE-797234-9.1 issued to LSA Associates, Inc. , please see attached request, including tables and figures.

The aquatic survey for California tiger salamander will be conducted by LSA biologist Laura Belt, who is authorized under the LSA permit to survey for California tiger salamanders. LSA biologist Dayna Winchell will be assisting Ms. Belt. Ms. Winchell has previous supervised experience with California tiger salamander, and is in the process of requesting to be added to LSA's list of authorized individuals. Ms. Belt is also authorized under the LSA permit to survey for vernal pool crustaceans, should these species be encountered during the aquatic surveys for California tiger salamander. The surveys will follow the appropriate protocols, including disinfecting sampling and field gear. No specimens will be collected unless specifically requested by the USFWS.

Please contact me if you have any questions.

Thank you, David

Laura Belt

Senior Wildlife Biologist

LSA Associates, Inc.

(916) 630-4600 Ext: 148

(916) 804-9182 (field cell)

laura.belt@lsa-assoc.com

--

David Lee Kelly

Recovery Biologist

Sacramento Fish and Wildlife Office

2800 Cottage Way W-2605

Sacramento, California 95825-1888

Phone:916-414-6492

--
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Sarah Markegard
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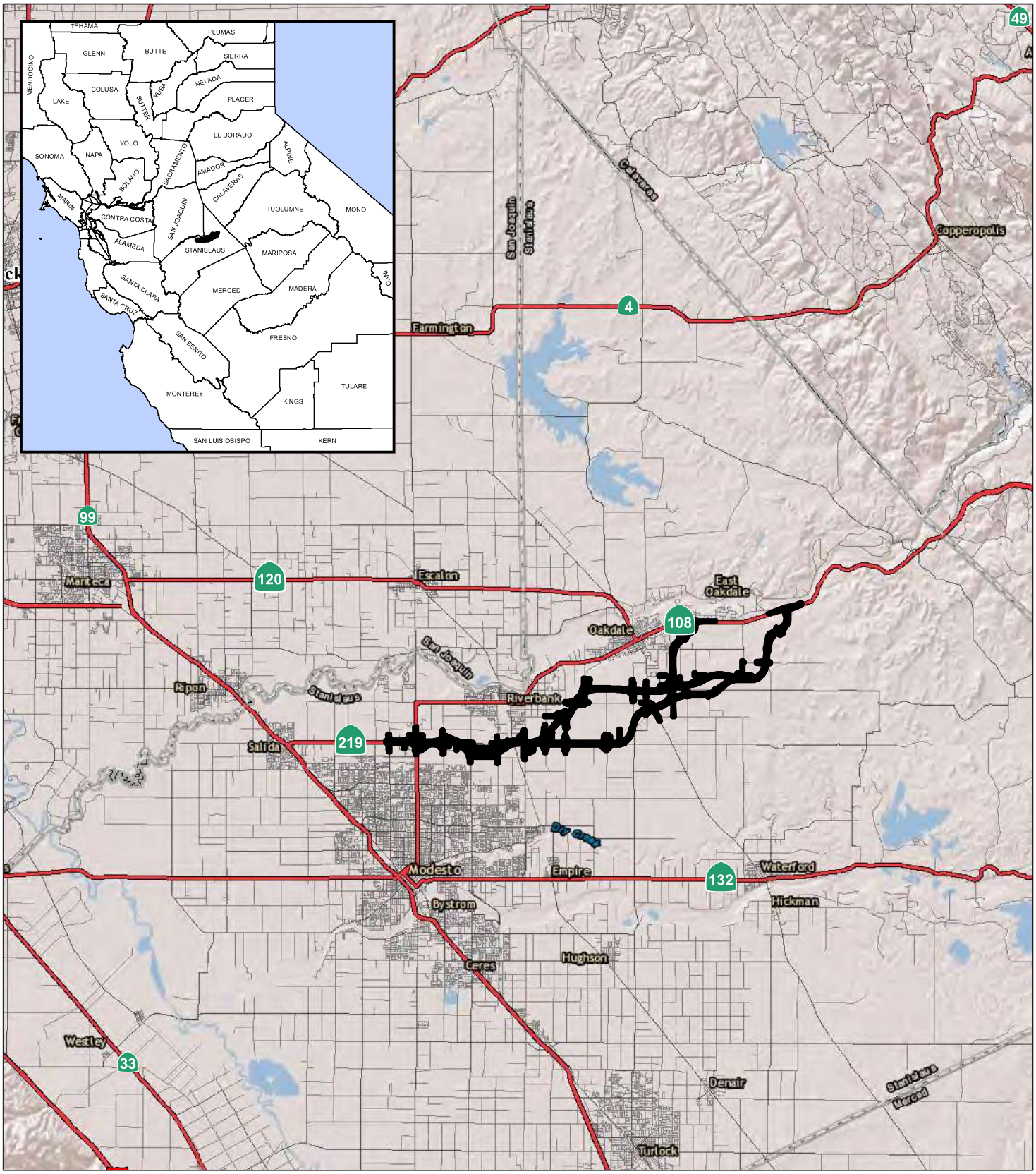
phone: 916-414-6492
email: sarah_markegard@fws.gov



LEGEND

Study Area

FIGURE 1

Regional Location

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

0 2.5 5
MILES

SOURCE: ESRI Imagery (4/2008)

