

OEHI Response to CEC Data Requests Set One No. A44

Amended Application for Certification
for
HYDROGEN ENERGY CALIFORNIA
(08-AFC-8A)
Kern County, California

January 2013

DATA REQUEST

A44. Please provide a summary table of surveys performed on the most recently proposed linear routes and the results of those surveys i.e. natural gas pipeline, carbon dioxide, transmission line, potable water pipeline, and railroad spur. Include specific dates, area surveyed including buffers, specific plant or wildlife species surveyed for, and which special-status species were observed, if any. For plant species, include dates and locations that reference populations were checked.

If focused surveys for San Joaquin kit fox dens, blunt-nosed leopard lizard, burrowing owl, and special-status plant species were not performed on the current linear facility routes, please perform them and provide the results including a graphic showing the Global Positioning System (GPS) locations of any identified special-status plant or wildlife species.

Response

The 2012 Biological Resources Survey Report is provided under Data Request A44 as Attachment A44-1, as requested by CEC. The survey results and report pertain to the CO2 supply pipeline and the CO2 Injection project areas only.

Biological surveys have been performed to assess potential impacts to biological resources that could result from construction during the first three years of the OEHI CO2 Project. Those areas include the corridor for the pipeline used to transport CO2 from the HECA Plant to the OEHI CO2 Project, the Main Plant Facility and 3 Satellites. The 2012 Special Status-Species Report documents the methods used, the survey routes and species observed.

ATTACHMENT A44-1
2012 BIOLOGICAL RESOURCES SURVEY REPORT



**2012 Special-Status Species
Surveys for Initial CO2 Injection
Phase**

Occidental of Elk Hills, Inc.

Elk Hills Oil Field,
Kern County, CA

PN: 185802799

January 8, 2013

Executive Summary

Stantec Consulting Services Inc. (Stantec) conducted biological resources surveys for special-status species in the Elk Hills Oil Field (EHOF), southwestern San Joaquin Valley, Kern County, California (Project area; see **Figure 1**). Biological surveys were requested by Occidental of Elk Hills, Inc. (OEHI) and were performed as part of an assessment of the potential impacts on biological resources resulting from construction of the proposed CO₂ supply pipeline from Hydrogen Energy California (HECA) to OEHI processing facilities and the test satellites constructed during the first three years of the project. The survey locations included portions of Sections 15, 22, 27, and 35 in Township 30 South (T30S), Range 24 East (R24E) and Section 3 in T31S, R24E Mount Diablo Base and Meridian (MDBM). This document provides an account of the biological resources surveys that were conducted between August 1st and December 6th, 2012.

Special-status species potentially occurring within the project area include:

- Blunt-nosed leopard lizard (BNLL; *Gambelia sila*);
- Giant kangaroo rat (GKR; *Dipodomys ingens*);
- LeConte's thrasher (LCT; *Toxostoma lecontei*);
- Loggerhead shrike (LS; *Lanius ludovicianus*);
- San Joaquin antelope squirrel (SJAS; *Ammospermophilus nelsoni*);
- San Joaquin kit fox (SJKF; *Vulpes macrotis* spp. *mutica*); and
- Western burrowing owl (WBO; *Athene cunicularia* spp. *hypugaea*).

Stantec conducted a total of six reconnaissance-level special-status animal species surveys within the CO₂ supply pipeline and primary processing facility Project area in Sections 15, 22 and 27 (T30S, R 24E; MDBM). An additional reconnaissance-level special-status species survey was conducted within the Satellite Location Project areas within Section 35 (T30S, R24E; MDBM) and Section 3 (T31S, R24E; MDBM). **No BNLL were observed within either of the Project areas.** Global Positioning System (GPS) coordinates were recorded for GKR precincts, active dens of SJKF, and active burrows of WBO, although these species may not

have been visually identified in the field during the surveys. Tallies were recorded for all other special-status species observed.

Well-defined assemblages of the special-status plant community, valley saltbush scrub (*Atriplex* sp.), were observed within the Project area. Rainfall in the winter of 2011-2012 was significantly below average, resulting in reduced germination and growth of plant species. Consequently, special-status plant species were not part of the surveys conducted for OEHI. Stantec will conduct special-status plant surveys at a later date upon request from OEHI.

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1.0 Introduction

Stantec Consulting Services Inc. (Stantec) conducted biological resources surveys for special-status species in the Elk Hills Oil Field (EHOF), southwestern San Joaquin Valley, Kern County, California (Project area; see **Figures 1 and 2**). Biological surveys were requested by Occidental of Elk Hills, Inc. (OEHI) and were performed as part of an assessment of the potential impacts on biological resources resulting from construction of the proposed CO₂ supply pipeline from Hydrogen Energy California (HECA) to OEHI processing facilities. The survey locations included portions of Sections 15, 22, 27 and 35 in Township 30 South (T30S), Range 24 East (R24E) Mount Diablo Base and Meridian (MDBM) and Section 3 in T31S, R 24E (MDBM). This document provides an account of the biological resources surveys that were conducted between August 1st and December 6th, 2012.

Special-status species include federally and/or state listed Threatened and Endangered species, Candidate, Proposed or otherwise sensitive species, as defined by the United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG) and the Bureau of Land Management (BLM). Seven special-status species potentially occur within the Project area (**Table 1**).

Table 1. Special-status species potentially occurring within the Project area

Common Name	Scientific Name	Federal Listing	State Listing
Blunt-nosed leopard lizard	<i>Gambelia sila</i>	Endangered	Endangered, Fully-Protected Species
Giant kangaroo rat	<i>Dipodomys ingens</i>	Endangered	Endangered
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	Endangered	Threatened
San Joaquin antelope squirrel	<i>Ammospermophilus nelsoni</i>	Species of Concern	Threatened
LeConte's thrasher	<i>Toxostoma lecontei</i>	None	Species of Concern
Loggerhead shrike	<i>Lanius ludovicianus</i>	None	Species of Concern
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	None	Species of Concern

The blunt-nosed leopard lizard (*Gambelia sila*; BNLL) requires the most regulatory consideration due to its Fully-Protected status. Therefore, Stantec conducted the special-status species

surveys according to the survey guidelines set forth in the *Approved Survey Methodology for the Blunt-nosed Leopard Lizard* (CDFG, revised May 2004; **Appendix A**). The *Approved Survey Methodology* outlines the preferred BNLL survey methodology and appropriate survey conditions including ground temperature, sustained wind speed, and cloud cover. Five surveys following this protocol were conducted within the CO₂ supply pipeline and primary processing facility Project area within Sections 15, 22 and 27 (T30S, R24E; MDBM) between August 1st and September 15th, 2012. An additional special-status species survey (outside of the optimal BNLL survey period) was conducted within the Satellite Location Project area in Section 35 (T30S, R24E; MDBM) and Section 3 (T31S, R24E; MDBM) and the CO₂ supply pipeline and primary processing facility Project area between December 3rd and December 6th, 2012. **No BNLL were observed within the Project areas.** Global Positioning System (GPS) coordinates were recorded for giant kangaroo rat (*Dipodomys ingens*; GKR) precincts, active dens of San Joaquin kit fox (*Vulpes macrotis* spp. *mutica*; SJKF), and active burrows of Western burrowing owl (*Athene cunicularia* spp. *hypugaea*; WBO), although these species may not have been visually identified in the field during the surveys. Tallies were recorded for all other special-status species observed.

Well-defined assemblages of the special-status plant community, valley saltbush scrub (*Atriplex* sp.), were observed within the Project area. Rainfall in the winter of 2011-2012 was significantly below average, resulting in reduced germination and growth of plant species. Consequently, special-status plant species were not part of the surveys conducted for OEHI. Stantec will conduct special-status plant surveys at a later date upon request from OEHI.

2.0 Project Area Description

2.1 PROJECT LOCATION

The Project areas consist of portions of five sections located within the EHOFF known as Sections 15, 22, 27 and 35, (T30S, R24E; MDBM) and Section 3 (T31, R24E; MDBM). The EHOFF is located in the southwestern San Joaquin Valley, approximately 40 miles west of the City of Bakersfield, Kern County, California. Photographs of the Project area are provided in **Appendix F (Photographs 1-14)**.

2.2 PLANT COMMUNITIES

The Project areas consist mainly of annual (non-native) grassland, with scattered stands of valley saltbush scrub. Rainfall in the winter of 2011-2012 was significantly below average, resulting in reduced germination and growth of plant species. Consequently, special-status plant species were not part of the surveys conducted for OEHI. Stantec will conduct special-status plant surveys at a later date upon request from OEHI.

2.2.1 Annual (non-native) Grassland

The annual grassland present in the Project area is characterized by a sparse to dense cover of low standing (<1 meter [m]) annual non-native grass species such as red brome (*Bromus madritensis* ssp. *rubens*) and Arabian schismus (*Schismus arabicus*). Native and non-native herbaceous species such as dove weed (*Croton setigerus*) and redstem filaree (*Erodium cicutarium*) are also present throughout the Project area. Native and non-native shrubs present in the Project area include saltbush (*Atriplex polycarpa*) and Russian thistle (*Salsola tragus*). Shrubs are widely distributed throughout the Project area, with increasing density in washes and along roads.

2.2.2 Valley Saltbush Scrub

Valley saltbush scrub communities are characterized by blue-green or grayish chenopod shrubs, and are established in predominately alkaline soils. Historically, open spaces in the saltbush canopy were bare or occupied by native forbs and grasses. Currently, non-native

grasses occupy much of the open spaces in the saltbush canopy. Valley saltbush scrub is listed by CDFG as *S2.1*, defined as a sensitive plant community (CDFG 2009, 2011b).

3.0 Survey Methodology

3.1 SURVEY OVERVIEW

Although the biological resources surveys included all special-status species potentially occurring within the Project areas, the surveys within the CO₂ supply pipeline and primary processing facility Project area were conducted according to CDFG survey guidelines for the BNLL. Methodology regarding time of day, temperature and weather conditions, researcher spacing, and experience of researchers were followed.

A total of five surveys were conducted between August 1 and September 15, 2012. The proposed CO₂ supply pipeline route surveys covered the approximate two mile long pipeline route and a 250 foot buffer. The southeast quadrant (1/4 section) of Section 27, the proposed location for the primary processing facility, was surveyed as well. Survey information was recorded on standardized survey sheets (**Appendix C**).

Surveyors walked in parallel transects with spacing of approximately 10m to 30m based on topography and ground vegetation cover. All surveys were conducted after sunrise and when air temperatures measured between 25 to 35 degrees Celsius. Temperatures were measured from approximately 2 centimeters (cm) above the ground over a surface that most represented the survey area. The temperature was measured out of direct sunlight in “surveyor-created shade”. All surveys were completed at 2:00 PM or as soon as the maximum air temperatures were reached, whichever occurred first. Additionally, surveys were only conducted on days when cloud cover was less than 90 percent and sustained winds did not exceed 10 miles per hour (mph). Wind speed was determined with the aid of a hand held anemometer.

The survey crew consisted of a combination of Stantec Level I and Level II BNLL researchers/biologists. A Level II researcher had demonstrated the ability to distinguish BNLL from other common lizards found in the southwestern San Joaquin Valley and had participated in at least 50 prior BNLL surveys and had made at least one confirmed field sighting of a BNLL. Level I researchers were required to take a Level I Species Identification Course offered by Stantec prior to commencing surveys. A representative list of surveyors and their qualifications are provided in **Appendix E**.

All project areas consisting of potential BNLL habitat were surveyed. Surveys were conducted on foot at a pace that did not exceed 1 mph for the total length of the survey, and surveyors were encouraged to stop periodically and scan their transect using close-focusing binoculars. Special emphasis was placed on streambeds, washes, and roads where BNLL are typically located.

At the conclusion of each transect, survey crew members provided the designated recorder with a Nikon Coolpix AW100 GPS™ camera photograph number for any GKR precincts, SJKF dens, or WBO burrows that were marked. The recorder was also given tallies for the number of other special-status species, as well as western whiptail lizard (*Aspidoscelis tigris* ssp. *mundus*) and side-blotched lizard (*Uta stansburiana*) that were observed during the course of the survey. GPS coordinates for special-status species observations are provided in **Appendix D**.

The survey of the Satellite Locations occurred between December 4th and December 6th, 2012. An additional survey of the CO₂ supply pipeline and primary processing facility project area occurred on December 3rd and 4th, 2012. Stantec biologists surveyed the proposed facility footprint and a 500 foot buffer for all three Satellite Locations, with a focus on locating special-status animal species and habitat such as SJKF dens, small mammal burrows and WBO burrows. Site photographs of the Satellite Locations are provided in **Appendix F (Photographs 9-14)**. A complete list of survey dates are presented in **Appendix D**.

3.2 OBSERVATION PROCEDURES

Active SJKF dens were marked with red pin flags. An active den was defined as having one or more den entrances exhibiting recent activity, including fresh scat, evidence of recent digging, tracks, fresh scrapes and prey remains. WBO active burrows were marked with green pin flags. Active burrows exhibited signs of recent inhabitation, such as fresh droppings, feathers and prey remains. GKR precincts were marked with yellow pin flags. Each pin flag planted and the photo/GPS coordinate captured represented between one and five precincts.

4.0 Results

4.1 SECTION 27

Section 27 is located in the USGS 7.5 minute East Elk Hills Quadrangle of Kern County, CA. The southeast quadrant of this section, in addition to the area that lies within the proposed CO₂ supply pipeline route and its buffer zone, was surveyed. An aerial map illustrating the location of each special-status species observation within Section 27 is presented in **Figure 3**.

The elevation of Section 27 ranges between 600 and 800 feet above mean sea level (msl). The topography is hilly throughout with multiple dirt roads transecting the section. Active well pads and other infrastructure are found mainly in the southwest quarter of the section. Numerous abandoned well pads are present in the southeast quarter of the section. Vegetation consists mostly of annual grassland. Shrub cover is scattered throughout the section.

The southeast quadrant was surveyed on September 6, September 7, September 9, September 10, September 11 and December 3rd, 2012. No BNLL observations were recorded in this quadrant. All other special-status and lizard species observations are presented in **Table 2**.

Table 2. Special-status species and additional lizard sightings within Section 27.

Kit Fox	Kit Fox Den	GKR Precinct	Burrowing Owl	Burrowing Owl Burrow	San Joaquin Antelope Squirrel	LeConte's Thrasher	Loggerhead Shrike	Side-Blotched Lizard	Whiptail Lizard
0	0	0	0	2	6	0	4	164	0

4.1 CO₂ SUPPLY PIPELINE ALIGNMENT

The proposed CO₂ supply pipeline alignment trends through Sections 15, 22 and 27, located in the USGS 7.5 minute East Elk Hills Quadrangle of Kern County, CA. The area that lies within the proposed CO₂ supply alignment and a 250 foot buffer zone were surveyed. A map illustrating the location of each special-status species observation within the proposed CO₂ supply pipeline route is presented in **Figure 4**.

The elevation of the proposed CO₂ supply pipeline route ranges between 300 and 600 feet above msl. The topography varies along the north/south route, with the northern side that lies

within 15 and 22 mostly flat changing to hilly in Section 27. The vegetation consists mostly of annual grassland. Shrub cover is scattered along the route, with dense clumps in some areas.

The proposed CO₂ supply pipeline route was surveyed on August 24, August 31, September 3, September 7, September 14 and December 5th, 2012. No BNLL observations were recorded within the area surveyed. All other special-status and lizard species observations are presented in **Table 3**.

