

# YOLO 80 CORRIDOR IMPROVEMENT PROJECT



## NESTING BURROWING OWL PROTOCOL SURVEY

Caltrans District 3  
Sacramento, Yolo, and Solano Counties, California

04-SOL-80-40.7/R44.7; 03-YOL-80-0.00/R11.72; 03-YOL-50-0.00/3.12;  
03-SAC-50-0.00/L0.617; 03-SAC-80-M0.00/M1.36

EA: 03-3H900 / EFIS: 0318000085

**July 2022**





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# YOLO 80 CORRIDOR IMPROVEMENT PROJECT

## Nesting Burrowing Owl Protocol Survey

Sacramento, Yolo, and Solano Counties, California

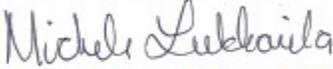
04-SOL-80-40.7/R44.7; 03-YOL-80-0.00/R11.72; 03-YOL-50-0.00/3.12;  
03-SAC-50-0.00/L0.617; 03-SAC-80-M0.00/M1.36

EA: 03-3H900 / EFIS: 0318000085

July 2022

STATE OF CALIFORNIA  
Department of Transportation

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## LIST OF ACRONYMS AND ABBREVIATIONS

<b>ABBREVIATION</b>	<b>DESCRIPTION</b>
BUOW	burrowing owl
Caltrans	California Department of Transportation
CNDDB	California Natural Diversity Database
ESL	environmental study limits
I-80	Interstate 80
project	03-3H900 Yolo 80 Corridor Improvement Project
Protocol	The California Burrowing Owl Consortium survey protocol
Stantec	Stantec Consulting Services Inc.
US-50	United States Route 50



## Chapter 1. Introduction

This report presents the methods, results, and conclusions associated with protocol level surveys for nesting burrowing owl (BUOW) (*Athene cunicularia*) within the 03-3H900 Yolo 80 Corridor Improvement Project's (project) environmental study limits (ESL), which encompasses all currently proposed project components and disturbance areas (e.g., road widening, paving, staging/laydown areas) and a 150-meter buffer around the ESL (study area). The findings of this report will be used to inform the analysis and determinations made in the natural environment study and environmental document.

The California Department of Transportation (Caltrans) proposes to construct improvements consisting of managed lanes, pedestrian/bicycle facilities, and Intelligent Transportation System elements along Interstate 80 (I-80) and United States Route 50 (US-50) from Kidwell Road near the eastern Solano County boundary (near the City of Dixon), through Yolo County, and to West El Camino Avenue on I-80 and Interstate 5 on US-50 in Sacramento County (Appendix A, Figure 1). Caltrans is both the lead agency under the National Environmental Policy Act (as assigned by the Federal Highway Administration) and the California Environmental Quality Act for the project.

The purpose of this project is to improve multimodal mobility on the I-80 and US-50 corridors in Solano, Yolo, and Sacramento Counties. The project would decrease congestion through the corridor and the effects that congestion has on transit and freight. It would improve transit headway times, reliability, access, and viability through the corridor. The project would also increase people throughput by increasing transit, bicycle and pedestrian, and carpool use. Furthermore, the project would address non-recurrent congestion caused by incidents, including collisions, by improving incident detection, verification, response, and clearing.



## Chapter 2. Background Information

Burrowing owl (BUOW) is designated as a species of special concern by the California Department of Fish and Wildlife. The primary threats to this species are the destruction of California ground squirrel (*Otospermophilus beecheyi*) colonies, the loss and fragmentation of habitat due to urban development, and conversion of grasslands and pasture to agriculture.

BUOW are members of the Strigidae family, which includes “typical” owls. The sexes are similar in appearance, although females are generally darker than males. Both sexes are fairly small, approximately 8 inches tall, with brown underparts and white spotting on the back, wings, and head. The chest is dark with white spotting, and the belly is brown with brown barring. The BUOW is easily distinguished from other owls by its long legs.

Unlike most owls, BUOW are active both day and night and frequently nest in loose colonies. The breeding season extends from March to August. Nests are built in abandoned small mammal burrows, and a typical clutch contains five or six eggs. The BUOW diet is primarily comprised of insects but also includes small mammals, birds, reptiles, and carrion. Their hunting style varies with the type and activity of prey pursued, time of day, and vegetation in the area (Thompson and Anderson 1988).

BUOW inhabit open, dry grassland, desert, and ruderal habitats. They often nest on the banks of canals and levees. They typically nest in abandoned small mammal burrows, particularly those of California ground squirrels, or other suitable underground cavities for nesting. They have also been documented in open areas near human habitation, especially airports and golf courses. BUOW will forage in open grassland areas adjacent to nest sites. The nesting season is between February 1 and August 31. The Central Valley and surrounding foothill regions of California provide year-round habitat for BUOW.



## Chapter 3. Methodology

### 3.1. Background Research

Prior to conducting fieldwork, Stantec Consulting Services, Inc. (Stantec) biologists determined habitat suitability based on the following sources:

- *Dixon, Merritt, Davis, and Sacramento West California*, U.S. Geological Survey 7.5-minute topographic quadrangle maps;
- Aerial photography of the study area and vicinity; and
- California Natural Diversity Database (CNDDDB) records for BUOW within the study area (California Department of Fish and Wildlife 2021).

Stantec biologists performed a database search of the CNDDDB to determine the location of reported BUOW occurrences in the vicinity of the study area. The CNDDDB recorded five separate occurrences of BUOW within the study area between 1988 and 2005 (CDFW 2021 [Appendix A, Figure 2]). Details of the occurrences are provided in Table 1.

**Table 1. Burrowing Owl CNDDDB Occurrence Details**

<b>CNDDDB Occurrence Number</b>	<b>Date</b>	<b>Location</b>	<b>Ecological Details</b>	<b>Observation Comments</b>
30	1988	West side of University of California, Davis campus	None listed	One pair with young observed in 1976 and 1977. Twenty-two pairs observed in 1981. One pair observed in 1985. Ten pairs observed in 1986 and in 1987. Eight pairs observed in 1988.
238	July 23, 1996	Just south of Spaulding Road; 0.2 mile east of Pedrick Road; 2.5 miles north-northeast of Dixon	Site is surrounded by irrigated agriculture to the south and southwest.	Two adults and two owls of unknown age observed.
391	March 12, 2000	East side of Drew Avenue, between Cowell Boulevard and I-80, Davis	Habitat surrounding burrow consists mostly of non-native grasses and weeds; lot was disked, leaving a small buffer around the burrow.	Two BUOW observed using a burrow on March 12, 2000. BUOW not observed during May and June 2000.
621	December 8, 2004	Just northeast of the intersection of 2nd Avenue and Pena Drive, Davis	Habitat consists of a fenced, undeveloped parcel vegetated mainly by weedy morning glory plants; dirt mounds on the parcel are used as owl lookouts. Observed 15-20 jackrabbits, but no ground squirrels.	Several owls observed at this site in 2002. One owl observed at this burrow site on July 13, 2003. Five juveniles observed at burrow site on July 29, 2004. Three adults observed at a burrow site on December 8, 2004.
695	October 10, 2005	Corner of frontage road (adjacent to I-80) and Mace Boulevard near Ikeda's Market, Davis	Habitat consists of a mowed, non-native grassland surrounded by a frontage road, a park and ride lot, and Ikeda's Market.	More than eight owls (five juveniles and two adults) at active burrows observed July 2004. Two burrowing owl (BUOW) observed at a burrow in December 2004. One pair active in spring 2005. Four burrows with six BUOW observed in October 2005.