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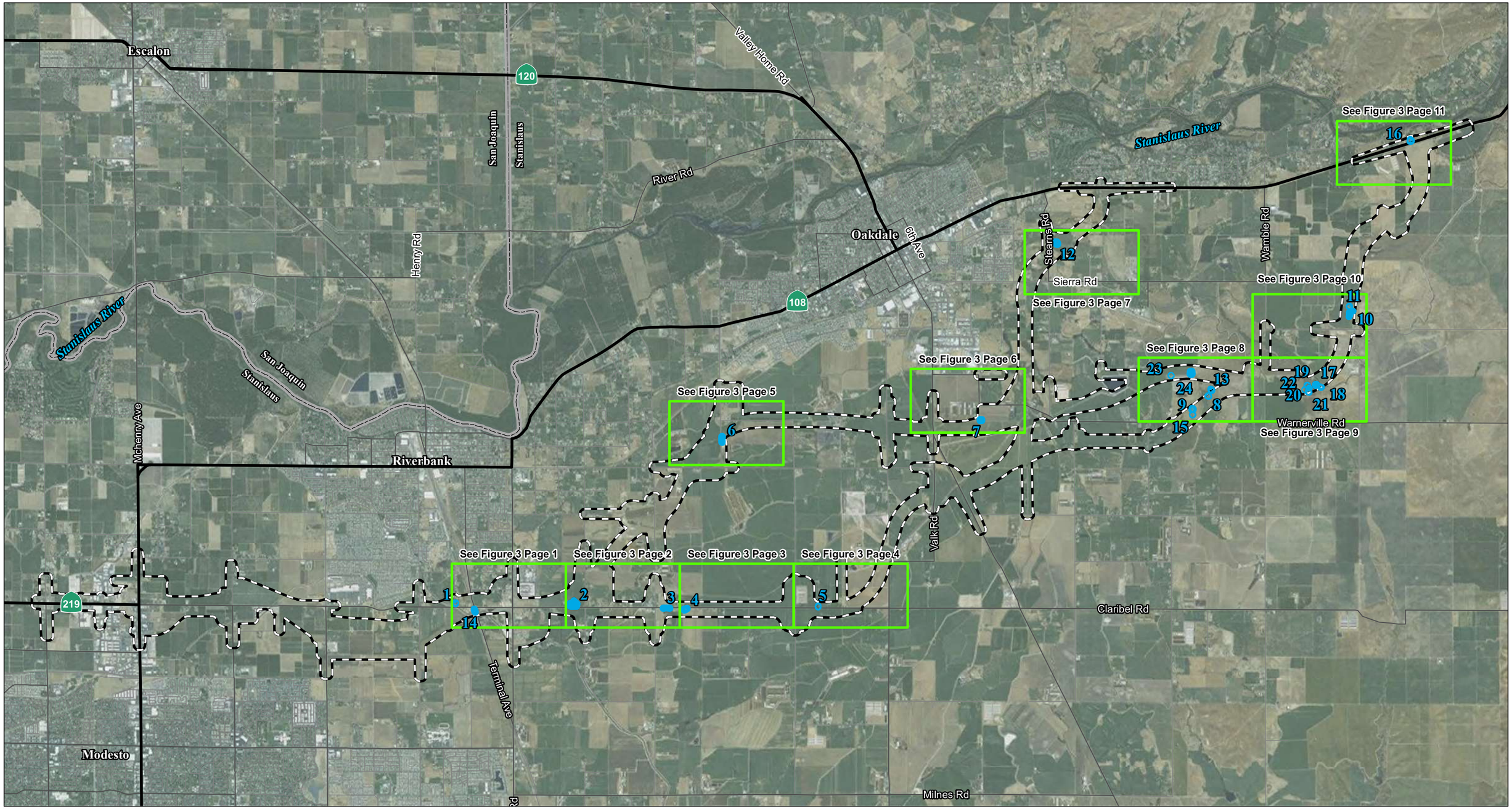

LEGEND

Biological Study Area

CTS 2015 - 2016 Survey Feature

0 0.5 1
MILES

SOURCE: NAIP Aerial Imagery (2014)

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FIGURE 2

California Tiger Salamander Wet Season Survey 2015-2016
Location of Potential Habitat in Proximity to Alignment Alternatives

EA: 10-0S800, Project ID: 1000000263
North County Corridor New State Route 108
Stanislaus County, California

LEGEND

Biological Study Area

CTS 2015 - 2016 Survey Feature

0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/ 2010); Mapping - LSA Associates, Inc. (2016)

