

## **APPENDIX F**

### **Biological Resources Technical Report**

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**BIOLOGICAL RESOURCES TECHNICAL REPORT  
AMENDED SALTON SEA UNIT 6 PROJECT  
IMPERIAL COUNTY, CALIFORNIA**

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AECOM Environment

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January 2009

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## EXECUTIVE SUMMARY

Wildlife and botanical surveys were performed for the Amended Salton Sea Unit 6 (SSU6) Project (Project). A primary focus of the surveys was to cover areas that were not part of the original SSU6 project. These included new offsite injection well pad locations, pipeline routes between the injection well pads and the plant site, and a new borrow area adjacent to the plant site. The plant site of the Amended Project is the same as the plant site for the original project, and the biological studies for the Amended Project included an update of the earlier plant site surveys performed for the original SSU6 licensing process. The surveys were performed in support of environmental documentation for the Amendment Petition to be submitted to the California Energy Commission (CEC) for the Project. This report documents the biological surveys results for the above locations.

In December 2003, CE Obsidian Energy, LLC (CEOE), obtained a license for the SSU6 geothermal project from the California Energy Commission (CEC) to construct and operate a 185 net megawatt (MW) geothermal steam-powered electric generating facility. The plant would be owned and operated by CEOE. The project was amended in April 2005 to a single plant with 215 MW capacity. CEOE now proposes to construct an Amended Project consisting of three single flash geothermal plants that will produce a combined total of 159 MW net of clean, renewable geothermal power.

The Amended Project is similar to the original project in terms of its physical footprint, with changes proposed for the locations of the production and injection wells and pads and their associated pipelines and the addition of a new borrow area adjacent to the plant site. The Amended Project plant site is larger (160 acres) than the original project's plant site (80 acres), with the Amended Project plant site encompassing the original 80 acres plus additional adjoining acreage to the south.

The surveys discussed in this report covered the Amended Project footprint locations plus the CEC-required survey buffer zones. The Amended Project footprint includes the plant site, the new injection well pads and associated pipelines, and the borrow site. The pipeline footprints include a 110 feet wide right-of-way (ROW) throughout. The study area also included a one-mile buffer around the plant site, well pads, and borrow site, in conformance with CEC survey guidelines. The 1,000 foot survey buffer required for the Amended Project's linear features (pipelines) is completely encompassed within the one-mile buffer for the Amended Project site.

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A total of four vegetation communities/land use types were found within the Amended Project footprint, including:

- Roadway or agricultural ditch (17.8 acres)
- Developed areas (28.9 acres)
- Agricultural lands ( 194.9 acres)
- Tamarisk Scrub (1.2 acres)

None of these land use types support native plant communities; therefore, no sensitive native plant communities were found within the footprint of the Amended Project.

Surveys for sensitive plant and animal species were also conducted. Only one sensitive plant species is known from the area, the Pierson's milkvetch, but no habitat for this species (sand dunes) occurs in the Project site or buffer areas.

Seven federally or state listed wildlife species are considered to have a potential to occur within the Project area due to previously documented occurrences, including the Yuma clapper rail and the California brown pelican. However, no federally or state listed species were observed in the 2008 survey of the Amended Project study area. The Amended Project has relocated to the plant site the production wells and pipelines that were proposed originally in the wetland area and on Obsidian Butte west and northwest of the plant site. This has increased the distance of Project facilities from the previously identified off-site habitats for listed species (i.e., wetlands, saltbush scrub). The closest Amended Project element to the habitat areas of concern is the plant site itself, which is approximately 60 feet away from a wetland area located northwest of the site. This wetland is considered potential habitat for the Yuma clapper rail. However, there will be no operating equipment in the northwestern portion of the plant site, the area closest to the wetland. In addition, the power block area of the Amended Project plant site is located further south (farther from the clapper rail habitat) than was the case in the original project. This means that the potential for indirect impacts on Yuma clapper rail due to noise and vibration associated with construction and operation in the power block (including pile driving during construction, a source of concern for clapper rail impacts), is reduced compared to the original SSU6 project.

In addition to the listed species, six California Species of Special Concern were identified as having potential to occur due to previously documented occurrences in the vicinity of the Amended Project. Only one of these species and its habitat, the burrowing owl (BUOW), was found to occur in the Amended Project study area. BUOW and their habitat occur throughout the Project area. As part of the study, a full protocol survey (Phase II) has been conducted, and a

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Phase III survey is planned for the breeding season in 2009. Phase II protocol BUOW surveys indicated the presence of both occupied and unoccupied burrows within the BUOW survey protocol-specified 500-foot buffer zone, but not within the Project footprint itself.

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## **1.0 INTRODUCTION**

This report summarizes results of wildlife and botanical surveys conducted by EDAW, Inc. (EDAW) and AECOM from September 2008 through December 2008. These surveys were conducted to determine the presence of special status animals and plants within the Amended Salton Sea Unit 6 (SSU6) Project site, including the plant site, the offsite injection well pads and associated pipeline areas, and a borrow area east of the plant site. The survey effort also included vegetation mapping.

### **1.1 Project Description**

The Amended SSU6 Project involves developing three geothermal steam-powered electric generation plants, with each unit producing 53 megawatts (MW) net output for a total of 159 MW. The Project has elements unique to a geothermal project including geothermal resource production facilities with brine production well pads and aboveground pipelines, geothermal-steam power generation facilities, brine injection wells and pads, and aboveground pipelines to the injection well pads where the brine will be returned to the geothermal reservoir. The Project area, located near the southeast shore of the Salton Sea, is within the unincorporated area of Imperial County, California (Figure 1). The Project will be owned by CE Obsidian Energy, LLC (CEOE) and operated by an affiliated company.

### **1.2 Project Location and Site Description**

The proposed power plant will be located on a 160-acre parcel bounded by McKendry Road to the north, Severe Road to the west, Peterson Road to the south, and Boyle Road to the east (Figure 2). The 160-acre parcel is currently occupied by agricultural land and small previously developed areas.

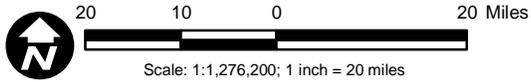
The Amended Project plans to locate the production wells and pads entirely within the 160-acre site, which has resulted in an impact reduction from the originally proposed project. The construction support area, including laydown and parking, is included within the 160-acre parcel. The following additional changes have been made in the Amended Project and were taken into account when conducting the surveys for this report:

- Removal of an injection well pad located on Obsidian Butte (OB-3).

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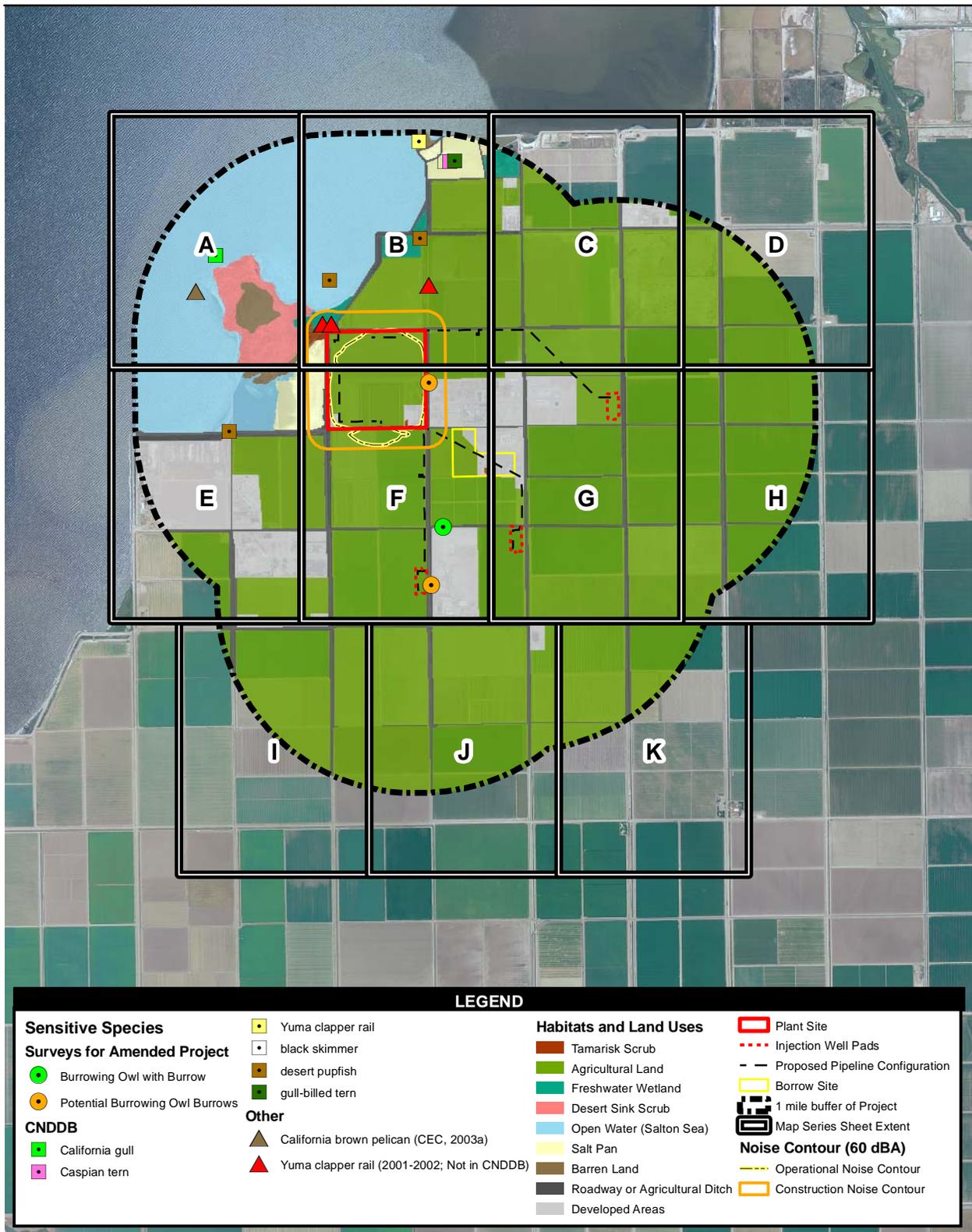
Source: NAIP 2005, EDAW 2008



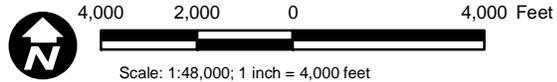
**Figure 1**  
**Regional Map**

**Salton Sea Unit 6**

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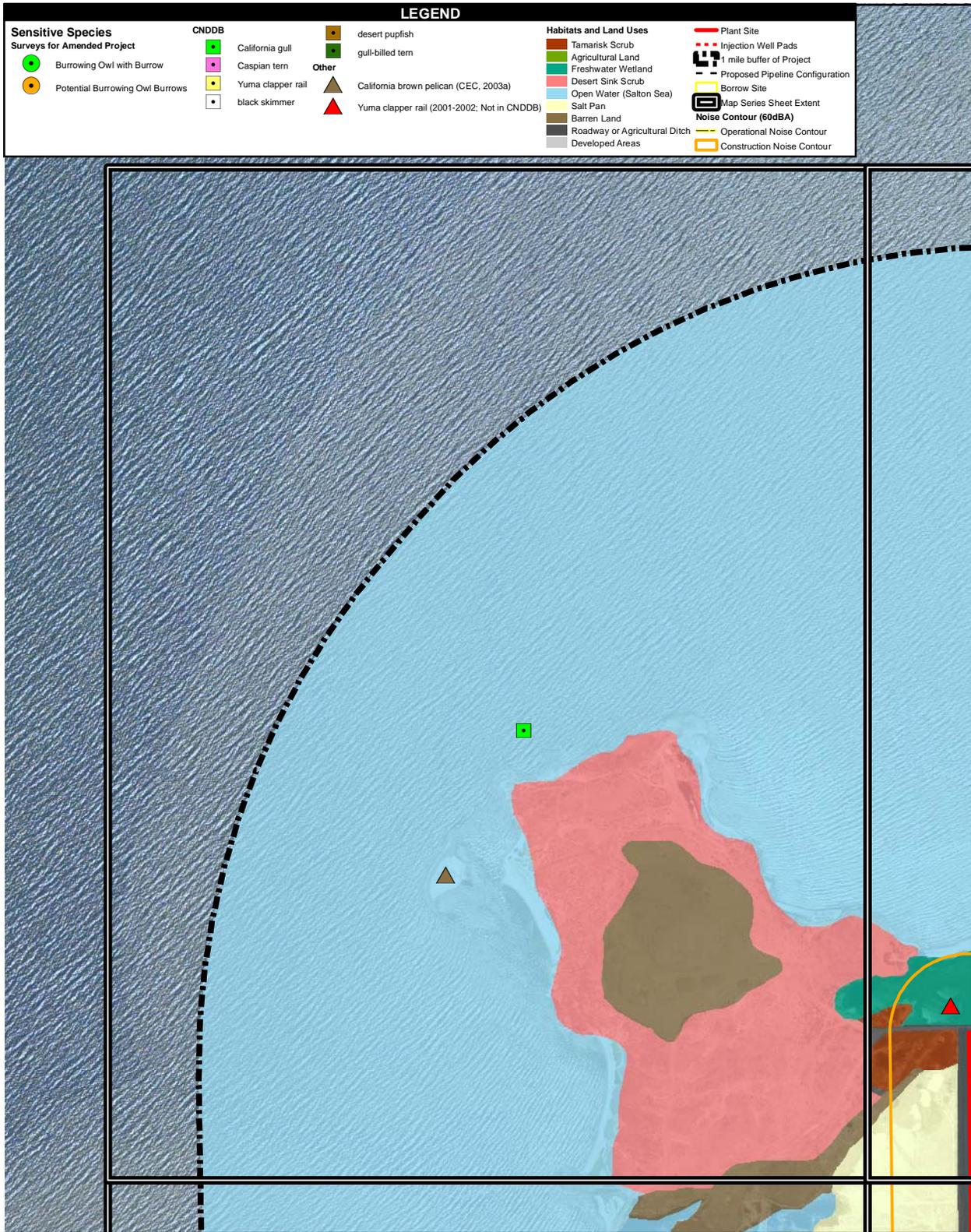
Source: NAIP 2005; EDAW 2008; CNDDB 2008



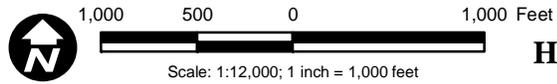
**Figure 2**  
**Map Series Sheet Locator**

**Amended Salton Sea Unit 6**

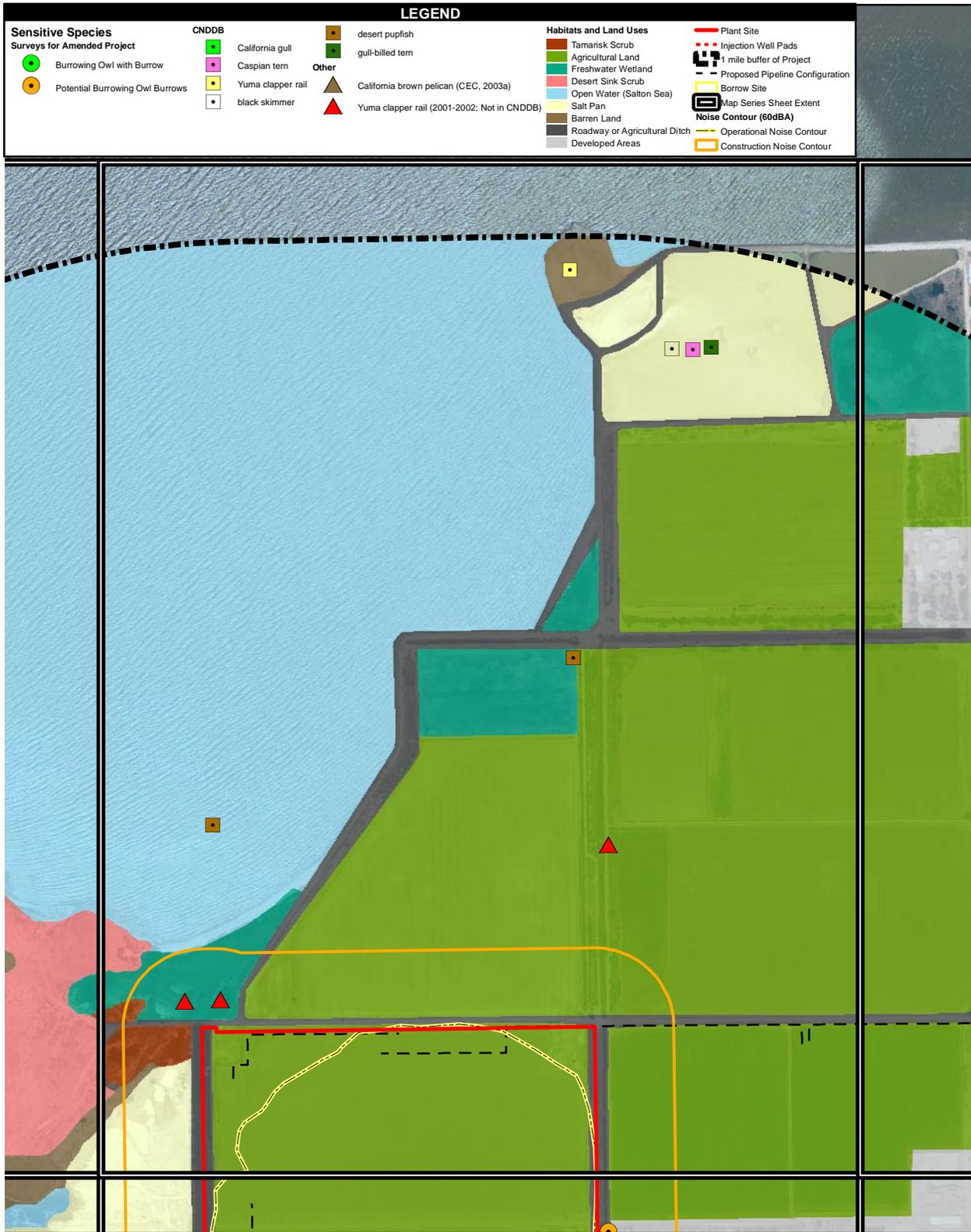
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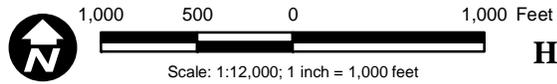
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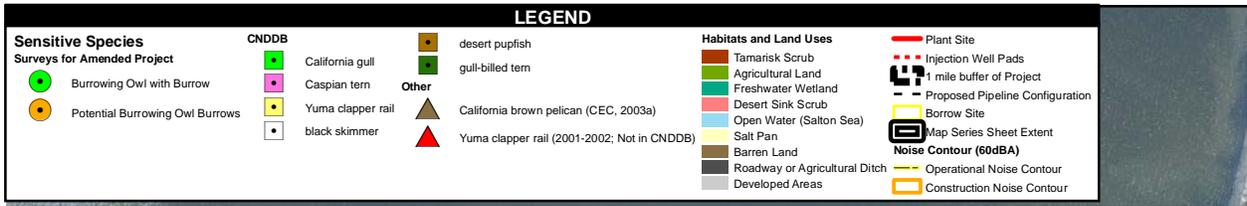
**Figure 2**  
**Habitat Map Series for Project Site and Buffer Zone**



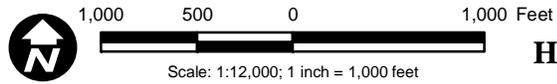
Source: NAIP 2005; EDAW 2008; CNDBB 2008



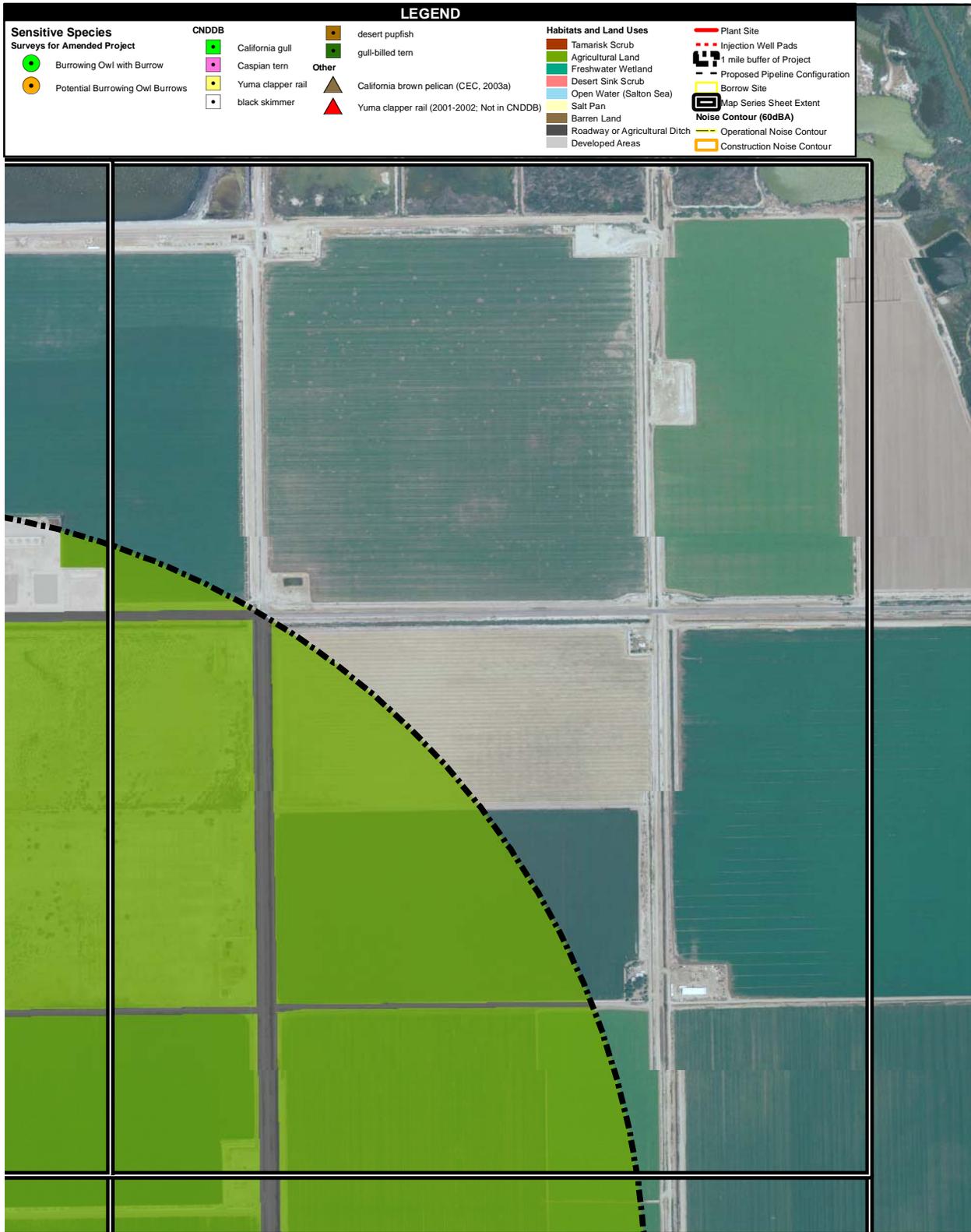
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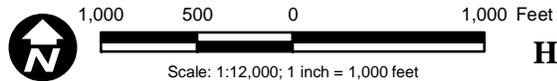
Source: NAIP 2005; EDAW 2008; CNDDDB 2008