Key:  
 CNDDDB = California Natural Diversity Database  
 I-80 = Interstate 80

### 3.2. Field Surveys

Protocol level surveys for BUOW were performed according to methodology described in the *Habitat Assessment of the Burrowing Owl Survey Protocol and Mitigation Guidelines* (Protocol) (The California Burrowing Owl Consortium 1993).

On February 10, 2021, Stantec biologists Chariss Femino, Brendan Cohen, Jacqueline Phipps, and Scott Elder conducted habitat assessment surveys to identify potential habitat that could be utilized by BUOW within the entire 3,925.22-acre study area. Per the Protocol, the study area was established with a 150-meter buffer around the ESL to survey for suitable habitat and potential burrows in areas where impacts from factors such as noise and vibration could impact BUOWs. The February 2021 survey corresponded to Phase I of the Protocol. Nesting season surveys corresponding to Phase II of the Protocol took place on April 16; May 13 and 20; and June 3, 2021. Winter season surveys corresponding to Phase III of the Protocol took place on January 13, 20–21, and 25, 2022 (Table 2).

**Table 2. Burrowing Owl Protocol Survey Details**

Protocol Phase	Dates Surveys Performed	Names of Surveyors	Time	Weather
I Habitat Assessment	February 10, 2021	Chariss Femino, Brendan Cohen, Jacqueline Phipps, Scott Elder	0730-1530	48° to 68° F Sunny
II Nesting Season Survey	April 16, 2021	Chariss Femino, Brendan Cohen, Scott Elder	1744-2044	60° to 80° F Clear
	May 13, 2021	Chariss Femino, Scott Elder	1830-2010	74° to 84° F Clear
	May 20, 2021	Chariss Femino, Scott Elder	1830-2001	64° to 70° F Cloudy
	June 3, 2021	Chariss Femino, Scott Elder	1830-2022	84° to 92° F Clear
III Winter Survey	January 13, 2022	Sara Cortez, Scott Elder	0600-0900	39° to 41° F Partial fog
	January 20, 2022	Sara Cortez, Scott Elder	0600-0900	37° to 38° F Clear
	January 21, 2022	Sara Cortez, Scott Elder	0600-0900	37° to 45° F Clear
	January 25, 2022	Sara Cortez, Scott Elder	0600-0900	35° to 45° F Partial fog

Key:  
°F = degrees Fahrenheit

All surveys were performed by walking transects in habitat that appeared to be suitable based on aerial imagery to determine if burrows were present that could be used by BUOW. Observations were made using binoculars where properties could not be accessed. The following information was recorded (depending on access and visibility) using a mapping grade global positioning system: potential habitat; areas with concentrated burrows; and signs of BUOW presence.

Potential habitat was identified as areas with low growing or sparse vegetation in open areas with existing small mammal burrows dispersed throughout the habitat. Concentrated burrows were mapped in areas where multiple small mammal burrows were observed within proximity to each other with surrounding dense vegetation and/or tree cover.

## Chapter 4. Results

A total of 10.282 acres of suitable habitat and 0.322 acre of concentrated burrows have been identified within the study area. Locations of suitable habitat and concentrated burrow locations identified during the survey efforts in the study area are provided in Appendix A, Figure 3. No observations of BUOW were made during the habitat assessment surveys on February 10, 2021. During the April 16, 2021, survey, observations were made of whitewash and downy feathers near burrows B03, B04, and B05, but no BUOWs were observed. During the May 13, May 20, and June 3, 2021, surveys, no observations of BUOW or signs of BUOWs were observed. During the January 13; 20–21; and 25, 2022 surveys, observations were made of whitewash near burrows B11, B12, B13, and B14, but no BUOWs were observed. The whitewash and feathers that were observed near burrows could be from BUOW or other bird species. Representative photographs are located in Appendix B. A list of wildlife observed in the study area during the surveys is located in Appendix C.



## **Chapter 5. Conclusion**

Although no BUOW were observed during the Protocol surveys, suitable nesting and wintering habitat with active ground squirrel burrows was documented within the study area. In the future, BUOW could potentially nest and/or overwinter in these and other areas, depending on site conditions.



## Chapter 6. References

- California Department of Fish and Wildlife (CDFW). 2021. California Natural Diversity Database – RareFind 5 for commercial subscribers. Available online at <https://nrm.dfg.ca.gov/cnddb>. Accessed January 16, 2021.
- The California Burrowing Owl Consortium. 1993. *Burrowing Owl Survey Protocol and Mitigation Guidelines*.
- Thompson, C.D. and S.H. Anderson. 1988. Foraging behavior and food habits of burrowing owls in Wyoming. *Prairie Nat.* 20: 23–28.