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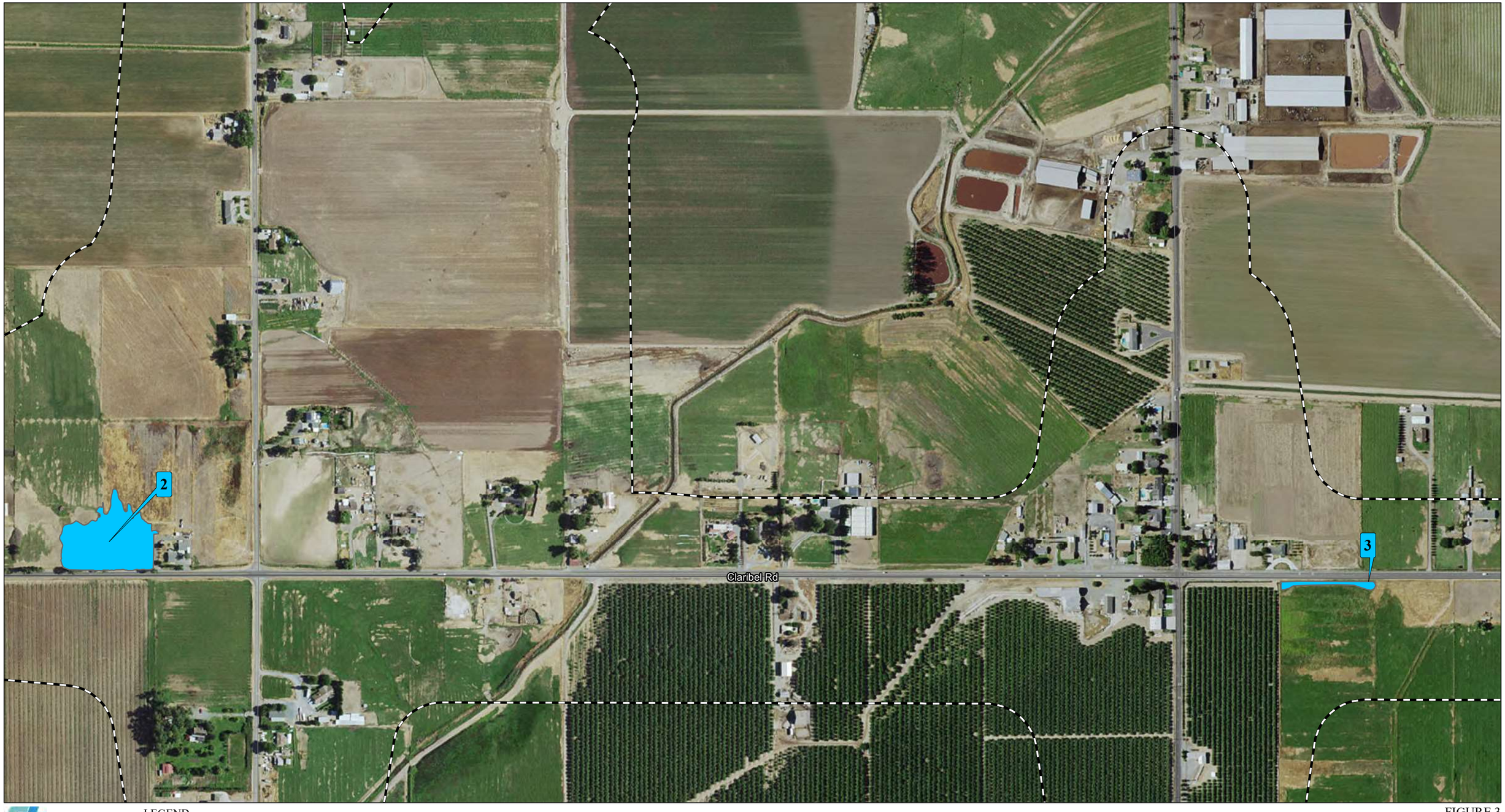
FIGURE 3
Page 1 of 11

California Tiger Salamander Wet Season Survey 2015-2016
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



LEGEND

Biological Study Area

CTS 2015 - 2016 Survey Feature

0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/ 2010); Mapping - LSA Associates, Inc. (2016)

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FIGURE 3
Page 2 of 11

California Tiger Salamander Wet Season Survey 2015-2016
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

LEGEND

Biological Study Area

CTS 2015 - 2016 Survey Feature

0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/ 2010); Mapping - LSA Associates, Inc. (2016)

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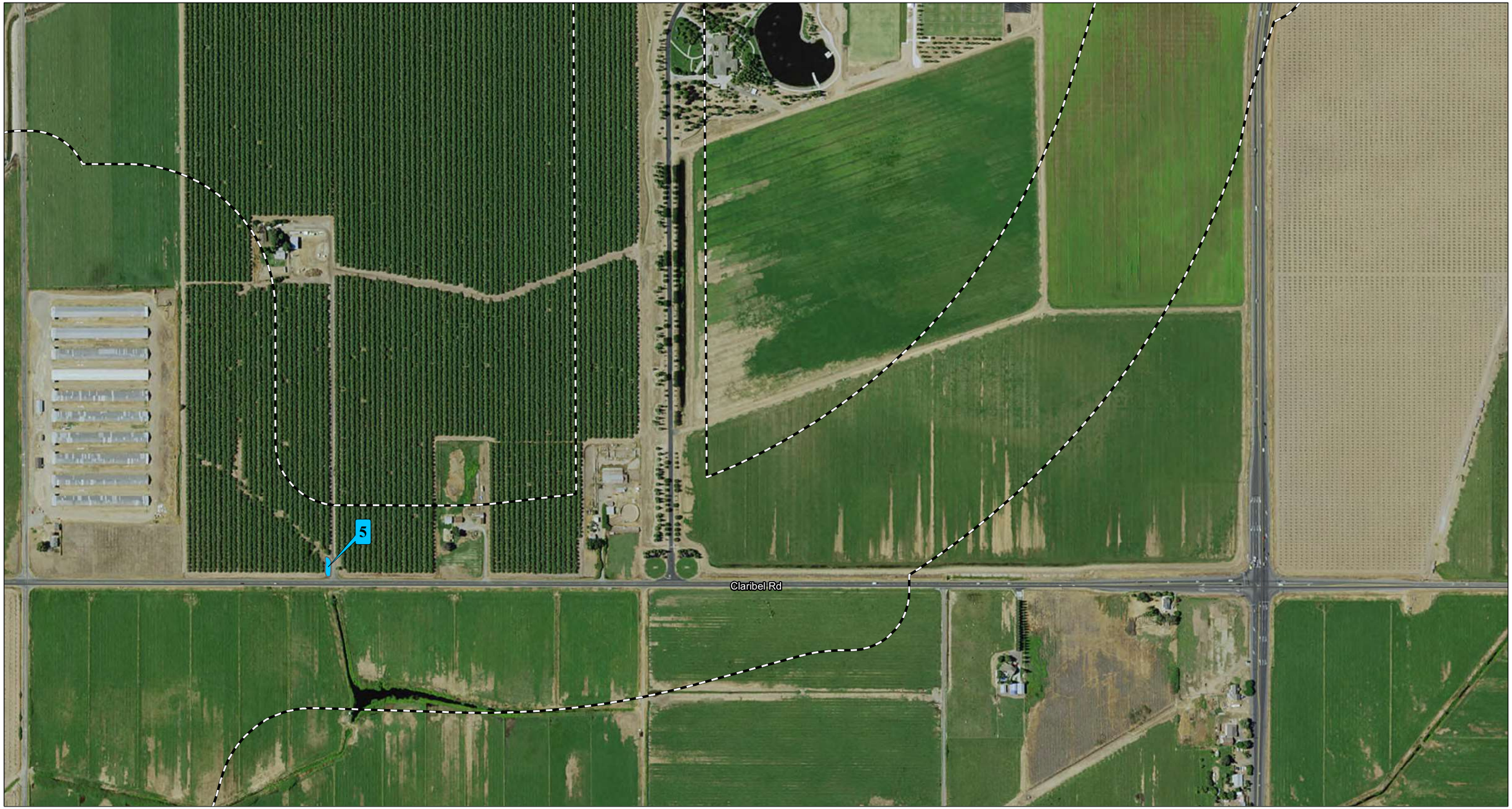
FIGURE 3
Page 3 of 11