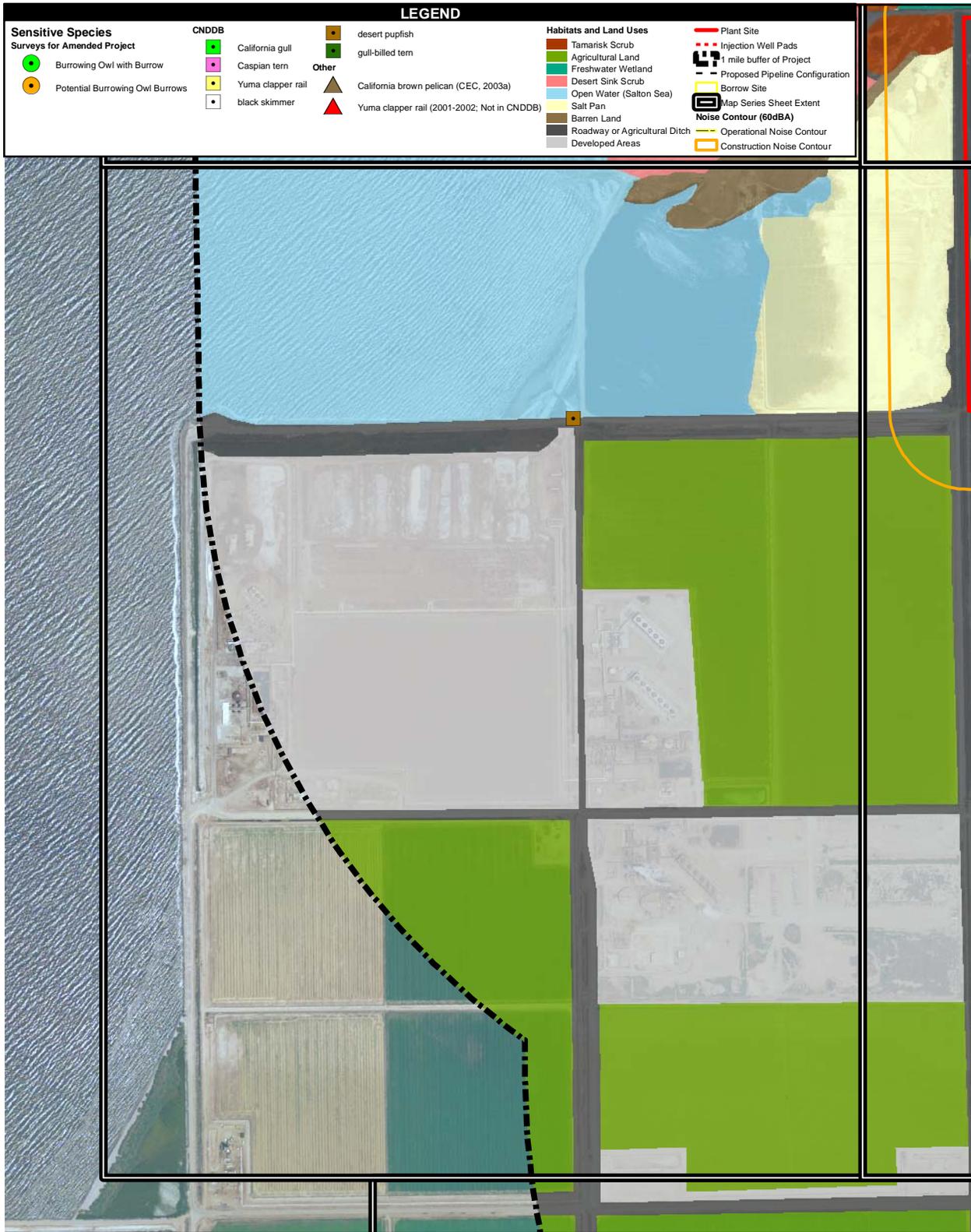
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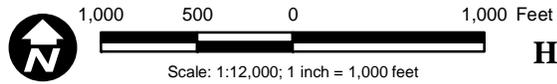
Source: NAIP 2005; EDAW 2008; CNDDB 2008



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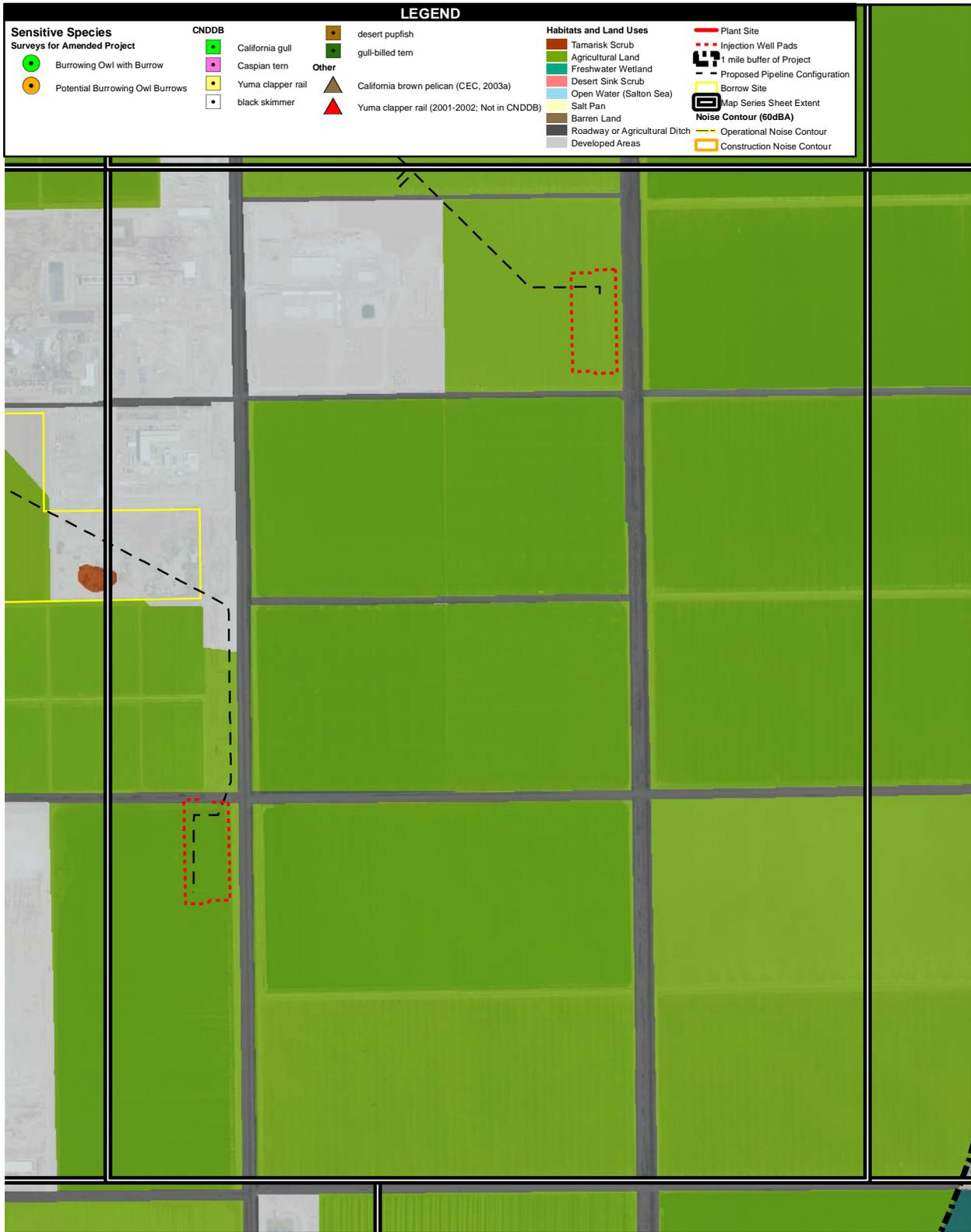


Source: NAIP 2005; EDAW 2008; CNDDB 2008

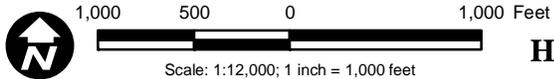


**Figure 2**  
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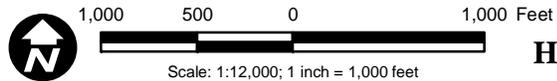
Source: NAIP 2005; EDAW 2008; CNDDB 2008



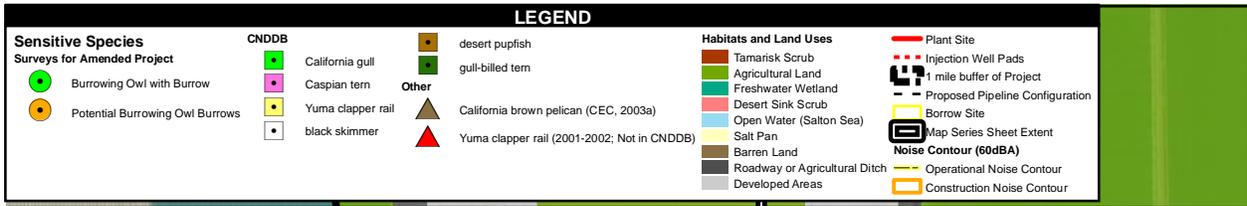
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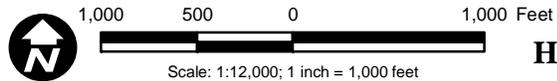
Source: NAIP 2005; EDAW 2008; CNDDB 2008



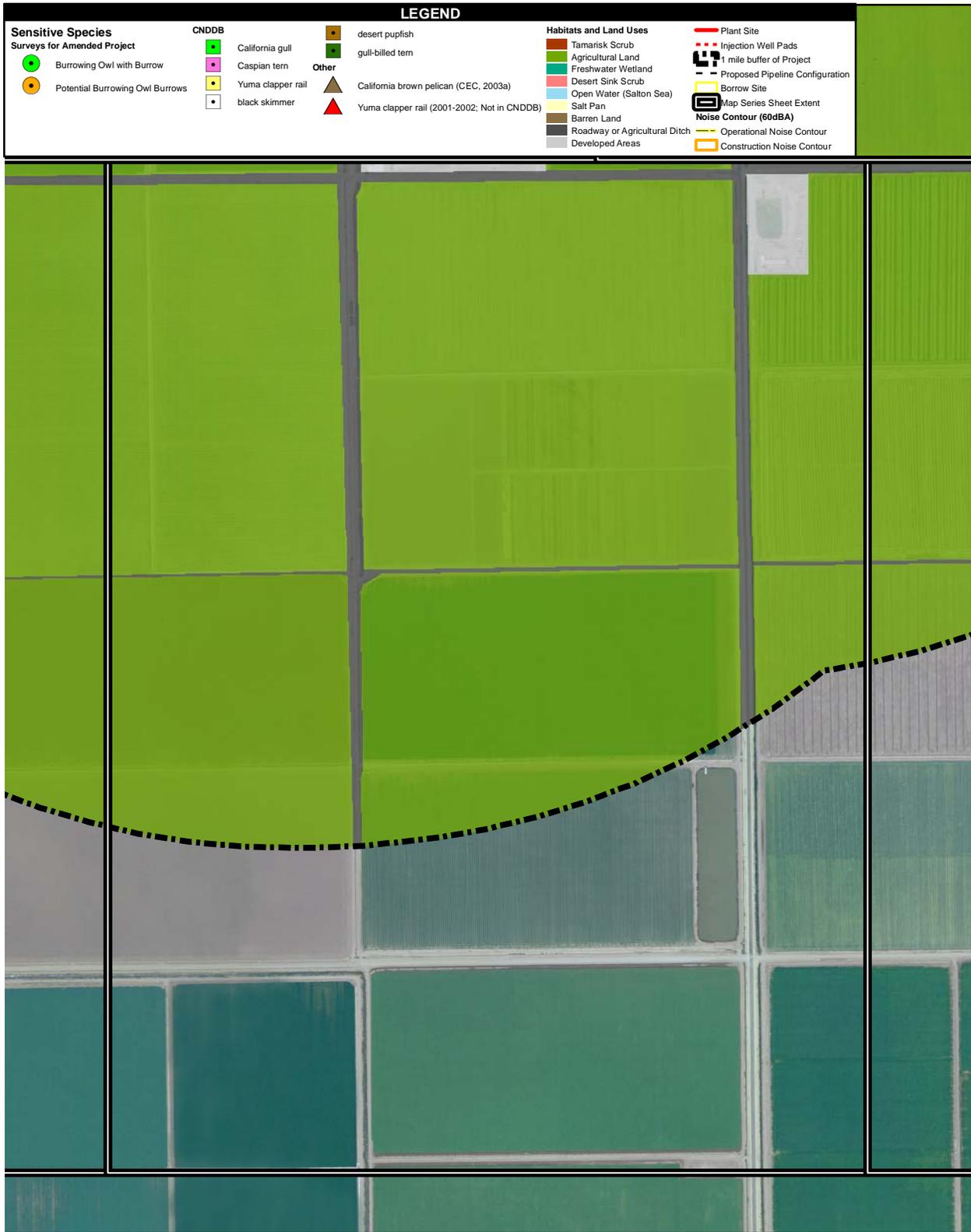
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Source: NAIP 2005; EDAW 2008; CNDDB 2008



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Source: NAIP 2005; EDAW 2008; CNDDB 2008

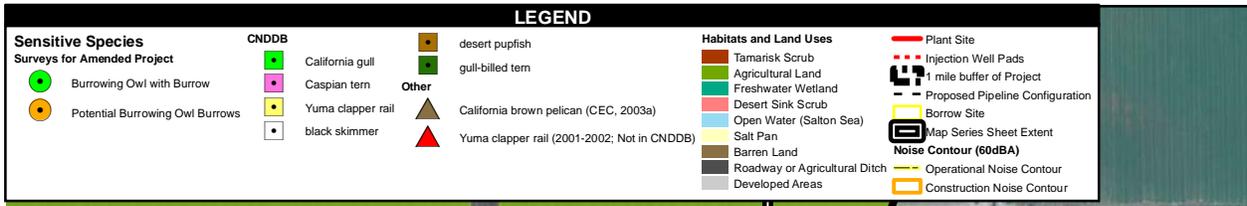


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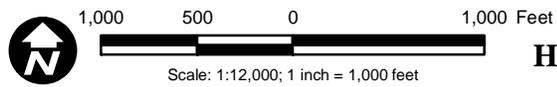


Scale: 1:12,000; 1 inch = 1,000 feet

**Figure 2**  
**Habitat Map Series for Project Site and Buffer Zone**



Source: NAIP 2005; EDAW 2008; CNDDB 2008



**Figure 2**  
**Habitat Map Series for Project Site and Buffer Zone**

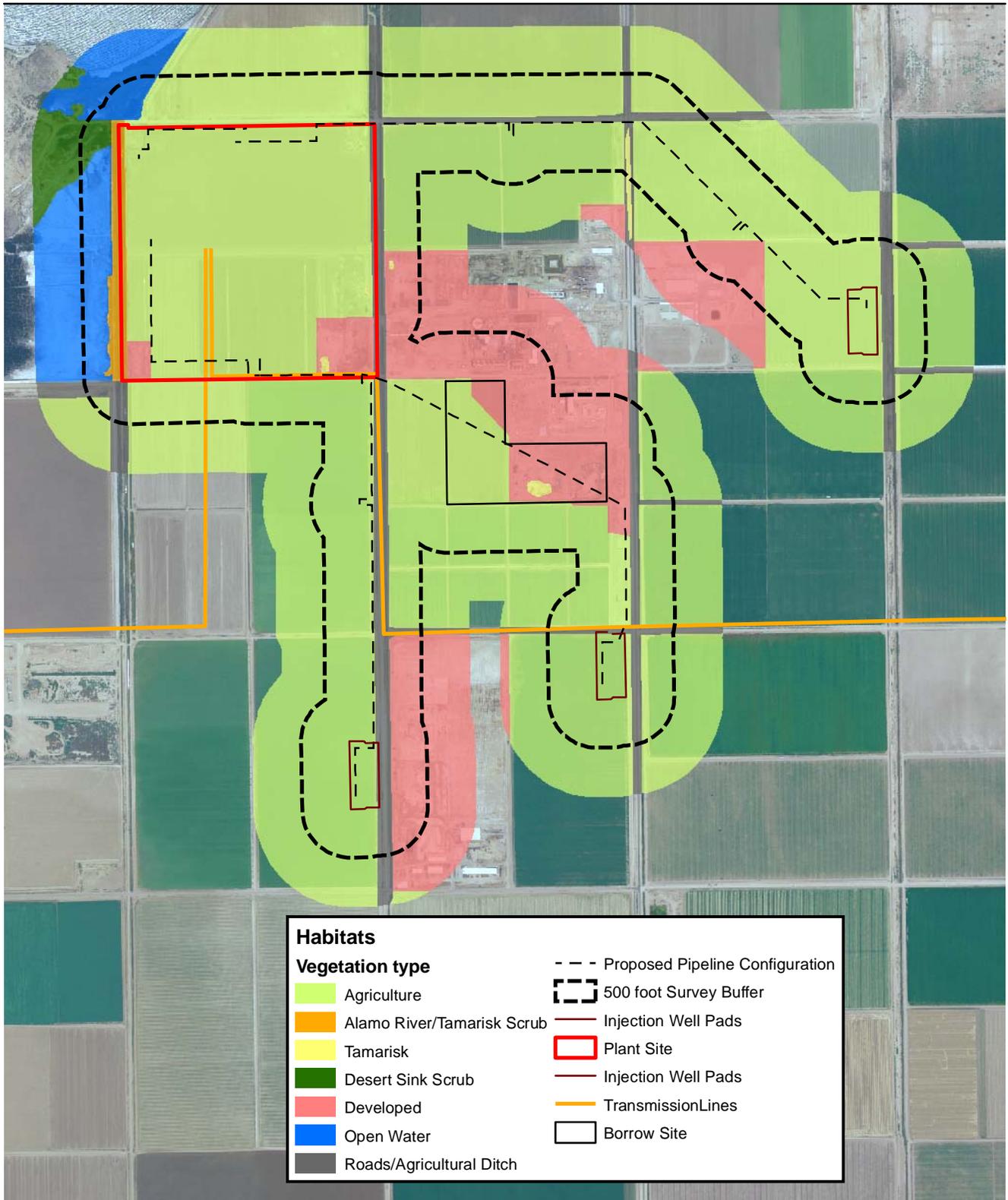
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- Elimination of the widening of McKendry Road; north of the plant site.
  - Change of location and number of production and injection well pads. The original SSU6 facility included eleven production wells on five well pads and eight injection wells on three well pads off-site. In contrast, the proposed Project will include nine production wells on three well pads on-site and nine proposed injection wells on three well pads located off-site, but in different locations than the original project. With the changes described above, there are no longer impacts to Obsidian Butte.
  - Power generating facilities are located on the same site as the original SSU6. However, in the Amended Project, the facilities are located in the center of the 160-acre parcel, while in the original SSU6 project, the facilities were located on the further to the north, closer to McKendry Road. Also, as stated above, the production wells now are all located on-site, along the perimeter of the 160-acre property.
  - Use of single-flash technology for the Amended Project versus multiple-flash technology. Single-flash technology requires significantly less infrastructure and produces less nonhazardous and hazardous waste than multiple-flash technology.

## **2.0 SURVEY METHODS**

EDAW biologists Scott McMillan and Barbra Calantas conducted wildlife and botanical field surveys for the new injection well pads and pipeline ROWs on September 23, 2008. EDAW biologist Shelly Dayman and Katie Hall conducted wildlife and botanical field surveys on October 7 through October 9, 2008. These surveys included a general BUOW assessment (Phase II) within the Project footprint and a 500-foot buffer zone, in accordance with the Burrowing Owl Survey Protocol established by the California Burrowing Owl Consortium (1993) (Figure 3). On November 7<sup>th</sup> through November 9<sup>th</sup> 2008, EDAW biologist Shelly Dayman and Katie Hall conducted protocol BUOW surveys and updated vegetation mapping at the plant site, the injection well pads and pipeline ROWs, and the borrow site. On December 24<sup>th</sup>, 2008, AECOM biologist Rocky Brown conducted an updated survey for the vegetation and wildlife within the one-mile buffer around the entire Amended Project.

The wildlife and botanical surveys in the injection well pad areas consisted of a pedestrian survey, while the survey of pipeline routes and buffer areas consisted of windshield surveys conducted by driving slowly (15 to 25 miles per hour) along dirt and paved roads. At several points during the survey, biologists focused their attention on areas with a higher potential for



Source: NAIP 2005, EDAW 2008

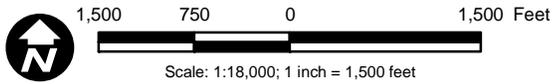


Figure 3  
Habitat Map for Project Site and Buffer Zones  
of Potential Areas of Impact

Amended Salton Sea Unit 6

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supporting special status animal and plant species where very small patches of native plants were found. None of these areas can be considered native habitat, as the patches of native plants were usually just a few feet in diameter and were always mixed with nonnative weed species associated with agricultural fields.

The surveys were planned to achieve three primary objectives: (1) characterize and identify all vegetation communities occurring within the study area and the potential for these communities to support special status species; (2) perform vegetation community mapping for the new injection well sites; and (3) map and record sensitive species incidentally observed during the survey.

Surveys were conducted in accordance with the sensitive species survey guidelines provided by the California Department of Fish and Game (CDFG), the Burrowing Owl Consortium Guidelines, and the United States Fish and Wildlife Service (USFWS) and the California Energy Commission's (CEC) recommended Biological Resources Field Survey Guidelines. Database information for the known sensitive species occurrences in the region include the California National Diversity Database (CNDDDB) (2008), the RareFind occurrences (CDFG, 1997), and the Inventory of Rare and Endangered Plants (CNPS, 2001).

For the BUOW surveys, areas were scoped, walked and viewed from vehicles to locate BUOW, BUOW sign (white-wash, pellets, feathers, bones), and potential burrows. The Amended Project footprint was surveyed, including a 500-ft buffer area, as suggested by the Burrowing Owl Consortium Protocol. BUOW, BUOW sign, and burrows with the potential for use by BUOW were mapped using GPS units.

### **3.0 EXISTING VEGETATION COMMUNITIES AND LAND USE TYPES WITHIN THE PROJECT SITE FOOTPRINT AND THE BUFFER AREAS**

Vegetation communities are used to describe species assemblages and patterns of plants across the landscape. A total of four vegetation communities and cover types were mapped within the Project area footprint, and nine vegetation communities and cover types were mapped within the one-mile buffer around the Project (Figure 2). Vegetation communities/land use types were classified based on the Holland classification system (Holland, 1986). The acreage of each vegetation/land use type within the Project site and surrounding buffer area is provided in Table 1.

**Table 1**  
**Vegetation Communities and Cover Types for the Amended Project**

Vegetation Communities and Other Cover Types for Amended Project	Project Footprint* (acres)	Survey Area** (acres)
Roadway or Agricultural Ditch	17.8	346.3
Developed Areas	28.9	510.7
Agricultural Lands	194.9	3,726.7
Desert Sink Scrub	0.0	82.8
Tamarisk Scrub	1.2	6.1
Freshwater Wetland	0.0	42.6
Open Water (Salton Sea)	0.0	799.8
Salt Pan	0.0	92.1
Barren Land	0.0	39.9
<b>Total Acreage</b>	<b>242.8</b>	<b>5,647.1</b>

\* = Project footprint acreages include the Amended Project plant site, well pads, 110-foot-wide pipeline ROW's, and borrow site

\*\* = Survey area includes Project footprint; a one-mile buffer area around the plant site, well pads, and borrow site; and a 1,000-foot buffer area around pipeline ROWs

### **3.1 Existing Vegetation Communities and Land Use Types within the Project Site Footprint**

Descriptions of the observed vegetation communities and cover types are provided below.