Table 3. Special-status species and additional lizard sightings within the proposed CO₂ supply pipeline route.

Kit Fox	Kit Fox Den	GKR Precinct	Burrowing Owl	Burrowing Owl Burrow	San Joaquin Antelope Squirrel	LeConte's Thrasher	Loggerhead Shrike	Side-Blotched Lizard	Whiptail Lizard
0	2	11	2	3	0	0	1	205	0

4.2 SATELLITE LOCATIONS

Satellite Locations 1 and 2 are located within Section 35, which is located in the USGS 7.5 minute Tupman Quadrangle of Kern County, CA. Satellite Location 3 is located within Section 3G, which is located in the USGS 7.5 minute East Elk Hills Quadrangle of Kern County, CA. The topography of all three Satellite Locations is hilly throughout, with active well pads, dirt roads and pipelines located within and adjacent to the 500-foot survey buffer zones surrounding the proposed facility footprints. The elevation of the Satellite Locations ranges between 500 and 1,000 feet above msl. The vegetation within the areas surveyed mainly consists of isolated patches of Valley Saltbush Scrub and non-native annual grasses.

The Satellite Locations were surveyed on December 4th and December 6th, 2012. A map illustrating the locations of the Satellite Locations are presented in **Figure 5**. Special-status and additional lizard species observations are presented in **Table 4**.

Table 4. Special-status species and additional lizard sightings within the three Satellite Location buffer zones.

Location	Kit Fox	Kit Fox Den	GKR Precinct	Burrowing Owl	Burrowing Owl Burrow	San Joaquin Antelope Squirrel	LeConte's Thrasher	Loggerhead Shrike	Side-Blotched Lizard	Whiptail Lizard
1	0	0	0	0	0	0	0	0	1	0
2	0	0	0	0	0	0	0	1	4	0
3	0	0	0	0	0	0	0	1	3	0

5.0 Conclusion

Stantec conducted reconnaissance-level BNLL surveys according to the survey guidelines set forth in the *Approved Survey Methodology for the Blunt-nosed Leopard Lizard* (CDFG, revised May 2004) as well as biological resource surveys for a special-status species for the Initial CO₂ Injection Phase Project. Five surveys were conducted within the CO₂ supply pipeline and primary processing facility Project area between August 1st and September 15th, 2012. Additional surveys were conducted within the CO₂ supply pipeline and primary processing facility Project area on December 3rd and December 5th, 2012. A biological resource for special-status species survey was also conducted within the Satellite Location Project area between December 4th and December 6th, 2012. No BNLL sightings occurred over the course of these surveys. GPS coordinates were recorded for three other special-status species observed within the Project area during the course of the surveys. Well-defined assemblages of the special-status plant community, valley saltbush scrub, were also observed throughout the Project area. All survey data were collected on BNLL Survey Reporting Forms and submitted to CDFG. Additional special-status plant and animal occurrences observed in the Project area were also documented on a CNDDDB Native Species Field Survey Form and submitted as required by CDFG (2009), CNPS (2001), and USFWS (1996).

Stantec will perform protocol-level special-status plant species surveys within the Project area in the winter/spring of 2013 if sufficient precipitation occurs. Special-status species refer to Federally-listed and/or State-listed threatened and endangered plant species, candidate, proposed or otherwise sensitive plant species, as defined by the United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG) and California Native Plant Society (CNPS).

The USFWS, CDFG and CNPS each have protocols for surveying rare and/or special-status plant species on public and private lands as noted below:

- United States Fish and Wildlife Service. 1996. *Guidelines for conducting and reporting botanical inventories for federally listed, proposed and candidate plants*. Accessed online at <http://www.fws.gov/sacramento/es/protocol.htm>.

- California Department of Fish and Game. 2009. *Protocols for surveying and evaluating impacts to special-status native plant populations and natural communities*. Accessed online at <http://www.dfg.ca.gov/habcon/plant/>.
- California Native Plant Society. 2001. Inventory of rare and endangered vascular plants of California (D.P. Tibor, editor). Sixth edition. Special Publication No, 1, California Native Plant Society, Sacramento, CA. *CNPS botanical survey guidelines*. Pages 38-40.

These guidelines above are provided in **Appendix B** and will be reviewed by Stantec botanists prior to the start of the 2013 botanical surveys. The recommendations in these guidelines include, but are not limited to:

- A visit to a nearby reference site where special-status plants are known to occur in the type(s) of habitat present in the Project area to determine if those species are identifiable at the time of the survey (CDFG [2009]; CNPS [2001]; USFWS [1996]).
- Systematic surveys to detect San Joaquin woolly-threads (*Monolopia congdonii*), Kern mallow (*Eremalche kernensis*), California jewelflower (*Caulanthus californicus*), and Bakersfield cactus (*Opuntia basilaris* var. *treleasei*) at parallel linear transects spaced 5 to 10 meters apart throughout the entire site, regardless of subjective habitat evaluations (Cypher 2002).
- Documentation of a special-status plant or natural community on a CDFG California Natural Diversity Database (CNDDDB) Native Species (or Community) Field Survey Form, accompanied by a copy of the relevant portion of a 7.5 minute topographic map with the occurrence(s) mapped (CDFG [2009]; CNPS [2001]; USFWS [1996]).
- A comprehensive list of all plants observed on the project site, identified to a taxonomic level which allows rarity to be determined (CDFG [2009]; CNPS [2001]; USFWS [1996]).

- More than one site visit during botanical surveys, if necessary, to make observations during the appropriate phenological stage of all target species (CDFG [2009]; CNPS [2001]; USFWS [1996]).

Stantec will perform these botanical surveys, as well as any other required biological surveys, as requested by OEHI.

6.0 References

California Department of Fish and Game. 2011. Nongame Wildlife Program-Fully Protected Animals. Accessed online at http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/fully_pro.html.

California Department of Fish and Game. 2011. *California Natural Diversity Database*. RAREFIND 3 Software.

California Department of Fish and Game. 2009. Protocols for surveying and evaluating impacts to special-status native plant populations and natural communities. Accessed online at <http://www.dfg.ca.gov/habcon/plant/>.

California Department of Fish and Game. 2004. Approved Survey Methodology for the Blunt-nosed Leopard Lizard. Accessed online at <http://www.dfg.ca.gov/wildlife/nongame/docs/BNLLrevisedprotocol.pdf>.

California Native Plant Society. 2001. Inventory of rare and endangered vascular plants of California (D.P. Tibor, editor). Sixth edition. Special Publication No, 1, California Native Plant Society, Sacramento, CA. CNPS botanical survey guidelines. Pages 38-40.

California Department of Fish and Game. 2009. Protocols for surveying and evaluating impacts to special-status native plant populations and natural communities. Accessed online at <http://www.dfg.ca.gov/habcon/plant/>.

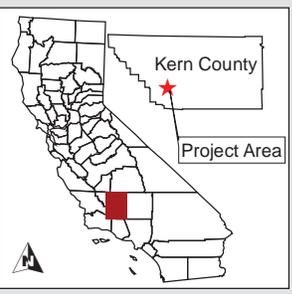
United States Fish and Wildlife Service. 1996. Guidelines for conducting and reporting botanical inventories for federally listed, proposed and candidate plants. Accessed online at <http://www.fws.gov/sacramento/es/protocol.htm>.

FIGURES

Project Area
 Elk Hills Unit Boundary
 — Major Roads

0 9 18
 |-----|-----|
 Kilometers

0 5 10
 |-----|-----|
 Miles



**2012 SPECIAL-STATUS SPECIES
 SURVEYS FOR INITIAL CO₂
 INJECTION PHASE**

**STANTEC CONSULTING
 SERVICES, Inc.**
 4700 Stockdale Highway, Suite 125
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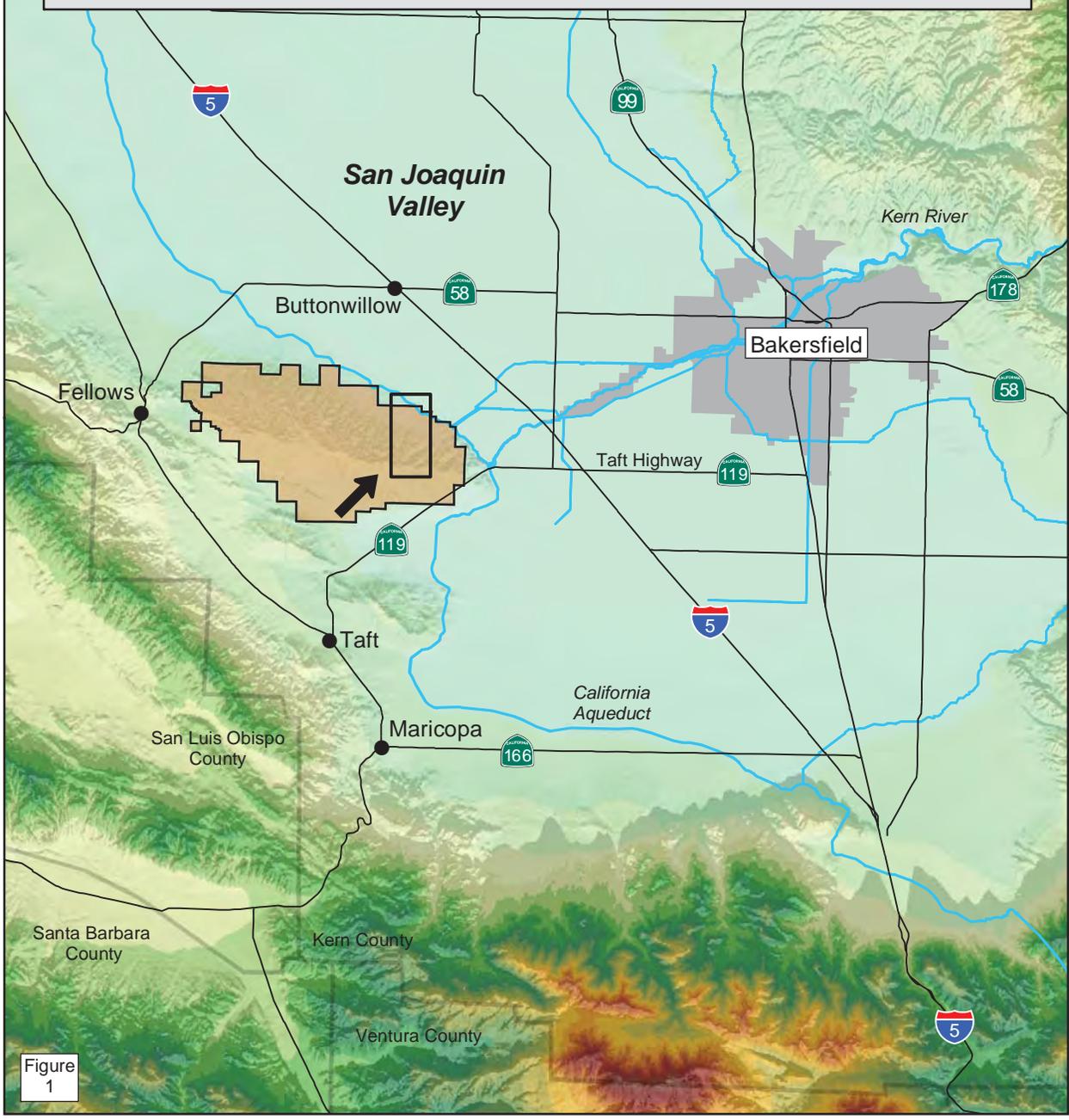
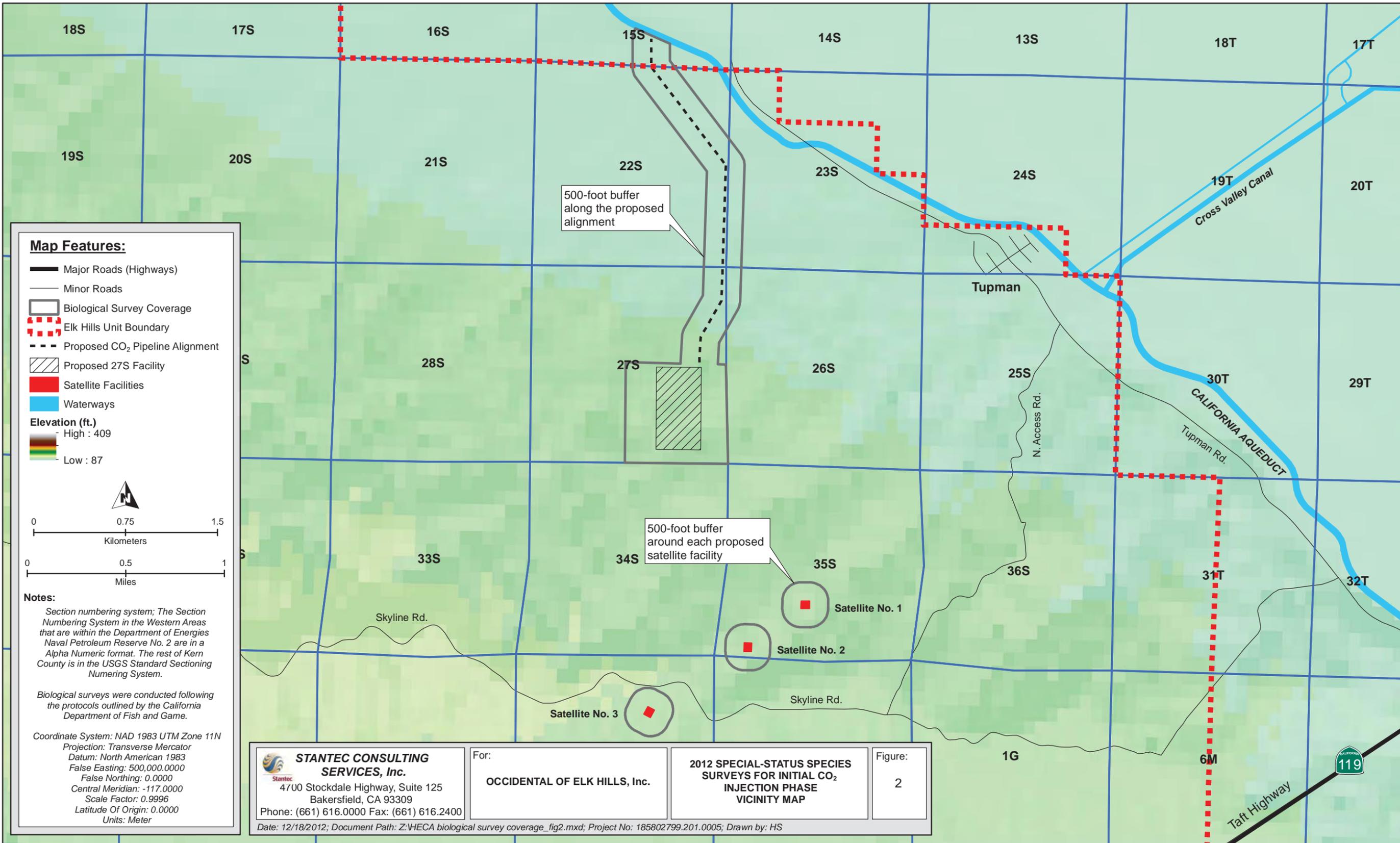


Figure
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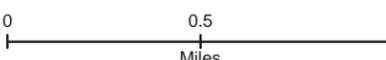
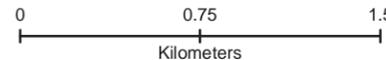


Map Features:

- Major Roads (Highways)
- Minor Roads
- Biological Survey Coverage
- Elk Hills Unit Boundary
- Proposed CO₂ Pipeline Alignment
- Proposed 27S Facility
- Satellite Facilities
- Waterways

Elevation (ft.)