California Tiger Salamander Wet Season Survey 2015-2016
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



LEGEND

Biological Study Area

CTS 2015 - 2016 Survey Feature

0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/ 2010); Mapping - LSA Associates, Inc. (2016)

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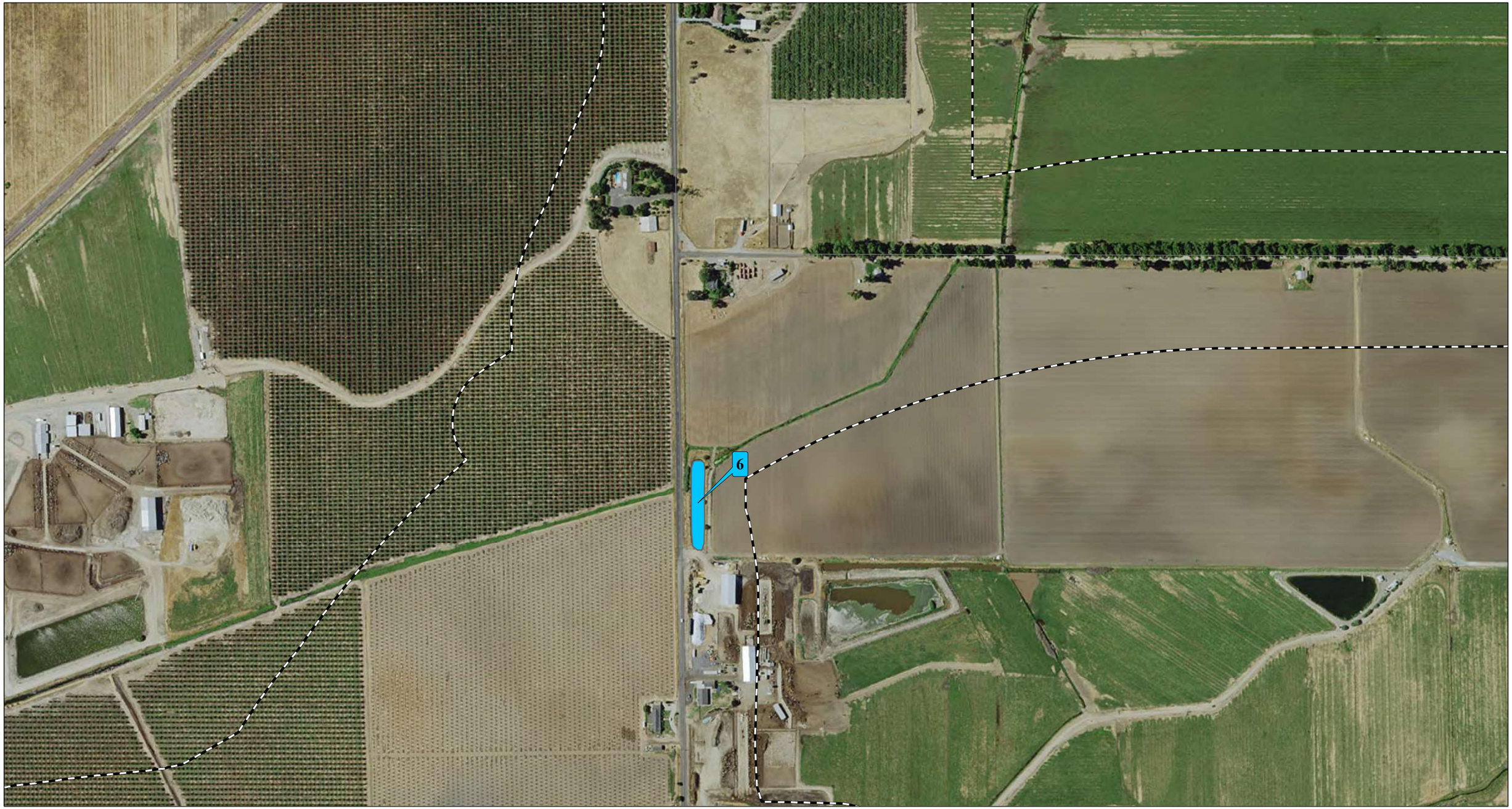
FIGURE 3
Page 4 of 11