#### **Roadway or Agricultural Ditch**

There are several unpaved and paved north-south and east-west oriented roads in the Project vicinity. Several agricultural ditches adjacent to these roads contain irrigation water from the agricultural fields. Generally these ditches are less than 20 feet in width and have steep banks. Some support sparse vegetation consisting of cattails (*Typha* sp.), giant reed (*Arundo donax*) and salt cedar (*Tamarisk* sp.). Periodic maintenance of the drainage channels and removal of vegetation precludes the habitat from supporting special status species. The agricultural ditch adjacent to Severe Road, west of the plant site and between McKendry and Grubel Roads supports dense stands of giant reed and salt cedar, which are invasive species. The ditch at the western end of Grubel Road is heavily vegetated with salt cedar.

A total of 17.8 acres of roadway/agricultural ditch were mapped within the Amended Project footprint and 346.3 acres were mapped within the one-mile buffer area.

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## **Developed Areas**

The areas mapped as developed include areas that are currently used for existing facilities, current pipelines, and other infrastructure related to the current power generation and agriculture (water well pads, etc.).

A total of 28.9 acres of developed land were mapped within the Amended Project footprint and 510.7 acres were mapped within the one mile buffer zone.

## **Agricultural Lands**

Agricultural lands form the major land use type in the Project vicinity. The dominant vegetation type in these fields is alfalfa. Most of the agricultural plots in the Project vicinity are active. These lands also provide foraging habitat for overwintering migratory birds and waterfowl.

A total of 194.9 acres of agricultural areas were mapped within the Amended Project footprint and 3,726.2 acres were mapped within the one mile buffer zone.

## **Desert Sink Scrub**

This habitat is restricted to Obsidian Butte and consists of low, grayish, microphyllous (small leaved) shrubs, widely scattered, and predominantly consisting of the salt-tolerant iodine bush (*Allenrolfea occidentalis*). Vegetation cover is low, with much bare ground between the widely spaced shrubs. The soils in this area are fine-textured, poorly drained with high alkalinity and/or salinity.

There was no desert sink scrub mapped with the Amended Project footprint; 82.8 acres were mapped within the one mile survey area.

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## **Tamarisk Scrub**

This habitat type refers to small monocultural stands of saltcedar (*Tamarisk* sp.) not associated with other habitat types in the Project vicinity. The presence of this habitat is usually an indication that tamarisk has supplanted native vegetation following major disturbance. Tamarisk is a non-native, invasive Eurasian or African species usually found in saline soils. Tamarisk is a strong phreatophyte and a prolific seeder, attributes which predispose the species to be aggressive competitors in disturbed riparian corridors.

A total of 1.2 acres of tamarisk scrub areas were mapped within the Amended Project footprint and 6.1 acres were mapped within the one-mile survey area.

## **Freshwater Wetland**

The closest freshwater wetland to the plant site occurs at the juncture of Severe Road and McKendry Road, adjacent to the northwest corner of the plant site. This area is bordered by Obsidian Butte to the west, the Salton Sea to the north, a portion of the Wildlife Refuge to the east, and the plant site and adjacent salt flat to the south. The marsh is fed by a drainage ditch outside the Project site along the west side of Severe Road, with flow ultimately emptying into the Salton Sea via an outlet to the north via under drain systems below the field. The wetland is lined by a thick stand of salt cedar on the outer margin and an inner margin consisting of dense stands of cattails. A few stands of giant reed also occur in the southeastern portion. The interior of the wetland consists of open water. There are also several wetland areas within the Wildlife Refuge, to the north of the plant site, including a wetland area created by the Wildlife Refuge adjacent to the south of Sinclair Road between Severe and Boyle Roads. Freshwater wetland areas in the Project area potentially could provide foraging and nesting habitat for the Yuma clapper rail.

There was no freshwater wetland mapped with the Amended Project footprint and 42.6 acres were mapped within the one mile survey area.

## **Open Water**

Open water habitat in the Project vicinity is associated with the Salton Sea.

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There was no open water mapped with the Amended Project footprint and 799.8 acres were mapped within the one mile survey area.

### **Salt Pan**

This habitat occurs west of Severe Road, north of Grubel Road and south of the Obsidian Butte. In addition, a small salt pan also occurs in the Refuge, approximately 0.75 miles north of the plant site. This habitat consists of a flat expanse of unvegetated land where previously standing water has evaporated, leaving behind deposits of salts and other minerals.

There was no salt pan mapped with the Amended Project footprint and 92.1 acres were mapped within the one mile survey area.

### **Barren Land**

Barren land supports little or no vegetation. The central and southern portions of the Obsidian Butte are barren land.

There was no barren land mapped with the Amended Project footprint and 39.9 acres were mapped within the one-mile survey area.

## **4.0 SENSITIVE SPECIES SURVEY RESULTS**

Figure 2 depicts the locations of sensitive species known to occur to the area.

### **4.1 Plant Species**

Plant species are designated as sensitive because of their overall rarity, endangerment, unique habitat requirements, and/or restricted distribution. In general, it is a combination of these factors that leads to a sensitivity designation. Sensitive plants include those listed by the USFWS (1990), CDFG (1997), and CNPS (2001). Species that are federally or state listed are afforded a degree of protection that entails a review and/or permitting process, including specific mitigation measures for any allowable impacts to the species. Species that are proposed to be listed by the USFWS are treated similarly to listed species by that agency. Recommendations of the USFWS, however, are advisory rather than mandatory in the case of proposed species. The CNPS listing is sanctioned by the CDFG and essentially serves as its list of candidate species for threatened or endangered status. All of the plants on CNPS lists 1B and 2 meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California

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Endangered Species Act) of the CDFG Code and are eligible for state listing (CNPS, 2001). Plant species on CNPS List 4 are those plants of limited distribution or that are infrequent throughout a broader area in California. These plants are not rare but are uncommon enough that their status should be monitored.

The potential for sensitive plants to occur is very low due to the disturbed condition of most of the study area. The desert scrub within the study area is low quality (disturbed in many areas). Sensitive plants were not observed, and the potential for their occurrence is also very low. A query of the CNDDDB for U.S. Geological Survey (USGS) 7.5. quadrangles in the Project area reveals only one sensitive plant— Peirson’s milkvetch (*Astragalus magdalenae* var. *peirsonii*). Peirson’s milkvetch, a federally threatened and state endangered species, is a perennial herb that inhabits desert dunes and typically blooms December through April. The single reported occurrence (1986) within the vicinity of the proposed Project was observed approximately four miles from the Amended Project plant site. The potential for this plant to occur within or near the Project area is very low due to the lack of appropriate sand dune habitat. The agricultural portion of the Project area lacks suitable habitat, as do the developed areas, roadway areas and drainage ditches. Conditions appropriate to promote the development of suitable habitat for Peirson’s milkvetch, such as the accumulation of windblown sand along washes and at the base of shrubs, do not occur within the Project site or in the buffer area. No Peirson’s milkvetch were observed in the 2008 surveys for the Amended Project.

#### **4.2 Sensitive Vegetation Communities**

Sensitive vegetation communities are those that are considered rare in the region, support special status plant or animal species, or receive regulatory protection (e.g., wetlands as defined by the U.S. Army Corps of Engineers and the CDFG). In addition, vegetation communities listed on the CDFG’s CNDDDB as having the highest inventory priority are considered sensitive (CNDDDB, 2008). There are no sensitive vegetation communities within the Project site or the buffer areas.

#### **4.3 Sensitive Wildlife**

Sensitive wildlife species are those listed by federal, state, and local agencies. The USFWS (1991) officially lists sensitive species as either threatened or endangered, or proposes such species for listing as threatened or endangered. The CDFG also lists species as threatened or endangered, or candidates for listing as threatened or endangered. Animals that are considered less sensitive may be listed as Species of Special Concern (CDFG, 1991). Descriptions of federally and state listed animal species that have potential to occur in the study site are provided

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below, along with less sensitive species that were detected. Animal locations are shown in Figure 2.

#### **4.4 Federally or State Listed Wildlife Species**

Seven wildlife species that are federally or state listed as endangered or threatened have the potential to occur on the Project site. These species include the federally and state listed endangered California brown pelican, desert pupfish (*Cyprinodon macularius*), southwestern willow flycatcher (*Empidonax traillii extimus*), and least Bell's vireo (*Vireo bellii pusillus*); the federally listed endangered and state listed threatened Yuma clapper rail; and the state listed threatened California black rail (*Laterallus jamaicensis coturniculus*)

##### **Desert Pupfish (*Cyprinodon macularius*)**

This federally and state listed endangered species frequents still or slow-moving bodies of water, including agricultural drainages. This small, silvery-colored fish develops quickly, sometimes reaching full maturity within two to three months, and has an average life span of six to nine months, with some surviving more than one year. Pupfish feed on brown and green algae, and may reach a length of three inches. During winter months, when the water is cold, they become dormant, burrowing in the muddy bottom of their habitat. As temperatures become extreme toward summer, evaporation dries up most pools and streams, resulting in the death of most pupfish. A few survive in the small number of pools, streams, and springs that do not dry up completely. Several threats to the desert pupfish are contributing to its decline, including habitat destruction resulting from development and livestock grazing, and pollution by toxic agricultural by-products. Possibly the most significant threat to this species is the introduction of exotic fish species that prey upon and compete with desert pupfish for limited resources. There are several historical records of this species in slow-flowing agricultural drainages throughout the Salton Sea area, including records in drainages in the Obsidian Butte area. There is no habitat for the desert pupfish identified within the Project study area. The agricultural drainage ditches identified in this survey were dried out and did not provide the slow-flowing water necessary for the species. Due to lack of suitable habitat within the Amended Project area, no significant impacts to this species are expected to result from the Project.

##### **Yuma Clapper Rail (*Rallus longirostris yumanensis*)**

The Yuma clapper rail (*Rallus longirostris yumanensis*) is a federally endangered and state threatened bird. It is common in summer, in localized freshwater wetlands in the Salton Basin

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and the lower Colorado River (Garrett and Dunn, 1981). It is found at both ends of the Salton Sea and is known to be a breeding species in marshes on the lower Alamo and New Rivers. Its winter occurrence is uncertain, probably owing to its low detectability when not courtship-calling (Garrett and Dunn, 1981). These secretive birds prefer extensive and undisturbed marshes for foraging and nesting, but they are adaptable to a range of ephemeral and disturbed wetland conditions in the interior (Garrett and Dunn, 1981). In a survey conducted by Ogden Environmental and Energy Services in 1994, a total of eight clapper rails were detected on or adjacent to the study area. A single bird responded to taped calls at a freshwater marsh area at the southwest corner of Sinclair Road and Lateral Drain 4-A, near a potential well pad site. Seven additional clapper rails responded to calls from a freshwater marsh pond adjacent to the northern boundary of the Project study area. Two additional clapper rails were recorded at the access road to Obsidian Butte adjacent to the plant site during the 2001 surveys conducted by CEOE's consultant. Another individual was detected in an agricultural ditch just south of Production Well Pad OB1 by CEOE's consultant in 2002.

In the 2008 surveys, no Yuma clapper rail were observed within the survey area. In addition, production facilities planned for the original project, which would have directly impacted Yuma clapper rail habitat, have been relocated to within the plant site for the Amended Project, eliminating direct impacts to the subspecies. However, the freshwater wetland northwest of the plant site provides a potential nesting and foraging habitat for the Yuma clapper rail, and rails inhabiting this area may be indirectly impacted by Project construction noise. There are no anticipated impacts to the Yuma clapper rail for the new injection well pads and pipelines.

### **California Brown Pelican (*Pelicanus occidentalis californicus*)**

This federally and state listed endangered species frequents marine habitats where it eats fish such as sardines and anchovies using a characteristic plunge-diving technique. This species is a colonial nester at predator-free sites, either nesting on the ground, or in trees and on cliff faces. Often encountered over open water, California brown pelicans are an uncommon to abundant nesting resident or post-breeding visitor to the Salton Sea. Brown pelicans were observed during past flyover surveys on several occasions in the Project vicinity. Recent (late 1990s) nesting attempts by brown pelicans have been documented for Obsidian Butte and the mouth of the Alamo River but were unsuccessful. There was no occurrence or habitat for the pelican found within the modified locations for the injection well pads and pipelines. The Amended Project's locations for the production well pads and associated pipelines are now farther removed from the areas with potential for the brown pelican (the islands west of Obsidian Butte). There are no anticipated impacts to the pelican in the new Project areas.

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### **Southwestern Willow Flycatcher (*Empidonax traillii extimus*)**

This olive-green, neotropical migrant is found only in riparian forest habitats in the southwestern United States. This is a federally and state listed endangered species. Its range extends from southern California to western Texas, including portions of southernmost Nevada and Utah and northernmost Sonora and Baja California del Norte (Unitt, 1987). Southwestern willow flycatchers nest in dense riparian vegetation associated with streams, rivers, lakes, springs and other wetlands. Nesting begins upon arrival at suitable breeding areas in late May and early June, and young are fledged from late June through mid-August (Brown, 1988). The flycatcher's decline is due to loss and degradation of riparian habitat combined with nest parasitism by the brown-headed cowbird (*Molothrus ater*). An historical observation of this species was recorded 3 miles west of Niland in 1952. This is outside of the study area for this Project, and this species' habitat is not present in the study area, so there are no anticipated impacts to the southwestern willow flycatcher.

### **Least Bell's Vireo (*Vireo bellii pusillus*)**

The federally and state listed endangered least Bell's vireo is a small, gray songbird that was historically a common summer visitor to riparian habitat throughout much of California. Currently, this species is found in restricted areas of riparian woodlands in southern California, with the majority of breeding pairs found in San Diego, Santa Barbara, and Riverside counties. The vireo's decline is due to loss and degradation of riparian habitat combined with nest parasitism by the brown-headed cowbird (*Molothrus ater*). Suitable riparian habitat for this species is not present in the new Project areas for the injection well pads and pipelines, and no least Bell's vireo have been recorded historically in this area. There are no anticipated impacts to the least Bell's vireo.

### **California Black Rail (*Laterallus jamaicensis coturniculus*)**

The California black rail (*Laterallus jamaicensis coturniculus*) is a state-threatened species. The black rail is a marsh-dweller of uncertain status at the Salton Sea. It has suffered statewide population decline and in the interior is common only along the U.S. section of the lower Colorado River Valley (Garrett and Dunn, 1981). There are no recent records for Baja California. Occurrence is scattered in the Salton Basin, although some locations have numerous calling birds over periods of several weeks in spring, strongly suggesting nesting. Winter records are few, and detectability for this species is very low in the nonbreeding season.

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Nevertheless, migratory behavior has been suggested (Small, 1974). Black rails require dense vegetation cover at all times. They utilize *Salicornia* (pickleweed) marshes on the coast and *Scirpus* (bulrush) marshes along the Colorado River, but habitat associations in the Salton Basin have not been described. In surveys conducted by Courtney Conway (Conway et al., 2002) between 2000 and 2001, no black rails were detected within the Project area. Surveys by URS biologists in spring 2002 were also negative. The Amended Project will not adversely affect the California black rail. This species was not observed within the Project area in the updated surveys. The nearest known black rail sighting is in the vicinity of Seely, over twenty miles from the Project site (CEOE, 2002). Therefore, no adverse effects on California black rail are expected to result from Project construction or operation.

#### **4.5 California Species of Special Concern**

Other sensitive wildlife species that have potential or have been detected in the Project area are described below.

##### **Flat-tailed Horned Lizard (*Phrynosoma mcalli*)**

Although once proposed for listing under the federal Endangered Species Act, the proposal for listing for this species was withdrawn in 2006. This species is a California Species of Special Concern. It is an uncommon resident of fine, windblown (aeolian) sands of the low Colorado Desert in southern California and northeastern Baja California (Stebbins, 1985). Its diet consists exclusively of ants, and its coloration and scaling facilitate its existence in hot, dry environments. The primary threat to this species is habitat destruction due to development, off-road vehicle use, mining, and military activities. CNDDDB results indicate that the nearest recorded flat-tailed horned lizard is approximately 15 miles to the southwest of the plant site, and ten miles northeast of the proposed L-Line Interconnection terminus. Surveys of the new injection well pads and associated pipelines did not find any native vegetation areas. There is no native creosote bush scrub habitat and there are no appropriate sandy soils in the Project area; therefore, there are no anticipated impacts to the flat-tailed horned lizard.

##### **Western Burrowing Owl (*Athene cunicularia hypugaea*)**

The western burrowing owl is a California Species of Special Concern. The breeding range of the western subspecies of BUOW extends south from southern Canada into the western half of the United States and down into Baja California and central Mexico (Johnsgard, 1988). BUOW inhabit open areas such as grasslands, pastures, coastal dunes, desert scrub, and the edges of

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agriculture fields (Unitt, 1984). BUOW use rodent burrows or construct burrows in semi-compacted soil in the slopes of drainage channels next to agriculture fields throughout the year for shelter from weather and predators. The BUOW nesting distribution is strongly correlated to local burrow distribution. Nesting densities vary from eight pairs per square kilometer in optimal habitat to one pair per 58 square kilometers in poor quality habitat (Johnsgard, 1988). They form short-term pair bonds, with male territoriality peaking during pair formation and declining after eggs are laid. Not all BUOW capable of breeding do so every year. BUOW have declined through much of their range because of habitat loss due to urbanization, agricultural conversion, and destruction of ground-squirrel colonies. This species is common throughout the study area based on pre-2008 surveys.

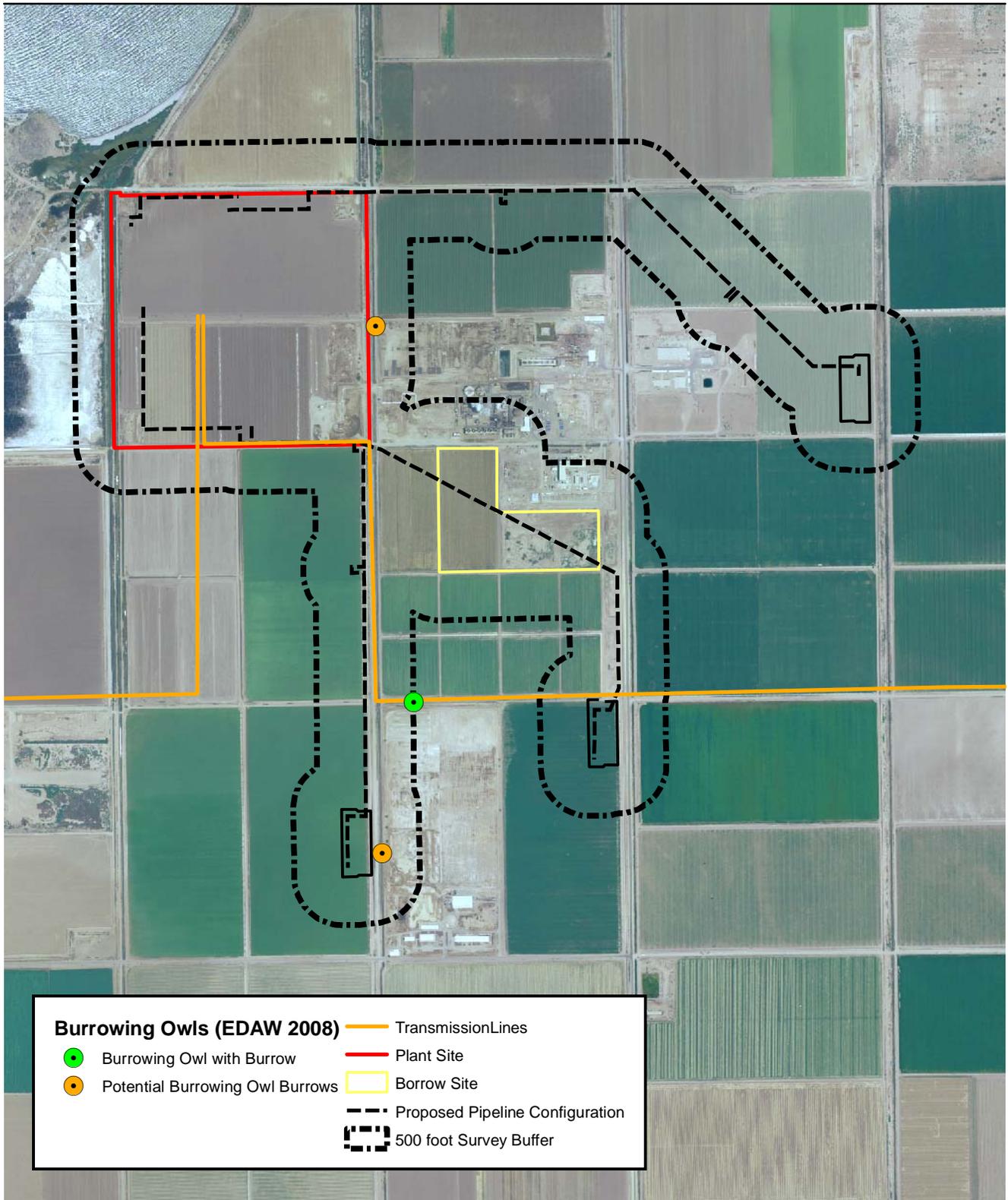
During the 2008 Phase I and Phase II BUOW surveys of the Amended Project site, one potential BUOW burrow was found within 500 feet of the plant site boundary (see Figure 4). In addition, one burrow was found with recent sign near injection well pad OB-1 and one BUOW was found within 500 feet of injection pipeline OB-1. The BUOW surveys conducted for the borrow site indicated that there are no BUOW occurrences within 500 feet of the borrow site. No BUOW or burrows were observed within the Amended Project footprint. The total size of the BUOW populations on the Amended Project site will be determined during focused breeding season (Phase III) surveys to be conducted in the spring of 2009.

#### **LeConte's Thrasher (*Toxostoma lecontei*)**

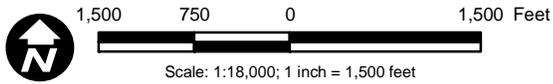
Le Conte's thrasher is recognized as a California Species of Special Concern. This species is an uncommon resident of desert scrub, desert wash and alkali desert scrub habitats from Inyo County to the Mexican border. The species is especially wary of humans and is susceptible to human disturbance (Remsen, 1978). Breeding season extends from late January to June. Its typical habitat consists of sparsely vegetated desert flats, dunes, alluvial fans, or gently rolling hills having a high proportion of one or more species of saltbush (*Atriplex* spp.) and/or cylindrical cholla cactus (*Opuntia* spp.). It also occupies other desert habitats with similar structural profiles but lacking saltbush/shadscale or cholla cactus. Le Conte's thrasher and thrashed habitat was not detected within the Project area so there are no anticipated impacts to this species.