- High : 409
- Low : 87



Notes:

Section numbering system: The Section Numbering System in the Western Areas that are within the Department of Energies Naval Petroleum Reserve No. 2 are in a Alpha Numeric format. The rest of Kern County is in the USGS Standard Sectioning Numering System.

Biological surveys were conducted following the protocols outlined by the California Department of Fish and Game.

Coordinate System: NAD 1983 UTM Zone 11N
 Projection: Transverse Mercator
 Datum: North American 1983
 False Easting: 500,000.0000
 False Northing: 0.0000
 Central Meridian: -117.0000
 Scale Factor: 0.9996
 Latitude Of Origin: 0.0000
 Units: Meter

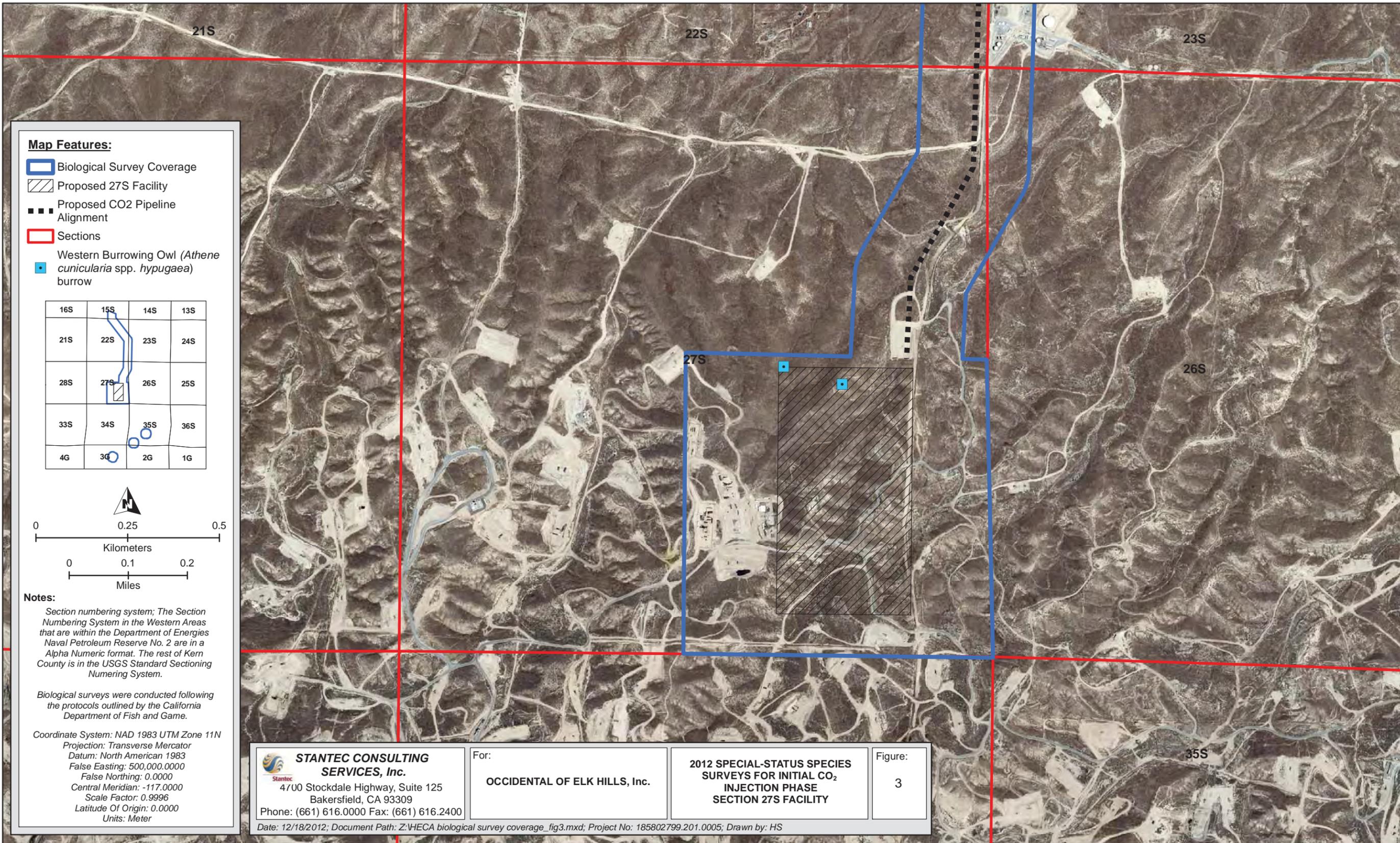
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For:
OCCIDENTAL OF ELK HILLS, Inc.

2012 SPECIAL-STATUS SPECIES SURVEYS FOR INITIAL CO₂ INJECTION PHASE VICINITY MAP

Figure:
 2

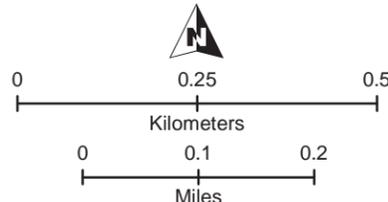
Date: 12/18/2012; Document Path: Z:\HECA biological survey coverage_fig2.mxd; Project No: 185802799.201.0005; Drawn by: HS



Map Features:

- Biological Survey Coverage
- Proposed 27S Facility
- Proposed CO2 Pipeline Alignment
- Sections
- Western Burrowing Owl (*Athene cunicularia* spp. *hypugaea*) burrow

16S	15S	14S	13S
21S	22S	23S	24S
28S	27S	26S	25S
33S	34S	35S	36S
4G	3G	2G	1G



Notes:

Section numbering system; The Section Numbering System in the Western Areas that are within the Department of Energies Naval Petroleum Reserve No. 2 are in a Alpha Numeric format. The rest of Kern County is in the USGS Standard Sectioning Numering System.

Biological surveys were conducted following the protocols outlined by the California Department of Fish and Game.

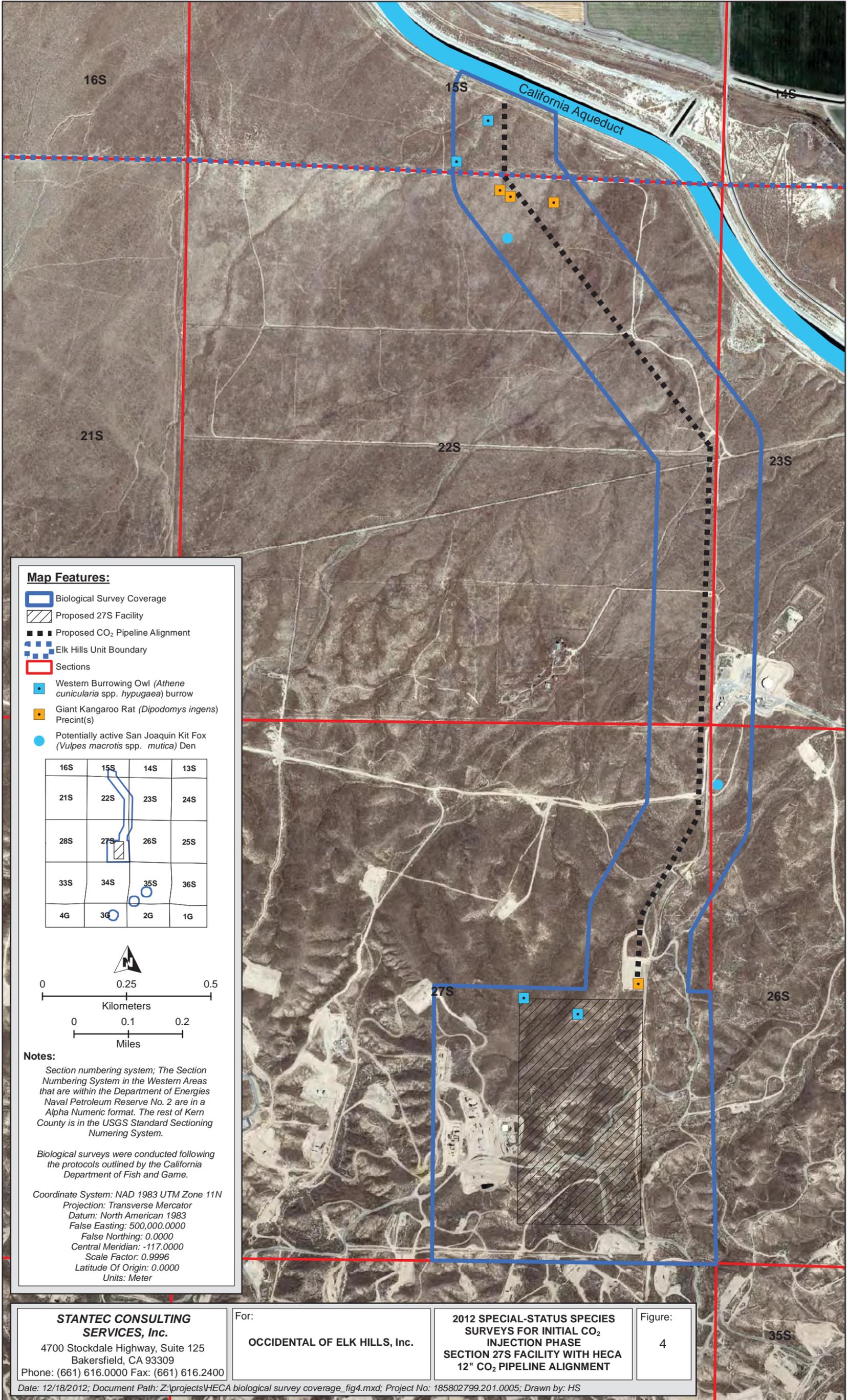
Coordinate System: NAD 1983 UTM Zone 11N
 Projection: Transverse Mercator
 Datum: North American 1983
 False Easting: 500,000.0000
 False Northing: 0.0000
 Central Meridian: -117.0000
 Scale Factor: 0.9996
 Latitude Of Origin: 0.0000
 Units: Meter

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For:
OCCIDENTAL OF ELK HILLS, Inc.

2012 SPECIAL-STATUS SPECIES SURVEYS FOR INITIAL CO₂ INJECTION PHASE SECTION 27S FACILITY

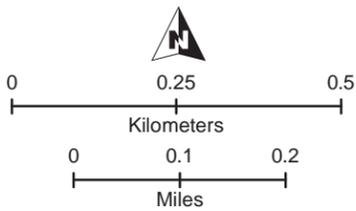
Figure:
 3



Map Features:

-  Biological Survey Coverage
-  Proposed 27S Facility
-  Proposed CO₂ Pipeline Alignment
-  Elk Hills Unit Boundary
-  Sections
-  Western Burrowing Owl (*Athene cunicularia* spp. *hypugaea*) burrow
-  Giant Kangaroo Rat (*Dipodomys ingens*) Precinct(s)
-  Potentially active San Joaquin Kit Fox (*Vulpes macrotis* spp. *mutica*) Den

16S	15S	14S	13S
21S	22S	23S	24S
28S	27S	26S	25S
33S	34S	35S	36S
4G	3G	2G	1G



Notes:

Section numbering system: The Section Numbering System in the Western Areas that are within the Department of Energies Naval Petroleum Reserve No. 2 are in a Alpha Numeric format. The rest of Kern County is in the USGS Standard Sectioning Numering System.

Biological surveys were conducted following the protocols outlined by the California Department of Fish and Game.

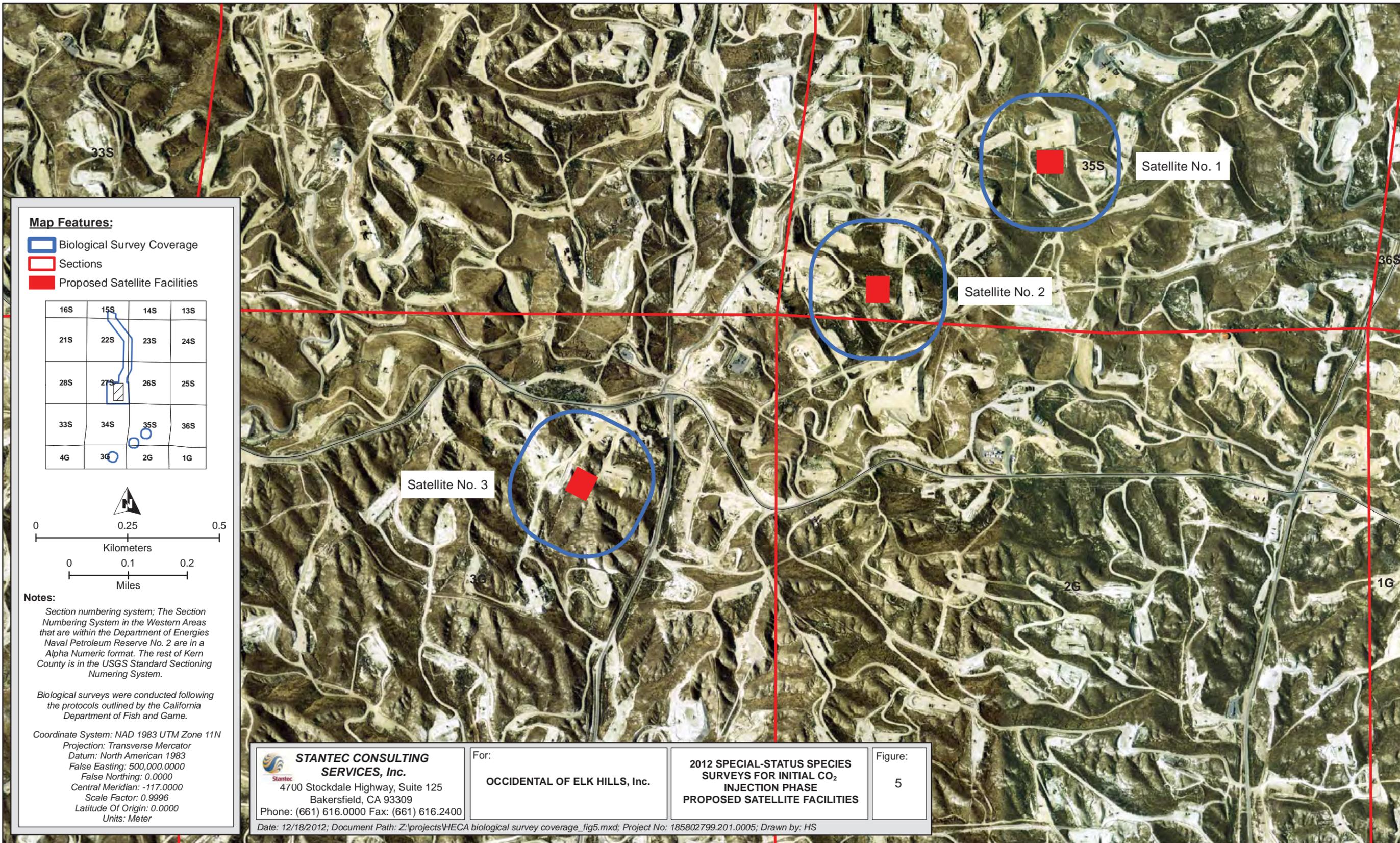
Coordinate System: NAD 1983 UTM Zone 11N
 Projection: Transverse Mercator
 Datum: North American 1983
 False Easting: 500,000.0000
 False Northing: 0.0000
 Central Meridian: -117.0000
 Scale Factor: 0.9996
 Latitude Of Origin: 0.0000
 Units: Meter

STANTEC CONSULTING SERVICES, Inc.
 4700 Stockdale Highway, Suite 125
 Bakersfield, CA 93309
 Phone: (661) 616.0000 Fax: (661) 616.2400

For:
OCCIDENTAL OF ELK HILLS, Inc.