California Tiger Salamander Wet Season Survey 2015-2016
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



LEGEND

Biological Study Area

CTS 2015 - 2016 Survey Feature

0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/ 2010); Mapping - LSA Associates, Inc. (2016)

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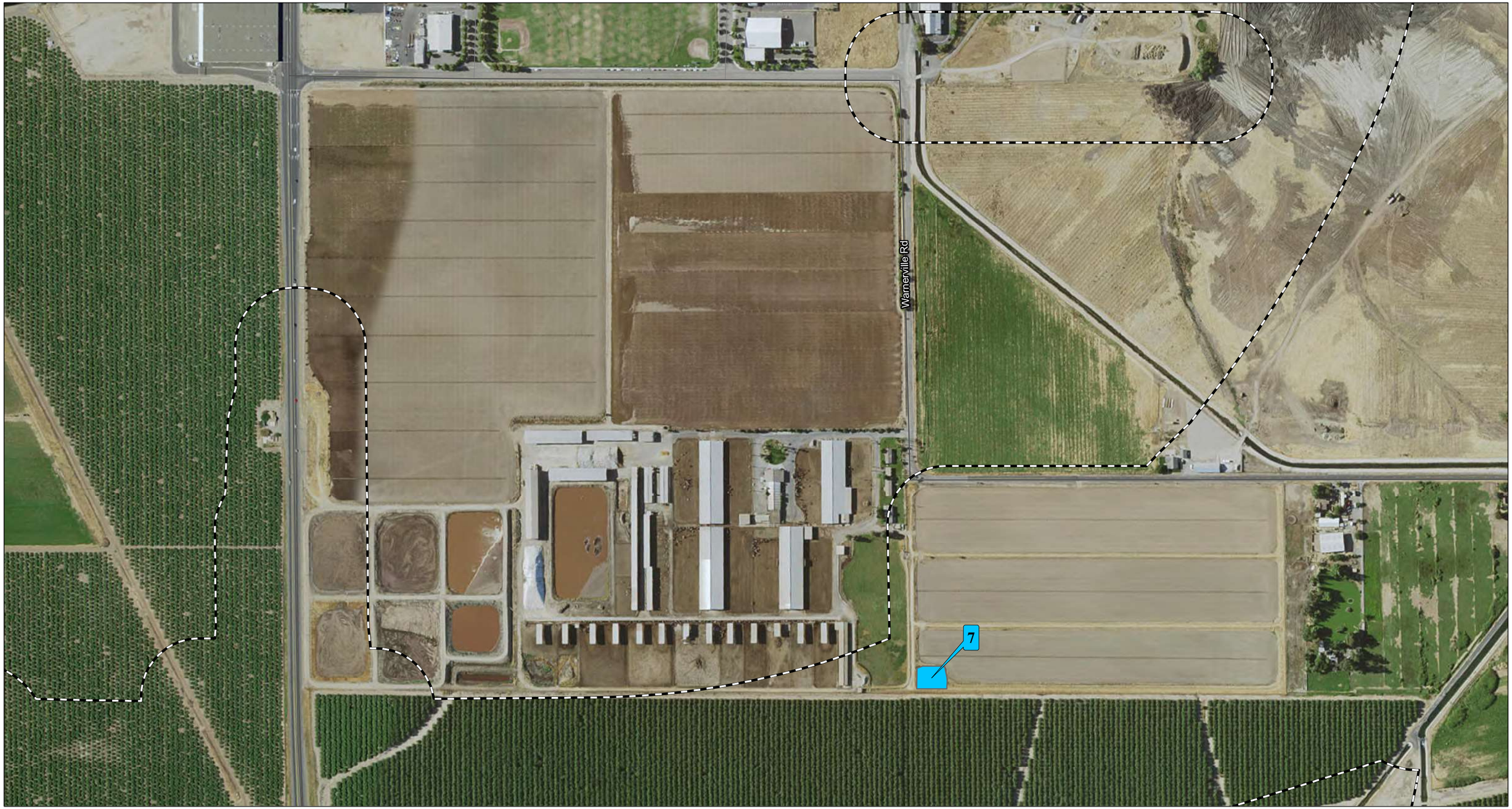
FIGURE 3
Page 5 of 11

California Tiger Salamander Wet Season Survey 2015-2016
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



LEGEND

Biological Study Area

CTS 2015 - 2016 Survey Feature

0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/ 2010); Mapping - LSA Associates, Inc. (2016)