# **Appendix A** Figures

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Figure 1. Project Location

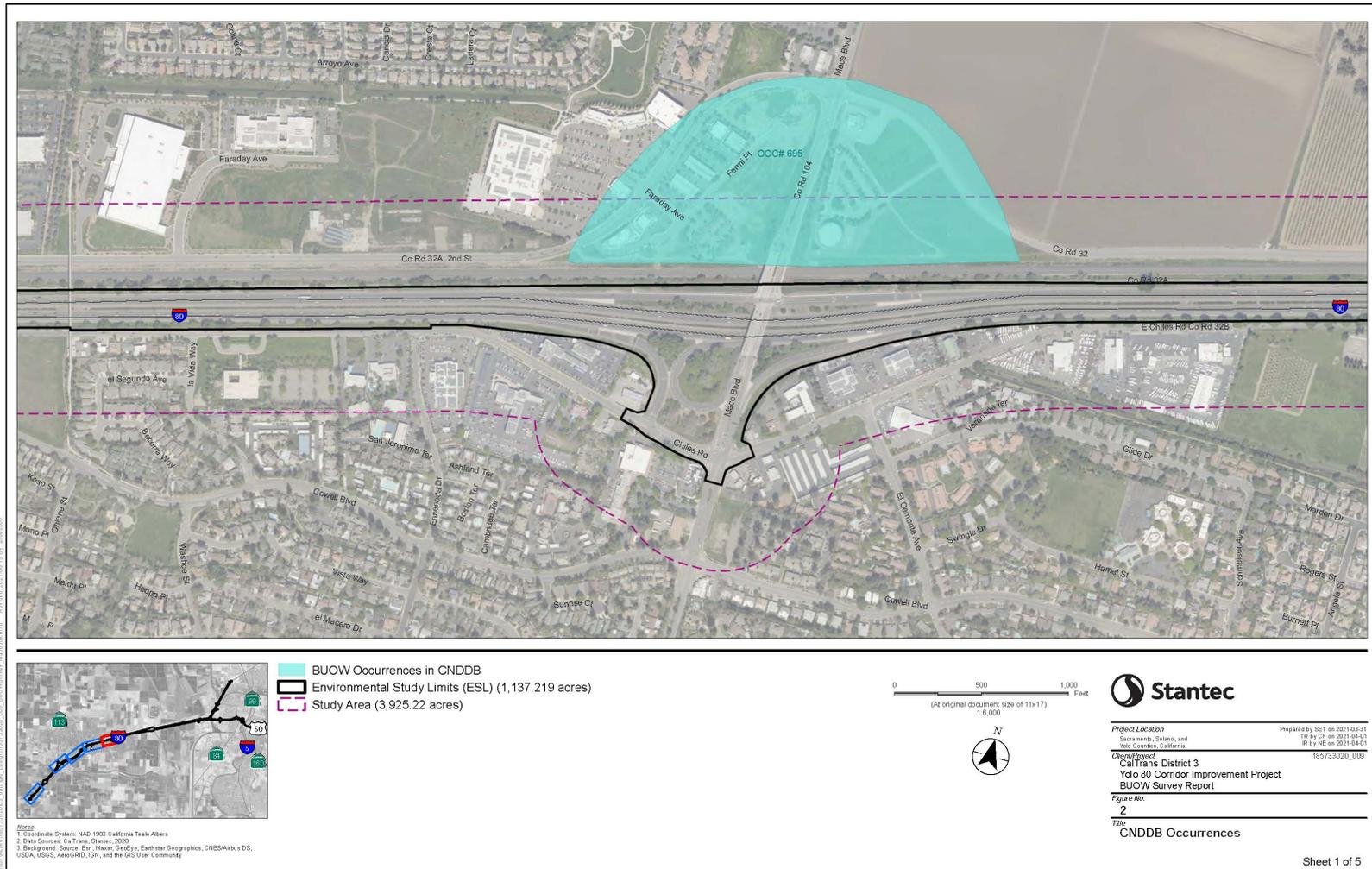
Figure 2. CNDDDB Occurrences

Figure 3. Nesting Survey Results





Appendix A, Figure 2. CNDDB Occurrences

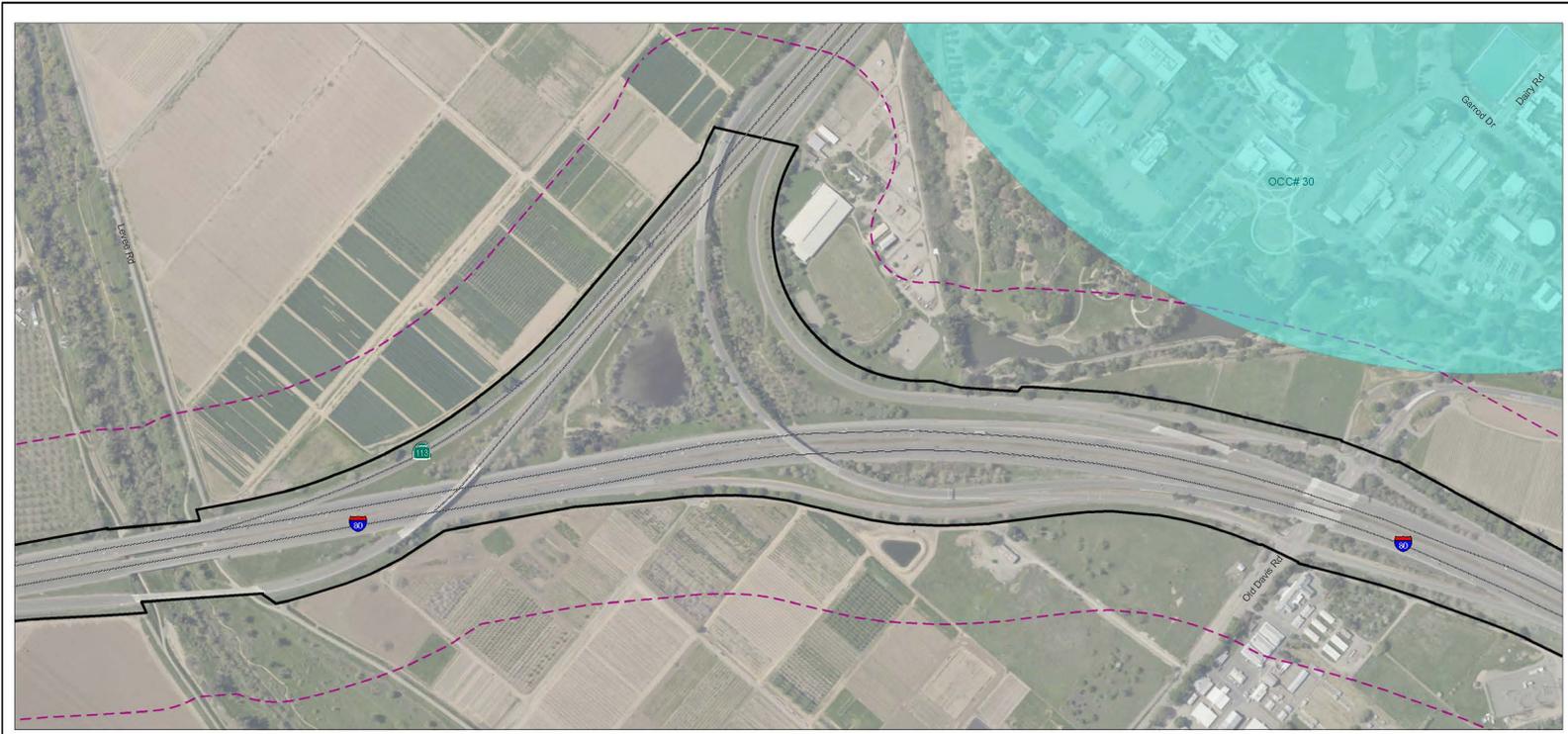


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- BUOW Occurrences in CNDDB
- Environmental Study Limits (ESL) (1,137.219 acres)
- Study Area (3,925.22 acres)



**Project Location:** Sacramento, Solano, and Yolo Counties, California  
 Prepared by: BEF on 2021-03-31  
 170 by CF on 2021-04-01  
 181 by ME on 2021-04-01  
 19573.3020\_009