2012 SPECIAL-STATUS SPECIES SURVEYS FOR INITIAL CO₂ INJECTION PHASE SECTION 27S FACILITY WITH HECA 12" CO₂ PIPELINE ALIGNMENT

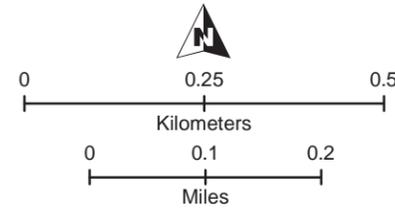
Figure:
 4



Map Features:

- Biological Survey Coverage
- Sections
- Proposed Satellite Facilities

16S	15S	14S	13S
21S	22S	23S	24S
28S	27S	26S	25S
33S	34S	35S	36S
4G	3G	2G	1G



Notes:
 Section numbering system; The Section Numbering System in the Western Areas that are within the Department of Energies Naval Petroleum Reserve No. 2 are in a Alpha Numeric format. The rest of Kern County is in the USGS Standard Sectioning Numering System.

Biological surveys were conducted following the protocols outlined by the California Department of Fish and Game.

Coordinate System: NAD 1983 UTM Zone 11N
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For:
OCCIDENTAL OF ELK HILLS, Inc.

2012 SPECIAL-STATUS SPECIES SURVEYS FOR INITIAL CO₂ INJECTION PHASE PROPOSED SATELLITE FACILITIES

Figure:
 5

APPENDIX A

Approved Survey Methodology for the Blunt-Nosed Leopard Lizard

May 2004

Dear Blunt-nosed Leopard Lizard Surveyor,

Attached is the revised survey methodology for the blunt-nosed leopard lizard (*Gambelia sila*). The protocol was developed by the San Joaquin Valley Southern Sierra Region (SJVSSR) of the California Department of Fish and Game (DFG) with input from the United States Fish and Wildlife Service, the Bureau of Land Management and various species experts. This protocol supercedes previous versions of DFG survey protocols for the blunt-nosed leopard lizard. The range-wide decline of population numbers in the past decade has provided the impetus for development of a more rigorous methodology to detect species presence. Additionally, since DFG is not able to issue any form of "take" permit for the blunt-nosed leopard lizard due to its status as a fully-protected animal under the California Fish and Game Code **§5050**, detection of species presence on a project site is crucial.

This standard methodology has been developed to provide consultants, local, state and federal agencies with minimum acceptable standards for surveys conducted to determine the status of this State and federally endangered species. The survey methods described within this protocol were designed to optimize the likelihood of detecting the presence of blunt-nosed leopard lizards should they occur on a project site.

When the presence of blunt-nosed leopard lizards is detected, we request that you notify the Department's local Permitting and Project Review staff for further instructions of what additional information will be needed to assess the project's potential impact on the species. This will assist in expediting the review of the project and help control the project sponsor's biological survey costs. Additionally, the USFWS should be contacted for further advice since this is also a federally-listed species. Use of this protocol and notification of the Department does not exempt you from consultation with the USFWS.

The Department is willing to cooperate with surveyors who have circumstances or needs not addressed by this protocol and who may wish to propose alternative methods to comply with State law prohibiting take of BNLL. If you have any questions or comments regarding this methodology or if you want to propose the use of a different methodology, please the SJVSSR Habitat Conservation Planning staff at (559) 243-4014 (Fresno, Merced, Madera, Kings, Tulare, and Kern Counties) or (805) 528-8670 (San Benito and San Luis Obispo Counties).

CALIFORNIA DEPARTMENT OF FISH AND GAME

APPROVED SURVEY METHODOLOGY FOR THE BLUNT-NOSED LEOPARD LIZARD MAY 2004

Blunt-nosed leopard lizard, *Gambelia sila* = (*Gambelia silus*)

STATUS: SE, FE, DFG fully protected

This protocol has been developed to provide a minimum level of protection for blunt-nosed leopard lizards (BNLL) when projects or maintenance activities are scheduled to occur within potential BNLL habitat. Disturbing activities should not proceed until appropriate surveys are conducted to determine if the species is present on the site. Surveys conducted according to the following protocol by qualified researchers provide a reasonable, although not conclusive, indication of BNLL presence at a particular site and yield critical information needed to prevent mortality and minimize impacts to the species. Researchers conducting the surveys are expected to understand the basic biological requirements of the species and have the ability to recognize potential BNLL habitat. This protocol satisfies the Department of Fish and Game requirements when it is determined that formal BNLL surveys are needed. [Note: This protocol is appropriate for pre-project BNLL surveys, however, population monitoring over time on a site is best conducted using a permanent survey grid, such as described in Tollestrup (1976).]

METHODS:

A minimum of two researchers, walking in parallel on adjacent transects, should conduct a BNLL survey. Optimum BNLL activity periods occur when air temperature is between 25C-35C (77F-95F) (Tollestrup 1976; USFWS 1985, 1998). Surveys must be conducted when the air temperature falls within the optimal range. Surveys may begin after sunrise as soon as the minimum air temperature criterion is met, and must end by 1400 hours or when the maximum temperature is reached, whichever occurs first (Tollestrup 1976). Time of day and air temperature should be recorded at the start and end of each survey. Air temperature should be periodically checked to ensure that the maximum has not been exceeded. Air temperature should be measured at 1-2 cm above the ground over a surface most representative of the area being surveyed. The researcher must shade the thermometer from direct sunlight while taking the reading. Other factors that affect BNLL activity such as soil temperature (measured at 1cm below soil surface with a shaded thermometer) and weather conditions must be recorded at the start and end of each survey. Surveys should not be conducted on overcast days (cloud cover > 90%) or when sustained wind velocity exceeds 10 mph (force > 3 on Beaufort wind scale) (Montanucci 1965; Tollestrup 1976; J. Vance, pers. comm.).

Surveys must be conducted on foot, and researchers must survey all areas with potential BNLL habitat. BNLL are often difficult to detect, particularly in areas where shrubs are fairly numerous (>30% cover) and/or the herbaceous vegetation is tall (>30 cm). In such conditions, 10 meter wide transects should be walked at a slow pace. In areas with few shrubs and shorter herbaceous vegetation (<15 cm), transects as wide as 30 meters are acceptable. When feasible, transects should be walked in a north-south orientation to minimize glare from the sun. The surveyor should stop periodically and scan the transect for BNLL using close-focusing binoculars (minimum 7X35 magnification). In addition to recording the location of all BNLL observed (must provide UTM coordinates), the presence of habitat features important for BNLL (washes, playas, relative abundance of small mammal burrows) should also be recorded for each transect. Streambeds, washes, roads, etc., should be walked in addition to transect lines since BNLL are often seen in these areas.

TIMING AND LENGTH OF SURVEY:

Survey intensity should be commensurate with the anticipated level of disturbance to the BNLL habitat. The primary concern for BNLL when disturbance occurs during maintenance activities is direct mortality from equipment or personnel. Removal of intact BNLL habitat has a much greater potential for “take” due to direct impact on animals aboveground as well as any hibernating animals or eggs underground. A longer survey effort including both spring adult surveys and fall hatchling surveys is therefore required for activities that cause impacts to undisturbed BNLL habitat. The more intensive survey effort increases the chances of observing the species, even if the population is small. Once a BNLL has been observed, surveys may cease and consultation with the Department must begin regarding avoidance measures. If BNLL are observed incidentally while conducting surveys for other species, specific surveys for BNLL are not required. Surveys will be accepted for one year from the date of completion.

Disturbances for Maintenance Activities

Examples of maintenance activities include grading existing roads, grass mowing on roadsides, and maintaining existing structures. BNLL are active and above ground from April through September, but optimum activity periods for adults occur between April 15 and July 15 (Montanucci 1965; Tollestrup 1979; USFWS 1985, 1998). BNLL surveys should be conducted for a total of 8 days over the course of the 90-day time span. A minimum of 3 survey days should be conducted consecutively, with a maximum of 6 days completed within any 30-day time period. Fall hatchling surveys are not required for activities in this category.

Disturbances Leading to Habitat Removal

Examples of disturbances that impact intact habitat include establishment of new roads or structures, housing subdivisions, and changes in historic land use. BNLL surveys should be conducted for 12 days over the course of the 90-day

adult optimal survey period (April 15 to July 15), with a maximum of 4 survey days per week and 8 days within any 30-day time period. At least one survey session should be conducted for 4 consecutive days, weather permitting. BNLL hatchlings and subadults are most commonly observed from August 1 to September 15, along with a few adults that are still active above ground (Montanucci 1965; Tollestrup 1979; USFWS 1985, 1998). In addition to the 12 days of adult BNLL surveys required for activities in this category, 5 more survey days are required during the hatchling optimal survey period for a total of 17 survey days overall.

QUALIFICATIONS OF RESEARCHERS:

An acceptable BNLL survey crew should consist of no more than 3 Level I researchers for every Level II researcher. This restriction should reduce the number of incorrect/missed identifications. The names and affiliations of all researchers must be recorded for each survey day.

Level I: Researcher has demonstrated the ability to distinguish BNLL from other common lizard species that may inhabit the area;

Level II: Researcher has demonstrated the ability to distinguish BNLL from other common lizard species that may inhabit the area and has participated in at least 50 survey days for BNLL (or 25 survey days and a BNLL identification course recognized by/acceptable to the Department of Fish and Game). Researcher has made at least one confirmed* field sighting of a BNLL.

REPORTING

All BNLL observations should be reported to the California Natural Diversity Database within 30 days. A sample form is attached. Additional forms can be obtained at <http://www.dfg.ca.gov/whdab/html/animals.html> .

SPECIAL REQUIREMENT FOR SURVEYS IN DFG CENTRAL COAST REGION (San Luis Obispo County)

Lands with potential BNLL habitat in the Department's Central Coast Region (CCR) have different conditions compared to the San Joaquin Valley Southern Sierra Region (SJVSSR). The sites with habitat in the CCR tend to be at higher elevations, where nighttime temperatures can remain low even though daytime temperatures meet minimum survey criteria. In such conditions, BNLL activity is likely to be low and surveys conducted at this time could result in non-detection of the species even though they are present. As such, an additional requirement of a visit to a known voucher site to check for BNLL activity applies to surveys conducted in this region. Once the species has been observed at the voucher site, formal surveys can begin. The Elkhorn Plain ER has been selected as the voucher site for the CCR.

LITERATURE CITED

Montanucci, R.R., 1965. Observations of the San Joaquin leopard lizard, *Crotaphytus wislizenii silus* Stejneger. *Herpetologica* 21(4): 270-283.

Tollestrup, K. 1976. A standardized method of obtaining an index of densities of blunt-nosed leopard lizards, *Crotaphytus silus*. Unpub. Rpt. U. S. Fish and Wildlife Service, Sacramento, CA. 11pp + Appendices.

Tollestrup, K. 1979. The ecology, social structure, and foraging behavior of two closely-related leopard lizards, *Gambelia silus* and *Gambelia wislizenii*. PhD Dissertation, University of California Berkeley.

United States Fish and Wildlife Service. 1985. Revised blunt-nosed leopard lizard recovery plan. United States Fish and Wildlife Service. Region 1, Portland, OR. 85 pp.

United States Fish and Wildlife Service. 1998. Recovery plan for upland species of the San Joaquin Valley, California. United States Fish and Wildlife Service. Region 1, Portland, OR. 319 pp.

PERSONAL COMMUNICATIONS

Julie Vance, California Department of Water Resources, San Joaquin District, 3374 E. Shields Ave, Fresno, California, 93726.

*A minimum of one confirmed field sighting must be documented for each Level II researcher and be available to the Department upon request. As with all BNLL sightings, it should also be submitted to the California Natural Diversity Database. Information to be included in documentation of BNLL sighting: Name of researcher, date of survey, location of survey, names of accompanying researchers who can confirm the sighting, and details of sighting (distance, BNLL activity, etc).

CONTACT INFORMATION

California Department of Fish and Game

San Joaquin Valley Southern Sierra Region
 Habitat Conservation Planning
 1234 Shaw Ave
 Fresno, CA 93710
 559/243-4005

Central Coast Region
 Habitat Conservation Planning
 P.O. Box 47
 Yountville, CA 94599
 805/528-8670

.....
 The Department is willing to cooperate with researchers who have circumstances or needs not addressed by this protocol and who may wish to propose alternative methods to comply with State law prohibiting take of BNLL.

Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants

(September 23, 1996)

These guidelines describe protocols for conducting botanical inventories for federally listed, proposed and candidate plants, and describe minimum standards for reporting results. The Service will use, in part, the information outlined below in determining whether the project under consideration may affect any listed, proposed, or candidate plants, and in determining the direct, indirect, and cumulative effects.

Field inventories should be conducted in a manner that will locate listed, proposed, or candidate species (target species) that may be present. The entire project area requires a botanical inventory, except developed agricultural lands. The field investigator(s) should:

1. Conduct inventories at the appropriate times of year when target species are present and identifiable. Inventories will include all potential habitats. Multiple site visits during a field season may be necessary to make observations during the appropriate phenological stage of all target species.
2. If available, use a regional or local reference population to obtain a visual image of the target species and associated habitat(s). If access to reference populations(s) is not available, investigators should study specimens from local herbaria.
3. List every species observed and compile a comprehensive list of vascular plants for the entire project site. Vascular plants need to be identified to a taxonomic level which allows rarity to be determined.
4. Report results of botanical field inventories that include:
 - a. a description of the biological setting, including plant community, topography, soils, potential habitat of target species, and an evaluation of environmental conditions, such as timing or quantity of rainfall, which may influence the performance and expression of target species
 - b. a map of project location showing scale, orientation, project boundaries, parcel size, and map quadrangle name
 - c. survey dates and survey methodology(ies)
 - d. if a reference population is available, provide a written narrative describing the target species reference population(s) used, and date(s) when observations were made
 - e. a comprehensive list of all vascular plants occurring on the project site for each habitat type

- f. current and historic land uses of the habitat(s) and degree of site alteration
 - g. presence of target species off-site on adjacent parcels, if known
 - h. an assessment of the biological significance or ecological quality of the project site in a local and regional context
5. If target species is(are) found, report results that additionally include:
 - a. a map showing federally listed, proposed and candidate species distribution as they relate to the proposed project
 - b. if target species is (are) associated with wetlands, a description of the direction and integrity of flow of surface hydrology. If target species is (are) affected by adjacent off-site hydrological influences, describe these factors.
 - c. the target species phenology and microhabitat, an estimate of the number of individuals of each target species per unit area; identify areas of high, medium and low density of target species over the project site, and provide acres of occupied habitat of target species. Investigators could provide color slides, photos or color copies of photos of target species or representative habitats to support information or descriptions contained in reports.
 - d. the degree of impact(s), if any, of the proposed project as it relates to the potential unoccupied habitat of target habitat.
 6. Document findings of target species by completing California Native Species Field Survey Form(s) and submit form(s) to the Natural Diversity Data Base. Documentation of determinations and/or voucher specimens may be useful in cases of taxonomic ambiguities, habitat or range extensions.
 7. Report as an addendum to the original survey, any change in abundance and distribution of target plants in subsequent years. Project sites with inventories older than 3 years from the current date of project proposal submission will likely need additional survey. Investigators need to assess whether an additional survey(s) is (are) needed.
 8. Adverse conditions may prevent investigator(s) from determining presence or identifying some target species in potential habitat(s) of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any year. An additional botanical inventory(ies) in a subsequent year(s) may be required if adverse conditions occur in a potential habitat(s). Investigator(s) may need to discuss such conditions.
 9. Guidance from California Department of Fish and Game (CDFG) regarding plant and plant community surveys can be found in Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities, 1984. Please contact the CDFG Regional Office for questions regarding the CDFG guidelines and for assistance in determining any applicable State regulatory requirements.