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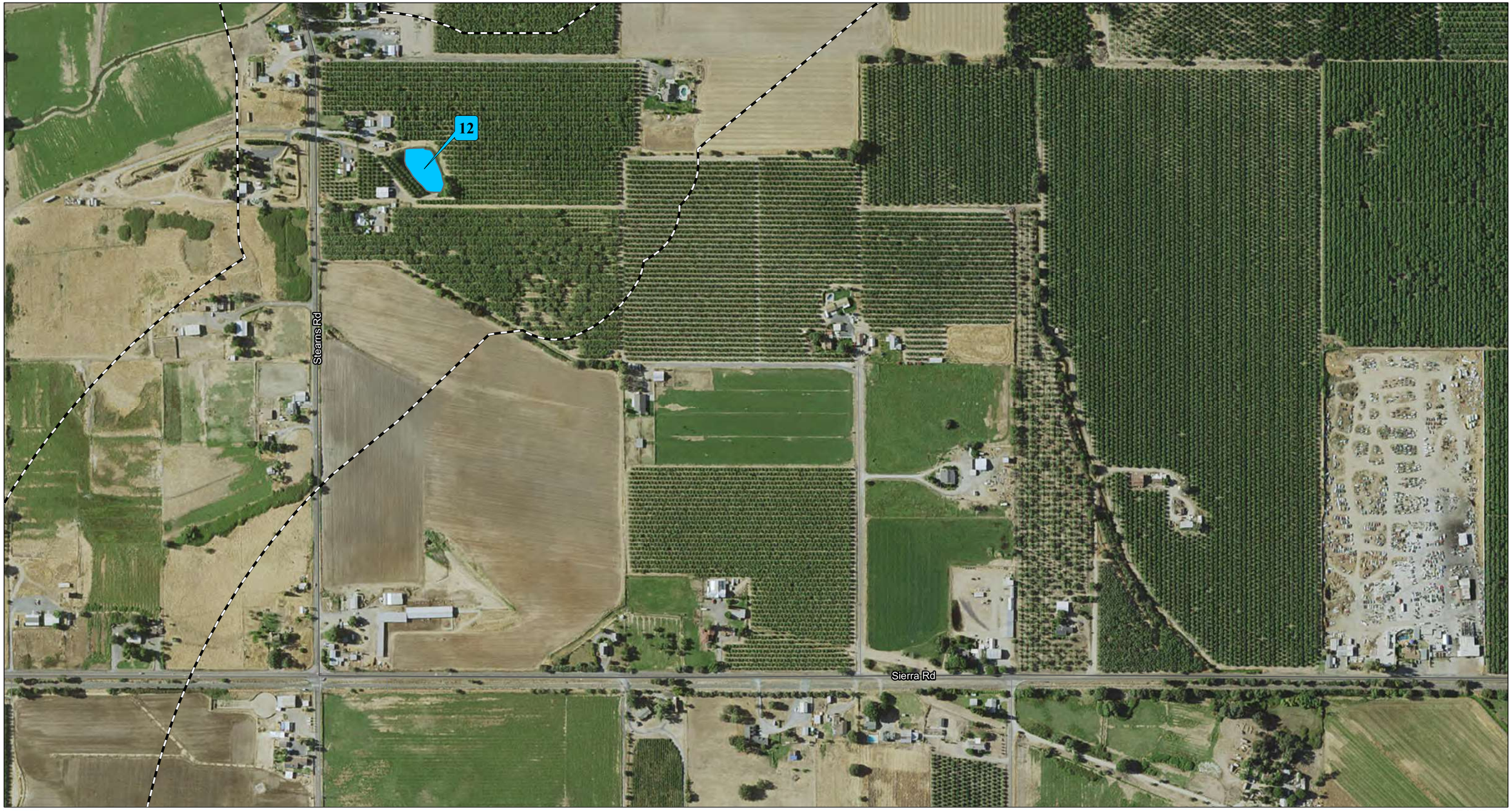
FIGURE 3
Page 6 of 11

California Tiger Salamander Wet Season Survey 2015-2016
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



LEGEND

Biological Study Area

CTS 2015 - 2016 Survey Feature

0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/ 2010); Mapping - LSA Associates, Inc. (2016)

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FIGURE 3
Page 7 of 11

California Tiger Salamander Wet Season Survey 2015-2016
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

LEGEND

Biological Study Area

CTS 2015 - 2016 Survey Feature

0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/ 2010); Mapping - LSA Associates, Inc. (2016)

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FIGURE 3
Page 8 of 11

California Tiger Salamander Wet Season Survey 2015-2016
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

LEGEND

Biological Study Area

CTS 2015 - 2016 Survey Feature

N

0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/ 2010); Mapping - LSA Associates, Inc. (2016)

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FIGURE 3
Page 9 of 11

California Tiger Salamander Wet Season Survey 2015-2016
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

LEGEND

Biological Study Area

CTS 2015 - 2016 Survey Feature

0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/ 2010); Mapping - LSA Associates, Inc. (2016)