**Client/Project:** CalTrans District 3  
 Yolo 80 Corridor Improvement Project  
 BUOW Survey Report

**Figure No.:** 2

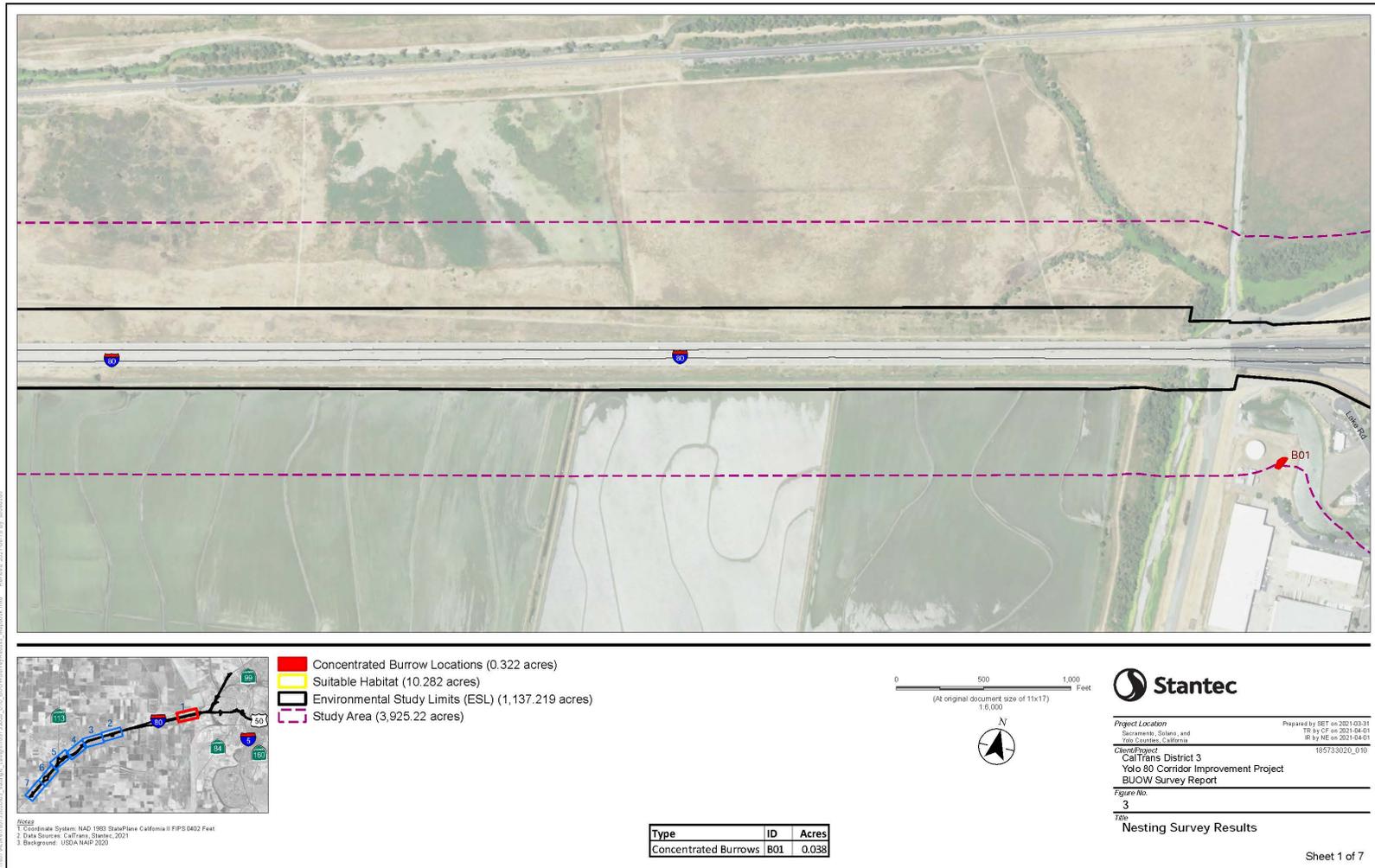
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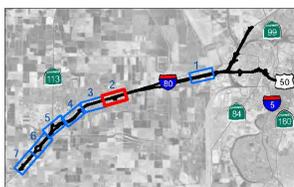
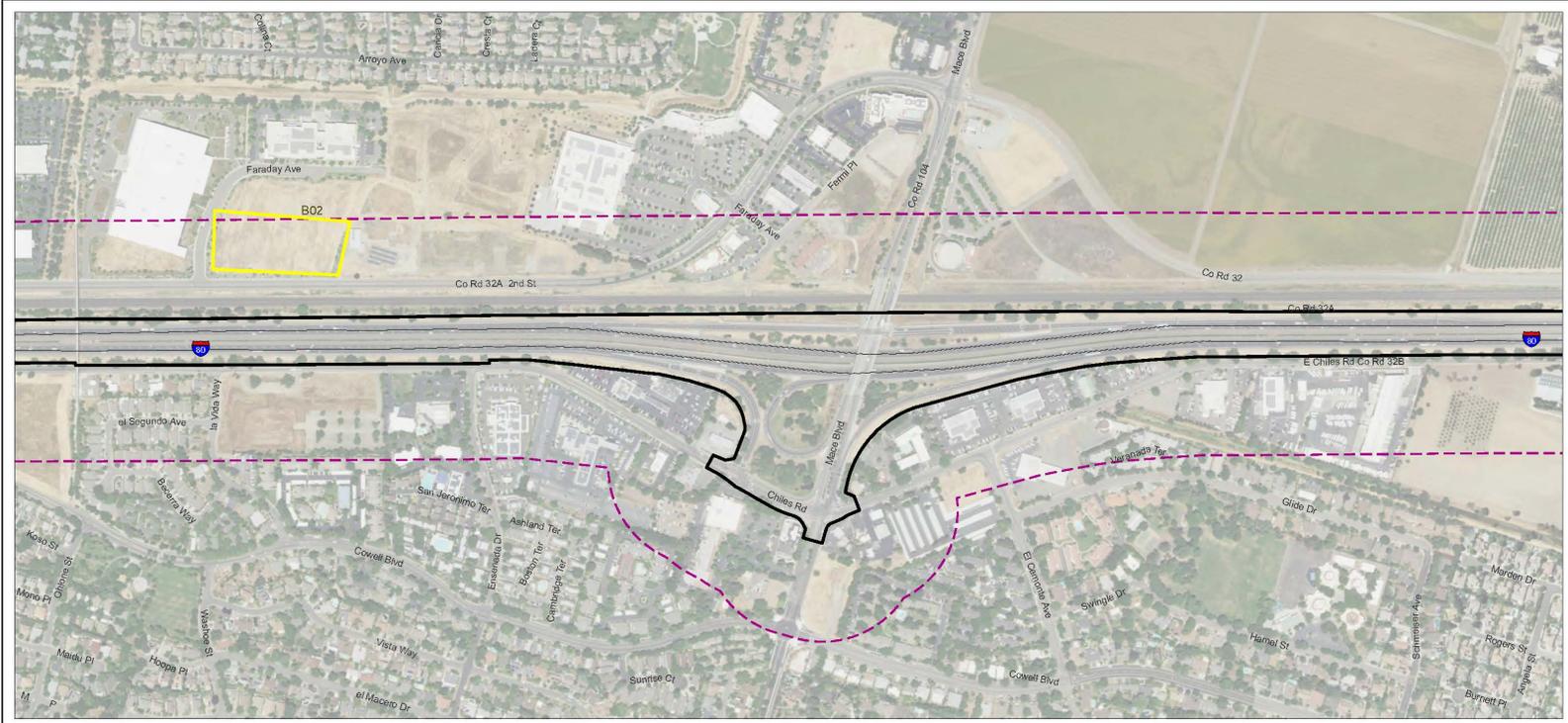
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 Yolo 80 Corridor Improvement Project**