#### **American White Pelican (*Pelecanus erythrorhynchos*)**

The American white pelican is a California Species of Special Concern. It is a northern breeder that utilizes southern California in the nonbreeding season. The Salton Sea supports the largest



Source: NAIP 2005; AECOM 2008



**Figure 4**  
**Burrowing Owl Sign and Observations**

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regional proportion of birds, which primarily stop over on spring and fall migration through the interior of California. American white pelicans require expanses of fairly shallow, calm water for foraging. These birds prefer fresh water, concentrating on various river mouths on the Salton Sea (Garrett and Dunn, 1981). American white pelicans are known to feed and roost in the Salton Sea around the mouth of the Alamo River. American white pelicans use the Salton Sea as a migratory stopover and wintering area. As a migratory stopover, individual pelicans appear to use the Salton Sea for a few weeks to a few months before continuing on their migration to Mexico. Some birds probably remain at the Salton Sea throughout the winter rather than continuing on to Mexico. Although the American white pelican has been recorded in the Project area, the implementation of proposed mitigation measures is expected to avoid significant impacts for the Project, including the new areas for injection well pads and pipelines.

### **Mountain Plover (*Charadrius montanus*)**

Although once proposed for listing under the federal Endangered Species Act, the proposal for listing for this species was withdrawn in 2003. The mountain plover is a California Species of Special Concern. This species is found in relatively specialized habitats, breeding only in arid shortgrass prairies and wintering in agricultural fields, and heavily grazed and recently burned rangelands. Female mountain plovers often desert their first egg clutch, leaving the male to care for it while the female starts a new clutch with a different male. This species forages within agricultural fields that have been recently cleared or burned, a condition that is highly variable across the Imperial Valley throughout the year. This species has also been occasionally observed in the Salton Sea area and is usually associated with the agricultural fields and farmland in the area. Declines in the mountain plover population have been attributed to the conversion of shortgrass prairie habitats to agricultural uses. The mountain plover has not been observed within the Project area, but 139 individuals of this species were observed by AMEC biologists in a freshly burned field near Walker Road and Hoskins Road, about one mile west of the L-Line Interconnection route, on February 6, 2002 as part of the biological studies for the original SSU6 project (CEC, 2003). This species was not detected in the study area for the injection wells and pipelines.

## **5.0 ENVIRONMENTAL IMPACTS**

This section discusses impacts on biological resources that are expected to result from the Amended Project. Relocation of Project components (e.g., well pads, pipeline routes) will avoid or substantially minimize adverse impacts. Potential impacts are described for construction and

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operation phases of the Project and by Project component. Significance criteria are defined in the general context of the California Environmental Quality Act of 1970. Potentially significant impacts to biological resources include, but are not limited to:

- Substantial adverse effects to wildlife species that are federally or State-listed or proposed to be listed; a substantial impact to wildlife species of special concern to CDFG, candidates for State listing, or animals fully protected in California;
- Substantial adverse effects to plant species considered by the CNPS to be rare, threatened, or endangered in California or with strict habitat requirements and narrow distributions
- Substantial adverse effects to a sensitive natural community (i.e., community that is especially diverse; regionally uncommon; or of special concern to local, State, and Federal agencies);
- Substantial adverse effects to habitats that serve as breeding, foraging, nesting, or migrating grounds and are limited in availability or that serve as core habitats for regional plant and wildlife populations; and
- Substantial adverse effect to important riparian habitats or wetlands or any other “waters of the U.S.” or State jurisdictional waters.

Direct impacts occur when biological resources are altered or destroyed during the course, or as a result, of Project implementation. Examples of such impacts include removing vegetation, filling wetland habitats, or severing or physically restricting the width of wildlife corridors. Other direct impacts may include loss of foraging or nesting habitat and loss of individual species as a result of habitat clearing. Indirect impacts may include elevated levels of noise or lighting, change in surface water hydrology within a floodplain and increased erosion or sedimentation. These types of indirect impacts can affect vegetation communities or their potential use by sensitive species. Permanent impacts may result in irreversible damage to biological resources. Temporary impacts are interim changes in the local environment that would not extend beyond Project-associated construction, including temporary disturbance to areas adjacent to native habitats that are then revegetated once construction is complete.

## **5.1 Construction**

Construction activities have the potential to result in temporary indirect impacts in a variety of ways. In general, Project construction activities would result in temporary reduction of wildlife use on adjacent lands as a result of human presence, construction dust, lighting, and noise. Wildlife use would be expected to return to pre-construction rates following the completion of construction activities.

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## **Vegetation Communities**

Project construction activities would not result in significant direct impacts to sensitive vegetation communities because no such communities occur within the Project site or along pipeline ROWs. Development of the Amended Project, including the injection well pads and pipelines, will result in the long-term loss of approximately 213.4 acres of land, of which 181.1 acres are agricultural lands, 14.1 acres are developed lands, 17.8 acres are roadways or agricultural ditches, and 1.2 acre is tamarisk scrub. The loss is not considered significant by itself or cumulatively with other projects because agricultural land, developed land, and roadways/agricultural ditches are not considered regionally important as habitat for wildlife.

## **Plant Species**

Construction of the Project would not result in significant direct impacts to special-status plant species because special status plants are not known to occur within the Project area.

## **Wildlife Species**

Construction activities have the potential to result in temporary indirect impacts in a variety of ways. In general, Amended Project construction activities would result in temporary reduction of wildlife use on adjacent lands as a result of human presence, construction dust, lighting, and noise. Wildlife use would be expected to return to pre-construction rates following the completion of construction activities.

Development of the site is expected to represent a minimal loss of raptor foraging habitat, and should not be limiting to raptor species in the area. As stated in the 2003 Staff Assessment for the original SSU6 project, construction at the plant site will not result in significant direct or indirect impacts to wildlife movement corridors because of the already highly fragmented habitat.

Project construction would generate average noise levels of approximately 85 dBA Leq at 50 feet from the construction activity; noise levels would attenuate to 60 dBA Leq at a distance of approximately 530 feet from the source. The USFWS considers 60 dBA Leq to be the threshold of significance for federally listed breeding birds. Construction activities in the power blocks of the three 53 MW units would occur at locations considerably greater than 530 feet from the boundary of the 160-acre site, and the noise generated from these locations would attenuate to below 60 dBA within the site boundary. However, Amended Project construction in the northwest corner of the plant site and pile driving for foundations of some Project equipment in

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the center of the site have the potential for indirect impacts to Yuma clapper rail. Potential noise impacts specific to Yuma clapper rail are described further in the following section.

### **Yuma Clapper Rail**

As indicated earlier, the freshwater wetland northwest of the plant site provides a potential nesting and foraging habitat for the Yuma clapper rail. The relocation of production facilities to within the plant site for the Amended Project will avoid direct impacts to this habitat. However, Yuma clapper rail may be impacted indirectly by Project construction noise occurring in the northwest corner of the plant site and by pile driving for the foundations of various Project heavy equipment items in the power block area in the center of the site. However, the Amended Project's larger site (160 acres compared to 80 acres for the original SSU6 project), has allowed the Amended Project power block facilities to be placed further from the northwestern areas of the plant site and thus further from the clapper rail habitat. Construction noise levels exceeding the USFWS threshold of 60 dBA are expected to extend into the potential clapper rail habitat next to the site

Construction activities in the northwestern area of the plant site will consist of site grading and construction of the flood control berm, storm water detention pond, an aerated brine injection well, and Production Well Pad OB-2. The potential impacts from these activities would be temporary and would occur over a relatively small area. All civil site work, including the construction of the stormwater detention pond and the berm around the entire perimeter, is expected to be completed in six months, and the detention pond and berm construction in the northwest corner will be a small portion of the total civil effort and duration. The berm will be constructed in the early stages of the Project. Once constructed, the flood control berm itself would provide some noise shielding for receptors within the immediate areas beyond the berm. This is particularly true for Yuma clapper rail, a bird species that builds its nests close to the ground.

Construction of the onsite well pads will occur over a ten-month period, only a portion of which will involve construction of Production Well Pad OB-2 and the aerated brine and plant injection wells. As noted earlier the USFWS uses 60 dBA Leq as a threshold of impacts for wildlife species. With the exception of pile driving activities, noise levels from plant site construction activities outside the northwestern portion of the site, including construction at the power blocks and production well pads OB-1 and OB-3, are expected to attenuate to less than 60 dBA Leq before reaching the plant site boundary. The Amended Project's potential noise impacts to Yuma clapper rail are expected to be less than those for the originally proposed SSU6 project, due to the relocation of production facilities to the plant site and the relocation of the plant

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equipment that require pile driving further from Yuma clapper rail habitat

With implementation of mitigation measures incorporated in the Conditions of Certification (see Section 6.0 below), potential noise impacts to Yuma clapper rail during construction would be reduced. These mitigation measures would create a noise abatement program for the construction of the Amended Project, particularly during construction activities involving heavy equipment in the northwest area of the plant site, which is the area closest to clapper rail habitat. The noise abatement program also will establish a noise monitoring program to ensure that the abatement program is properly implemented.

Consistent with the Conditions of Certification for SSU6, noise levels for site grading and clearing, pile driving, and steam blows would be reduced using measures that attenuate noise as much as practicable. For one-half hour before and one hour after sunrise and one hour before and one-half hour after sunset, overall plant site construction noise levels would not be allowed to exceed 60 dBA Leq hourly at occupied Yuma clapper rail habitat areas during the breeding season (February 15 to August 31). Site grading and pile driving vibration levels would not be allowed to exceed 72 VdB at the northern and western plant site boundaries during the Yuma clapper rail nesting season (June 1 to August 31).

There is no known Yuma clapper rail habitat within 1,000 feet of the three injection well pads, and Yuma clapper rails are not expected to be impacted by injection well pad construction noise. The construction of the proposed injection well pads and pipelines will not have any impacts to wetlands or other jurisdictional waters.

During plant commissioning, the plant piping would be cleaned by high-pressure steam (steam blows) during daytime hours over an approximately 72-hour period. Steam blows produce noise levels up to 118 dBA at a distance of 100 feet. A noise silencer can attenuate the steam blow by approximately 44 dB to about 74 dBA, which would attenuate with distance to the 60 dBA USFWS threshold at approximately 400 feet (within the plant site boundary). Therefore, Project steam blows would have no significant impacts on Yuma clapper rail or other special-status species.

### **Burrowing Owl**

The construction of the power plant is expected to have temporary impacts to one potential BUOW burrow within 500 feet of the plant site boundary (the BUOW survey protocol buffer zone) (see Figure 4). Owls potentially inhabiting this burrow would be impacted by the noise, dust, and other disturbances associated with the construction of the plant site. Indirect

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disturbance of adjacent BUOW populations due to construction is not considered permanent, as temporarily displaced owls would be expected to return upon completion of Project construction.

BUOW surveys conducted for the Amended Project indicated the presence of one burrow with recent sign near injection well pad OB-1 and one owl within 500 feet of injection pipeline OB-1. The BUOW surveys conducted for the borrow site indicated that there are no BUOW occurrences within 500 feet of the borrow site. Mitigation measures to reduce or eliminate impacts to BUOW are contained in the existing Conditions of Certification (COC) adopted by the CEC for the SSU6 project. These COCs, including recommended changes to make them appropriate for the Amended Project, are shown in Section 6.0

### **Mountain Plover**

Mountain plovers overwinter in agricultural fields, such as the alfalfa fields found in the Project area. This species prefer to forage in recently burned or heavily grazed agricultural fields and only roost in abandoned or fallowed agricultural fields. Since the parcels encompassing the plant site, the offsite well pads and pipelines, and the borrow area do not fall into any of those categories, the Amended Project will not result in loss of foraging habitat of this species. Project construction may result in some loss of roosting habitat. Because the Project area predominantly consists of agricultural lands including much of the immediate vicinity, there is ample roosting habitat for this species, and impacts to the mountain plover from Project construction would be considered to be less-than-significant.

### **California Brown Pelican**

In the Project area, the California brown pelicans are known to use the islands to the west of Obsidian Butte in the summer (approximately 0.7 miles form the proposed plant site). This nesting site is sufficient distance from the plant site such that the noise levels generated from the construction activities proposed within the northwestern corner of the plant site (e.g., production well OB-2) are not expected to negatively impact any pelicans loafing or nesting in this area. However, construction noise in the northwestern area of the plant site might temporarily displace feeding or loafing pelicans along the Salton Sea shoreline and open water area just northwest of the plant site. Because the Amended Project facilities have been moved further away from the Salton Sea islands used by this species, the impacts of the Amended Project on the California Brown Pelican would be reduced compared to the original SSU6 project.

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## **Jurisdictional Waters**

As part of the original SSU6 project, the Applicant submitted an application for a Section 404 permit for potential impacts to wetlands along McKendry Road. These impacts have been eliminated because of the Amended Project's relocation of all production wells to the plant site. Construction of the other Amended Project facilities (injection well pads and pipelines and borrow site) will have no wetlands impacts. However, there are approximately 0.08 acres of ephemeral drainages on BLM land along the transmission line route that are considered Federal jurisdictional waters. While transmission line impacts are not covered in this Amendment Petition because they have not changed from original SSU6 project, a 404 permit from the USACE will be required for potential impacts to these drainages.

## **5.2 Operation**

Following initial construction activities, Amended Project operation would also generate varying levels of dust, lighting and noise disturbance adjacent to the plant site and offsite well pads and, on limited occasion, in proximity to injection well pipelines. The level of disturbance from noise, lighting, etc., often associated with maintenance activities, would be both of smaller magnitude and of shorter duration than those associated with construction. A small, less-than-significant increase in the sorts of disturbance would also be anticipated for day-to-day general Project operations at the plant site.

## **Vegetation Communities**

Operation of the Amended Project would not result in significant direct impacts to sensitive vegetation communities because no sensitive vegetation communities occur on the site or within the surrounding survey buffer area. Operation potentially could result in indirect impacts to vegetation communities through unauthorized access by workers. Unauthorized access by workers and their vehicles can trample and destroy vegetation outside of, but immediately adjacent to, the proposed Project area. These impacts will be avoided, however, through implementation of Project mitigation measures (e.g., worker awareness training).

## **Plant Species**

Operation of the Project would not result in significant direct impacts to special-status plant species because special-status plants are not known to occur within the Project area.

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## **Wildlife Species**

Direct impacts could result from mortality of wildlife by crushing or vehicle collisions during operation and maintenance activities. Implementation of measures included in the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) that will be prepared would reduce the Project's impacts on listed and special-status wildlife species to a level of insignificance.

For protected wildlife species, indirect impacts are possible due to the noise associated with the operations of the proposed Project. Acoustical calculations were performed to estimate the location of the 60 dBA Leq noise contour from operation of the plant. For plant operation, the 60 dBA Leq contour is located within the plant site. As the plant facilities are located in the center of the plant site (approximately 750 feet away from clapper rail habitat), operation sound levels of the plant would be less than the 60 dBA Leq threshold in the Yuma clapper rail habitat located to the northwest of the plant site (Figure 2). For the injection wells, the 60 dBA Leq contour is approximately 30 feet from the noise source and will remain within the boundaries of the well pad. Therefore, no significant noise impacts to the Yuma clapper rail or other sensitive bird species would occur as a result of operation of the Amended Project.

## **Jurisdictional Waters**

Operation of the Amended Project plant site and offsite well field would not result in significant direct or indirect impacts to Federal or state Jurisdictional Waters. No jurisdictional waters exist within the footprints of these facilities.

### **5.3 Cumulative Impacts**

With mitigation, the Amended SSU6 project itself will not have significant adverse effect on biological resources. The cumulative impacts to specific environmental resources resulting from the Project considered together with other projects in the area also would be less than significant. Other projects would be required individually to comply with applicable biological resource-related LORS, undergo a CEQA environmental review process, and implement mitigation for their identified impacts. Regional mitigation issues would be addressed and coordinated on a regional basis by local agencies such as Imperial County, the Salton Sea Authority and IID, as well as other interested stakeholders.

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## 6.0 MITIGATION MEASURES AND CONDITIONS OF CERTIFICATION

Biological resources mitigation measures are embodied in the CEC's Conditions of Certification (COC) for the original project. The COCs presented in the Commission Decision for the original SSSU6 project are presented below. Proposed changes to the COCs to make them applicable to the Amended Project are shown in ~~striketrough~~ (deletions) and *italics* (additional or modified language). The modifications indicate in italics where COCs (or parts of COCs) apply to transmission lines, as these portions of the COCs do not apply to this Amendment Petition. BIO-24 has been deleted because the wetlands impacts that led to the requirement for wetlands mitigation will not occur with the Amended Project. However, the Applicant plans to undertake a wetlands creation program on a voluntary basis.

### **Designated Biologist and Biological Monitor(s) Selection**

**BIO-1** The project owner shall submit the resume(s), including contact information, of the proposed Designated Biologist and any Biological Monitor(s) to the Compliance Project Manager (CPM) for approval.

**Verification:** The project owner shall submit the resume and contact information for the Designated Biologist and Biological Monitor(s) to the CPM at least 60 days prior to the start of any site (or related facilities) mobilization. The Designated Biologist must have a thorough understanding of the Conditions of Certification, the federal and state permits, and the monitoring procedures established in the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). Site and related facility activities shall not commence until an approved Designated Biologist is available to be on site and to train all Biological Monitors. Biological Monitor(s) training shall include familiarity with the Conditions of Certification, the federal and state permits, and the monitoring procedures established in the BRMIMP.

The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's Degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; and
3. At least one year of field experience with biological resources found in or near the project area.

The Biological Monitor(s) shall have a background in biology and be approved by the CPM.

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If a Designated Biologist needs to be replaced, the specified information of the proposed replacement must be submitted to the CPM at least ten working days prior to the termination or release of the preceding Designated Biologist. In an emergency, the project owner shall immediately notify the CPM and submit the qualifications of a short-term replacement. The CPM shall approve the short-term replacement within one business day. The short-term replacement shall have all the duties and rights of a Designated Biologist while a permanent Designated Biologist is proposed to the CPM for consideration.

### **Designated Biologist and Biological Monitor(s) Duties**

**BIO-2** The project owner shall ensure that the Designated Biologist and Biological Monitor(s) shall perform the following during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, and closure activities:

1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources Conditions of Certification;
2. Be available to supervise or conduct mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as wetlands and special status species or their habitat;
3. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
4. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (parking lots) for animals in harms way;
5. Notify the project owner and the CPM of any non-compliance with any biological resources Condition of Certification; and
6. Respond directly to inquiries of the CPM regarding biological resource issues.

**Verification:** The project owner shall ensure that the Designated Biologist and Biological Monitor(s) maintain written records of the tasks described above, and summaries of these records shall be submitted in the Monthly Compliance Reports (MCR).

During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report.

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### **Designated Biologist and Biological Monitor(s) Authority**

**BIO-3** The project owner's Construction/Operation Manager shall act on the advice of the Designated Biologist or Biological Monitor(s) to ensure conformance with the biological resources Conditions of Certification.

If required by the Designated Biologist or Biological Monitor(s), the project owner's Construction/ Operation Manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist as sensitive or which may affect a sensitive area or species.

The Designated Biologist and Biological Monitor(s) shall:

1. Require a halt to all activities in any area when it is determined that there would be an adverse impact to sensitive species if the activities continued;
2. Inform the project owner and the Construction/Operation Manager when to resume activities; and
3. Notify the CPM if there is a halt of any activities, and advise the CPM of any corrective actions that have been taken, or will be instituted, as a result of the halt.

**Verification:** The project owner shall ensure that the Designated Biologist notifies the CPM immediately (and no later than the following morning of the incident, or Monday morning in the case of a weekend) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem.

Whenever corrective action is taken by the project owner, a determination of success or failure will be made by the CPM within five working days after receipt of notice that corrective action is completed, or the project owner will be notified by the CPM that coordination with other agencies will require additional time before a determination can be made.

### **Worker Environmental Awareness Program**

**BIO-4** The project owner shall develop and implement a CPM-approved Worker Environmental Awareness Program (WEAP) in which each of its employees, as well as employees of contractors and subcontractors who work on the project site or any related facilities during site mobilization, ground disturbance, grading, construction, operation and closure are

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informed about sensitive biological resources associated with the project.

The WEAP must:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material is made available to all participants;
2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas. Personnel shall be advised that handling of flat-tailed horned lizards by anyone is prohibited by State law without a permit;
3. Present the reasons for protecting these resources;
4. Present the meaning of various temporary and permanent habitat protection measures;
5. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
6. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.

The specific program can be administered by video by a competent individual(s) acceptable to the Designated Biologist.

**Verification:** At least 60 days prior to the start of any site (or related facilities) mobilization, the project owner shall provide to the CPM two copies of the WEAP and all supporting written materials prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program.

The project owner shall provide in the MCR the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date.

The signed training acknowledgement forms from construction shall be kept on file by the project owner for a period of at least six months after the start of commercial operation.

During project operation, signed statements for active project operational personnel shall be kept on file for six months following the termination of an individual's employment.

### **Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP)**

**BIO-5** The project owner shall submit two copies of the proposed Biological Resources

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Mitigation Implementation and Monitoring Plan (BRMIMP) to the CPM for review and approval, and to California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS) for review and comment, and shall implement the measures identified in the approved BRMIMP.

The final BRMIMP shall identify;

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
2. All biological resources Conditions of Certification identified in the Commission's Final Decision;
3. All biological resource mitigation, monitoring and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion and Bureau of Land Management (BLM) Right-of-Way permit. (*Note: USFWS Biological Opinion and BLM ROW permit apply to transmission lines; do not apply to Amendment Petition*);
4. All biological resources mitigation, monitoring and compliance measures required in other state agency terms and conditions, such as those provided in the CDFG Incidental Take Permit and Streambed Alteration Agreement (*Note: per new procedures; Incidental Take Permits and Streambed Alteration Agreements will be handled as part of the CEC process without a separate permit from CDFG*) and Regional Water Quality Control Board permits;
5. All biological resources mitigation, monitoring and compliance measures required in local agency permits, such as site grading and landscaping requirements;
6. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation and closure;
7. All required mitigation measures for each sensitive biological resource;
8. Required habitat compensation strategy, including provisions for acquisition, enhancement, and management for any temporary and permanent loss of sensitive biological resources;
9. A detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
10. All locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;
11. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities - one set prior to any site or related facilities mobilization disturbance and one set subsequent to completion of project construction. Include planned timing of aerial photography and a description of why times were chosen;

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12. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
  13. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
  14. All performance standards and remedial measures to be implemented if performance standards are not met;
  15. A discussion of biological resources related facility closure measures;
  16. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval; and
  17. A copy of all biological resources permits obtained.

**Verification:** The project owner shall provide the specified document at least 60 days prior to start of any site (or related facilities) mobilization. The CPM, in consultation with the CDFG, the USFWS and any other appropriate agencies, will determine the BRMIMP's acceptability within 45 days of receipt. The project owner shall notify the CPM no less than five working days before implementing any modifications to the approved BRMIMP to obtain CPM approval.

Any changes to the approved BRMIMP must also be approved by the CPM in consultation with CDFG, the USFWS and appropriate agencies to ensure no conflicts exist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases, and which mitigation and monitoring items are still outstanding.

### **Closure Plan Measures**

**BIO-6** Deleted. Refer to General Conditions of Compliance for closure.

### **Incidental Take Permit**

**BIO-7** The project owner shall acquire an Incidental Take Permit from the California Department of Fish and Game (CDFG) (per Section 2081(b) of the Fish and Game Code; California Endangered Species Act) if required and incorporate the terms and conditions into the project's BRMIMP.