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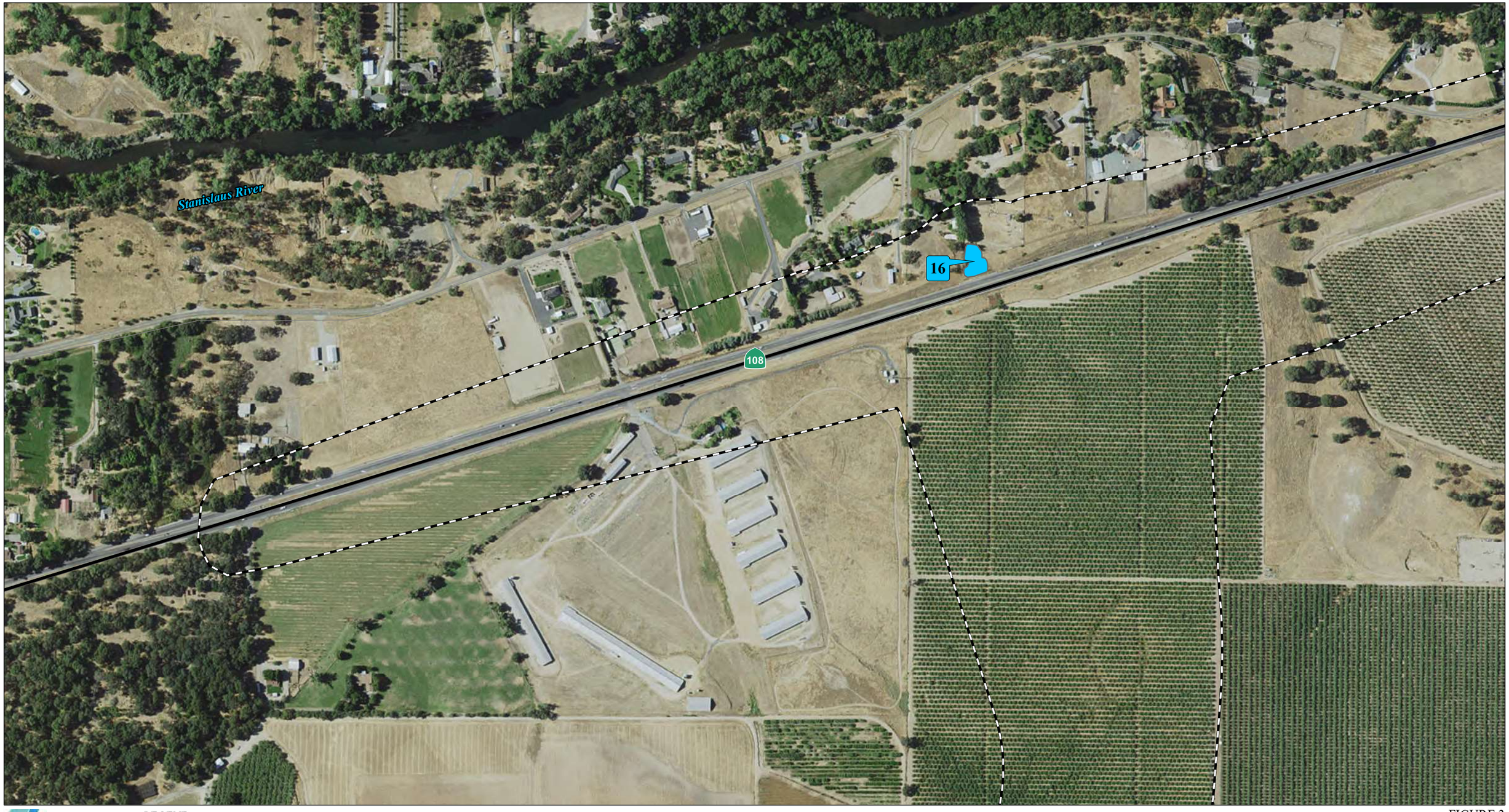
FIGURE 3
Page 10 of 11

California Tiger Salamander Wet Season Survey 2015-2016
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



LEGEND

Biological Study Area

CTS 2015 - 2016 Survey Feature

0 200 400
Feet

SOURCE: Microsoft Aerial Imagery (5/ 2010); Mapping - LSA Associates, Inc. (2016)

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FIGURE 3
Page 11 of 11

California Tiger Salamander Wet Season Survey 2015-2016
Location of Potential Habitat in Proximity to Biological Study Area

EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

LEGEND

SR-120/McKinley Avenue Biological Study Area

FIGURE 4

0 1500 3000
FEET

SOURCE: NAIP (2014)

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EA: 10-0S800, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

SR-120/McKinley Avenue Interchange Vicinity

View of the upland and ponded features at the McKinley Avenue and SR-120 site that provides suitable habitat for CTS looking west (January 21, 2016).

View of the ponded features at the McKinley Avenue and SR-120 site that provides suitable breeding habitat for CTS looking west (January 21, 2016).

View of the ponded features at the McKinley Avenue and SR-120 site that provides suitable breeding habitat for CTS looking east (January 21, 2016).

View of the CTS eggs attached to vegetation in thr ponded features at the McKinley Avenue and SR-120 site that provides suitable breeding habitat for CTS (January 21, 2016).

Caltrans

Figure 5

EA: 10-0S800, Project ID # 1000000263

North County Corridor New State Route 108 Project

Stanislaus County, California

SR 120-McKinley Avenue CTS Reference Site

Representitive Photos from January 2016

SOURCE: LSA Associates, Inc (2016).

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View of the upland and ponded features at the McKinley Avenue and SR-120 site that provides suitable aestivation and breeding habitat for CTS looking west (February 11, 2016).

View of the ponded features and upland habitat at the McKinley Avenue and SR-120 site that provides suitable aestivation and breeding habitat for CTS looking east (February 11, 2016).

View of CTS and chorus frog larvae in the ponded features at the McKinley Avenue and SR-120 site (February 11, 2016).

View of a CTS larvae (lower right corner) in the ponded features at the McKinley Avenue and SR-120 site (February 11, 2016).

Caltrans

Figure 6

EA: 10-0S800, Project ID # 1000000263

North County Corridor New State Route 108 Project

Stanislaus County, California

SR 120 - McKinley Avenue CTS Reference Site

Representitive Photos from February 2016

SOURCE: LSA Associates, Inc (2016).

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View of the upland habitat features at the McKinley Avenue and SR-120 site that provides suitable aestivation habitat for CTS looking west (April 13, 2016).

View of the ponded features at the McKinley Avenue and SR-120 site that provides suitable breeding habitat for CTS looking west (April 13, 2016).

View of the ponded features at the McKinley Avenue and SR-120 site that provides suitable breeding habitat for CTS looking east (April 13, 2016).

View of CTS metamorphs in ponded feature at the McKinley Avenue and SR-120 site that provides suitable breeding habitat for CTS (April 13, 2016).

Caltrans

Figure 7

EA: 10-0S800, Project ID # 1000000263

North County Corridor New State Route 108 Project

Stanislaus County, California

SR 120 - McKinley Avenue CTS Reference Site

Representitive Photos from April 2016

SOURCE: LSA Associates, Inc (2016).