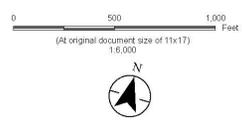


### Appendix A, Figure 3. Nesting Survey Results





- Concentrated Burrow Locations (0.322 acres)
- Suitable Habitat (10.282 acres)
- Environmental Study Limits (ESL) (1,137.219 acres)
- Study Area (3,925.22 acres)



**Stantec**

*Project Location*  
Sacramento, Solano, and  
Yolo Counties, California

*Client/Project*  
CalTrans District 3  
Yolo 80 Corridor Improvement Project  
BUOW Survey Report

*Figure No.*  
3

*Date*  
Nesting Survey Results

Prepared by BEF on 2021-03-31  
170 by CF on 2021-04-01  
R1 by ME on 2021-04-01  
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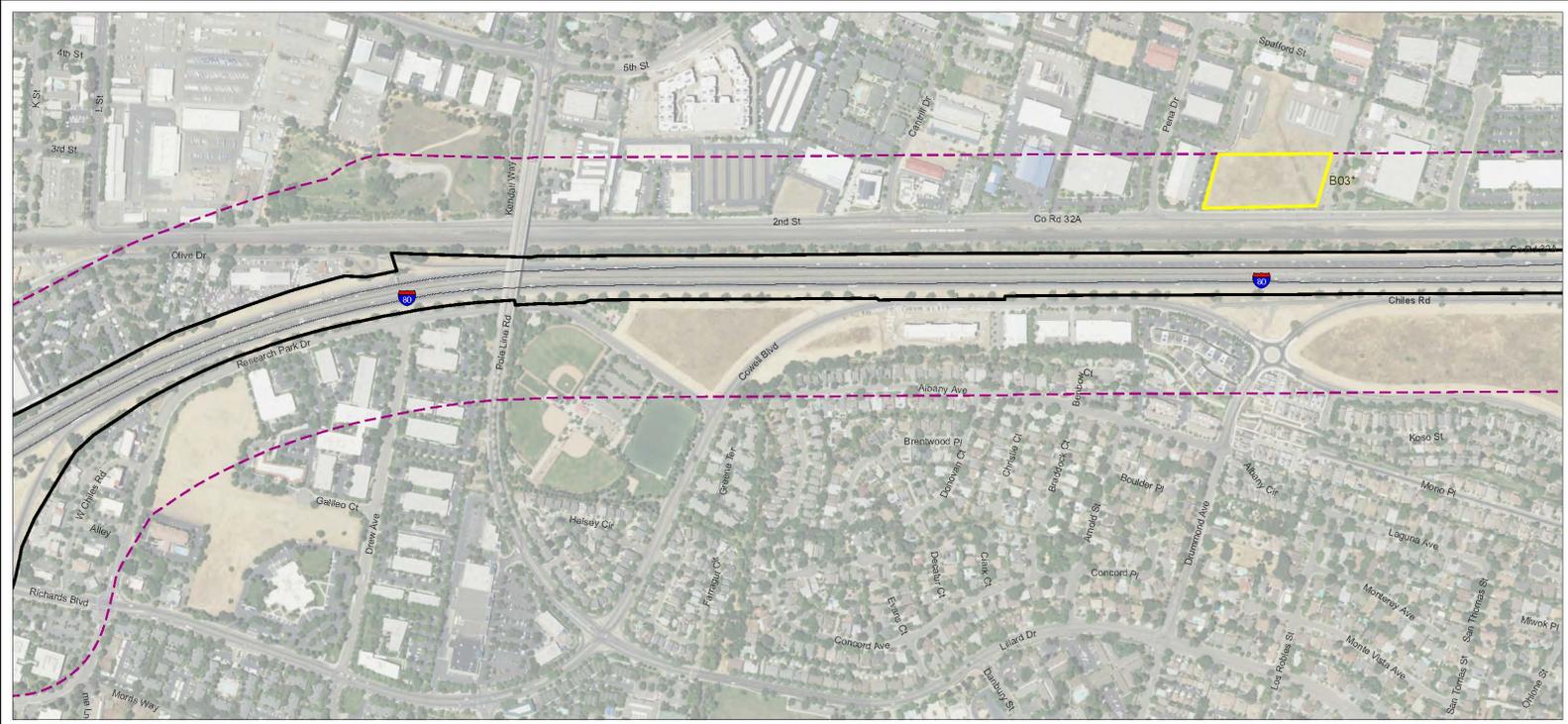
Type	ID	Acres
Suitable Habitat	B02	4.226

*Access*

1. Coordinate System: NAD 1983 StatePlane California II FIPS 6402 Feet
2. Data Sources: CalTrans, Stantec, 2021
3. Background: USDA NAD 2011

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Yolo 80 Corridor Improvement Project**



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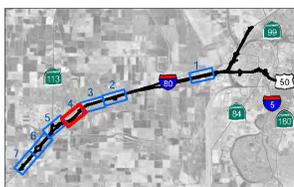
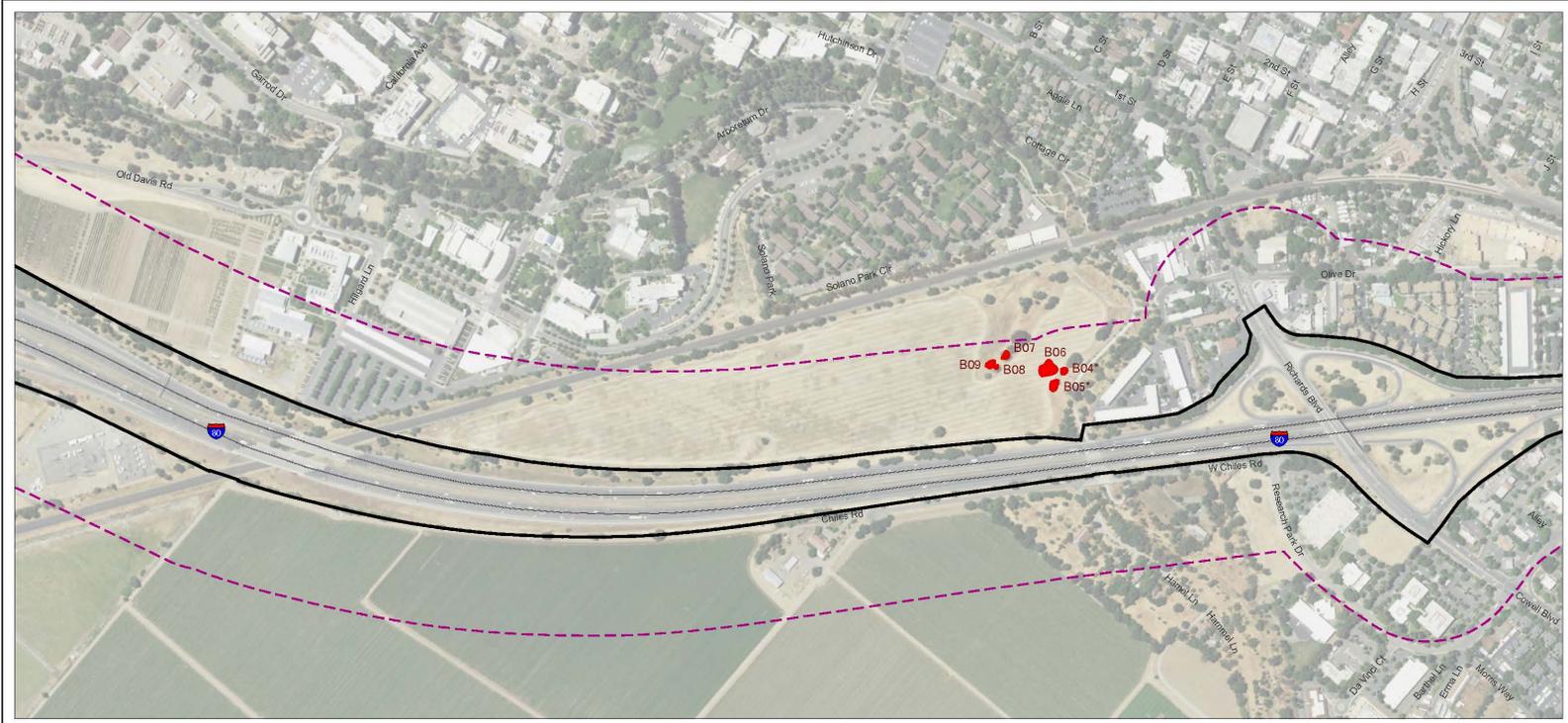
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**Title:** Nesting Survey Results