**Verification:** At least 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall submit to the CPM a copy of the CDFG Incidental Take Permit

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(if required). *(Note: (Note: Condition applies to transmission lines; does not apply to Amendment Petition also note that per new procedure, CDFG will not issue separate Incidental Take Permits).*

### **Streambed Alteration Agreement**

**BIO-8** The project owner shall acquire a Streambed Alteration Agreement from the CDFG (per Section 1600 of the Fish and Game Code) if required, and incorporate the biological resource related terms and conditions into the project's BRMIMP.

**Verification:** At least 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall submit to the CPM a copy of the CDFG Streambed Alteration Agreement (if required). *(Note Condition applies to transmission lines; does not apply to Amendment Petition.)*

### **Regional Water Quality Control Board Certification**

**BIO-9** The project owner shall acquire the Regional Water Quality Control Board Section 401 state Clean Water Act certification or a waiver if required, and incorporate the biological resource related terms and conditions into the project's BRMIMP.

**Verification:** At least 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall provide the CPM with a copy of the Regional Water Quality Control Board's certification or waiver. *(Note: Condition applies to transmission lines; does not apply to Amendment Petition.)*

### **Federal Biological Opinion**

**BIO-10** The project owner shall provide a copy of the Biological Opinion per Section 7 of the federal Endangered Species Act obtained from the U.S. Fish and Wildlife Service. The terms and conditions contained in the Biological Opinion shall be incorporated into the project's BRMIMP.

**Verification:** At least 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall submit to the CPM a copy of the U. S. Fish and Wildlife Service's Biological Opinion. *(Note: Condition applies to transmission lines; does not apply to Amendment Petition.)*

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## **U. S. Army Corps of Engineers Section 404 Permit**

**BIO-11** The project owner shall provide evidence of compliance with the U.S. Army Corps of Engineers Section 404 program of the federal Clean Water Act. The biological resources related terms and conditions contained in the permit shall be incorporated into the project's BRMIMP.

**Verification:** At least 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall submit to the CPM evidence of compliance with the U.S. Army Corps of Engineers Section 404 program of the federal Clean Water Act. (*Note: Condition applies to transmission lines; does not apply to Amendment Petition.*)

## **Preventative Design Mitigation Features**

**BIO-12** The project owner shall modify the project design to incorporate all feasible measures that avoid or minimize impacts to the local biological resources such as the following.

1. Design, install, and maintain transmission line poles, access roads, pulling sites, and storage and parking areas to avoid identified sensitive resources and preferentially use previous pull sites or already disturbed locations. (*Note: Condition applies to transmission lines; does not apply to Amendment Petition*)
2. Avoid wetland loss to the extent possible when placing facility features.
3. Design, install, and maintain facilities to prevent brine spills from endangering adjacent properties and waterways that contain sensitive habitat.
4. Schedule disposal of brine within brine ponds ~~as expeditiously as possible~~ on a regular basis.
5. Design, install, and maintain facility lighting to prevent side casting of light towards wildlife habitat.
6. Insulate production and injection well pipelines and flanges, except during maintenance, NDE testing, and repair activities.
7. Prescribe a road sealant that is non-toxic to wildlife and plants and use only fresh water when adjacent to wetlands, rivers, or drainage canals.
8. Equip steam blow piping with a temporary silencer that quiets the noise of steam blows to no greater than 74 dBA measured at a distance of 100 feet. Orient the silencer to maximize the noise reduction achieved in occupied Yuma clapper rail habitat to the north and northwest of the project site (i.e., Union Pond, McKendry Pond and Obsidian Butte).
9. Shield pile driving equipment to maximize noise reduction in the occupied Yuma clapper rail habitat to the north and northwest of the project site (i.e., Union Pond, McKendry Pond and Obsidian Butte).

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10. Design, install, and maintain transmission lines and all electrical components to reduce the likelihood of electrocutions of large birds by following the Avian Power Line Interaction Committee (APLIC)'s Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996. (*Note: Condition applies to transmission lines; does not apply to Amendment Petition.*)
  11. Route the reject reverse osmosis water to the service water pond in lieu of the brine ponds.
  12. All mitigation measures and their implementation methods shall be included in the BRMIMP.

**Verification:** All mitigation measures and their implementation methods shall be included in the BRMIMP.

### **Construction Mitigation Management to Avoid Harassment or Harm**

**BIO-13** The project owner shall manage their construction site, and related facilities, in a manner to avoid or minimizes impacts to the local biological resources.

Typical measures are:

1. Install a temporarily fence and provide wildlife escape ramps for construction areas that contain steep walled holes or trenches if outside of an approved, permanent exclusionary fence. The temporary fence shall be constructed of materials that are approved by USFWS and CDFG. The ramps shall be located at not greater than 1,000-foot intervals and shall be sloped less than 45 degrees. All animals discovered in trenches shall be allowed to escape voluntarily (by escape ramps or temporary structures), without harassment, before construction activities resume, or be removed from the trench or hole by a qualified biologist and allowed to escape unimpeded;
2. Make certain all food-related trash is disposed of in closed containers and removed at least once a week.
3. Prohibit feeding of wildlife by staff or contractors;
4. Prohibit non-security related firearms or weapons from being brought to the site;
5. Prohibit pets from being brought to the site;
6. Minimize use of rodenticides and herbicides in the project area;
7. Advise all employees, contractors, and visitors of the need to adhere to speed limits and to avoid any animals, including burrowing owls, which may be encountered on or crossing the roads to and from the project site. The maximum speed on unpaved roads or on paved roads within 300 feet of occupied sensitive species habitat (such as on McKendry Road west of

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Boyle road and Lack Road between Kuns and Lindsey Roads) shall be restricted to 15 miles per hour or lower during construction.

8. Inspect all construction pipes, culverts, or similar structures with a diameter of four inches or greater for sensitive species (such as burrowing owls) prior to movement of pipe or pipe burial. Cap all pipes with a diameter of four inches or greater if they are to be left in trenches overnight or in storage areas outside of the construction laydown area.
9. For the section of pipeline between production well OB3 and the power plant site, empty the concrete-lined pipe at the power plant site. For all remaining sections, empty concrete lined pipe into designed evaporation and percolation ponds;
10. Report all inadvertent deaths of sensitive species to the appropriate project representative. Injured animals shall be reported to USFWS and CDFG and the project owner shall follow instructions that are provided by USFWS and CDFG. All incidences of wildlife injury or mortality resulting from project-related vehicle traffic on roads used to access the project shall be reported in the MCR.
11. Implement standard mitigation measures for the flat-tailed horned lizard detailed in the Flat-tailed Horned Lizard Rangelwide Management Strategy-Appendix 3 for work in flat-tailed horned lizard habitat. (*Note: Condition applies to transmission lines; does not apply to Amendment Petition.*)
12. Confine construction activities to the plant, well pad, or pipeline side of any existing or constructed barriers (such as roads or levees) to reduce the potential disruption associated with human presence within occupied sensitive species habitat.
13. Transmission line construction within 1 mile of Lack and Lindsey Roads shall not be conducted at night or when wind speeds exceed 15 miles per hour. (*Note: Condition applies to transmission lines; does not apply to Amendment Petition.*)

**Verification:** All mitigation measures and their implementation methods shall be included in the BRMIMP.

### **Pre-Construction Monitoring to Avoid Harassment or Harm**

**BIO-14** The project owner shall provide a baseline survey proposal in the BRMIMP. The CPM, in consultation with the CDFG, Refuge, the USFWS and any other appropriate agencies, will determine the acceptability of the baseline survey protocol(s), the survey area(s) and the Designated Biologist's prescription(s) for potential impacts.

Prior to mobilization, the project owner shall conduct baseline surveys for special status species *with the potential to occur at the Project area* at a level that establishes the occurrence and abundance of species. In addition, mapping of suitable habitat types will be completed for any

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special status species that potentially occur, but are not present at the time of the baseline survey. Mapping of suitable habitat types will also be completed for any species that can not be surveyed for because of protocol restrictions. The baseline surveys shall cover appropriate habitats within one-mile of the plant site and within 1,000 feet of all linear facilities, unless other areas are deemed more appropriate. Protocol level surveys for Yuma clapper rails shall be conducted by qualified individuals at Union Pond, McKendry Pond, and the adjacent parts of the Vail 5 drain prior to the start of any construction within 0.5 mile of these sites.

The Designated Biologist shall make recommendations to the project owner to avoid or minimize impacts to the special status species based on completed baseline surveys and any protocol level surveys.

**Verification:** The baseline survey proposal shall include a list of target species and the survey techniques to be used. The list of target species must, at a minimum, include California brown pelicans, mountain plover, burrowing owl, Yuma clapper rail, California black rail, and flat-tailed horned lizard (*Note: Flat-tailed horned lizard survey applies to transmission lines; does not apply to Amendment Petition*). In addition, a proposal for mapping suitable habitats shall, at a minimum, include Yuma clapper rail and mountain plover habitat. The baseline survey proposal shall establish indices (e.g., propensity for flight) for comparison with other monitoring efforts. The baseline survey proposal shall include the survey locations and their distance from the site or linear facilities. The baseline survey proposal shall identify actions that can be taken to avoid or minimize impacts to the special status species (such as restricting construction to certain months or marking sensitive areas).

The project owner shall provide copies of agency-approved survey protocols in the BRMIMP. At a minimum, the project owner shall include a copy of the agency-approved survey protocol for California black rail and Yuma clapper rail in the event that the baseline surveys show these species are mating or nesting within 1,000 feet of the proposed project. The BRMIMP shall identify at least two southern California or western Arizona biologists that hold a USFWS permit for surveying these species and include their contact information.

Results of the baseline surveys must be submitted to the CPM, USFWS, CDFG and Refuge no later than thirty (30) days prior to the start of mobilization. The protocol survey results shall be submitted to the CPM, USFWS, CDFG and Refuge no more than ten (10) days after completion and at least twenty (20) days prior to mobilization.

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### **Construction Monitoring to Avoid Harassment or Harm**

**BIO-15** The project owner shall perform monitoring throughout construction to ensure construction-related impacts remain at or below levels of significance set forth in the BRMIMP. The monitoring results shall be compared to the pre-construction baseline surveys' indices and to other local population values.

The project owner shall provide a monitoring proposal and indices for comparison to pre-construction baseline survey work within the BRMIMP. Monitoring must include any sensitive species located during the pre-construction baseline survey and any areas identified as suitable habitat. Protocol level surveys shall be completed for appropriate habitats within 1,000 feet of the plant site and within 1,000 feet of all linear facilities or within specified areas in the Salton Sea Basin during each year that construction is occurring and for the year following construction. The CPM, in consultation with the CDFG, Refuge, the USFWS and any other appropriate agencies, will determine the acceptability of the monitoring protocol(s) and survey area(s).

**Verification:** The project owner shall provide the results of the construction monitoring in the MCR or annual compliance reports, as appropriate. Protocol survey results shall be compiled into a separate report and submitted within four (4) weeks of completion. The construction monitoring results shall be compared by the designated biologist in the MCR to preconstruction indices established in the BRMIMP (e.g., increased number of flights) and to other local population values collected by the project owner or other entities.

### **Noise and Vibration Management to Avoid Harassment or Harm**

**BIO-16** The project owner shall prepare a detailed Noise and Vibration Assessment and Abatement Plan based on the final design of the facility to determine the most practicable measures to reduce/mitigate construction noise and vibration impacts. At a minimum, the Noise and Vibration Assessment and Abatement Plan shall address measures to:

1. Reduce site grading and clearing, pile-driving and steam-blow noise levels using measures that have the maximum sound attenuation effect practicable (e.g., beyond 78 dBA Leq5) at the occupied habitat areas during the Yuma clapper rail mating and nesting season (February 15 to August 31);
2. Ensure overall noise levels at the power plant site during the mating season of Yuma clapper rails (February 15 to August 31), will not exceed the threshold of 60 dBA Leq hourly at occupied habitat areas for one-half hour before and one hour after sunrise and one hour before and one-half hour after sunset; and

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3. Ensure site grading and clearing and pile-driving vibrations levels are equal or less than 72 VdB at the northern and western boundaries of the power plant site during the Yuma clapper rail nesting season (June 1 to August 31). The project owner will conduct noise monitoring at the edge of project boundaries facing occupied listed species breeding habitat to verify compliance with any applicable noise restrictions. Other noise and vibration avoidance measures can be considered for approval by the CPM in consultation with involved agencies and may include measures such as sound wall installation and the use of smaller construction equipment in the northwest corner of the Project. Use of this type of equipment will keep the noise levels under 60 dBA.

**Verification:** The project owner shall submit two copies of the Noise and Vibration Assessment and Abatement Plan to the CPM for review and approval and one copy to the CDFG, Refuge, and USFWS for review and comment 60 days prior to start of any site (or related facilities) mobilization. The Noise and Vibration Assessment and Abatement Plan shall identify all noise and vibration sources by construction phase, the location of all biologically related sensitive receptors, and the noise and vibration levels expected after the implementation of mitigation. The CPM, in consultation with the CDFG, Refuge, USFWS and any other appropriate agencies, will determine the Noise and Vibration Assessment and Abatement Plan's acceptability within 45 days of receipt.

The project owner shall, at a minimum, appoint a person(s) to collect weekly noise measurements at locations to be determined in consultation with the CPM ~~original Noise Measurement Locations ML2, ML3 and ML4 for a 1-hour period.~~

- If noise measurement is outside of Yuma clapper rail mating and nesting season (September 1 to February 14) and exceeds 60 dBA Leq at the edge or within occupied habitat, it shall be highlighted in the data table for the MCR and the reasons for the noise level (if known) described.
- If a noise measurement is within Yuma clapper rail mating and nesting season (February 15 to August 31) and exceeds 60 dBA Leq hourly at the edge or within occupied habitat, then pieces of construction equipment shall be stopped, moved, or quieted such that resultant noise levels are less than 60 dBA. Construction work need only be stopped or quieted for one-half hour before and 1 hour after sunrise and 1 hour before and one-half hour after sunset. If 24-hour construction is required, every person on the agency call list shall be notified as to the expected noise level, the equipment in use, and the remedial actions that are recommended (if any). The remedial action(s) should be implemented

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after approval by agency staff and may include the use of noise walls around the potential clapper rail habitat.

The noise measurements and any remedial actions taken shall be described in the MCR.

### **Overhead Transmission Line Monitoring to Avoid Harassment or Harm**

**BIO-17** The project owner shall install an agency-approved marker on the grounding wire of the proposed transmission lines. These markers shall be placed and maintained on the highest-bird-use portions of the proposed transmission lines (initially Mileposts M10 to L13). Monitoring of the entire 31 miles of proposed transmission line, and sections of unmarked but comparable transmission line in the study area, shall be implemented for the first two years of operation, and may continue for up to ten years (to determine effectiveness of remedies) if impacts are found to be excessive by a working group of interested agency personnel. Remedial actions to address collision deaths shall be included in a Bird Collision Deterrent Proposal and Monitoring Plan. The project owner must implement the CPM-approved remedial actions where ever high bird use and evidence of bird collisions are found during post-construction monitoring, and measure the effectiveness of the remedial measure for reducing impacts for at least one year following their implementation.

**Verification:** The project owner shall submit two copies of a Bird Collision Deterrent Proposal and Monitoring Plan (BCDM Plan) to the CPM for review and approval and one copy to the CDFG, Refuge, and USFWS for review and comment 60 days prior to start of transmission line mobilization. The BCDM Plan shall identify all Species of Concern, the threshold used for determining impacts, the proposed type and spacing of markers, the post-construction monitoring plan, and remedial actions. The first monitoring report shall be due to the CPM, Refuge, CDFG and USFWS three months after completion of the transmission line construction, and the second monitoring report shall be due to the same parties at six months. A two-year summary report which summarizes all actions taken, compiles all the monitoring data, and includes an evaluation of effectiveness of the markers is due two years after the completion of the transmission line construction. A working group of interested agency personnel shall meet after submittal of the second monitoring report to determine if remedial actions need to be implemented and the timeline for their completion. The project owner must implement the CPM-approved remedial actions following the timelines set by the working group of interested agencies. The BCDM shall include remedial actions such as marking of unmarked transmission line segments that show high bird use and collisions during the post construction monitoring, decreasing the spacing of markers on marked lines, and alternative transmission line routes. Maintenance and replacement of markers for the life of the transmission line will be required for all areas

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determined in the two-year summary report to have high bird use and evidence of bird collisions. The CPM, in consultation with the CDFG, the Refuge, the USFWS and any other appropriate agencies, will determine the BCDM Plan's acceptability within 30 days of receipt.

*(Note: Condition applies to transmission lines; does not apply to Amendment Petition.)*

### **Re-vegetation for Construction Impacts**

**BIO-18** The project owner shall contour all temporary disturbance areas and allow them to re-vegetate with pre-disturbance species. Invasive exotic species (as defined by the U.S. Department of Agriculture) shall be precluded from establishing themselves in the temporary disturbance areas through implementation of a three-year post-construction weed removal program. Every three years for a period of nine years following construction, the project owner shall evaluate the need for control of exotic species in areas disturbed by construction of the power plant and its associated facilities.

**Verification:** The project owner shall provide a brief report of temporary disturbance conditions at the end of the project construction in the BRMIMP Closure Report. Annual reporting of weed abatement shall be provided to the CPM in the annual reporting for nine years post-construction, or until such time as the CPM determines it is no longer needed.

### **Survey and Provide Habitat Compensation for Burrowing Owls**

**BIO-19** The project owner shall survey for burrowing owl activities on the 160-acre parcel and along the transmission lines (*Note: transmission lines not covered in Amendment petition*) prior to site mobilization to assess owl presence. The project owner shall evaluate the potential impact to each burrowing owl occurrence using impact criteria reviewed by the CDFG and USFWS and approved by the CPM. The impact criteria will be based on type of activity, length of activity, distance maintained from the burrowing owl(s), and time of year. For impact determinations which require monitoring of burrowing owls, a credentialed biologist approved by the CPM must do the monitoring.

The project owner shall protect at least 6.5 acres of suitable land for each impacted pair of owls or impacted unpaired resident bird (as determined by the CPM-approved impact criteria). For each occupied burrowing owl burrow that must be destroyed, existing unsuitable burrows on the protected lands shall be enhanced (e.g., cleared of debris or enlarged) or new burrows installed at a ratio of ~~2:1~~ that will ensure the successful relocation of impacted BUOW. If habitat is made unsuitable (e.g., the evicted owls leave the area), 6.5 acres of habitat per pair would be provided.

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For example, if pre-construction surveys find 17 occupied owl burrows within the project's footprint, and monitoring determined 17 burrowing owl pairs left the area, the project owner must create 34 new or improve 34 existing burrows and provide 110.5 acres of protected land. The actual requirement will be determined after the CPM reviews the burrowing owl pre-construction surveys and monitoring. Avoidance is preferred over mitigation of impacts.

**Verification:** At least 60 days prior to site mobilization, the project owner shall provide to the CPM for review and approval, and to the USFWS and CDFG for review and comment, the impact criteria that will be used to evaluate construction, maintenance, and operational impacts to burrowing owls. The project owner must submit to the CPM for approval the resume of any biologist (s) that will perform the burrowing owl monitoring at least one week prior to their assignment to start monitoring. If burrowing owl monitoring is needed, then a summary report completed by the Designated Biologist and all original data sheets shall be included in the MCR. At least 15 days prior to site mobilization, the project owner shall provide the CPM, USFWS, Refuge, and CDFG with the burrowing owl survey results. Burrowing owl surveys are valid only for 30 days.

Based on the number of burrowing owls identified as potentially impacted, the project owner shall identify the amount of land it intends to protect 15 days prior to construction. The project owner shall fund the acquisition and long-term management of the compensation lands in a form acceptable to the CEC and CDFG (e.g., provide a letter of credit or establish an escrow account) 15 days prior to construction. The project owner shall propose land for purchase or protection with a description of habitat types and propose a management and monitoring plan 90 days prior to commercial operation. The land protection proposal and management fund(s) shall be approved by the CPM and reviewed by CDFG.

The project owner shall rectify any under-funded amounts in the acquisition and long-term management account(s) at least 60 days prior to commercial operation. At least 30 days prior the start of commercial operation, the project owner shall submit to the CPM two copies of the relevant legal paperwork that protects lands in perpetuity (e.g., a conservation easement as filed with the Imperial County Recorder), a final land management and monitoring plan, and documents which discuss the types of habitat protected on the parcel. If a private mitigation bank is used, the project owner shall provide a letter to the CPM from the approved land management organization stating the amount of funds received, the amount of acres purchased and their location, and the amount of funds dedicated to long term monitoring or management at least 60 days prior to commercial operation. If fund remain after performance of all habitat compensation obligations, the monies in the letter of credit or escrow account will be returned to the project owner with written approval of the CPM.

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All mitigation measures and their implementation methods shall be included in the BRMIMP.

### **Emergency Management to Avoid Harassment or Harm**

**BIO-20** The project owner shall prepare and submit an agency notification list for emergency events which involve the rupture or spill of brine fluids at the facility. The project owner shall obtain and then follow the recommendations resulting from the agency notification for avoiding harassment or harm to biological resources.

**Verification:** The project owner shall provide the agency notification list to the CPM for approval at least 60 days prior to start of commercial operation. The agency notification list shall be incorporated into the BRMIMP. The project owner shall report in the annual compliance report any agency notifications and whether the agency recommendations were followed.

### **County Permit for Wellheads, Pads and Brine Pipelines**

**BIO-21** The project owner shall submit a copy of the Imperial County permit for the wellheads, pads and brine pipelines. The biological resource related terms and conditions contained in the permit shall be incorporated in the project's BRMIMP.

**Verification:** At least 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall submit to the CPM a copy of the Imperial County permit and any related documents which discuss biological resources.

### **Compensation for Impacts to Flat-tailed Horned Lizard Habitat**

**BIO-22** The project owner shall provide funding to the Bureau of Land Management (BLM) for impacts to flat-tailed horned lizard as prescribed by the *Flat-tailed Horned Lizard Rangeland Management Strategy - Appendix 4 Compensation Formula*. (Note: Condition applies to transmission lines; does not apply to Amendment Petition.)

### **Landscaping Plan**

**BIO-23** The project owner shall develop and submit a Landscaping Plan for the project.

**Verification:** At least 90 days prior to the installing the landscaping, the project owner shall submit a copy of the landscape plan to the CPM for review and approval and to the CDFG, Refuge, and USFWS for review and comment. The landscaping plan shall clearly identify all

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plant species (and their variety) to be installed and the anticipated irrigation schedule. Preference shall be given to native plants.