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Representative Photos of Potentially Suitable CTS Aquatic Habitat

Feature Number	Feature Photo	Attributes
1		- Feature is located in ruderal field adjacent to Litt Road - Water source is canal overflow and roadside drainage - Few suitable burrows were observed in the upland habitat; including the levee next to Litt Road - Following significant rain events, this feature measured approximately 190 feet x 90 feet, and up to 4 feet in depth
2		- Feature is located within irrigated pasture - Water source is rainwater and agriculture runoff - Suitable burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 650 x 400 feet, and up to 3 feet in depth

Feature Number	Feature Photo	Attributes
3		- Feature is located in irrigated pasture - Water source is rainwater and runoff from irrigated pasture - Suitable burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 60 feet x 50 feet, and up to 3 feet in depth
4		- Feature is located in irrigated pasture - Water source is rainwater and runoff from irrigated pasture - Suitable burrows were observed the upland habitat - Following significant rain events, this feature measured approximately 250 feet x 160 feet, and up to 3 feet in depth

Feature Number	Feature Photo	Attributes
5		- Small pond located within orchard - Water source is rainwater - This feature drains under Claribel Road and into a pond south of the road - Suitable burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 30 feet x 90 feet, and up to 3 feet in depth
6		- Basin located adjacent to irrigated pasture and a dairy farm - Water source is runoff from the adjacent irrigated pasture and dairy farm - Suitable burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 400 feet x 90 feet, and over 4 feet in depth

Feature Number	Feature Photo	Attributes
7		- Feature is a pond located within irrigated pasture - Water source is runoff from the irrigated pasture and adjacent dairy pond - Suitable burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 100 feet x 95 feet, and over 5 feet in depth
8		- Feature is located within grazed annual grasslands - Water source is rainwater and canal overflow - Burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 150 feet x 80 feet, and up to 2 feet in depth - *Branchinecta lynchi* and *Linderiella occidentalis* were observed in this features during the 2013-2014 wet season survey for vernal pool branchiopods, 2014-2015 aquatic survey for CTS, and the 2015-2016 aquatic survey for CTS

Feature Number	Feature Photo	Attributes
9		- Feature is located within annual grasslands - Water source is rainfall and canal overflow - Suitable burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 240 feet x 240 feet x 320 feet, and up to 30 inches in depth - *Branchinecta lynchi* was previously observed in this feature during the 2013-2014 wet season survey for vernal pool branchiopods, 2014-2015 aquatic survey for CTS, and the 2015-2016 aquatic survey for CTS
10		- Feature is located in ruderal grassland that is surrounded by orchards and agricultural fields - Water source is rain water and runoff from adjacent agricultural fields - Suitable burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 700 feet x 50 feet, and up to 3 feet in depth

Feature Number	Feature Photo	Attributes
11		- Feature is located in an area of ruderal grassland and is surrounded by agricultural fields and orchards. - Water source is rainwater and runoff from adjacent agricultural field - Many burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 65 feet x 100 feet, and up to 3.5 feet in depth
12		- Feature is located within an orchard and is used as supplemental water for the orchard - Main water source is rainfall, but is also supplemented by another water source - Few suitable burrows observed in the upland habitat - Following significant rain events, this feature measured approximately 150 feet x 60 feet, and over 4 feet in depth

Feature Number	Feature Photo	Attributes
13		- Feature is located within annual grasslands - Water source is rainfall and canal overflow - Suitable burrows were observed in the upland habitat - Last year following significant rain events, this feature measured approximately 75 feet x 50 feet, and up to 9 inches in depth
14		- The feature is located next to railroad tracks on the south side of Claribel Road - Water source is rainfall and road side run-off - Several suitable burrows were observed in the upland habitat on the west side of the railroad tracks; - Last year following significant rain events, this feature measured approximately 185 feet x 50 feet, and up to 3 feet in depth

Feature Number	Feature Photo	Attributes
15		- Feature is located within annual grasslands - Water source is rainfall and canal overflow - Suitable burrows were observed in the upland habitat - Last year following significant rain events, this feature measured approximately 90 feet x 70 feet X 60 feet, and up to 30 inches in depth
16		- The feature is located on the north side of State Route 108 in annual grasslands - Water source is rainfall and road side run-off - Several suitable burrows were observed in the upland habitat; - Following significant rain events, this feature measured approximately 70 feet x 80 feet, and up to 1.5 feet in depth

17		- Feature is located within annual grasslands - Water source is rainfall - Suitable burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 100 feet x 100 feet X 100 feet, and up to 2 feet in depth
18		- Feature is located within annual grasslands - Water source is rainfall - Suitable burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 100 feet x 20 feet, and up to 32 inches in depth

19		- Feature is located within annual grasslands - Water source is rainfall - Suitable burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 115 feet x 45 feet, and up to 12 inches in depth
20		- Feature is located within annual grasslands - Water source is rainfall - Suitable burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 40 feet x 20 feet, and up to 8 inches in depth

21		- Feature is located within annual grasslands - Water source is rainfall - Suitable burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 120 feet x 30 feet, and up to 10 inches in depth
22		- Feature is located within annual grasslands - Water source is rainfall - Suitable burrows were observed in the upland habitat - Following significant rain events, this feature measured approximately 52 feet x 32 feet, and up to 10 inches in depth

23		- Feature is located within annual grasslands - Entire feature was filled with rock, and does not provide suitable aquatic habitat for CTS
24		- Detention feature is located within annual grasslands - Cattails completely inundate the feature; does not provide suitable aquatic habitat for CTS