APPENDIX B
Plant Survey Protocol

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, 2009¹

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 criteria³:

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).
- Listed⁴ 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 information⁵;
 - ♦ 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 wetlands⁸ or by the U.S. Fish and Wildlife Service to survey for the presence of special status plants⁹.

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/tpge02e.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 CNDDDB¹⁰ and BIOS¹¹ 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 ecoregion¹², 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 CNDDDB 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

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 terrain¹³, 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 present¹⁴. 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 current¹⁵; 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 conducted¹⁶; 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

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 communities¹⁷ 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 datum¹⁸ 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 CNDDDB a California Native Species (or Community) Field Survey Form¹⁹ 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 datum²⁰ 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 form²¹ and submit it with the CNDDDB 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

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 herbarium²² 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 species²³.

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 vegetation²⁴ 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 CNDDDB and included in the environmental document as an Appendix. It is not necessary to submit entire environmental documents to the CNDDDB; and,
- ♦ The location of voucher specimens, if collected.

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

- Barbour, M., T. Keeler-Wolf, and A. A. Schoenherr (eds.). 2007. Terrestrial vegetation of California (3rd Edition). University of California Press.
- Bonham, C.D. 1988. Measurements for terrestrial vegetation. John Wiley and Sons, Inc., New York, NY.
- California Native Plant Society. Most recent version. Inventory of rare and endangered plants (online edition). California Native Plant Society, Sacramento, CA. Online URL <http://www.cnps.org/inventory>.
- California Natural Diversity Database. Most recent version. Special vascular plants, bryophytes and lichens list. Updated quarterly. Available at www.dfg.ca.gov.
- Elzinga, C.L., D.W. Salzer, and J. Willoughby. 1998. Measuring and monitoring plant populations. BLM Technical Reference 1730-1. U.S. Dept. of the Interior, Bureau of Land Management, Denver, Colorado.
- Leppig, G. and J.W. White. 2006. Conservation of peripheral plant populations in California. *Madroño* 53:264-274.
- Mueller-Dombois, D. and H. Ellenberg. 1974. Aims and methods of vegetation ecology. John Wiley and Sons, Inc., New York, NY.
- U.S. Fish and Wildlife Service. 1996. Guidelines for conducting and reporting botanical inventories for federally listed plants on the Santa Rosa Plain. Sacramento, CA.
- U.S. Fish and Wildlife Service. 1996. Guidelines for conducting and reporting botanical inventories for federally listed, proposed and candidate plants. Sacramento, CA.
- Van der Maarel, E. 2005. Vegetation Ecology. Blackwell Science Ltd., Malden, MA.

CNPS Botanical Survey Guidelines

CALIFORNIA NATIVE PLANT SOCIETY

December 9, 1983

Revised June 2, 2001

The following recommendations are intended to help those who prepare and review environmental documents determine when a botanical survey is needed, who should be considered qualified to conduct such surveys, how surveys should be conducted, and what information should be contained in the survey report. The California Native Plant Society recommends that lead agencies not accept the results of surveys unless they are conducted and reported according to these guidelines.

1. Botanical surveys are conducted in order to determine the environmental effects of proposed projects on all botanical resources, including special status plants (rare, threatened, and endangered plants) and plant (vegetation) communities. Special status plants are not limited to those that have been listed by state and federal agencies but include any plants that, based on all available data, can be shown to be rare, threatened, or endangered under the following definitions:

A species, subspecies, or variety of plant is "endangered" when the prospects of its survival and reproduction are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, or disease. A plant is "threatened" when it is likely to become endangered in the foreseeable future in the absence of protection measures. 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.¹

Rare plant (vegetation) communities are those communities that are of highly limited distribution. These communities may or may not contain special status plants. The most current version of the California Natural Diversity Database's *List of California Terrestrial Natural Communities*² should be used as a guide to the names and status of communities.

Consistent with the California Native Plant Society's goal of preserving plant biodiversity on a regional and local scale, and with California Environmental Quality Act environmental impact assessment criteria³, surveys should also assess impacts to locally significant plants. Both plants and plant communities can be considered significant if their local occurrence is on the outer limits of known distribution, a range extension, a rediscovery, or rare or uncommon in a local context (such as within a county or region). Lead agencies should address impacts to these locally unique botanical resources regardless of their status elsewhere in the state.

2. Botanical surveys must be conducted to determine if, or to the extent that, special status or locally significant plants and plant communities will be affected by a proposed project when any natural vegetation occurs on the site and the project has the potential for direct or indirect effects on vegetation.
3. Those conducting botanical surveys must possess the following qualifications:
 - a. Experience conducting floristic field surveys;
 - b. Knowledge of plant taxonomy and plant community ecology and classification;
 - c. Familiarity with the plants of the area, including special status and locally significant plants;

¹ California Environmental Quality Act Guidelines, §15065 and §15380.

² List of California Terrestrial Natural Communities. California Department of Fish and Game Natural Diversity Database. Sacramento, CA.

³ California Environmental Quality Act Guidelines, Appendix G (Initial Study Environmental Checklist).

- d. Familiarity with the appropriate state and federal statutes related to plants and plant collecting; and,
 - e. Experience with analyzing impacts of a project on native plants and communities.
- Botanical surveys should be conducted in a manner that will locate any special status or locally significant plants or plant communities that may be present. Specifically, botanical surveys should be:
- a. Conducted in the field at the proper times of year when special status and locally significant plants are both evident and identifiable. □ When special status plants are known to occur in the type(s) of habitat present in the project area, nearby accessible occurrences of the plants (reference sites) should be observed to determine that the plants are identifiable at the time of survey.
 - b. Floristic in nature. A floristic survey requires that every plant observed be identified to species, subspecies, or variety as applicable. In order to properly characterize the site, a complete list of plants observed on the site shall be included in every botanical survey report. In addition, a sufficient number of visits spaced throughout the growing season is necessary to prepare an accurate inventory of all plants that exist on the site. The number of visits and the timing between visits must be determined by geographic location, the plant communities present, and the weather patterns of the year(s) in which the surveys are conducted.
 - c. Conducted in a manner that is consistent with conservation ethics and accepted plant collection and documentation techniques⁵. Collections (voucher specimens) of special status and locally significant plants should be made, unless such actions would jeopardize the continued existence of the population. A single sheet should be collected and deposited at a recognized public herbarium for future reference. All collections shall be made in accordance with applicable state and federal permit requirements. Photography may be used to document plant identification only when the population cannot withstand collection of voucher specimens.
 - d. Conducted using systematic field techniques in all habitats of the site to ensure a thorough coverage of potential impact areas. All habitats within the project site must be surveyed thoroughly in order to properly inventory and document the plants present. The level of effort required per given area and habitat is dependent upon the vegetation and its overall diversity and structural complexity.
 - e. □ All documented. □ When a special status plant (or rare plant community) is located, a California Native Species (or Community) Field Survey Form or equivalent written form, accompanied by a copy of the appropriate portion of a □5-minute topographic map with the occurrence mapped, shall be completed, included within the survey report, and separately submitted to the California Natural Diversity Database. Population boundaries should be mapped as accurately as possible. The number of individuals in each population should be counted or estimated, as appropriate.
5. Complete reports of botanical surveys shall be included with all environmental assessment documents, including Negative Declarations and □ itigated Negative Declarations, Timber □ arvesting Plans, Environmental Impact Reports, and Environmental Impact Statements. Survey reports shall contain the following information:
- a. Project location and description, including:

□ Collecting Guidelines and Documentation Techniques. California Native Plant Society Policy (adopted □ arch □ 1995).

⁵ Ferren, □ .R., Jr., D.L. □ agney, and T.A. Sholars. 1995. The Future of California Floristics and Systematics: Collecting Guidelines and Documentation Techniques. □ *arob* □ 2(2):19□210.

- 1) A detailed map of the location and footprint of the proposed project.
 - 2) A detailed description of the proposed project, including one-time activities and ongoing activities that may affect botanical resources.
 - 3) A description of the general biological setting of the project area.
- b. Methods, including:
- 1) Survey methods for each of the habitats present, and rationale for the methods used.
 - 2) Description of reference site(s) visited and phenological development of the target special status plants, with an assessment of any conditions differing from the project site that may affect their identification.
 - 3) Dates of surveys and rationale for timing and intervals; names of personnel conducting the surveys; and total hours spent in the field for each surveyor on each date.
- ☐ Location of deposited voucher specimens and herbaria visited.
- c. Results, including:
- 1) A description and map of the vegetation communities on the project site. The current standard for vegetation classification, ☐ ☐ *annual of California* ☐ ☐ *etation*⁶ ☐ should be used as a basis for the habitat descriptions and the vegetation map. If another vegetation classification system is used, the report must reference the system and provide the reason for its use.
 - 2) A description of the phenology of each of the plant communities at the time of each survey date.
 - 3) A list of all plants observed on the project site using accepted scientific nomenclature, along with any special status designation. The reference(s) used for scientific nomenclature shall be cited.
- ☐ ☐ ritten description and detailed map(s) showing the location of each special status or locally significant plant found, the size of each population, and method used to estimate or census the population.
- 5) Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms and accompanying maps.
- d. Discussion, including:
- 1) Any factors that may have affected the results of the surveys (e.g., drought, human disturbance, recent fire).
 - 2) Discussion of any special local or range-wide significance of any plant population or community on the site.
 - 3) An assessment of potential impacts. This shall include a map showing the distribution of special status and locally significant plants and communities on the site in relation to the proposed activities. Direct, indirect, and cumulative impacts to the plants and communities shall be discussed.
- ☐ Recommended measures to avoid and/or minimize direct, indirect, and cumulative impacts.
- e. References cited and persons contacted.
- f. Qualifications of field personnel including any special experience with the habitats and special status plants present on the site.

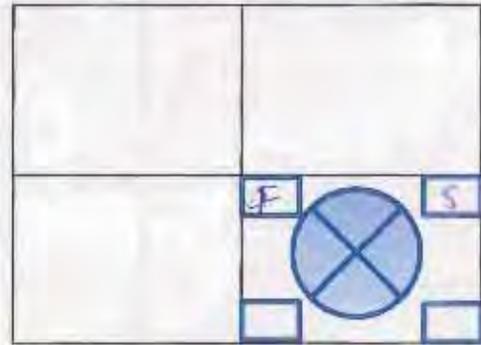
⁶ Sawyer, J.O. and T. Keeler-olf. 1995. *annual of California* *etation*. California Native Plant Society. Sacramento, CA. pp.

APPENDIX C
Survey Reports

BLUNT-NOSE LEOPARD LIZARD HATCHLING SURVEYS



Start "S"
Finish "F"



Survey Number: 4 of 5

Date: 4/4/12

Section Number: 27S
Quadrant Location: SE Quarter

Project #: 185802799
Level Two Team Researcher: I. Maldonado
Time Left Office: 5:20 am

Health & Safety: T. Ferdig
Time Returned to Office: 1:50

Sensitive Species (Total Number of Species or Features Observed):

Blunt-Nosed Leopard Lizard (*Gambelia sila*): 0
Giant Kangaroo Rat (*Dipodomys ingens*): 0
Kit Fox (*Vulpes macrotis*): 0
Burrowing Owl (*Athene cunicularia*): 0
Active Kit Fox Dens: 0
Active Owl Burrows: 1
GKR Precincts: 0

Other Species of Note (Total Number of Species Observed):

Western Whiptails (*Aspidoscelis tigris*): 0
Side-Blotched Lizard (*Uta stansburiana*): 28
Coachwhip (*Masticophis flagellum*): 0
LeConte's Thrasher (*Toxostoma lecontei*): 0
Gopher Snake (*Pituophis catenifer*): 0
Pit Vipers (Subfamily Crotalinae): 0
SJ Antelope Squirrel (*Ammospermophilus nelsoni*): 2
Loggerhead Shrikes (*Lanius ludovicianus*): 2

Memory Card Downloaded:
Photos Placed In Section Folder:
Field Sheets Turned In:
Field Sheets Daily QC:
Field Sheets Scanned:

Employee: A. Albo Date: 09/06/12
Employee: _____ Date: _____
Employee: I. Maldonado Date: 07/06/12
Employee: B. ... Date: 9-7-12
Employee: Z. ... Date: 09-11-12

ADMIN: 185802799>Project Specific>Field Sheets> Daily Data Sheets

FILE NAME: 090002 - SEC - 27S - SE - Quad. pdf



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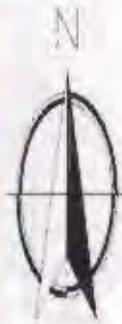


BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS

DAILY FIELD SHEETS

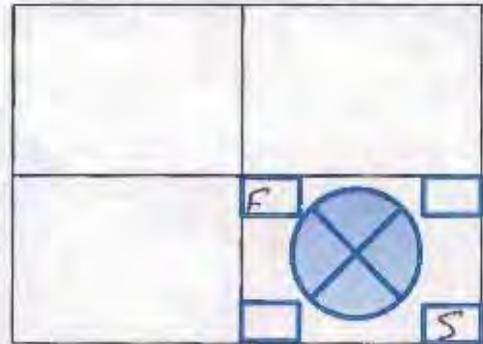
Date:	Project #	Section #	Camera 1 Surveyor:	Camera 2 Surveyor:	Camera 3 Surveyor:
9/6/12	185702799	Sec. 27S SE 1/4			
Camera 1 Photo #	Time	Photo Description			Symbol
Camera 2 Photo #	Time	Photo Description			Symbol
Camera 3 Photo #	Time	Photo Description			Symbol

BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS



Start "S"

Finish "F"



Survey Number: 5 of 5

Date: 9/11/12

Section Number: 27S

Quadrant Location: SE Quarter

Project #: 185802799

Level Two Team Researcher: I. Maldonado

Health & Safety: A. Arbo

Time Left Office: 5:20 am

Time Returned to Office: 1:30 pm

Sensitive Species (Total Number of Species or Features Observed):

Blunt-Nosed Leopard Lizard (*Gambelia sila*): 0 Giant Kangaroo Rat (*Dipodomys ingens*): 0
 Kit Fox (*Vulpes macrotis*): 0 Burrowing Owl (*Athene cunicularia*): 0
 Active Kit Fox Dens: 0 Active Owl Burrows: 0
 GKR Precincts: 0