Type	ID	Acres
Suitable Habitat	B03*	3.405

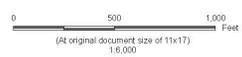
\*Potential Burrowing Owl sign, please see report

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**Project Location**  
 Sacramento, Solano, and  
 Yolo Counties, California

**Prepared by**  
 CalTrans District 3  
 Yolo 80 Corridor Improvement Project  
 BUOW Survey Report

**Figure No.**  
 3

**Date**  
 10/13/2020

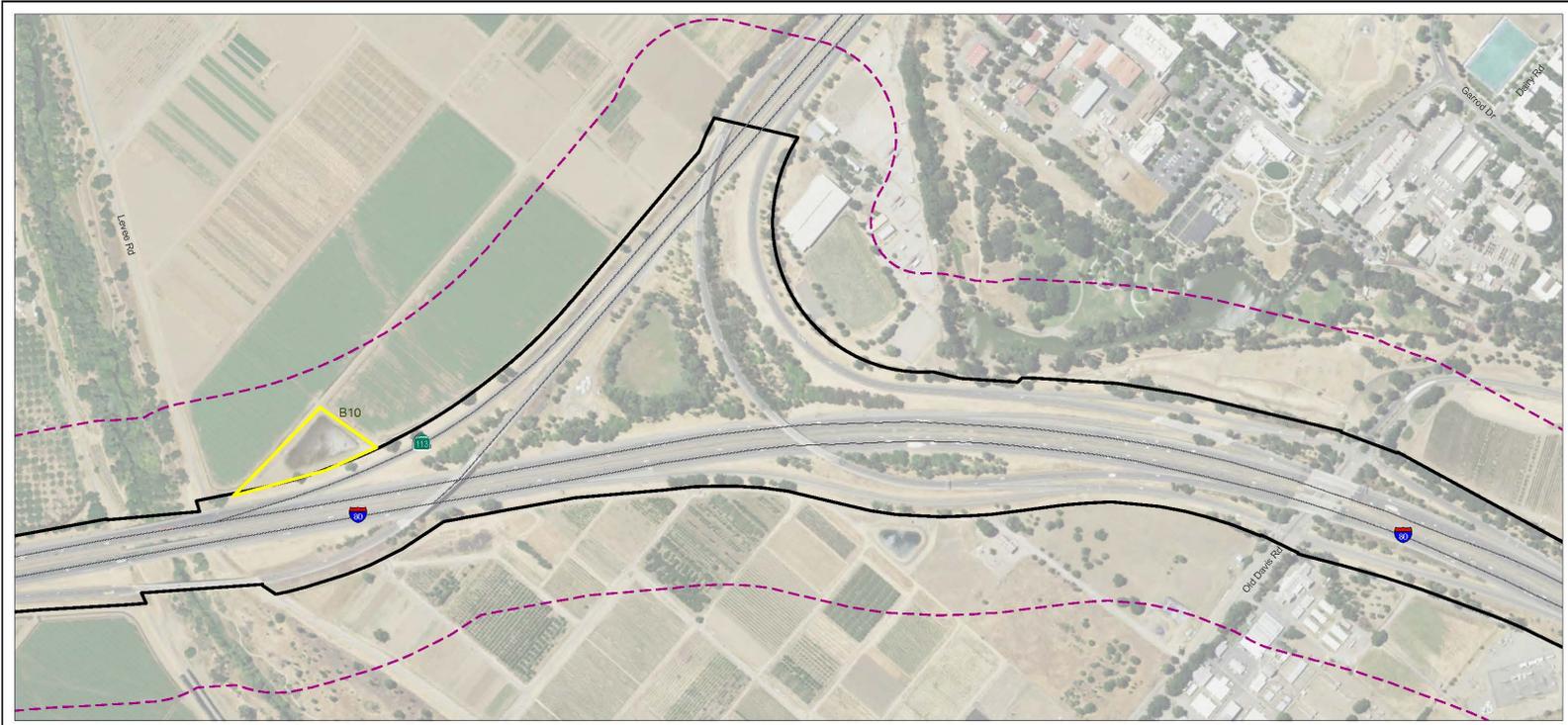
Type	ID	Acres
Concentrated Burrows	B04*	0.013
Concentrated Burrows	B05*	0.031
Concentrated Burrows	B06	0.097
Concentrated Burrows	B07	0.016
Concentrated Burrows	B08	0.002
Concentrated Burrows	B09	0.022