### **Conservation Easement for Wetland**

~~**BIO-24** The project owner shall submit copies of the fee title and/or conservation easement relating to the restoration and creation of wetland habitat prior to the start of the first Yuma clapper rail breeding season that follows the initiation of fill operations along McKendry Road. The project owner shall provide an endowment to fund management of the land to achieve the targeted functions and values described in the U.S. Army Corps of Engineers permit.~~

~~**Verification:** Within 30 days before the start of commercial operation, the project owner shall submit to the CPM two copies of the conservation easement, as recorded with the Imperial County Recorder and any related documents that discuss the types of habitat restored or created on the parcel.~~

### **Provide Habitat Compensation for Permanent Disturbance to Burrowing Owl Habitat**

~~**BIO-25** Foraging habitat which is permanently destroyed shall be replaced at 0.5:1 (mitigation:impacts) a ratio suitable for the protection of burrowing owls and managed for the protection of burrowing owls. Based on these ratios, the project owner must protect and manage 42.65 acres of land for burrowing owls (40 acres for the power plant site and 2.65 acres for the transmission line pads). (Note: transmission lines are not included in the Amendment Petition.) The mitigation amount can be reduced if mitigation land for the same burrowing owls is also being provided under Condition of Certification BIO-19. (Note: Final burrowing owl mitigation needs can only be determined following Phase III (nesting) surveys in spring 2009 and subsequent discussions with the resources agencies and CEC.)~~

~~**Verification:** At least 15 days prior to site mobilization, the project owner shall provide the CPM, USFWS, Refuge, and CDFG with the burrowing owl survey results. If burrowing owls are present where a permanent facility will be placed or within 300 feet of a permanent facility, the project owner shall identify the amount of land they intend to protect 15 days prior to construction. The project owner shall fund the acquisition and long-term management of the compensation lands in a form acceptable to the CEC and CDFG (e.g., provide a letter of credit or establish an escrow account) 15 days prior to construction. The land protection proposal and management fund(s) shall be approved by the CPM and reviewed by CDFG. The project owner shall propose land for purchase or protection with a description of habitat types and propose a management and monitoring plan at least 90 days prior to commercial operation.~~

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The project owner shall rectify any underfunded amounts in the acquisition and long-term management account(s) at least 60 days prior to commercial operation. At least 30 days prior to commercial operation, the project owner shall submit to the CPM two copies of the relevant legal paperwork that protects lands in perpetuity (e.g., a conservation easement as filed with the Imperial County Recorder), a final management and monitoring plan, and documents and documents which discuss the types of habitat protected on the parcel.

If a private mitigation bank is used, the project owner shall provide a letter to the CPM from the approved land management organization stating the amount of funds received, the amount of acres purchased and their location, and the amount of funds dedicated to long term monitoring or management at least 60 days prior to commercial operation. If funds remain after performance of all habitat compensation obligations, the monies in the letter of credit or escrow account will be returned to the project owner with written approval of the CPM.

All mitigation measures and their implementation methods shall be included in the BRMIMP.

### **Operational Management to Avoid Harassment or Harm**

**BIO-26** The operation of the power plant ~~and transmission lines~~ (*Transmission lines not included in Amendment Petition*) shall be conducted to avoid harassment and harm to sensitive biological resources. At a minimum, maintenance and operations personnel shall follow the following guidance:

1. Regular transmission line maintenance within 1 mile of the intersection of Lack and Lindsey Roads shall not be conducted at night or when wind speeds exceed 15 miles per hour; (*Note: Does not apply to Amendment Petition*)
2. The project owner shall develop a reporting procedure for observations by land owners along the transmission lines of bird strikes or the presence of carcasses that may have resulted from transmission line strikes. (*Note: Does not apply to Amendment Petition.*)
3. The project owner and Imperial Irrigation District's maintenance personnel shall observe the areas under power transmission lines during the course of their duties to informally monitor for birds that have struck the transmission lines. (*Note: Does not apply to Amendment Petition.*)
4. Advise all employees, contractors, and visitors of the need to adhere to speed limits. The maximum speed on unpaved roads or on paved roads within 300 feet of occupied sensitive species habitat (such as on McKendry Road west of Boyle road and Lack Road between Kuns and Lindsey Roads) shall be restricted 15 miles per hour or lower during operations.

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**Verification:** All mitigation measures and their implementation methods shall be included in the BRMIMP. The project owner shall report in the annual compliance report any agency notifications and whether the agency recommendations were followed, and shall include a copy of any reports sent to the U.S. Fish and Wildlife Service in compliance with the Federal Biological Opinion.

## REFERENCES CITED

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California Burrowing Owl Consortium

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California National Diversity Database (CNDDDB)

2008 A database application for the California Department of Fish and Game Natural Heritage Division. Sacramento, California.

California Native Plant Society (CNPS)

2001 Inventory of Rare and Endangered Plants of California, California Native Plant Society, Sacramento, California.

California Energy Commission (CEC)

- 
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Small, A.

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Stebbins, R. C.

1985 A Field Guide to Western Reptiles and Amphibians. 2<sup>nd</sup> Edition. Houghton Mifflin, New York, NY.

United States Fish and Wildlife Service (USFWS)

1990 Endangered and Threatened Wildlife and Plants: Review of Plant Taxa for Listing as Endangered or Threatened Species; Notice of Review. Federal Register 55(35): 6184-6229.

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1991 Endangered and Threatened Wildlife and Plants: Animal Candidate Review for Listing as Endangered or Threatened Species; Proposed Rule. Federal Register 56(255): 58804-58836.

Unitt, P.

1984 The Birds of San Diego County. Memoir 13, San Diego Society of Natural History. 276pp.

1987 *Epidonax traillii extimus*: An Endangered Species. Western Birds 18(3): 137-62

**ATTACHMENT 1**  
**RESUMES**

## SCOTT MCMILLAN

Biologist

## SUMMARY

Over 17 years of experience in botany  
Experience with rare and native plants

## EDUCATION

BS, Biology, San Diego State University, 1991

## AFFILIATIONS

California Native Plant Society member  
Research Associate at the San Diego Natural History Museum

## CERTIFICATIONS

San Diego County certified environmental consultant

## PUBLICATIONS/PRESENTATIONS

Bauder, E. T. and S. McMillan. 1996. Current distribution and historical extent of vernal pools in southern California and northern Baja California, Mexico. Proceedings from the 1996 conference: Ecology, Conservation, and Management of Vernal Pool Ecosystems. Sacramento. Published by the California Native Plant Society.

Bauder, E. T.; A. D. Kreager; and S. McMillan. 1998. Recovery Plan for the Vernal Pools of Southern California. Written for the U.S. Fish and Wildlife Service, Portland.

McMillan, S. 1995. A morphometric and systematic study of the southern California species in the genus *Pogogyne* (Lamiaceae). Presented at the 1996 Conference for the American Institute of Biological Sciences. San Diego.

McMillan, S. 1995. The vernal pools of southern California and northern Baja California, Mexico. Presented at the 1996 Conference for the American Institute of Biological Sciences. San Diego.

McMillan, S. 1995. Vernal pools and the coastal sage scrub community. Presented at the 1995 seminar: Coastal Sage Scrub; A Vanishing Habitat. Quail Botanical Gardens, Encinitas.

McMillan, S. 1996. The systematics, biogeography, and ecology of the genus *Pogogyne* (Lamiaceae). Proceedings from the 1996 conference: Ecology, Conservation, and Management of Vernal Pool Ecosystems. Sacramento. Published by the California Native Plant Society.

McMillan, S. 1996. The vernal pools of southern California and northern Baja California, Mexico. Presented at the Symposium for Botanical Research in Baja California and Adjacent Areas. Universidad Autonoma de Baja California, Ensenada, Mexico.

Scott McMillan has conducted botanical consulting in the southern California floristic province for over 17 years. He has conducted work in Orange, Los Angeles, and Riverside counties, but the majority of his work has been in San Diego County. Mr. McMillan has conducted hundreds of vegetation and general botany surveys as well as hundreds of rare plant surveys.

Mr. McMillan has conducted surveys for almost all of the habitat types found in southern California, including coastal sage scrub, chaparral, vernal pools, riparian, dune and saltmarsh, and oak woodland.

Mr. McMillan has not only worked in botany as a consultant but has also conducted botanical research as part of his unfinished thesis, as well as with Dr. Ellen Bauder, Dr. Michael Simpson, and Dr. John O'Leary at San Diego State University (SDSU). Mr. McMillan was an instructor at SDSU (general biology and botany) as well as the University of San Diego (botany). He has given many scientific presentations on the species and habitats in southern California, especially on vernal pools and the species found in them.

Mr. McMillan is coauthor on the Fish and Wildlife's Vernal Pool Recovery Plan, as well as the Checklist of the Vascular Flora of San Diego County. His list of scientific publications includes the Current Distribution and Historical Extent of Vernal Pools in Southern California and Northern Baja California, Mexico (coauthored with Dr. Ellen Bauder and published in the California Native Plant Society's Proceeding from the 1996 conference: Ecology, Conservation, and Management of Vernal Pool Ecosystems). Mr. McMillan has extensive experience with almost all of the sensitive plant species and habitats in San Diego County. This experience includes knowledge of species identification and distribution, as well as the affinities that these species have toward habitat type, soil type, hydrological regime, and other ecological factors.

Although Mr. McMillan has worked on most habitat types in San Diego County, much of his work has been concentrated on the coastal sage scrub and chaparral habitats of southern California. In recent years (2000-2002), these surveys have included the East Miramar Housing Project (totaling over 800 acres), which documented and mapped populations of six sensitive plant species. Other projects have included the City of San Diego's MSCP Rare Plant Surveys and Monitoring. This project included surveys, mapping, monitoring, and management recommendations of 12 sensitive species during 2001 and 2002. During these 2 years, over 150 different parcels were surveyed for sensitive plant species, totaling over 5,000 acres. Permanent monitoring sites were established at many of these localities as part of the requirements for the MSCP. Other rare plant survey work conducted during the last 2 years includes Jamul Ranch for the California Department of Fish and Game (over 2,000 acres), Sweetwater Reservoir for Sweetwater Authority (200 acres), and Bonita Meadows for the California Department of Transportation (200 acres).

In addition to conducting rare plant surveys, Mr. McMillan has also conducted Quino checkerspot butterfly, fairy shrimp, California gnatcatcher surveys. He is also responsible for authoring many biological technical reports, work plans, and restoration and management plans for projects in San Diego County. As part of these projects, Mr. McMillan has coordinated and scheduled other biologists, equipment operators, surveyors, and landscape maintenance crews.

## RESTORATION ECOLOGIST INTRODUCTION

Mr. McMillan has 10 years of experience conducting numerous restoration projects on a wide range of habitats. He has conducted restoration of mountain meadow, riparian woodland, coastal sage scrub, chaparral, and

SCOTT MCMILLAN

Simpson, M. G.; S. McMillan; and B. Stone. 1996. Checklist of the Vascular Flora of San Diego County, 2nd Edition. San Diego State Herbarium Press. Special Publication No. 1.

Simpson, M. G.; S. McMillan; and E. Gergus. 1999. Laboratory Manual for Organismal Biology: An Evolutionary Approach. Burgess Publishing.

McMillan, S. 1999. Large-scale restoration and creation of vernal pool habitat in San Diego County and the implications to species and habitat conservation. Paper presented at the 1999 Society for Ecological Restoration (SER) International Conference. San Francisco.

vernal pool habitats throughout the southern California region. In addition, Mr. McMillan has also conducted desert habitat restoration projects on creosote scrub in Imperial County, ironwood woodland in San Diego County, and cottonwood/willow riparian habitat in Anza Borrego State Park. As with the surveys experience, Mr. McMillan's experience in native habitat restoration has often been associated with vernal pools and other sensitive species habitats. These efforts have often been associated with mitigation for impacts to sensitive species such as San Diego fairy shrimp, Riverside fairy shrimp, Otay Mesa mint, San Diego mesa mint, San Diego button-celery, spreading navarretia, California gnatcatcher, cactus wren, and Quino checkerspot butterfly.

#### DESERT SURVEY INTRODUCTION

Mr. McMillan has mapped vegetation and conducted rare plant and general botanical surveys throughout the Colorado and Mojave deserts of California. The areas surveyed include most of Anza Borrego State Park and the Providence Mountains State Recreation Area, where both upland and riparian areas were surveyed. He is familiar with most of the sensitive plant species and vegetation types that occur in the deserts of San Diego and Imperial counties. Mr. McMillan has also conducted vegetation assessment and rare plant surveys in numerous areas of the Mojave Desert, in both the western and eastern portions.

#### PROJECT EXPERIENCE

State Route 125 South Vernal Pool and Quino Checkerspot Butterfly Habitat Restoration, San Diego County, CA  
 CLIENT: California Transportation Ventures  
 Directing restoration implementation, maintenance, and monitoring of the first habitat restoration designed specifically for the federally endangered Quino, as well as the restoration of over 100 vernal pools on Otay Mesa.

Mass 3 Preserve Vernal Pool Enhancement and Habitat Management Plan, Marine Corps Base Camp Pendleton, CA  
 CLIENT: Marine Corps Base Camp Pendleton  
 Authored the Enhancement and Management Plan for coastal sage scrub, native grassland, and vernal pool habitats on the Mass 3 Preserve area.

City of San Diego Vernal Pool and Quino Checkerspot Restoration and Management Program, CA  
 CLIENT: City of San Diego  
 Conducted the fieldwork and data collection. Authored portions of the report to the City, County of San Diego, regulatory agencies, and SANDAG. Report analyzed numerous vernal pool locations within San Diego for restoration and management needs. Report included recommendations for implementation at six sites, where habitat was restored for vernal pools and Quino checkerspot butterfly. Directed the implementation of weed control, seed collection, plant propagation, and monitoring.

Dennery West Vernal Pool and Quino Checkspot Butterfly Restoration and Management Program, CA  
 CLIENT: Caltrans  
 Conducted the fieldwork and data collection. Authored the Restoration, Management, and Monitoring Plan for vernal pools, Quino checkerspot butterfly, burrowing owls, and California gnatcatcher. Plan was approved by the regulatory agencies as mitigation for impact on State Route 905.

SCOTT MCMILLAN

Surveys and Assessment of Selected *Acanthomintha ilicifolia*  
Populations in San Diego County, CA  
Biologist

CLIENT: San Diego State University

Conducted the fieldwork and data collection. Authored portions of the report to CDFG. Work was performed prior to joining EDAW.

Meadow Restoration at Cuyamaca Lake, Cuyamaca Rancho State  
Park, CA

Biologist

CLIENT: San Diego State University

Helped to develop the restoration plan and conduct a watershed analysis. Directed implementation and data collection. Work was performed prior to joining EDAW.

Post Fire Vegetation Analysis of Coastal Sage Scrub Sites in  
San Diego, Orange, and Riverside Counties

Biologist

CLIENT: San Diego State University

Vegetation sampling, species identification, and data analysis. Data was published by in a scientific journal. Work was performed prior to joining EDAW.

Vegetation and Rare Plant Survey of the Anza Borrego State Park, CA  
Biologist

CLIENT: California State Parks

Vegetation sampling and surveys for rare plants and wildlife. Data analysis and report preparation. Work was performed prior to joining EDAW.

A Vegetation Survey of Providence Mountains State Recreation Area,  
CA

Biologist

CLIENT: California State Parks

Vegetation sampling and rare plant surveys at the 5,900-acre State Recreation Area. General wildlife surveys. Authored report to California State Parks. Work was performed prior to joining EDAW.

Rare Plant and Wildlife Surveys at the Naval Radio Receiving Facility in  
Imperial Beach and Naval Amphibious Base in Coronado

Biologist

CLIENT: Southwest Division

Rare plant surveys and vegetation analysis. Conducted wildlife surveys on the dune habitat. Authored portions of the report to Southwest Division. Work was performed prior to joining EDAW.

Biological Survey for Rare Plants at Marine Corps Base, Camp  
Pendleton, CA

Biologist

CLIENT: Marine Corps Base, Camp Pendleton

Rare plant surveys with GIS mapping. Authored report to Southwest Division. Work was performed prior to joining EDAW.

Biological Survey for Vernal Pools at Marine Corps Base,  
Camp Pendleton, CA

Biologist

CLIENT: Marine Corps Base, Camp Pendleton

Vernal pool surveys with GIS mapping. Authored report with management recommendations to Southwest Division.

SCOTT MCMILLAN

State Route 125 Quino Checkerspot Butterfly Surveys and Habitat Assessment

Biologist

CLIENT: California Transportation Venture, Inc.

Conducted habitat assessment and butterfly surveys. Updated vernal pool and rare plant surveys for SR-125. Authored a report with management and restoration recommendations.

Revegetation Monitoring on Pipeline Segments for the San Diego County Water Authority (SDCWA)

Biologist

CLIENT: San Diego County Water Authority

Helped to develop and implement restoration of coastal sage scrub, chaparral, and riparian habitats. Conducted monitoring and authored reports to SDCWA. Work was performed prior to joining EDAW.

Scripps Ranch High School Riparian Revegetation Plan and Monitoring Project

Biologist

CLIENT: San Diego City Schools

Developed restoration plan and directed implementation and monitoring. Authored reports to San Diego City Schools. Work was performed prior to joining EDAW.

Restoration of Vernal Pools at the Miramar Mounds National Natural Landmark (Group U), Marine Corps Air Station Miramar

Biologist

CLIENT: Marine Corps Air Station Miramar

Conducted vernal pool surveys of the entire base. Authored a restoration plan for the Group U vernal pools. Directed implementation, maintenance, and monitoring of over 100 vernal pools. Authored reports to Marine Corps Air Station Miramar.

City of San Diego Vernal Pool and Coastal Sage Scrub Restoration and Preservation Plan on Otay Mesa

Biologist

CLIENT: City of San Diego

Authored Restoration Plan for vernal pool habitat. Directed implementation, maintenance, and monitoring. Authored report to the City of San Diego. Work was performed prior to joining EDAW.

Dennery Canyon Vernal Pool, Coastal Sage Scrub, and Mule Fat Scrub Restoration and Preservation Plan

Biologist

CLIENT: RECON

Directed restoration implementation, maintenance, and monitoring of over 300 vernal pools on Otay Mesa for Pardee Construction. Work was performed prior to joining EDAW.

Sweetwater Reservoir Botanical Surveys, Rare Plant Surveys, and Vegetation Mapping

Biologist

CLIENT: Sweetwater Authority

Conducted general botanical surveys, rare plant surveys, and vegetation mapping on multiple project areas around Sweetwater Lake. Also conducted fairy shrimp surveys and wrote a management and restoration plan.

SCOTT MCMILLAN

Bonita Meadows General Botanical Surveys, Rare Plant Surveys,  
Vegetation Mapping and Restoration Recommendations  
Biologist

CLIENT: Caltrans

Conducted general botanical surveys, rare plant surveys, and vegetation mapping on a 200-acre parcel for a habitat preservation bank associated with I-15 and SR-125. Also wrote management and restoration recommendations. Work was performed prior to joining EDAW.

Jamul Ranch General Botanical Surveys and Rare Plant Surveys  
Biologist

CLIENT: USGS

Conducted general botanical surveys and rare plant surveys on the 2,000 + acre Jamul Ranch Preserve (California Department of Fish and Game). Also wrote management and restoration recommendations.

City of San Diego MSCP Rare Plant Surveys, Mapping, and Monitoring Program  
Biologist

CLIENT: City of San Diego

Conducted general botanical surveys and rare plant surveys on the City of San Diego's MSCP lands (over 5,000 acres and 150 parcels). Also established permanent monitoring sites and conducted baseline sampling. Management and restoration recommendations were also provided.

BARBRA CALANTAS  
Wildlife Biologist

EDUCATION

Bachelor of Arts in Biology, minor in Chemistry from the University of San Diego, 2003

CERTIFICATION

Federal Endangered Species Act 10(a)(1)(A) Independent Survey Permit TE-820658

State Scientific Collecting Permit SC-009174

TRAININGS

Flat-tailed Horned Lizard Survey and Monitoring Techniques, 2008, Bureau of Land Management

Southwestern Willow Flycatcher Workshop, 2008, Southern Sierra Research Station

Sensitive Butterfly Workshop, 2005, San Diego Nature Festivals

Natural History and Management of Bats Symposium, 2005, the Western Section of the Wildlife Society

35<sup>th</sup> Annual North American Symposium on Bat Research, 2005, North American Symposium on Bat Research

Wildlife Tracking and Corridor Analysis Training – Tom Brown Jr. Tracking Course Equivalent, 2005, San Diego Tracking Team

Southwestern Pond Turtle Workshop, 2005, the Western Section of the Wildlife Society

Intermediate Birding Course, 2005, the San Diego Audubon Society

California Fairy Shrimp Identification Course and Practical Exam for all Species of Fairy Shrimp in California, 2005, Mary Schug Belk,

Desert Tortoise Survey and Handling Techniques Workshop, 2004, Desert Tortoise Workshop Council

Sensitive Butterfly Workshop, 2004, San Diego Nature Festivals

Raptor Education and Rehabilitation Class, 2004, San Diego Nature Festivals

AFFILIATIONS

San Diego Tracking Team

San Diego Audubon Society

Desert Tortoise Council

Skyhunter's Sanctuary Raptor Rehabilitation Program

The Wildlife Society

Barbra Calantas has 6 years of experience as an environmental consultant. Her responsibilities have included project and task management on large projects and on-call projects, general and focused plant and wildlife field surveys, database management, quality assurance and quality control for data collection procedures, wildlife tracking studies, GPS techniques, sensitive species mapping, and preparation of a variety of biological technical reports. She is also experienced with noise impact analyses and storm water sampling procedures.

Ms. Calantas' experience in the consulting field is quickly expanding. She has worked on projects for private landowners, government agencies, and industrial companies. She has conducted surveys for state and federally listed plant and wildlife species. She has experience in performing protocol-level surveys for federally and state-threatened and endangered species including Quino checkerspot butterfly, least Bell's vireo, and arroyo toad. She holds a State scientific collecting permit and a Federal Endangered Species Act 10(a)(1)(A) independent permit to perform Quino checkerspot butterfly, fairy shrimp surveys, and coastal California gnatcatcher surveys, and is in the process of obtaining her independent permit for southwestern willow flycatcher, and Desert Tortoise certification.

MILITARY PROJECTS

Vernal Pool Habitat Monitoring Plan, San Diego County, CA  
Project Manager

CLIENT: MCB Camp Pendleton

Ms. Calantas is managing EDAW staff and subconsultant services to produce a vernal pool habitat monitoring plan to monitor effects of the Expeditionary Fighting Vehicle (EFV) fielding on vernal pool habitats for 10 years, per implantation of the EFV Biological Opinion. After approval with MCB Camp Pendleton staff and the U.S. Fish and Wildlife Service, EDAW will implement the first year of the monitoring plan as a baseline study.

Basewide Vernal Pool Floral and Faunal Surveys, MCB Camp Pendleton, CA  
Project Manager

CLIENT: MCB Camp Pendleton

For this project, Ms. Calantas is managing EDAW staff and subconsultant services to conduct fairy shrimp and floral inventory surveys for over 1,000 pools throughout MCB Camp Pendleton, over a 3-year period. She is responsible for all data consolidation and management, annual report preparation and submittal, and survey scheduling with personnel. She will also assist with conducting fairy shrimp surveys.

P-613 Close Combat Battle Course, MCB Camp Pendleton, CA  
Project Wildlife Biologist

CLIENT: U.S. Navy, Southwest Division

Ms. Calantas performed focused protocol-level surveys for several federally listed threatened and endangered wildlife species, including the Quino checkerspot butterfly and least Bell's vireo. She also prepared a Biological Technical Report and contributed to biology sections for the Environmental Assessment for this project.

BARBRA CALANTAS

NEPA Analysis for Naval Special Warfare Mountain Warfare Training Facility Operations, Facilities, and Land Acquisition at La Posta, Naval Base Coronado, CA

Project Wildlife Biologist

CLIENT: U.S. Navy, Region Southwest

As a project wildlife biologist, Ms. Calantas conducted floral and faunal surveys for the NEPA analysis of the land withdrawal from the Bureau of Land Management to the U.S. Navy. She conducted general wildlife surveys, habitat assessments, focused protocol-level surveys for the federally listed Quino checkerspot butterfly over approximately 500 acres, and assisted in wetland delineation surveys. Ms. Calantas also prepared the Biological Technical Report, and contributed to the Environmental Assessment, Biological Assessment, and Wetlands Delineation Report for this project.