Other Species of Note (Total Number of Species Observed):

Western Whiptails (*Aspidoscelis tigris*): 0 Side-Blotched Lizard (*Uta stansburiana*): 20
 Coachwhip (*Masticophis flagellum*): 0 LeConte's Thrasher (*Toxostoma lecontei*): 0
 Gopher Snake (*Pituophis catenifer*): 0 Pit Vipers (Subfamily *Crotalinae*): 0
 SJ Antelope Squirrel (*Ammospermophilus nelsoni*): 1 Loggerhead Shrikes (*Lanius ludovicianus*): 0

Memory Card Downloaded:

Photos Placed In Section Folder:

Field Sheets Turned In:

Field Sheets Daily QC:

Field Sheets Scanned:

Employee: A. Arbo Date: 9/11/12 NO PHOTOS

Employee: _____ Date: _____

Employee: I. Maldonado Date: 9/11/12

Employee: M. LOGSDON Date: 09/12/12

Employee: R. RIVERA Date: 9/11/12

ADMIN: 185802799>Project Specific>Field Sheets> Daily Data Sheets

FILE NAME: 091112 - SEC 27S - SE - Quad. pdf



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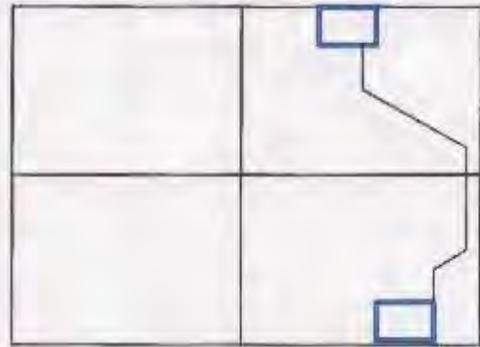


BLUNT-NOSED LEOPARD LIZARD HATC. LING SURVEYS



Start "S"

Finish "F"



Survey Number: 2 of 5

Date: 8/31/12

Section Number: 15S, 22S, 27S
 Quadrant Location: HECA ALIGNMENT

Project #: 185802799
 Level Two Team Researcher: A. Arbo
 Time Left Office: 5:15 am

Health & Safety: J. Slater
 Time Returned to Office: 11:35

Sensitive Species (Total Number of Species or Features Observed):

Blunt-Nosed Leopard Lizard (*Gambelia sila*): 0
 Kit Fox (*Vulpes macrotis*): 0
 Active Kit Fox Dens: 0
 GKR Precincts: 0
 Giant Kangaroo Rat (*Dipodomys ingens*): 0
 Burrowing Owl (*Athene cunicularia*): 0
 Active Owl Burrows: 0

Other Species of Note (Total Number of Species Observed):

Western Whiptails (*Aspidoscelis tigris*): 0
 Coachwhip (*Masticophis flagellum*): 0
 Gopher Snake (*Pituophis catenifer*): 0
 SJ Antelope Squirrel (*Amмосpermophilus nelsoni*): 0
 Side-Blotched Lizard (*Uta stansburiana*): 55
 LeConte's Thrasher (*Toxostoma lecontei*): 0
 Pit Vipers (Subfamily *Crotalinae*): 0
 Loggerhead Shrikes (*Lanius ludovicianus*): 0

Memory Card Downloaded:
 Photos Placed In Section Folder:
 Field Sheets Turned In:
 Field Sheets Daily QC:
 Field Sheets Scanned:

Employee: A. Arbo Date: 8/31 **NO PHOTOS**
 Employee: _____ Date: _____
 Employee: Quadrant Date: 8/31/12
 Employee: J. Bamberbut Date: 8-31-12
 Employee: Alway Date: 9-4-12

ADMIN: 185802799>Project Specific>Field Sheets> Daily Data Sheets

FILE NAME: 083112-SEC - HECA.pdf



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BLUNT-NOSE LEOPARD LIZARD HATCHLING SURVEYS

Blunt-nosed Leopard Lizard (*Gambelia sila*) Hatchling Survey Reporting Form (August 1st to September 15th)

Survey Date: <u>8/31</u> Section: HECA Alignment	Number of Surveyors: <u>3</u> Level II Researcher: <u>A. Arbo</u> Surveyors: <u>L. Elms, J. Sater</u>
---	---

Site Name and Location

County	Quadrangle	Elevation (feet msl)	Township & Range	Section	Datum	Center Coordinates
Kern County	East Elk Hills Quadrangle	300-600	T30S R24E	15, 22, 27	WGS 84	Northing: 3907000 Easting: 283000 (Zone 11)

SURVEY RESULTS

Survey Date	Starting Time	End Time	Starting Air Temperature	End Air Temperature	Starting Soil Temperature	Ending Soil Temperature
8/31	8:00am	10:20am	78°F	86°F	80°F	96°
Cloud Cover Percentage	Starting Wind Speed	End Wind Speed	Distance Covered (mi)	BNLL Results:		
25%	0	0-5mph	12 miles	Adult Male: <u>0</u>	Adult Female: <u>0</u>	Juvenile: <u>0</u>
				Hatchlings: <u>0</u>	Unknown: <u>0</u>	

Total Number of Observations for the Three Most Common Lizards

Species: <i>Gambelia sila</i>	Number Observed:	Total: <u>0</u>
Species: <i>Uta stansburiana</i>	Number Observed: <u> </u>	Total: <u>55</u>
Species: <i>Aspidoscelis tigris</i>	Number Observed:	Total: <u>0</u>

Habitat Description:

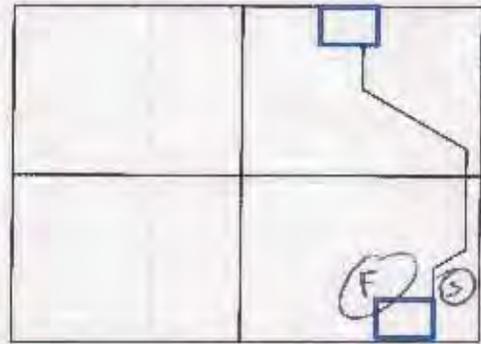
		General Habitat Description:
% Cover Shrub	10%	grassy flat land w/ small amount of saltbush, saltbush hills also
% Cover Grass	75%	
% Cover Forb	15%	
% Cover Bare Ground	15	

BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS



Start "S"

Finish "F"



Survey Number: 5 of 5

Date: 14 September 2012

Section Number: 15S, 22S, 27S
 Quadrant Location: HECA ALIGNMENT

Project #: 185802799
 Level Two Team Researcher: James May
 Time Left Office: 05:40 AM

Health & Safety: Jamie Slater / Layon Eby
 Time Returned to Office: _____

Sensitive Species (Total Number of Species or Features Observed):

Blunt-Nosed Leopard Lizard (*Gambelia sila*): 0 Giant Kangaroo Rat (*Dipodomys ingens*): 0
 Kit Fox (*Vulpes macrotis*): 0 Burrowing Owl (*Athene cunicularia*): 0
 Active Kit Fox Dens: 1 Active Owl Burrows: 1
 GKR Precincts: 1 (8 prc)

Other Species of Note (Total Number of Species Observed):

Western Whiptails (*Aspidoscelis tigris*): 0 Side-Blotched Lizard (*Uta stansburiana*): 34
 Coachwhip (*Masticophis flagellum*): 0 LeConte's Thrasher (*Toxostoma lecontei*): 0
 Gopher Snake (*Pituophis catenifer*): 0 Pit Vipers (Subfamily *Crotalinae*): 0
 SJ Antelope Squirrel (*Ammospermophilus nelsoni*): 0 Loggerhead Shrikes (*Lanius ludovicianus*): 0

Memory Card Downloaded:
 Photos Placed In Section Folder:
 Field Sheets Turned In:
 Field Sheets Daily QC:
 Field Sheets Scanned:

Employee: J May Date: 9/14/2012
 Employee: J May Date: 9/14/2012

ADMIN: 185802799>Project Specific>Field Sheets> Daily Data Sheets

FILE NAME: 091412-SEC-15S, 22S, 27S, HECA.pdf



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BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS

Blunt-nosed Leopard Lizard (*Gambelia sila*) Hatchling Survey Reporting Form (August 1st to September 15th)

Survey Date: <u>14 Sept 2012</u>		Number of Surveyors: <u>3</u> Level II Researcher: <u>James P. May</u>				
Section: <u>HECA Alignment</u>		Surveyors: <u>James May, Jamie Slater, Logan Elmer</u>				
Site Name and Location						
County	Quadrangle	Elevation (feet msl)	Township & Range	Section	Datum	Center Coordinates
Kern County	East Elk Hills Quadrangle	300-600	T30S R24E	15, 22, 27	WGS 84	Northing: 3907000 Easting: 283000 (Zone 11)
SURVEY RESULTS						
Survey Date	Starting Time	End Time	Starting Air Temperature	End Air Temperature	Starting Soil Temperature	Ending Soil Temperature
Sept 14, 2012	07 ²⁵	10 ⁰⁵	78°	89°	78°	92°
Cloud Cover Percentage	Starting Wind Speed	End Wind Speed	Distance Covered (mi)	BNLL Results:		
5% Haze to N	< 5 mph NW	5 mph SW	4.5 miles x 3 12.5 miles	Adult Male: <u>0</u>	Adult Female: <u>0</u>	Juvenile: <u>0</u>
				Hatchlings: <u>0</u>	Unknown: <u>0</u>	
Total Number of Observations for the Three Most Common Lizards						
Species: <i>Gambelia sila</i>			Number Observed:		Total: <u>0</u>	
Species: <i>Uta stansburiana</i>			Number Observed: 		Total: <u>34</u>	
Species: <i>Aspidoscelis tigris</i>			Number Observed:		Total: <u>0</u>	
Habitat Description:						
% Cover Shrub	<u>8%</u>	General Habitat Description:				
% Cover Grass	<u>40%</u>					
% Cover Forb	<u>12%</u>					
% Cover Bare Ground	<u>40%</u>					

BLUNT-NOSE LEOPARD LIZARD HATC. TRAPPING SURVEYS

DAILY FIELD SHEETS

Date:	Project # 185702799	Section # HECA ALIGNMT	Camera 1 Surveyor:	Camera 2 Surveyor: J. Slater	Camera 3 Surveyor:
Camera 1 Photo #	Time	Photo Description			Symbol
Camera 2 Photo #	Time	Photo Description			Symbol
0227	07 ⁵¹	- Slater - Potential Notal Den - Kit Fox			KFD
0228	08 ³⁰	GKR Prec. x 8			GKRP
0229	08 ⁴¹	Burrowing Owl Burrow			BOB
Camera 3 Photo #	Time	Photo Description			Symbol

BLUNT-NOSE LEOPARD LIZARD HATCHLING SURVEYS

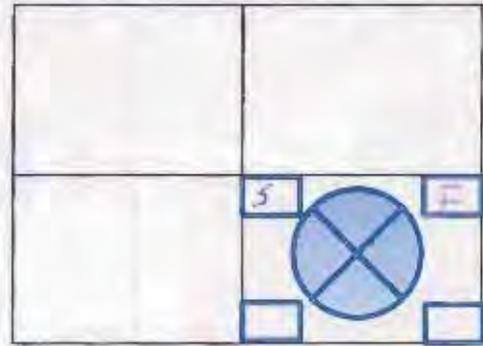
Date:	Project # 185702799	Section # HECA ALIGNMT	Camera 7 Surveyor:	Camera 8 Surveyor:	
Camera 7 Photo #	Time	Photo Description			Symbol
Camera 8 Photo #	Time	Photo Description			Symbol

BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS



Start "S"

Finish "F"



Survey Number: 1 of 5

Date: 09/7/12

Section Number: 27S
Quadrant Location: SE Quarter

Project #: 185802799
Level Two Team Researcher: L. Maldonado
Time Left Office: 5:20 am

Health & Safety: L. Barrett
Time Returned to Office: 1:30

Sensitive Species (Total Number of Species or Features Observed):

Blunt-Nosed Leopard Lizard (*Gambelia sila*): 0
 Kit Fox (*Vulpes macrotis*): 0
 Active Kit Fox Dens: 0
 GKR Precincts: 0
 Giant Kangaroo Rat (*Dipodomys ingens*): 0
 Burrowing Owl (*Athene cunicularia*): 0
 Active Owl Burrows: 0

Other Species of Note (Total Number of Species Observed):

Western Whiptails (*Aspidoscelis tigris*): 0
 Coachwhip (*Masticophis flagellum*): 0
 Gopher Snake (*Pituophis catenifer*): 0
 SJ Antelope Squirrel (*Ammospermophilus nelsoni*): 3
 Side-Blotched Lizard (*Uta stansburiana*): 29
 LeConte's Thrasher (*Toxostoma lecontei*): 0
 Pit Vipers (Subfamily *Crotalinae*): 0
 Loggerhead Shrikes (*Lanius ludovicianus*): 0

Memory Card Downloaded:
 Photos Placed In Section Folder:
 Field Sheets Turned In:
 Field Sheets Daily QC:
 Field Sheets Scanned:

Employee: MA ^{no photos} _{factor} Date: _____
 Employee: N/A Date: _____
 Employee: L. Maldonado Date: 09/7/12
 Employee: M. LOESTON Date: 09/08/12
 Employee: Alwang Date: 9/11/12

ADMIN: 185802799>Project Specific>Field Sheets> Daily Data Sheets

FILE NAME: 090712 - SEC ~~27S~~ - SE - Quad.pdf



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BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS

Blunt-nosed Leopard Lizard (*Gambelia sila*) Hatchling Survey Reporting Form (August 1st to September 15th)

Survey Date: <u>9/1/12</u> Section: <u>27S SE Quarter</u>		Number of Surveyors: <u>5</u> Level II Researcher: <u>L. Maldonado</u> Surveyors: <u>A. Arbo, L. Barrett, M. Gomez, T. Farley</u>				
Site Name and Location						
County	Quadrangle	Elevation (feet msl)	Township & Range	Section	Datum	Center Coordinates
Kern County	East Elk Hills Quadrangle	600-800	T30S R24E	SE1/4, Sec. 27	WGS 84	Northing: 3906900 Easting: 283000 (Zone 11)
SURVEY RESULTS						
Survey Date	Starting Time	End Time	Starting Air Temperature	End Air Temperature	Starting Soil Temperature	Ending Soil Temperature
9/1/12	7:25 am	9:46	77°F	84°F	77°F	91°F
Cloud Cover Percentage	Starting Wind Speed	End Wind Speed	Distance Covered (mi)	BNLL Results:		
5%	0-5 NW	0-5 NW	10 mi	Adult Male: <input checked="" type="checkbox"/>	Adult Female: <input checked="" type="checkbox"/>	
				Juvenile: <input checked="" type="checkbox"/>	Unknown: <input checked="" type="checkbox"/>	
				Hatchlings: <input checked="" type="checkbox"/>		
Total Number of Observations for the Three Most Common Lizards						
Species: <i>Gambelia sila</i>			Number Observed:		Total: <input checked="" type="checkbox"/>	
Species: <i>Uta stansburiana</i>			Number Observed: <u> </u>		Total: <u>29</u>	
Species: <i>Aspidoscelis tigris</i>			Number Observed:		Total: <input checked="" type="checkbox"/>	
Habitat Description:						
% Cover Shrub	<u>10</u>	General Habitat Description: hilly bromel/schismus grassland, scattered Atriplex throughout the 1/4 section. Lots of well pads and other infrastructure.				
% Cover Grass	<u>68</u>					
% Cover Forb	<u>2</u>					
% Cover Bare Ground	<u>20</u>					