\*Potential Burrowing Owl sign, please see report

**Nesting Survey Results**

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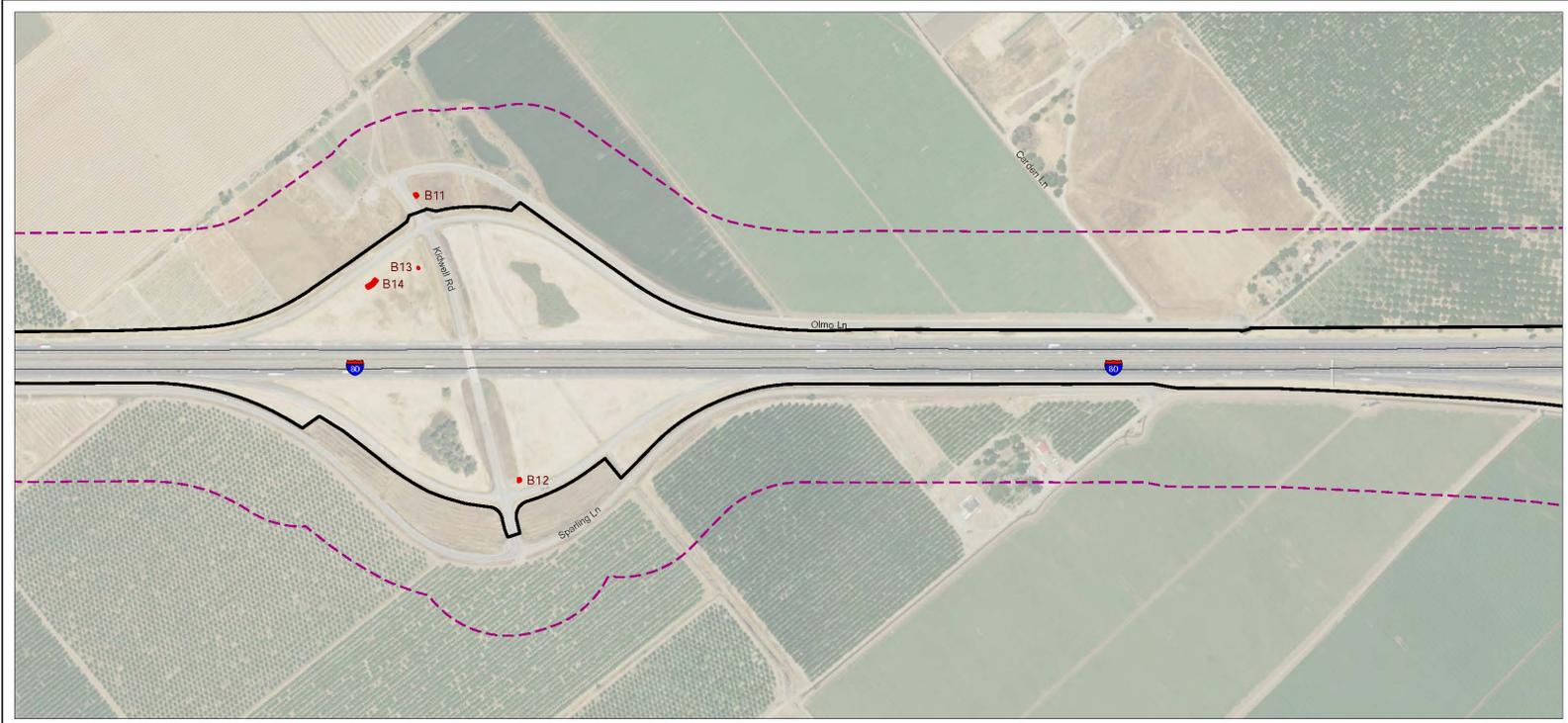
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**Title:** Nesting Survey Results

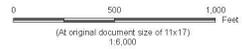
Type	ID	Acres
Suitable Habitat	B10	2.652

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 Yolo 80 Corridor Improvement Project  
 BUOW Survey Report

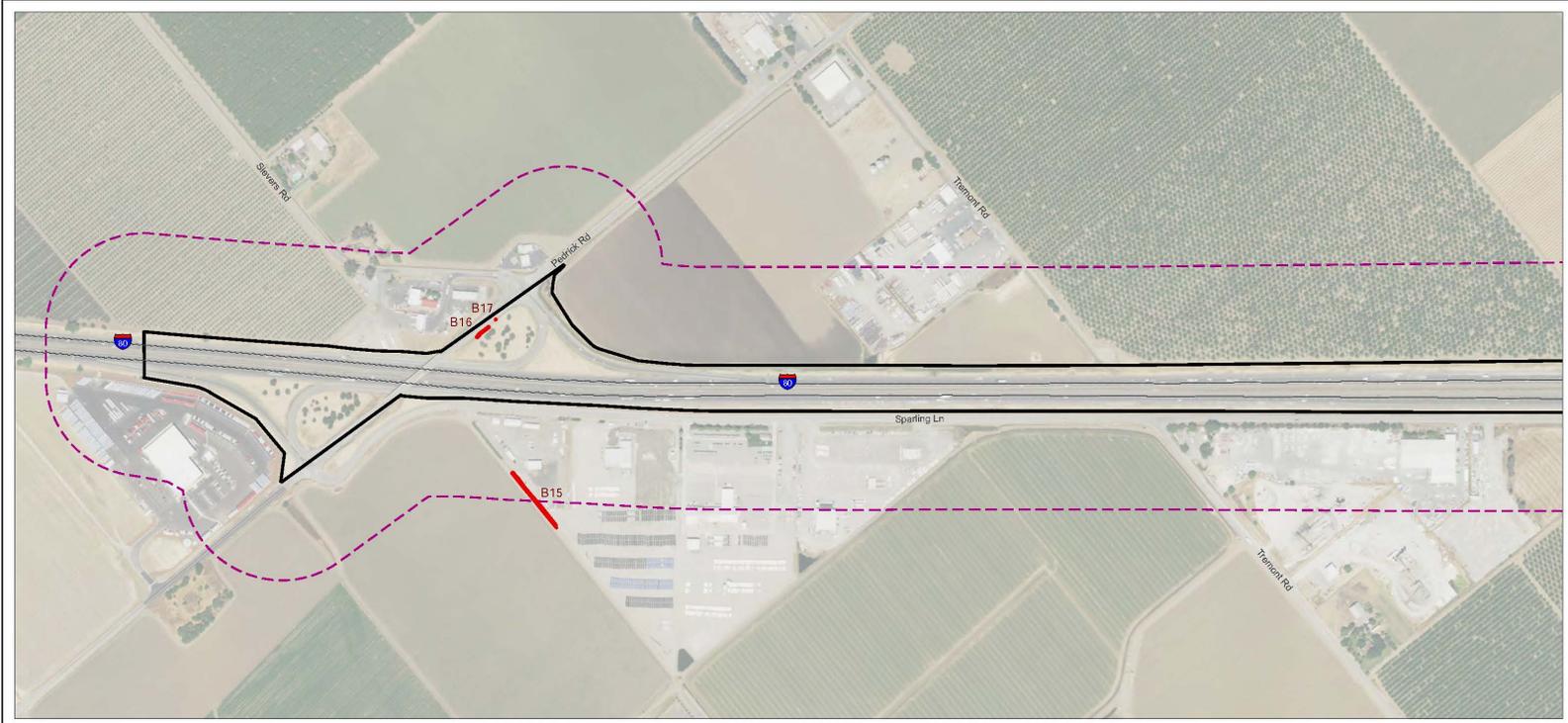
**Figure No.:** 3  
**Title:** Nesting Survey Results

Type	ID	Acres
Concentrated Burrows	B11	0.004
Concentrated Burrows	B12	0.003
Concentrated Burrows	B13	0.010
Concentrated Burrows	B14	0.020

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 19573.3020\_010

**Client/Project:** CalTrans District 3  
 Yolo 80 Corridor Improvement Project  
 BUOW Survey Report

**Figure No.:**

3

**Title:** Nesting Survey Results

Type	ID	Acres
Concentrated Burrows	B15	0.063
Concentrated Burrows	B16	0.012
Concentrated Burrows	B17	<0.001

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**03-3H900 Nesting Burrowing Owl Protocol Survey  
 Yolo 80 Corridor Improvement Project**



## **Appendix B** Representative Photographs

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Photograph 1. Suitable burrows at B02 location. February 10, 2021.