U.S. Marine Corps Base Camp Pendleton Military Family Housing Project - Rodeo Grounds Site, San Diego County, CA

Project Biologist

CLIENT: Southwest Division of the Navy

Conducted protocol California gnatcatcher surveys on approximately 84 acres. More than 10 pairs of gnatcatchers were detected. Assisted with preparation of 45-Day Report to USFWS.

MASS 3 Vernal Pool Conservation Plan, MCB Camp Pendleton, CA

Project Biologist

CLIENT: MCB Camp Pendleton

Ms. Calantas identified voucher specimens collected during protocol surveys for approximately 490 acres containing 262 vernal pools within the MASS 3 Area.

Fort Rosecrans National Cemetery Expansion, San Diego County, CA  
Project Biologist

CLIENT: Department of Veterans Affairs, National Cemetery Administration

Ms. Calantas contributed to an analysis of biological issues of concern included the project's potential effect on vernal pools and sensitive species, such as the coastal California gnatcatcher, and fairy shrimp. Ms. Calantas prepared a Biological Assessment, and wrote technical sections of the EIS/EIR.

## TRANSPORTATION PROJECTS

Manchester Avenue/I-5 Interchange, San Diego County, CA  
Environmental Monitor

CLIENTS: City of Encinitas, Dokken Engineering

Barbra analyzed noise impacts of improving the interchange at Manchester Avenue and Interstate 5, and adding auxiliary lanes north and south of the interchange. She also analyzed potential traffic and construction noise impacts to more than 70 receptor points representing approximately 200 residences. Noise analysis included potential construction and post-construction noise impacts to threatened and endangered species in the San Elijo Lagoon and upland areas adjacent to the freeway. The work was coordinated with Caltrans District 11.

South Santa Fe Avenue Widening, San Diego County, CA  
Environmental Monitor

CLIENT: County of San Diego Public Works Department

Performed noise impact analyses and contributed to EIR/EA document sections for widening a two-mile section of roadway from two lanes to four lanes. The roadway has many adjacent residences and businesses.

BARBRA CALANTAS

Wildcat Canyon Road Enhancement Project, Before-After-Control-Impact Study - Preconstruction, San Diego County, CA  
Project Wildlife Biologist

CLIENT: San Diego County Department of Public Works

Ms. Calantas assisted with a year-long preconstruction wildlife movement study for the Wildcat Canyon Road Enhancement Project Before-After-Control-Impact Study. Methods include tracking station, tracking transect, and roadkill surveys. She also helped in the completion of six survey reports, statistical analysis, and final report for this project.

State Route 56, San Diego County, CA

Project Biologist

CLIENT: City of San Diego

Ms. Calantas conducted sensitive species presence/absence surveys and nesting avian surveys, and prepared biotechnical reports for this project. Work completed was done in coordination with Caltrans. She is also conducting 2007 focused protocol level surveys for the federally endangered least Bell's vireo currently in progress.

State Route 125 South Quino Checkerspot Butterfly and Vernal Pool Restoration Area on Johnson Canyon, San Diego County, CA

Project Wildlife Biologist

CLIENT: Caltrans and South Bay Expressway

As a project wildlife biologist, Ms. Calantas conducted Quino checkerspot butterfly focused protocol-level adult surveys on the Johnson Canyon mitigation site and Johnson Canyon Open Space Preserve in Otay Mesa for the State Route 125 South project. She has also conducted focused surveys for the coastal California gnatcatcher, cactus wren, and least Bell's vireo. Additional surveys Ms. Calantas has conducted include focused burrowing owl surveys, protocol level fairy shrimp surveys, small mammal trapping, reptile coverboard surveys, and focused western spadefoot toad surveys. Work also included preparation and submittal of the gnatcatcher and cactus wren 45-Day report, Quino 45-day Report, fairy shrimp 90-day report, and contribution to annual monitoring reports.

Lake Jennings Open Space Preserve/Restoration Area Land Management and Post-fire Recovery Monitoring, San Diego County, CA  
Project Biologist

CLIENT: Caltrans and California Transportation Ventures, Inc.

Conducted focused surveys for the coastal cactus wren on this burned, restored area as part of the post-fire monitoring and long-term management of the preserve, for mitigation associated with the State Route 125 South project. Assisted with 45-Day Report. Detected cactus wren and California gnatcatcher onsite after wildfires.

Cannon Road Reach 4, Carlsbad, CA

Project Biologist

CLIENT: City of Carlsbad

Performed habitat assessments and general wildlife surveys for the preparation of the Cannon Road Reach 4 Preliminary Environmental Assessment Report (PEAR). The City of Carlsbad is proposing to construct the final segment of Cannon Road which would extend from its existing terminus at El Camino Real, northeast approximately 0.7 mile, to the future College Boulevard and is classified as a major arterial in the Carlsbad Circulation Element. These studies established a baseline for future environmental documentation and review within the context of the Local Assistance process. It will also allow the City to make an informed decision with respect to the comparative merits of the various alignment alternatives.

BARBRA CALANTAS

State Route 76 East Expansion Project, San Diego County, CA

Project Biologist

CLIENT: Caltrans

As a lead project wildlife biologist, Ms. Calantas managed the general wildlife schedule for four focused protocol level surveys for the federally listed arroyo toad, coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher. She also conducted protocol surveys for these species within approximately 600 acres of riparian habitat and oversaw data processing and GIS map coordination. Ms. Calantas also oversaw the submittal of the required 30-day Report for toad surveys, and 45-Day reports for the vireo, gnatcatcher, and flycatcher. She is also conducting 2007 surveys currently in progress for the four federally listed wildlife species, and will assist with the required 30-Day and 45-Day reports.

Golden Valley Bridge Project, Los Angeles County, CA

Project Biologist

CLIENT: City of Santa Clarita and Caltrans

For this project, Ms. Calantas conducted focused surveys for the arroyo toad and coastal California gnatcatcher.

San Diego Regional Airport, Airport Site Selection Process, San Diego County, CA

Project Biologist

CLIENT: San Diego County Regional Airport Authority and Ricondo &amp; Associates

Ms. Calantas contributed to biological investigations associated with the review of two civilian and three military sites for development of a regional airport. Investigations included site reconnaissance surveys (civilian sites only), literature review, discussions with resource agencies and local experts, and compilation of available databases. A total of 15,000 acres (i.e., 3,000 acres per site) were evaluated in detail, and additional evaluations were made for off-airport improvements. All sites were described and impacts evaluated in Alternatives Analysis documents. Biological resource analyses focused on Biological Communities, Threatened and Endangered Species, and Wetlands. Issues considered included habitat fragmentation, introduction of exotic/invasive species, effects of noise and light on wildlife behavior, pollutants, and air strikes, among other effects. Anticipated mitigation measures and a general mitigation cost analysis were provided.

State Route 52 Inside Widening Project, San Diego County, CA

Project Biologist

CLIENT: San Diego Association of Governments/California Department of Transportation

Completed focused protocol surveys for the Quino checkerspot butterfly, coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher under valid 10(a)(1)(A) permit. Assisted with field survey coordinated and scheduled field surveys and assisted with writing the Natural Environment Study and 45-Day reports for submittal to the U.S. Fish and Wildlife Service.

Citracado Parkway – Andreasen Drive to West Valley Parkway, San Diego County, CA

Project Biologist

CLIENT: City of Escondido

Conducted protocol least Bell's vireo surveys and burrowing owl surveys, and biological monitoring for geotechnical boring. This project spans a multijurisdictional area, including the City of Escondido and the County of San Diego, thus requiring consideration of draft subarea Natural Communities Conservation Plans.

BARBRA CALANTAS

North Torrey Pines Bridge Retrofit Environmental Studies, Del Mar, CA  
Lead Project Biologist

CLIENT: Simon Wong Engineering for the City of Del Mar

Managed the biology task for this project, conducted biological surveys, and wrote the Biological Assessment and Natural Environment Study reports, summarizing several years of various biological surveys. The railroad overhead crossing was built in 1932 as part of the Coast Highway between La Jolla and Del Mar. The objective of the retrofit project is to strengthen the existing bridge structure while retaining the historic design of the bridge. The process includes compliance with Caltrans Local Assistance Procedures.

#### WATER PROJECTS

Caltrans District 11 Office Building Sewerline Replacement Project,  
San Diego, CA

Project Wildlife Biologist

CLIENT: State of California General Services Department, Real Estate Services Division

As a project wildlife biologist for the project, Ms. Calantas conducted two seasons of focused protocol-level surveys for the federally endangered least Bell's vireo. Ms. Calantas also prepared technical survey reports for the project.

Sewer and Water Group Job 691, San Diego County, CA

Project Wildlife Biologist

CLIENT: City of San Diego, Water and Wastewater Division

As project wildlife biologist, Ms. Calantas conducted rare plant, sensitive wildlife, and nesting avian surveys and prepared the technical survey report for this project.

Escondido Regional General Permit, San Diego County, CA

Project Wildlife Biologist

CLIENT: City of Escondido

As the project wildlife biologist, Ms. Calantas performed an impact analysis for the proposed Escondido Regional General Permit that would cover all operations and maintenance activities along the City of Escondido's sewer outfall line that spans from the city of Escondido to the San Elijo Lagoon. Ms. Calantas also prepared the Biological Assessment and necessary applications for regulatory compliance.

Olivenhain Municipal Water District, Program EIR,

San Diego County, CA

Project Biologist

CLIENT: Olivenhain Municipal Water District

Ms. Calantas conducted general wildlife habitat assessments and surveys at 14 Olivenhain Municipal Water District facilities scheduled for maintenance and improvement work. She also contributed to biological resource section of the Program EIR for this project.

Dry-weather Monitoring, Escondido, CA

Environmental Monitor

CLIENT: City of Escondido

As part of a large sampling team, Ms. Calantas determined discharge rates, conducted field measurements, collected water quality samples, and recorded environmental observations in compliance with the City of Escondido's Jurisdictional Urban Runoff Management Plan (JURMP). This extensive environmental measurement program involves characterizing dry-weather water quality flows and conditions at 156 locations throughout the city for the Public Works Department. Monitoring locations span the San Luis Rey,

BARBRA CALANTAS

Carlsbad, and San Dieguito watersheds. Based on field measurements and conditions, Ms. Calantas determined follow up investigation or corrective action needs for discharges from industrial, municipal, commercial, and residential land uses.

## ENERGY PROJECTS

Pine Tree Wind Development Project, Kern County, CA

Project Wildlife Biologist

CLIENT: Los Angeles Department of Water and Power

For this project, Ms. Calantas assisted in the environmental documentation for a Wind Energy Resource Area in the foothills of the Sierra Nevada south of Kings Canyon National Park and north of the city of Tehachapi for a proposed green energy farm (wind turbines). She contributed to the biological technical report and biological assessment, and permitting procedures for compliance with regulatory agencies.

Homestead Wind Energy Development Project, Kern County, CA

Wildlife Biologist

CLIENT: Horizon Wind Energy

For this project, Ms. Calantas conducted focused avian surveys at point count stations for multiple seasons, including migration periods and general wildlife surveys. Assisted with data summary.

## CONFIDENTIAL PROJECT

Wildlife Biologist

CLIENT: CONFIDENTIAL CLIENT

Ms. Calantas conducted focused raptor surveys, burrowing owl surveys, and general wildlife surveys. Assisted with data summary and will author the biological technical report and biological assessment.

## OTHER PROJECTS

San Diego Gas and Electric Natural Communities Conservation Plan

On-Call Services, San Diego County, CA

Biologist

CLIENT: San Diego Gas and Electric

Ms. Calantas has contributed to this project as a lead biologist in providing on-call support to SDG&E Land Planning and Natural Resources for planned and emergency operations and maintenance activities associated with their electricity transmission and distribution lines within San Diego and Orange Counties. This project involves evaluating potential biological impacts from operations and maintenance activities being conducted under SDG&E's Subregional Natural Communities Conservation Plan (NCCP). A thorough understanding of SDG&E operations and maintenance activities and operational protocols of the NCCP are required. The project consists of ongoing multiple task orders for an 18-month duration. This project will result in a maximum of 35 to 40 task orders, with a \$100,000 total contract amount.

Lockheed/Laborde Canyon OHV Park, Riverside County, CA

Project Biologist

CLIENT: County of Riverside

For this project, Ms. Calantas conducted rare plant and wildlife species surveys throughout the 2,600-acre site for potential design as an OHV park. Determined existing biological conditions associated with the park, habitat and resource sensitivity on the access roadways, and wildlife corridor value.

BARBRA CALANTAS

Viejas Boulevard Bridge Replacement Project, San Diego County, CA  
Project Wildlife Biologist

CLIENT: County of San Diego

As a project wildlife biologist, Ms. Calantas conducted focused protocol-level surveys for the federally endangered arroyo toad.

Ramona Airport Vernal Pool Project, San Diego County, CA

Project Biologist

CLIENT: County of San Diego

Ms. Calantas contributed to vernal pool rare plant surveys and created a database of results for vernal pool field surveys, for GIS modeling and mapping.

Escondido Hale Avenue Resource Recovery Facility Expansion Tanks, San Diego County, CA

Project Wildlife Biologist

CLIENT: City of Escondido

As a project wildlife biologist, Ms. Calantas conducted general wildlife surveys and habitat assessments for the least Bell's vireo, southwestern willow flycatcher, and arroyo toad. She also conducted a tree impact survey for the installation of two expansion tanks for the Hale Avenue Resource Recovery Facility, using GPS methodology and GIS modeling. Ms. Calantas prepared the Biological Technical Report for this project.

Mesquite Lake Specific Plan, Imperial County, CA

Project Wildlife Biologist

CLIENT: County of Imperial

For this project, Ms. Calantas conducted general wildlife surveys, habitat assessments, and focused surveys for burrowing owl over approximately 5,000 acres. She also contributed to biological resource sections of environmental documents for this project.

Hollenbeck Canyon Wildlife Area Land Management Plan,

San Diego County, CA

Project Biologist

CLIENT: California Department of Fish and Game

Assisted in general wildlife surveys and habitat assessments for a land management plan per CDFG Guidelines for the approximately 5,500-acre Hollenbeck Canyon Wildlife Area to establish a set of management goals and tasks that will enhance the Area's natural resources, protect special plant and animal species and their habitats on site, and allow for compatible public uses where appropriate. Contributed to land management plan and assisted with document.

Lakeside Ballpark Project, San Diego County, CA

Project Biologist

CLIENT: County of San Diego Department of Public Works

Ms. Calantas conducted protocol California gnatcatcher and least Bell's vireo surveys and assisted with preparation of the 45-Day Report to USFWS. One least Bell's vireo and two pairs of gnatcatchers were detected.

Borderfield State Park Sediment Basin Restoration Project, San Diego County, CA

Project Biologist

CLIENT: California Department of Parks and Recreation

Project biologist for 3-year restoration monitoring effort of least Bell's vireo population and habitat use. Monitored least Bell's vireo population on site via protocol surveys enhanced with spot-mapping techniques to delineate territories. Used ArcPad GIS software to complete spot-mapping surveys and spatially compare territories over three years.

BARBRA CALANTAS

San Luis Rey River Park Master Plan, Biological Technical Report and Programmatic EIR, San Diego County, CA  
Project Biologist

CLIENT: County of San Diego, Department of Parks and Recreation

Ms. Calantas contributed to biological studies for a park along an 8.5-mile stretch of the San Luis Rey River in northern San Diego County. Technical report and a Programmatic EIR evaluate recreational amenities, habitat preserve, and trail system. Five "active" sites were studied in detail and resources within a 3,660-acre Core Study Area were evaluated. Site-specific surveys including wetland delineations, vegetation mapping, general floral and faunal inventories, and habitat assessments for sensitive species. Potential impacts to biological resources were analyzed and anticipated permits and required mitigation were identified. Qualitative assessments of the potential effects on biological resources from proposed passive recreation areas (Tier B passive park sites), multi-use trails, and preserved lands were also evaluated. A Programmatic EIR was also prepared.

SHELLY DAYMAN  
Biologist

#### SUMMARY

Experience includes writing environmental compliance documents and conducting biological surveys in the southwestern United States, including desert tortoise and burrowing owl focused surveys.

Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) experience.

Small mammal trapping, handling, and identification.

Biological Construction Monitor

#### EDUCATION

BS, Biology, Ecology Major, University of Calgary, 1994

#### AFFILIATION

American Society of Mammalogists

#### CERTIFICATIONS

FERC Environmental Compliance

Desert Tortoise Handling Workshop

Mohave Ground Squirrel Workshop

Shelly Dayman has 8 years of experience conducting biological surveys; vegetation mapping; construction monitoring; and wildlife surveys for desert tortoise, western burrowing owl, and small mammals in southwestern United States. Ms. Dayman is familiar with Biological Opinions, Streambed Alteration Agreements, Biological Resources Reports, Environmental Assessment/Initial Studies, Mitigated Negative Declarations, the biological sections of Environmental Impact Reports and Statements as well as the western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).

Ms. Dayman has experience in the identification of flora and fauna in the Mohave, Sonoran, and Chihuahuan Deserts, with experience in sage scrub habitat, riparian areas, chaparral, playas and vernal pools, and woodlands and disturbed habitat in the southern United States. She has conducted small mammal trapping in the Sonoran and Chihuahuan Deserts, with some trapping experience in sage scrub and chaparral habitat in Riverside County. She has performed protocol level surveys for burrowing owl and Mohave Desert tortoise.

#### PROJECT EXPERIENCE

Black Rock Survey 2008, Calipatria, CA

Biologist

CLIENT: Cal Energy

Conducted a burrowing owl survey in Imperial County. Described biological resources on-site and appropriate mitigation measures.

CONFIDENTIAL PROJECT, Mojave Desert, CA

Biologist

CLIENT: CONFIDENTIAL CLIENT

Conducted biological reconnaissance surveys throughout the Mojave desert (Kern County and San Bernardino County) to determine suitability of habitat for sensitive and/or listed species. Assisted client in assessing sites for suitability for development.

Niland Solar Energy Survey 2008, Niland, CA

Biologist

CLIENT: Los Angeles Department of Water and Power

Conducted protocol burrowing owl surveys in Imperial County. Biological resources were assessed and appropriate mitigation measures for resources observed were recommended.

SR76 Tracking and Road Kill Surveys, Oceanside, CA

Biologist

CLIENT: SANDAG/California Dept of Transportation District 7

Assisted in a movement study to determine wildlife corridors. Identified wildlife tracks and road kill.

Sloan Canyon Biological Survey 2008, Henderson, NV

Biologist

CLIENT: Bureau of Land Management

Conducted a biological survey on BLM land within this area of the Mohave desert. The survey used USFWS protocols for Mohave Desert tortoise and other federal, state, and BLM protected species.

SHELLY DAYMAN

## CONFIDENTIAL PROJECT

Biologist

CLIENT: CONFIDENTIAL CLIENT

Conducted focused Mohave Desert tortoise and burrowing owl protocol focused surveys for a solar array project. Responsible for project planning, survey coordination, and writing of technical documents.

Guava Street Natural Environment Study, Murrieta, CA

Biologist

CLIENT: City of Murrieta

Conducted a focused burrowing owl survey for a project involving the removal and replacement of an existing bridge. Assisted in the preparation of an NES with compliance with the western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).

Main Street Natural Environment Study, Temecula, CA

Biologist

CLIENT: City of Murrieta

Conducted a focused burrowing owl survey for a project involving the removal and replacement of an existing bridge. Assisted in the preparation of an NES with compliance with the western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).

## CONFIDENTIAL PROJECT

Biologist

CLIENT: CONFIDENTIAL CLIENT

Conducted focused Mohave Desert tortoise and burrowing owl protocol focused surveys for a solar array project. Responsible for project planning, survey coordination, and writing of technical documents.

County of Riverside, CA

Ecologist

CLIENT: The County of Riverside

Reviewed proposed projects to determine if they were consistent with the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Attempted to establish an "active relocation" program for burrowing owls in Western Riverside County. Reviewed environmental documents, including EIRs, biological surveys, and archaeological surveys. Work was performed prior to joining EDAW.

Kern River Pipeline Project, Barstow, CA

Biologist

CLIENT: Kern River

Conducted right-of-way and buffer surveys for special-status species (primarily the threatened desert tortoise). Documented daily construction and biological activities. Worked with the construction contractor, environmental inspectors, the lead biologist, and other biological monitors to identify and eliminate potential environmental issues. Complied with the U.S. Fish and Wildlife Federal Biological Opinion, the California Department of Fish and Game 2081 Permit, the Memorandum of Understanding and FERC requirements and guidelines. Work was performed prior to joining EDAW.

The University of Arizona, Research Studies, Tucson, AZ

Biologist

CLIENT: The University of Arizona

Evaluated biological communities including plant, invertebrate and small mammal communities. Determined percent cover, biomass and plant species diversity. Captured and processed small mammals, made species identifications, and recorded body measurements. Identified pitfall trapped invertebrates to functional taxonomic groups. Used radio-telemetry to determine the effects of roads on mortality in western box turtles. Work was performed prior to joining EDAW.

ANDREW FISHER  
Wildlife Biologist

#### SUMMARY

Extensive experience in avian identification for both North American and African species

Trained in wildlife tracking and trailing

Familiar with all aspects of GPS data collection, usage, and mapping

Experienced mountaineer, hiker, and backcountry trekker

Andrew Fisher has experience in avian identification, wildlife tracking and trailing, large mammal radiotelemetry, raptor rehabilitation, museum small mammal taxidermy, vegetation surveys, photo documentation, and field research methods. He has worked overseas implementing human-wildlife conflict resolution measures. Currently, he is gaining experience in technical report writing, small mammal handling, environmental compliance, roadkill surveys, avian and amphibian surveys, fairy shrimp collection and identification, and construction monitoring. He is pursuing obtaining his independent permit to survey for California fairy shrimp.

#### EDUCATION

BS, Wildlife, Fish, and Conservation Biology,  
University of California, Davis, 2006

#### PROJECT EXPERIENCE

#### CERTIFICATION

10(a)(1)(A) Endangered Species Permit  
TE-820658-4 to conduct presence/absence  
surveys for coastal California gnatcatcher

Coastal California Gnatcatcher Surveyor, MCB Camp Pendleton, CA  
Wildlife Biologist

CLIENT: MCB Camp Pendleton

Currently conducting presence/absence surveys for coastal California gnatcatcher throughout the base. Also conducting habitat assessments and surveys for other threatened and endangered species.

#### TRAINING

Wildlife Trailing Workshop, Oct 4-6, 2007,  
San Diego Tracking Team

California Fairy Shrimp Identification Course and  
Practical Exam for all Species of Fairy Shrimp in  
California, Dec 18-20, 2007, Mary Schug Belk

Basewide Vernal Pool Floral and Faunal Surveys, MCB Camp Pendleton, CA

Wildlife Biologist

CLIENT: MCB Camp Pendleton

Currently assisting in the field collection of vernal pool branchiopod species in various training areas on base. Assisting in lab identification of *Branchinecta lindahli*, *Branchinecta sandiegonensis*, and *Streptocephalus woottoni*. Also helping to enter and maintain data collected during these surveys.

SR-76 Biological Assessment, San Diego, CA

Wildlife Biologist

CLIENT: Caltrans

Currently conducting a preconstruction wildlife movement study for SR 76 using tracking stations, tracking transects, and roadkill surveys. Assisting in data collection and entry.