SJAS 111

BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS

DAILY FIELD SHEETS

Date: <i>9/7/12</i>	Project # 185702799	Section # Sec. 27S SE 1/4	Camera 1 Surveyor: <i>X</i>	Camera 2 Surveyor: <i>X</i>	Camera 3 Surveyor: <i>X</i>
Camera 1 Photo #	Time	Photo Description		Symbol	
Camera 2 Photo #	Time	Photo Description		Symbol	
Camera 3 Photo #	Time	Photo Description		Symbol	

BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS

Date:	Project #	Section #	Camera 4 Surveyor:	Camera 5 Surveyor:	Camera 6 Surveyor:
9/7/12	185702799	Sec. 27S SE 1/4	X	W. Lopez M. Gama	X
Camera 4 Photo #	Time	Photo Description		Symbol	
Camera 5 Photo #	Time	Photo Description		Symbol	
Camera 6 Photo #	Time	Photo Description		Symbol	

BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS

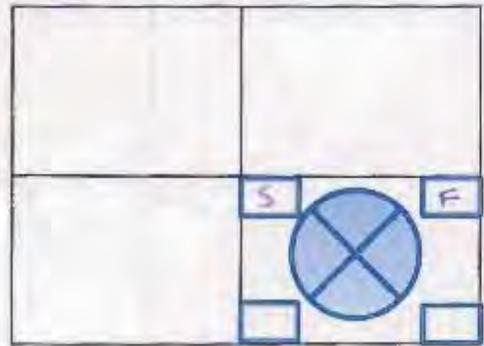
Date: <i>9/7/12</i>	Project # 185702799	Section # Sec. 275 SE 1/4	Camera 7 Surveyor: <i>X</i>	Camera 8 Surveyor: <i>X</i>	
Camera 7 Photo #	Time	Photo Description		Symbol	
Camera 8 Photo #	Time	Photo Description		Symbol	

BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS



Start "S"

Finish "F"



Survey Number: 3 of 5

Section Number: 27S

Quadrant Location: SE Quarter

Health & Safety: J Slater

Time Returned to Office: 11:00am

Date: 9/9/12

Project #: 185802799

Level Two Team Researcher: I. Maldonado

Time Left Office: 5:20am

Sensitive Species (Total Number of Species or Features Observed):

Blunt-Nosed Leopard Lizard (*Gambelia sila*): 0 Giant Kangaroo Rat (*Dipodomys ingens*): 0
 Kit Fox (*Vulpes macrotis*): 0 Burrowing Owl (*Athene cunicularia*): 0
 Active Kit Fox Dens: 0 Active Owl Burrows: 0
 GKR Precincts: 0

Other Species of Note (Total Number of Species Observed):

Western Whiptails (*Aspidoscelis tigris*): 0 Side-Blotched Lizard (*Uta stansburiana*): 32
 Coachwhip (*Masticophis flagellum*): 0 LeConte's Thrasher (*Toxostoma lecontei*): 0
 Gopher Snake (*Pituophis catenifer*): 0 Pit Vipers (Subfamily *Crotalinae*): 0
 SJ Antelope Squirrel (*Ammospermophilus nelsoni*): 0 Loggerhead Shrikes (*Lanius ludovicianus*): 0

Memory Card Downloaded:

Photos Placed In Section Folder:

Field Sheets Turned In:

Field Sheets Daily QC:

Field Sheets Scanned:

Employee: A. Almu Date: 9/9/12 NO PHOTOS

Employee: _____ Date: _____

Employee: I. Maldonado Date: 9/9/12

Employee: M. LOOSTON Date: 09/10/12

Employee: afslater Date: 9/4/12

ADMIN: 185802799>Project Specific>Field Sheets> Daily Data Sheets

FILE NAME: 090912-stc-27S-SE-Quad.pdf



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BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS

Blunt-nosed Leopard Lizard (*Gambelia sila*) Hatchling Survey Reporting Form (August 1st to September 15th)

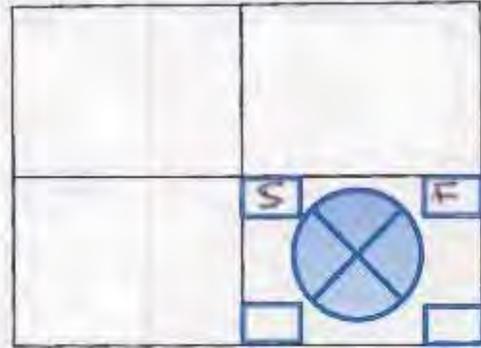
Survey Date: <u>9/9/12</u> Section: 27S SE Quarter		Number of Surveyors: <u>4</u> Level II Researcher: <u>T. Magallon</u> Surveyors: <u>A. Croft, C. Jones, J. Slater</u>				
Site Name and Location						
County	Quadrangle	Elevation (feet msl)	Township & Range	Section	Datum	Center Coordinates
Kern County	East Elk Hills Quadrangle	600-800	T30S R24E	SE1/4, Sec. 27	WGS 84	Northing: 3906900 Easting: 283000 (Zone 11)
SURVEY RESULTS						
Survey Date	Starting Time	End Time	Starting Air Temperature	End Air Temperature	Starting Soil Temperature	Ending Soil Temperature
9/9/12	7:45 am	9:30 am	78°F	89°F	80°F	99°F
Cloud Cover Percentage	Starting Wind Speed	End Wind Speed	Distance Covered (mi)	BNLL Results:		
0%	0-5 NW	0-5 NW	8	Adult Male: <u>0</u>	Adult Female: <u>0</u>	
				Juvenile: <u>0</u>	Unknown: <u>0</u>	
				Hatchlings: <u>0</u>		
Total Number of Observations for the Three Most Common Lizards						
Species: <i>Gambelia sila</i>			Number Observed:	Total: <u>0</u>		
Species: <i>Uta stansburiana</i>			Number Observed: <u> </u>	Total: <u>32</u>		
Species: <i>Aspidoscelis tigris</i>			Number Observed:	Total: <u>0</u>		
Habitat Description:						
% Cover Shrub	10	General Habitat Description: hilly bromes/chicimus grassland scattered Atriplex throughout the 1/4 section. Lots of well pads, roads etc.				
% Cover Grass	68					
% Cover Forb	2					
% Cover Bare Ground	20					

BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS



Start "S"

Finish "F"



Survey Number: 2 of 5

Date: 9/10/12

Section Number: 27S
Quadrant Location: SE Quarter

Project #: 185802799
Level Two Team Researcher: I. Maldonado
Time Left Office: 5:20 am

Health & Safety: L. Barrett
Time Returned to Office: 2 pm

Sensitive Species (Total Number of Species or Features Observed):

Blunt-Nosed Leopard Lizard (*Gambelia sila*): 0
 Kit Fox (*Vulpes macrotis*): 0
 Active Kit Fox Dens: 0
 GKR Precincts: 0
 Giant Kangaroo Rat (*Dipodomys ingens*): 0
 Burrowing Owl (*Athene cunicularia*): 0
 Active Owl Burrows: 0

Other Species of Note (Total Number of Species Observed):

Western Whiptails (*Aspidoscelis tigris*): 0
 Coachwhip (*Masticophis flagellum*): 0
 Gopher Snake (*Pituophis catenifer*): 0
 SJ Antelope Squirrel (*Ammospermophilus nelsoni*): 0
 Side-Blotched Lizard (*Uta stansburiana*): 55
 LeConte's Thrasher (*Toxostoma lecontei*): 0
 Pit Vipers (Subfamily *Crotalinae*): 0
 Loggerhead Shrikes (*Lanius ludovicianus*): 1

Memory Card Downloaded:
 Photos Placed In Section Folder:
 Field Sheets Turned In:
 Field Sheets Daily QC:
 Field Sheets Scanned:

Employee: A. Arava Date: 9/10/12
 Employee: _____ Date: _____
 Employee: I. Maldonado Date: 9/10/12
 Employee: Abraham Date: 9-11-12
 Employee: Cherry Date: 9/12/12

ADMIN: 185802799>Project Specific>Field Sheets> Daily Data Sheets

FILE NAME: 091012-SEC-27S-SE-Quad PDF



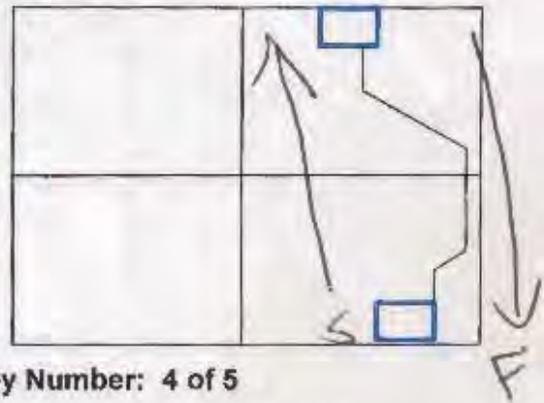
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BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS



Start "S"

Finish "F"



Survey Number: 4 of 5

Section Number: 15S, 22S, 27S
 Quadrant Location: HECA ALIGNMENT

Health & Safety: JS
 Time Returned to Office: 11:30

Date: 9/7/12

Project #: 185802799
 Level Two Team Researcher: Logan E.
 Time Left Office: 6:30

Sensitive Species (Total Number of Species or Features Observed):

Blunt-Nosed Leopard Lizard (*Gambelia sila*): 0
 Kit Fox (*Vulpes macrotis*): 0
 Active Kit Fox Dens: 1
 GKR Precincts: 0
 Giant Kangaroo Rat (*Dipodomys ingens*): 0
 Burrowing Owl (*Athene cunicularia*): 2
 Active Owl Burrows: 2

Other Species of Note (Total Number of Species Observed):

Western Whiptails (*Aspidoscelis tigris*): 0
 Coachwhip (*Masticophis flagellum*): 0
 Gopher Snake (*Pituophis catenifer*): 0
 SJ Antelope Squirrel (*Ammospermophilus nelsoni*): 0
 Side-Blotched Lizard (*Uta stansburiana*): 9
 LeConte's Thrasher (*Toxostoma lecontei*): 0
 Pit Vipers (Subfamily *Crotalinae*): 0
 Loggerhead Shrikes (*Lanius ludovicianus*): 0

Memory Card Downloaded:
 Photos Placed In Section Folder:
 Field Sheets Turned In:
 Field Sheets Daily QC:
 Field Sheets Scanned:

Employee: J. Brumback Date: 9-7-2012
 Employee: J. Brumback Date: 9-7-2012
 Employee: Logan E. Date: 9-7-2012
 Employee: M. LOGSDON Date: 09/08/12
 Employee: M. P. LANG Date: 9/11/12

ADMIN: 185802799>Project Specific>Field Sheets> Daily Data Sheets

FILE NAME: 090710 - SEC - 15S, 22S, 27S - HECA.pdf



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BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS

Blunt-nosed Leopard Lizard (*Gambelia sila*) Hatchling Survey Reporting Form (August 1st to September 15th)

Survey Date: <u>9/7/12</u>	Number of Surveyors: <u>3</u> Level II Researcher: <u>LE</u>
Section: HECA Alignment <u>1</u>	Surveyors: <u>SS JB</u>

Site Name and Location

County	Quadrangle	Elevation (feet msl)	Township & Range	Section	Datum	Center Coordinates
Kern County	East Elk Hills Quadrangle	300-600	T30S R24E	15, 22, 27	WGS 84	Northing: 3907000 Easting: 283000 (Zone 11)

SURVEY RESULTS

Survey Date	Starting Time	End Time	Starting Air Temperature	End Air Temperature	Starting Soil Temperature	Ending Soil Temperature
9/7	7:48	10:30	77°	87°	77°	90°
Cloud Cover Percentage	Starting Wind Speed	End Wind Speed	Distance Covered (mi)	BNLL Results:		
5%	25% 30%		4.25m. x 3	Adult Male: <u>0</u>	Adult Female: <u>0</u>	
				Juvenile: <u>0</u>	Unknown: <u>0</u>	
				Hatchlings: <u>0</u>		

Total Number of Observations for the Three Most Common Lizards

Species:	Number Observed:	Total:
Aspidoscelis tigris <i>Gambelia sila</i>		0
Uta stansburiana <i>Uta stansburiana</i> 25 10 17 1		40
<i>Aspidoscelis tigris</i>		0

Habitat Description:

% Cover	General Habitat Description:
Shrub <u>15%</u>	<i>Atriplex, Bromus, schismus mixed</i>
Grass <u>70</u>	
Forb <u>5</u>	
Bare Ground <u>30</u>	

BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS



Start "S"
Finish "F"



Survey Number: 3 of 5

Date: 9/3/12

Section Number: 15S, 22S, 27S
Quadrant Location: HECA ALIGNMENT

Project #: 185802799
Level Two Team Researcher: L. Maldonado
Time Left Office: 6:20

Health & Safety: J. Slater
Time Returned to Office: 1:15

Sensitive Species (Total Number of Species or Features Observed):

Blunt-Nosed Leopard Lizard (*Gambelia sila*): 0
 Kit Fox (*Vulpes macrotis*): 0
 Active Kit Fox Dens: 0
 GKR Precincts: 0
 Giant Kangaroo Rat (*Dipodomys ingens*): 0
 Burrowing Owl (*Athene cunicularia*): 0
 Active Owl Burrows: 0

Other Species of Note (Total Number of Species Observed):

Western Whiptails (*Aspidoscelis tigris*): 0
 Coachwhip (*Masticophis flagellum*): 0
 Gopher Snake (*Pituophis catenifer*): 0
 SJ Antelope Squirrel (*Ammospermophilus nelsoni*): 0
 Side-Blotched Lizard (*Uta stansburiana*): 43
 LeConte's Thrasher (*Toxostoma lecontei*): 0
 Pit Vipers (Subfamily *Crotalinae*): 0
 Loggerhead Shrikes (*Lanius ludovicianus*): 1

Memory Card Downloaded:
 Photos Placed In Section Folder:
 Field Sheets Turned In:
 Field Sheets Daily QC:
 Field Sheets Scanned:

Employee: A. Guba Date: 9/3/12
 Employee: _____ Date: _____
 Employee: L. Maldonado Date: 9/3/12
 Employee: M. LOGSDON Date: 09/03/12
 Employee: TFUENTE Date: 9/5/12

ADMIN: 185802799>Project Specific>Field Sheets> Daily Data Sheets

FILE NAME: 090312 - SEC 15S, 22S, 27S, HECA



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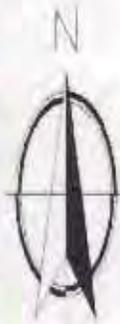
BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS

Blunt-nosed Leopard Lizard (*Gambelia sila*) Hatchling Survey Reporting Form (August 1st to September 15th)