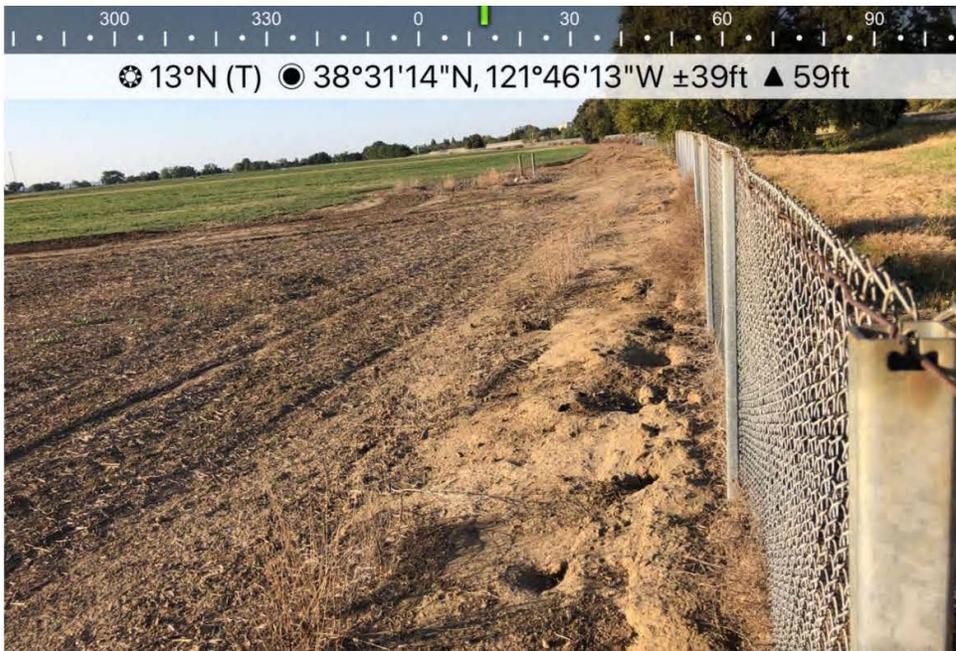
Photograph 2. Suitable burrows at B06 location. April 16, 2021.



Photograph 3. Suitable burrows at B08 location. February 10, 2021.



Photograph 4. Suitable burrows at B11 location. April 16, 2021.



Photograph 5. Suitable burrows at B19 location. April 16, 2021.



Photograph 6. Suitable foraging habitat at B19 location. April 16, 2021.



Photograph 7. Suitable burrows at B24 location. February 10, 2021.



Photograph 8. Signs of whitewash around burrow apron at B06 location. April 16, 2021.



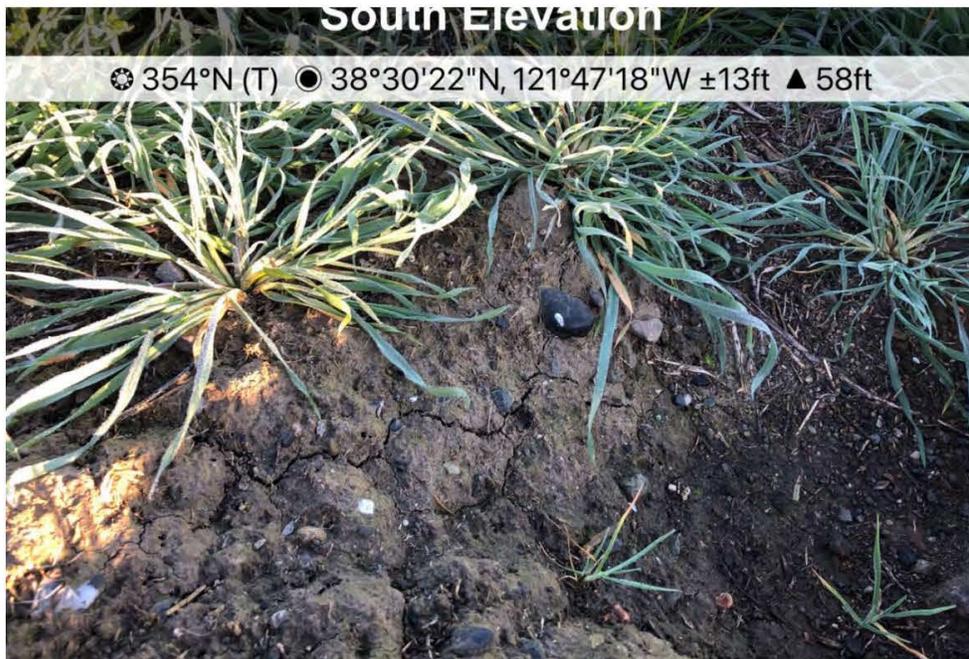
Photograph 9. Signs of whitewash on wood stake and suitable foraging habitat at B07 location. April 16, 2021.



Photograph 10. Example of grassland habitat that was excluded from suitable BUOW habitat due to height and density of vegetation. April 16, 2021.



Photograph 11. Signs of whitewash adjacent to suitable burrow at B11 location. January 21, 2022.



Photograph 12. Signs of whitewash near to suitable burrow at B12 location. January 25, 2022.

# **Appendix C** Wildlife Observed

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Field Visit Dates: February 10 April 16, May 13, May 20, and June 3, 2021, and January 13, 20, 21, and 25, 2022

Common Name	Scientific Name
American crow	<i>Corvus brachyrhynchos</i>
American kestrel	<i>Falco sparverius</i>
barn swallow	<i>Hirundo rustica</i>
black phoebe	<i>Sayornis nigricans</i>
brown-headed cowbird	<i>Molothrus ater</i>
California ground squirrel	<i>Otospermophilus beecheyi</i>
California scrub jay	<i>Aphelocoma californica</i>
Canada goose	<i>Branta canadensis</i>
European starling	<i>Sturnus vulgaris</i>
greater white-fronted goose	<i>Anser albifrons</i>
house finch	<i>Haemorhous mexicanus</i>
jackrabbit	<i>Lepus californicus</i>
killdeer	<i>Chararius vociferus</i>
mallard	<i>Anas platyrancus</i>
mourning dove	<i>Zenaida macroura</i>
northern flicker	<i>Colaptes auratus</i>
northern harrier	<i>Circus hudsonius</i>
northern mockingbird	<i>Mimus polyglottos</i>
pacific gopher snake	<i>Pituophis catenifer cantenifer</i>
peregrine falcon	<i>Falco peregrinus</i>
prairie falcon	<i>Falco mexicanus</i>
red-shouldered hawk	<i>Buteo lineatus</i>
red-tailed hawk	<i>Buteo jamaicensis</i>
rock pigeon	<i>Columba livia</i>
Swainson's hawk	<i>Buteo swainsoni</i>
turkey vulture	<i>Cathartes aura</i>
western kingbird	<i>Tyrannus verticalis</i>
western meadowlark	<i>Sturnella neglecta</i>
white-crowned sparrow	<i>Zonotrichia leucophrys</i>
white-tailed kite	<i>Elanus leucurus</i>
wild turkey	<i>Meleagris gallopavo</i>