Biological Science Technician, Carlsbad, CA

Wildlife Biologist

CLIENT: U. S. Fish and Wildlife Service

Conducted point count surveys for the California gnatcatcher throughout San Diego County. Took weather measurements and used a GPS to locate points and track routes. Hiked in very rugged, uneven, and often remote areas to access survey points. Collected and analyzed soil samples for texturing and bulk density. Familiar with plants of San Diego and conducted vegetation surveys throughout the county. Kept detailed field notes, entered scientific data into Access databases, performed quality assurance/quality control on data, and assisted in data presentation.

Keeper Aide, Sacramento, CA

Wildlife Biologist

CLIENT: Sacramento Zoo

Assisted in the preparation of diets and feeding of birds, ungulates, carnivores, and primates. Improved and enhanced animal exhibits and displays. Worked with zoo staff to maintain animal exhibits, provide animal enrichment, and do overall zoo cleanup. Learned how zoos participate in animal research, education, and conservation, and how they work together on species survival plans.

ANDREW FISHER

Wood Duck Research Assistant, Davis, CA  
Wildlife Biologist

CLIENT: University of California, Davis

Assisted in the ongoing monitoring and maintenance of wood duck nest boxes. Took yolk samples, blood samples, various measurements, and weights, and web-tagged ducklings on various watersheds in Yolo and Sacramento counties. Learned and implemented methods for conserving a threatened species, working on both public and private lands and recording nest depredation.

Raptor Rehabilitator, Davis, CA  
Wildlife Biologist

CLIENT: California Raptor Center

Fed, treated, and rehabilitated sick and injured birds of prey. Practiced veterinary techniques and proper handling methods. Assisted in cage cleaning; improved holding facilities; and practiced methods for prevention of imprinting, proper rehabilitation, and release techniques. Conducted health exams and weight checks, and learned the ways to diagnose illness and injury in raptors. Initiated and conducted an independent study and analysis of red-tailed hawk weight fluctuations during rehabilitation. Formulated hypotheses for bird weight fluctuations and how weight correlates with overall fitness and releaseability. Practiced methods for release and physical therapy.

Museum Mammal Taxidermist, Davis, CA  
Wildlife Biologist

CLIENT: Museum of Wildlife and Fisheries

Practiced various techniques for the proper preparation of scientific mammal specimens. Took measurements, skinned, and then stuffed various small mammals for entry into the museum collection. This included methods for long-term preservation, small mammal identification, and museum curation. Became familiar with the methods for preservation and upkeep of a museum. Practiced usage of a museum's collection for research and education. Learned methods for identification of small mammal specimens including their sex, reproductive status, and rough age.

Spotted Owl Diet Study Intern, Davis, CA  
Wildlife Biologist

CLIENT: University of California, Davis and USDA Forest Service

Dissected spotted owl pellets previously collected in various forests in the Sierra Nevada. Analyzed pellets to identify rodent, bird, bat, and insect remains to help determine spotted owl diet preference. Assisted in the study of spotted owl prey species abundance, distribution, and preference. Used prey remains to understand overall prey abundance in conjunction with habitat types. Practiced using museum rodent skeletons to identify bones found in pellets.

## KATIE HALL

Biologist

## SUMMARY

Write environmental compliance documents, including environmental impact statements, environmental assessments, and categorical exclusions in accordance with NEPA guidelines and agency requirements (using various formats).

USACE-certified wetland delineator; 5 years' experience in threatened and endangered species surveys, biological surveys, wetland delineations, mitigation services, restoration services, and riparian surveys.

Prepare Section 401, Section 404, and Sections 10 & 6 nationwide and individual permits for various clients.

WET2 Methodology and Water Toxicology testing.

Erosion Control Monitor

Water Quality Monitor

Biological Construction Monitor

Computer skills, including extensive experience using Microsoft Access and Excel, FoxPro, dBase, GIS/GPS, and ArcView/ArcInfo.

## EDUCATION

BA, Geography, Environmental Sciences concentration; minor Geology, University of Tennessee, Knoxville, TN, 1999. Graduated with Honors; Gamma Theta Upsilon. Emphasis on physical geography, biodiversity, ecology, biogeography, and geographic information systems.

## CERTIFICATIONS

U.S. Army Corps of Engineers Wetland Delineator Certification Training Program 2003 & ARM Supplement 2007

NEPA Documentation Certification Training Program, Shipley Group, 2002

TxDOT Precertifications:

- Wetland Delineation
- USACE Permits - Nationwide Permits
- USACE Permits - Section 404 Permits
- Protected Species Determination (Habitat)
- Hazardous Materials Assessment
- Environmental Document Preparation

Avian Focused Protocol Surveys

Vernal Pool Fairy Shrimp

Desert Tortoise

Scientific Collection Permit

## AFFILIATIONS

Member, American Association of Geographers

Member, Society of Ecology

Member, Society of Wetland Scientists

San Diego Tracking Team

Katie Hall has more than 7 years of multidisciplinary experience serving as environmental scientist, ecologist, research assistant, and assistant manager on various projects related to environmental compliance, ecological assessment, and scheduling. Her experience includes storm water management, accompanied with erosion, water quality, and biological monitoring. She has conducted focused rare plant surveys, vegetation mapping, avian focused protocol surveys, and biological resource and habitat assessments. Ms. Hall's relevant experience includes biological analysis and performing GPS-surveying on various NEPA-compliant projects for the Texas Department of Transportation (TxDOT) and the Federal Highway Administration (FHWA). Past experience includes projects for federal clients, such as the United States Army Corps of Engineers (USACE), U.S. Environmental Protection Agency (EPA), U.S. Army, and Department of Defense (DoD). State and local government contacts and clients include TxDOT; Texas Parks and Wildlife (TPWD); Texas Council on Environmental Quality (TCEQ); Texas Water Development Board (TWDB); and various municipalities throughout southern, central, and northern Texas. Additional experience on projects in Virginia and California with NEPA/CEQA compliance with local, state, and federal regulations.

Ms. Hall has worked on projects for private landowners, government agencies, and industrial companies. She has conducted surveys for state and federally listed plant and wildlife species. She has experience in performing protocol-level surveys for federally and state-listed threatened and endangered species including Quino checkerspot butterfly, least Bell's vireo, and arroyo toad. She holds a State scientific collecting permit and a Federal Endangered Species Act 10(a)(1)(A) independent permit to perform fairy shrimp surveys and Desert Tortoise certification. Her responsibilities have included project and task management on large projects and on-call projects, general and focused plant and wildlife field surveys, database management, quality assurance and quality control for data collection procedures, wildlife tracking studies, GPS techniques, sensitive species mapping, and preparation of a variety of biological technical reports. She is also experienced with noise impact analyses and storm water sampling procedures.

## PROJECT EXPERIENCE

SR 76 Biological Assessment, San Diego, CA

Biologist

CLIENT: Caltrans

Conducting preconstruction wildlife movement study for SR 76 biological assessment using tracking station, tracking transect, and roadkill surveys. Responsible for data summary and assisting with the summary monitoring report.

State Route 76 Realignment and Widening Project,

San Diego County, CA

Biologist

CLIENT: Caltrans

Performed formal USACE wetland and jurisdictional delineation for a 16-mile segment of the San Luis Rey River. Determined federal and state jurisdictional extents of a semi-arid riverine system, which contains rare and sensitive habitat for listed and special status plant and animal species. Assisted in obtaining agency concurrence on field methodology, and conducted and supervised delineation field teams during the formal USACE wetland delineation. Assisted in preparation of wetland delineation report sections and alternatives analysis.

KATIE HALL

Pine Tree Wind Development Project, Kern County, CA

Wildlife Biologist

CLIENT: LADWP and IEC

Assisted in conducting focused surveys for the Mojave desert tortoise, following a modified protocol, approved by the local BLM office. Also assisted in reviewing sections of the environmental documentation for the project.

CONFIDENTIAL PROJECT

Wildlife Biologist

CLIENT: CONFIDENTIAL CLIENT

Assisted in conducting focused surveys for the western burrowing owl. Project area consisted of over 300 acres. Also assisted in reviewing sections of the environmental documentation for the project.

CONFIDENTIAL PROJECT

Wildlife Biologist

CLIENT: CONFIDENTIAL CLIENT

Led the 2007-2008 desert tortoise and western burrowing owl field effort during a focused absence/presence survey of species that had the potential to occur within the impact area of a planned solar energy project located in the western Mojave desert. More than 2,000 acres of land was surveyed for the target species, in addition to a 1-mile buffer zone. Vegetation mapping and an inventory of any special status wildlife was also conducted. Responsible for planning and implementing all stages of the survey effort. Also responsible for data management and preparation of the desert tortoise survey report.

CONFIDENTIAL PROJECT

Wildlife Biologist

CLIENT: CONFIDENTIAL CLIENT

Led the 2007-2008 desert tortoise and western burrowing owl field effort during a focused absence/presence survey of species that had the potential to occur within the impact area of a planned solar energy project located in the western Mojave desert. More than 4,000 plus acres of land was surveyed for the target species, in addition to a 1-mile buffer zone. Vegetation mapping and an inventory of any special status wildlife was also conducted. Responsible for planning and implementing all stages of the survey effort. Also responsible for data management and preparation of the desert tortoise survey report.

Basewide Vernal Pool Floral and Faunal Surveys,

MCB Camp Pendleton, CA

Biologist

CLIENT: MCB Camp Pendleton

Assisting in the field collection of vernal pool branchiopod species in various training areas on base. Assisting in laboratory identification of *Branchinecta lindahli*, *Branchinecta sandiegonensis*, and *Streptocephalus woottoni*. Also helping to update and maintain data collected during these surveys in the database.

San Diego Gas and Electric, 2007 Firestorm Emergency Monitoring

Services, San Diego County, CA

Biologist/Restoration Ecologist

CLIENT: San Diego Gas and Electric, Land Planning and Natural Resources

Assisted SDG&E with emergency response efforts following the fires that occurred in San Diego County during fall 2007 (Firestorm 2007). Performed assessments of natural habitats surrounding power poles burned during Firestorm 2007 before and after repair work was performed by SDG&E staff. Prepared summary reports documenting essential information regarding the status of each work site visited. Also assisted SDG&E staff with determining which best management practices (BMPs) could be used within the SDG&E service territory within San Diego County to remediate ground disturbances caused by emergency repair work following Firestorm 2007. In addition to suggesting BMPs, performed assessments of stream crossings impacted by SDG&E emergency response teams during Firestorm 2007 and prepared

KATIE HALL

associated summary reports that would be utilized by SDG&E during preparation of documents necessary for after-the-fact emergency reporting to the regulatory agencies, including the Army Corps of Engineers (Emergency Permit Regional General Permit 63) and California Department of Fish and Game and U.S. Fish and Wildlife Service (SDG&E's Subregional Natural Communities Conservation Plan).

State Route 52 San Diego Ambrosia Transplantation Project,  
San Diego County, CA  
Project Biologist

CLIENT: California Department of Transportation, District 11  
The terminus of State Route 52 will be extended eastward from its current location in Santee, California. A small population of San Diego ambrosia (*Ambrosia pumila*; federally listed as endangered) growing in the project footprint required transplantation to a nearby mitigation site. As the project restoration ecologist and field manager, Ms. Hall was responsible for planning, implementing, monitoring, and reporting on the project.

Focused Survey and Inventory of Pendleton Button-Celery,  
San Diego County, CA  
Project Biologist

CLIENT: Marine Corps Base Camp Pendleton, Environmental Security, Land Management Branch

Ms. Hall was one of the main biologists that performed focused rare plant surveys for Pendleton button-celery (*Eryngium pendletonense*) on MCB Camp Pendleton. A total of 850 acres was surveyed for this rare plant to document new populations and obtain complete mapping and associated data for existing and new occurrences. Submeter GIS equipment and cutting-edge database technology were utilized during the survey process.

SR-76 Biological Assessment, San Diego, CA  
Biologist

CLIENT: Caltrans

Conducting preconstruction wildlife movement study for SR 76 using tracking stations, tracking transects, and roadkill surveys. Also assisting in data collection and entry into the database.

San Diego Gas and Electric Natural Communities Conservation Plan  
On-Call Services, San Diego County, CA  
Biologist

CLIENT: San Diego Gas and Electric

Provided on-call support to SDG&E Land Planning and Natural Resources for planned and emergency operations and maintenance activities associated with their electricity transmission and distribution lines within San Diego and Orange counties. Evaluated potential biological impacts from operations and maintenance activities being conducted under SDG&E's Subregional Natural Communities Conservation Plan.

Mesquite Raven Monitoring, Glamis, CA  
Wildlife Biologist

CLIENT: Los Angeles Department of Public Works

Conducted focused raven surveys for the biological monitoring program.

Sorrento Creek Channel Maintenance Project, San Diego, CA  
Project Scientist

CLIENT: City of San Diego

Conducted field measurements and recorded activities related to the flood-control maintenance in Sorrento Creek, Los Peñasquitos Creek, and Carroll Canyon Creek. The project involves dredging and vegetation removal to maintain flood capacity, which is conducted in strict compliance with Sections 401 and 404 of the Clean Water Act and Section 1600 of the California Fish and Game Code. Responsibilities include project redesign support, a focused

KATIE HALL

water quality analysis, hydrographic surveying, hydrological analysis, environmental and biological monitoring, and compliance reporting.

Mesquite Habitat Monitoring Plan, Glamis, CA

Wildlife Biologist

CLIENT: LADPW

Assisted in creation and finalization of revised habitat monitoring plan to incorporate sampling of small mammals, birds, and vegetation as indicators for and in concert with desert tortoise monitoring.

CONFIDENTIAL PROJECT

Wildlife Biologist

CLIENT: CONFIDENTIAL CLIENT

Conducted protocol focused desert tortoise and burrowing owl surveys and general wildlife surveys.

Pine Tree Wind Development Project, Kern County, CA

Project Biologist/Environmental Monitor

CLIENT: Los Angeles Department of Water and Power (LADWP)

Assisted in creating and presenting an educational program for the Pine Tree Wind Development Project focusing on species awareness and protecting the federal and state listed Mojave desert tortoise. The education program was presented to the District's employees as mandated by the USFWS prior to working in areas potentially occupied by the tortoise. Assisted with presence/absence surveys for the federally threatened Mojave desert tortoise. Responsible for project planning, coordination of construction and biological monitoring, mitigation compliance, and implementing the biological monitoring during project construction.

SR 76 Biological Assessment, San Diego, CA

Biologist

CLIENT: Caltrans

Performed rare plant surveys, southwestern arroyo toad surveys, least Bell's vireo surveys, and wetland delineation as part of the overall biological assessment.

Old Creek Road Crossing Replacement, Ventura County, CA

Project Biologist

CLIENT: Caltrans

Responsible for the completion of habitat assessment and applicable biological surveys for a Caltrans NES, tree survey, biological monitoring involving directional drilling for Old Creek and EIR biological assessment.

On-Call Storm Water and Environmental Services Support,

Escondido, CA

Environmental Analyst/Biologist

CLIENT: City of Escondido

Directed the field sampling team in determining discharge rates, conducting field measurements, collecting water quality samples, and recording environmental observations in compliance with the City of Escondido's Jurisdictional Urban Runoff Management Plan (JURMP). This extensive environmental measurement program involves characterizing dry-weather water quality flows and conditions at 156 locations throughout the city. Monitoring locations span the San Luis Rey, Carlsbad, and San Dieguito watersheds. Assisted in analyzing chemical data, assessed permit compliance, and determined follow-up investigation or corrective action needs. This program evaluates runoff contributions from industrial, municipal, commercial, and residential land uses. Also assisted in developing training materials and implementing in-house and City training programs for storm water field inspections. For other specific sites in the city requiring focused attention, conducted storm water inspections of municipal and industrial sites, including BMP recommendations, public outreach, and storm water ordinance violation citations.

KATIE HALL

State Route 125 South Environmental Compliance,  
San Diego County, CA  
Environmental Analyst/Biologist

CLIENT: California Transportation Ventures

Providing environmental compliance services for the construction of State Route 125 South, an 11.2-mile freeway/toll road in southern San Diego County. Responsible for assisting in maintaining and inspecting BMPs for compliance with construction erosion control and stormwater requirements. Inspected environmental compliance with biological resources, noise, and water quality mitigation measures. Reviewed and commented on design plans and permits, as well as conducted post-construction inspections for water quality assurance to stormwater drainages.

City of Palms Springs Smoketree Commons EIR, Palm Springs, CA  
Project Biologist

CLIENT: City of Palm Springs

Provided research, writing, and editing of the biological resources section of the EIR for a commercial/retail project on a 19-acre undeveloped site. Issues included removal of native vegetation and potential species habitat, compensatory mitigation, scenic vistas, traffic, and noise.

Otay Water District Recycled Water Pipeline, San Diego County, CA  
Project Biologist

CLIENT: Otay Water District

Project involves hydrologic unit being placed underneath Otay River and tributary installation over a 4-mile stretch, U.S. Fish and Wildlife Service and Department of Fish and Game consultation, wetland delineation, biological species survey, compensatory mitigation and Section 401 California RWQCB certification within southwestern San Diego County.

Rancho Cordova, Sacramento County, CA and San Diego County, CA  
Project Biologist

CLIENT: City of Rancho Cordova

Monitored habitat restoration, habitat mapping, and fairy shrimp and vernal pool data collection for several projects within Sacramento County and northern San Diego County, California.

Relief Route, City of Haskell, TX

Project Ecologist

CLIENT: TxDot

USACE permit application for the US 277 4.5-mile Relief Route for the City of Haskell, Texas, for the Texas Department of Transportation (TxDOT) Abilene District. The study focus was placed on the proposed route's expected improvement of safety and increased mobility, USACE permit application for 0.41 acre of adjacent wetlands and headwaters, creation of 0.37 acre of wetland mitigation, GPS construction, threatened and endangered species considerations, extensive site reconnaissance, and detailed survey. Work was performed prior to joining EDAW.

Relief Bypass, Howard County, TX

Project Ecologist

CLIENT: TxDot Abilene District

USACE permit application to construct a 12-mile truck relief bypass facility around the City of Big Spring, Howard County, Texas, for the Abilene District of the Texas Department of Transportation (TxDOT). The study focus was placed on the proposed route's expected improvement of safety and increased mobility, USACE permit application for 6.22 acres of jurisdictional waters of the U.S., consisting of 2.4 acres of jurisdictional waters and 3.82 acres of jurisdictional wetlands, mitigation, GPS construction, and threatened and endangered species considerations, extensive site reconnaissance, and detailed survey. Work was performed prior to joining EDAW.

KATIE HALL

Paul D. Rushing Park, Harris County, TX

Project Ecologist

CLIENT: Harris County Precinct 3

Project focused on the Paul D. Rushing Park public recreational complex, a storm water quality management and detention system, and mitigation that involved a series of created lakes and enhanced wetlands for Harris County Precinct 3. The project involved an after-the-fact USACE permit application for wetland impacts. Extensive site reconnaissance and detailed survey was conducted. Work was performed prior to joining EDAW.

WET2 Methodology Report, Woodlands, TX

Project Ecologist

CLIENT: Elektra Enterprises, Inc.

Wetlands Determination for Land Bank Credit for Elektra Enterprises, Inc. in the Woodlands, TX. Responsible for project management of the consulting effort to perform a WET2 methodology necessary to calculate the credit value of 5.03 acres of wetlands on a 90-acre tract held by the client for the land development. Project also required a social significance and effectiveness wetlands evaluation and a detailed site survey by the subcontractors. Work was performed prior to joining EDAW.

Wetland Delineation Determination, Houston, TX

Project Ecologist

CLIENT: Canyon Lakes Development

Feasibility study for Canyon Lakes Development at Stonegate in Houston, TX. Responsible for the project management of the feasibility study for the land development of a 435-acre site. The study focus was centered on wetlands determination, GPS construction, and threatened and endangered species considerations affecting proposed site development plan. Project required extensive site reconnaissance and detailed survey, which the management of several subcontractors designated by the client. Work was performed prior to joining EDAW.

Gosling Road Widening and Realignment, Houston, TX

Project Biologist

CLIENT: Harris County, TX

Environmental assessment for Gosling Road widening and realignment for the Harris County infrastructure, Houston, TX. Responsible for project coordination necessary to complete and submit the final report to the client and cognizant regulatory agencies so that the design and construction process could proceed on from this key milestone. Work was performed prior to joining EDAW.

Categorical Exclusion, Denton County, TX

Project Ecologist

CLIENT: City of Highland Village

Categorical Exclusion, Highland Village Hike and Bike Inland Trail, City of Highland Village, TX – Performed QA/QC, technical edit, and incorporated final comments for this CE report on a proposed new facility hike and bike trail through a residential community in Denton County. Work was performed prior to joining EDAW.

Wetlands Delineation Determination, Galveston County, TX

Project Biologist

CLIENT: KW Interests, Inc.

Responsible for project coordination of a field and research consulting effort to determine wetlands on a 70-acre site under land development by the client. Project involved analysis of aerial photography; site reconnaissance and survey; threatened and endangered species survey; historical and archaeological survey; verification of jurisdictional wetlands on the site; local, state and federal data form preparation; and final report submittal to the client and cognizant regulatory agencies. Work was performed prior to joining EDAW.

KATIE HALL

Brown & Root Services (Special Projects Position in support of U.S. Army), Bosnia - Herzegovina

Associate Cost Specialist

CLIENT: United States Army

Assigned to the Project Controls Department in Bosnia i Herzegovina in support of the Balkans Peace Mission. Duties included database management to ensure accuracy of information reported to the client; communication and scheduling support and assistance to various project managers for work breakdown structure (WBS) schedules; and providing assistance in the development of utility programs, and processing/classifying IHP requests. Responsible for the management of five logistical WBSs and ensuring that the functional areas remained within budgets, which required maintaining frequent and regular (often 24-hour on-call) contacts with the functional area manager. Duties also included preparing financial reports for various aspects of the project as required and assigning cost codes to documents received from the Payroll and Accounting Department on a day-to-day basis. Responsibilities also included supervision and organization, cost engineering, subcontract supervision, financial management, and cost control. Work was performed prior to joining EDAW.

U.S. Environmental Protection Agency, Office of Air and Radiation (OPAR), Washington, DC

Grantee

CLIENT: EPA Agency

Worked on the International Transport of Air Pollutants (ITAP) Proposal Draft based on pollutants, concentrations and exposures in the United States due to the combined effects of local, regional, and international sources of emissions. Work was performed prior to joining EDAW.

Oak Ridge National Laboratory, Oak Ridge, TN

Research Assistant

CLIENT: Oak Ridge National Laboratory

Responsible for training and supervising student field teams to perform sample collection, testing and analyses on soil and leaf litter samples for radionuclides. Managed report preparation and mapping using remote sensor data. Developed collection and lab schedules for student teams. Prepared site-specific topographical maps displaying trend analysis data. Prepared lab protocols for analyses to be conducted. Developed remote sensor location plan for radiometry and mapping. Work was performed prior to joining EDAW.

University of Tennessee, Knoxville, TN

Research Assistant/Field Technician/Cartographer

CLIENT: University of Tennessee

Appointed by chair of department of geography to a 3 month research assignment in Puerto Rico. Duties included installation and operation of field instruments/remote sensors, and collecting and analyzing soil leaf litter chemistry in the rainforest of the La Sabana National Forest. Responsible for documentation, preparation of reports and maps, and writing draft sections in support of the principal researcher. Work was performed prior to joining EDAW.