Survey Date: <u>6/20/12</u> Section: HECA Alignment		Number of Surveyors: <u>3</u> Level II Researcher: <u>L. Maldonado</u> Surveyors: <u>J. Slater, L. Elms</u>				
Site Name and Location						
County	Quadrangle	Elevation (feet msl)	Township & Range	Section	Datum	Center Coordinates
Kern County	East Elk Hills Quadrangle	300-600	T30S R24E	15, 22, 27	WGS 84	Northing: 3907000 Easting: 283000 (Zone 11)
SURVEY RESULTS						
Survey Date	Starting Time	End Time	Starting Air Temperature	End Air Temperature	Starting Soil Temperature	Ending Soil Temperature
6/20/12	7:50am	9:23	77°F	84°F	77°F	89°F
Cloud Cover Percentage	Starting Wind Speed	End Wind Speed	Distance Covered (mi)	BNLL Results:		
0	0-5	0-5	9.75 mi 2.00	Adult Male: <u>0</u>	Adult Female: <u>0</u>	Juvenile: <u>0</u>
				Hatchlings: <u>0</u>	Unknown: <u>0</u>	
Total Number of Observations for the Three Most Common Lizards						
Species: <i>Gambelia sila</i>			Number Observed:		Total:	
Species: <i>Uta stansburiana</i>			Number Observed: <u> </u>		Total: <u>43</u>	
Species: <i>Aspidoscelis tigris</i>			Number Observed:		Total:	
Habitat Description:						
% Cover Shrub	45	General Habitat Description: hilly in south, flat in north brome/schismus grassland with scattered Atriplex				
% Cover Grass	49					
% Cover Forb	1					
% Cover Bare Ground	5					

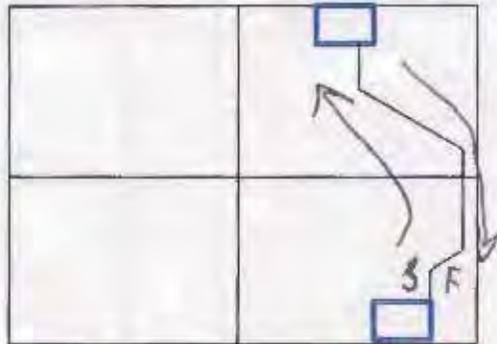
LHS1

BLUNT-NOSED LEOPARD LIZARD HATCHLING SURVEYS



Start "S"

Finish "F"



Survey Number: 1 of 5

Date: 8/24/12

Section Number: 15S, 22S, 27S
 Quadrant Location: HECA ALIGNMENT

Project #: 185802799
 Level Two Team Researcher: Logan Elms
 Time Left Office: 5.00

Health & Safety: Jamie Slater
 Time Returned to Office: 10:00

Sensitive Species (Total Number of Species or Features Observed):

Blunt-Nosed Leopard Lizard (*Gambelia sila*): 0
 Kit Fox (*Vulpes macrotis*): 2
 Active Kit Fox Dens: 0
 GKR Precincts: 0
 Giant Kangaroo Rat (*Dipodomys ingens*): 0
 Burrowing Owl (*Athene cunicularia*): 0
 Active Owl Burrows: 0

Other Species of Note (Total Number of Species Observed):

Western Whiptails (*Aspidoscelis tigris*): 0
 Coachwhip (*Masticophis flagellum*): 0
 Gopher Snake (*Pituophis catenifer*): 0
 SJ Antelope Squirrel (*Ammospermophilus nelsoni*): 0
 Side-Blotched Lizard (*Uta stansburiana*): 12
 LeConte's Thrasher (*Toxostoma lecontei*): 0
 Pit Vipers (Subfamily *Crotalinae*): 1
 Loggerhead Shrikes (*Lanius ludovicianus*): 0

Memory Card Downloaded:
 Photos Placed In Section Folder:
 Field Sheets Turned In:
 Field Sheets Daily QC:
 Field Sheets Scanned:

Employee: Audrey Cubo Date: 8/24/12
 Employee: Audrey Cubo Date: 8/24/12
 Employee: M. LOGSDON Date: 08/20/12
 Employee: Sherry Date: 8/27/12

ADMIN: 185802799>Project Specific>Field Sheets> Daily Data Sheets

FILE NAME: 082412 - SEC 15S, 22S, 27S - HECA AD Quad



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BLUNT-NOSEL LEOPARD LIZARD HATCHLING SURVEYS

Blunt-nosed Leopard Lizard (*Gambelia sila*) Hatchling Survey Reporting Form (August 1st to September 15th)

Survey Date: <u>8/21</u> Section: HECA Alignment		Number of Surveyors: <u>3</u> Level II Researcher: <u>Logan Elms</u> Surveyors: <u>J. Slater, Thomas Aguirre</u>				
Site Name and Location						
County	Quadrangle	Elevation (feet msl)	Township & Range	Section	Datum	Center Coordinates
Kern County	East Elk Hills Quadrangle	300-600	T30S R24E	15, 22, 27	WGS 84	Northing: 3907000 Easting: 283000 (Zone 11)
SURVEY RESULTS						
Survey Date	Starting Time	End Time	Starting Air Temperature	End Air Temperature	Starting Soil Temperature	Ending Soil Temperature
8/21/12	6:30	9:07	77°	91°	⊗	⊗
Cloud Cover Percentage	Starting Wind Speed	End Wind Speed	Distance Covered (mi)	BNLL Results:		
25%	n/a	n/a	2.5/2.5	Adult Male: <u>0</u>	Adult Female: <u>0</u>	
				Juvenile: <u>0</u>	Unknown: <u>0</u>	
				Hatchlings: <u>0</u>		
Total Number of Observations for the Three Most Common Lizards						
Species: <i>Gambelia sila</i>			Number Observed: <u>0</u>		Total:	
Species: <i>Uta stansburiana</i> 			Number Observed:		Total: <u>12</u>	
Species: <i>Aspidoscelis tigris</i>			Number Observed: <u>0</u>		Total:	
Habitat Description:						
% Cover Shrub	<u>15%</u>	General Habitat Description: <u>mixed grassland and shrubs, active oil zone high open grassland low. Hilly terrain above.</u>				
% Cover Grass	<u>50%</u>					
% Cover Forb	<u>10%</u>					
% Cover Bare Ground	<u>25%</u>					

APPENDIX D
Special Status Species

Special-Status Species Survey Dates

Location	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6
CO2 Pipeline Route	8/24/2012	8/31/2012	9/3/2012	9/7/2012	9/14/2012	12/5/2012
SE 1/4 Section of 27S	9/6/2012	9/7/2012	9/9/2012	9/10/2012	9/11/2012	12/3/2012
Satellite Location 1	12/4/2012					
Satellite Location 2	12/4/2012	12/6/2012				
Satellite Location 3	12/4/2012					

GPS COORDINATES OF SPECIAL-STATUS SPECIES OBSERVED

Section	Date	Species	Latitude	Longitude
HECA	9/3/12	GKR Precinct	35.289828	-119.378850
HECA	9/7/12	BOB	35.312875	-119.384418
HECA	9/7/12	BOB	35.311750	-119.385427
HECA	9/7/12	KFD	35.309735	-119.383707
HECA	9/14/12	KFD	35.295200	-119.376407
HECA	9/14/12	GKR Precinct	35.310848	-119.383640
HECA	12/5/12	GKR Precinct	35.310710	-119.382220
HECA	12/5/12	GKR Precinct	35.311010	-119.383980
27S	9/6/12	BOB	35.289367	-119.382570
27S	12/3/12	BOB	35.288970	-119.380810

BOB – Western Burrowing Owl (*Athene cunicularia* spp. *hypugaea*) active Burrow

KFD – Potentially active San Joaquin Kit Fox (*Vulpes macrotis* spp. *mutica*) Den

GKR Precinct - Giant Kanagaroo Rat (*Dipodomys ingens*) Precinct(s)

APPENDIX E
Surveyor Qualifications

Surveyors and their Qualifications

James May PG, REHS

Mr. May has an MS in Geological Sciences from CSU Northridge. He has five years of experience conducting biological and botanical surveys with Stantec. He is a Level II blunt-nosed leopard lizard researcher.

Logan Elms

Mr. Elms has a BS in Biology from CSU Bakersfield. He has three years of research experience conducting botanical surveys in multiple California plant communities. He has experience in developing and conducting research in a variety of botanical topics including physiology, community structure, and fire ecology. He is knowledgeable in plant identification using the Jepson Manual and other keys, as well as being familiar with a number of botanical communities throughout California. Mr. Elms' professional experience includes threatened and endangered species surveys (kangaroo rat, blunt-nosed leopard lizard, burrowing owl, kern mallow, slender mariposa lily, etc.) in the San Joaquin Valley and Angeles National Forest. He is a Level II blunt-nosed leopard lizard researcher.

Audie Arbo

Ms. Arbo has a BS in Wildlife Ecology from the University of Maine. She is a Wildlife Ecologist and Project Scientist responsible for conducting wetland delineations, vernal pool surveys, acoustic bat analysis, post-construction natural resource compliance monitoring, function-value assessments, and reporting. She has worked on a variety of wildlife projects ranging from spotted turtle telemetry and handling, avian nocturnal migration studies, to spring salamander stream surveys. Most recently, she was involved with avian and bat mortality surveys for a wind power project in Maine. Ms. Arbo is a Level II blunt-nosed leopard lizard researcher.

Ignacio Maldonado

Mr. Maldonado is currently pursuing a BS in Fisheries and Wildlife Biology from Oregon State University. He has 18 months of experience conducting biological surveys for Stantec. Mr. Maldonado's professional experience includes threatened and endangered species surveys (kangaroo rat, blunt-nosed leopard lizard, burrowing owl, kern mallow, slender mariposa lily, etc.) in the San Joaquin Valley and Angeles National Forest. Mr. Maldonado also has experience conducting biological surveys for the Nevada Department of Wildlife. He is a Level II blunt-nosed leopard lizard researcher.

Chris Jones

Mr. Jones has six years of experience conducting biological and botanical surveys in the San Joaquin Valley. He has worked both as a sub-consultant for Stantec and as a Stantec employee. Mr. Jones' professional experience includes threatened and endangered species surveys (kangaroo rat, blunt-nosed leopard lizard, burrowing owl, kern mallow etc.) in the San Joaquin Valley. He is a Level II blunt-nosed leopard lizard researcher.

Amy Croft

Ms. Croft has an MS in Environmental Science and Policy from Johns Hopkins University. She has more than 10 years of experience as a wildlife biologist and researcher specializing in avian species. She has performed habitat surveys, nest surveys, monitoring, species identification, trapping, marking, release, and tracking of hundreds of avian species across North America and in Africa. Ms. Croft has worked on projects for Federal, state, and local/municipal clients. She is a Level I blunt-nosed leopard lizard researcher.

APPENDIX F
Photographic Log

**STANTEC CONSULTING
PHOTOGRAPHIC RECORD**

Client:	Occidental of Elk Hills, Inc.	Job Number:	185802799
Subject Name:	2012 Sensitive Species Surveys for Initial CO2 Injection Phase	Location:	CO2 supply pipeline
Photographer:	Stantec	Date:	September 17, 2012

Photograph No. 1



North End of CO2 Pipeline Route (15S), Facing South

Photograph No. 2



Middle Point of CO2 Pipeline Route (22S), Facing South

**STANTEC CONSULTING
PHOTOGRAPHIC RECORD**

Client:	Occidental of Elk Hills, Inc.	Job Number:	185802799
Subject Name:	2012 Sensitive Species Surveys for Initial CO2 Injection Phase	Location:	CO2 Supply Line
Photographer:	Stantec	Date:	September 17, 2012

Photograph No. 3



Middle Point of CO2 Supply Pipeline Route (22S), Facing North

Photograph No. 4



South End of CO2 Supply Pipeline Route (27S), Facing North

**STANTEC CONSULTING
PHOTOGRAPHIC RECORD**

Client:	Occidental of Elk Hills, Inc.	Job Number:	185802799
Subject Name:	2012 Sensitive Species Surveys for Initial CO2 Injection Phase	Location:	Section 27S, SE Quadrant
Photographer:	Stantec	Date:	September 10, 2012

Photograph No. 5



Section 27S, NW Corner, Facing SE

Photograph No. 6



Section 27S, SW Corner, Facing NE

**STANTEC CONSULTING
PHOTOGRAPHIC RECORD**

Client:	Occidental of Elk Hills, Inc.	Job Number:	185802799
Subject Name:	2012 Sensitive Species Surveys for Initial CO2 Injection Phase	Location:	Section 27S, SE Quadrant
Photographer:	Stantec	Date:	September 10, 2012

Photograph No. 7



Section 27S, SE Corner, Facing NW

Photograph No. 8



Section 27S, NE Corner, Facing SW

**STANTEC CONSULTING
PHOTOGRAPHIC RECORD**

Client:	Occidental of Elk Hills, Inc.	Job Number:	185802799
Subject Name:	2012 Sensitive Species Surveys for Initial CO2 Injection Phase	Location:	27S, Satellite Location 1
Photographer:	Stantec	Date:	December 4, 2012

Photograph No. 9



View of Satellite Location 1 from the NW corner of the buffer zone facing SE

Photograph No. 10



View of Satellite Location 1 from the SW corner of the buffer zone facing NE

**STANTEC CONSULTING
PHOTOGRAPHIC RECORD**

Client:	Occidental of Elk Hills, Inc.	Job Number:	185802799
Subject Name:	2012 Sensitive Species Surveys for Initial CO2 Injection Phase	Location:	27S, Satellite Location 2
Photographer:	Stantec	Date:	September 9, 2012

Photograph No. 11



View of Satellite Location 2 from the NW corner of the buffer zone facing SE

Photograph No. 12



View of Satellite Location 2 from the NE corner of the buffer zone facing SW

**STANTEC CONSULTING
PHOTOGRAPHIC RECORD**

Client:	Occidental of Elk Hills, Inc.	Job Number:	185802799
Subject Name:	2012 Sensitive Species Surveys for Initial CO2 Injection Phase	Location:	3G, Satellite Location 3
Photographer:	Stantec	Date:	September 9, 2012

Photograph No. 13



View of Satellite Location 3 from the north end facing south.

Photograph No. 14



View of Satellite Location 3 from the center facing north.



**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV**

**AMENDED APPLICATION FOR CERTIFICATION
FOR THE HYDROGEN ENERGY
CALIFORNIA PROJECT**

**Docket No. 08-AFC-08A
PROOF OF SERVICE
(Revised 12/24/12)**

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*Indicates Change

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After docketing, the Docket Unit will provide a copy to the persons listed below. Do not send copies of documents to these persons unless specifically directed to do so.

KAREN DOUGLAS
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ANDREW McALLISTER
Commissioner and Associate Member

Raoul Renaud
Hearing Adviser

Eileen Allen
Commissioners' Technical
Adviser for Facility Siting

Galen Lemei
Adviser to Presiding Member

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Adviser to Presiding Member

David Hungerford
Adviser to Associate Member

Patrick Saxton
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Robert Worl
Project Manager

John Heiser
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Lisa DeCarlo
Staff Counsel

DECLARATION OF SERVICE

I, Dale Shileikis, declare that on January 21, 2013, I served and filed copies of the attached OEHI Response to CEC Data Requests Set One No. A44, dated January, 2013. This document is accompanied by the most recent Proof of Service list, which I copied from the web page for this project at: http://www.energy.ca.gov/sitingcases/hydrogen_energy/index.html.

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, as appropriate, in the following manner:

(Check one)

For service to all other parties and filing with the Docket Unit at the Energy Commission:

- I e-mailed the document to all e-mail addresses on the Service List above and personally delivered it or deposited it in the US mail with first class postage to those parties noted above as "hard copy required"; OR
- Instead of e-mailing the document, I personally delivered it or deposited it in the US mail with first class postage to all of the persons on the Service List for whom a mailing address is given.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: 1/21/13