R E P O R T

2011 SPRING AND FALL BIRD POINT COUNT SURVEY FOR THE RIO MESA SOLAR ELECTRIC GENERATING FACILITY RIVERSIDE COUNTY, CALIFORNIA

Prepared for

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February 08, 2012

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Tables

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BCC	Birds of Conservation Concern
BLM	Bureau of Land Management
BSA	Biological Study Area
CDFG	California Department of Fish and Game
FP	Fully Protected
Gen-tie line	Generator tie-line
LCRV	Lower Colorado River Valley
MBTA	Migratory Bird Treaty Act
MW	Megawatt
Rio Mesa SEGF	Rio Mesa Solar Electric Generating Facility
SSC	Species of Special Concern
USC	United States Code
USFWS	U.S.nited States Fish and Wildlife Service
WL	Watch List

SECTION 1 INTRODUCTION

This report documents the methodology and results for the spring and fall 2011 bird point count surveys conducted for the Rio Mesa Solar Electric Generating Facility (Rio Mesa SEFG or Project). The Bureau of Land Management (BLM) requires bird point count surveys on solar sites as part of the baseline environmental information. For many years, BLM and other agencies have used bird abundance and diversity as a general measure of the quality and productivity of a particular site.

The Lower Colorado River Valley (LCRV) is a secondary bird migration route for migrant songbirds and a minor wintering area for waterfowl and shorebird species compared to the main Pacific Flyway that occurs to the west along the Salton Sea and the eastern side of the Peninsular Mountain ranges. Four National Wildlife Refuges (Havasu, Bill Williams, Cibola, and Imperial) have been established along the Colorado River on the California/Arizona boundary. These refuges offer habitat for migratory birds and other wildlife.

The Cibola National Wildlife Refuge is the closest refuge to the Project and is located approximately five miles southeast of the proposed project site. According to the Cibola Refuge bird checklist, 288 bird species, including numerous species of migratory passerines (songbirds), upland species (quail, roadrunners, mourning and white-winged doves), waders and waterfowl (greater sandhill cranes, Canada and snow geese, ibis, egrets, herons, ducks), and raptors (hawks, falcons, eagles, vultures) occur in the area (United States Fish and Wildlife Service [USFWS] 1995). The Imperial refuge is 18 miles to the south while the Bill Williams and Havasu refuges are 65 and 70 miles north of the site, respectively.

The purpose of this report is to provide information on the bird species that use or fly over the site which will in turn aid in compliance with federal and state regulations, including the Migratory Bird Treaty Act (MBTA), which prohibits the 'take' of any migratory bird covered by the MBTA[1].

[1] USC § 703(a): In general. Unless and except as permitted by regulations made as hereinafter provided in this subchapter, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof, included in the terms of the conventions between the United States and Great Britain for the protection of migratory birds concluded August 16, 1916(39 Stat. 1702), the United States and the United Mexican States for the protection of migratory birds and game mammals concluded February 7, 1936, the United States and the Government of Japan for the protection of migratory birds and birds in danger of extinction, and their environment concluded March 4, 1972 and the convention between the United States and the Union of Soviet Socialist Republics for the conservation of migratory birds and their environments concluded November19, 1976.
According to 50 C.F.R. 10.12, "take" means "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect."

SECTION 2 PROJECT DESCRIPTION

The Project site is located on the east side of the Mule Mountains approximately 13 miles southwest of Blythe, California (Figure 1). The site is within the Colorado Desert region of the Sonoran Desert on the Palo Verde Mesa in Riverside County, California.

The site is partially on private and partially on public land administered by the BLM. The Project will include three solar concentrating thermal power plants with 760-foot tall solar power towers, and a shared common area. Each plant will have a nominal output of 250 megawatts (MW). The Project will be executed in three phases. Each 250 MW plant requires about 1,850 acres (2.9 square miles), for a total project area of approximately 5,750 acres required for all three plants. These three plants will be connected via a common overhead 220 kilovolt generator tie-line (gen-tie line) to the newly approved Southern California Edison Colorado River Substation approximately 9.7 miles to the north.

The Biological Study Area (BSA) for the Project consists of the main project site where the three solar plants and common area are proposed (plus a 500-foot buffer), the gen-tie line along existing transmission lines that extend to the proposed Colorado River Substation (plus a 650-foot buffer), and access areas from State Route 78 via Bradshaw Trail and 34th Avenue (plus a 100-foot buffer). The BSA totals 11,277 acres.

SECTION 3 METHODOLOGY

Point count survey methodology followed the BLM's Solar Facility Point Count Protocol (2009), which closely follows Ralph *et al.* (1995), with some modifications. This protocol was part of the final Biological Resources Work Plan reviewed and commented on by the responsible agencies prior to implementation. Both spring and fall surveys were conducted one day a week for each transect, for four consecutive weeks in order to identify species occupying the site during each season. Spring point counts began on April 5, 2011 and ended on May 5, 2011. Fall point counts began on November 9, 2011 and ended on December 9, 2011 (Appendix A). Counts began at sunrise and ended within approximately four hours of sunrise.

Sixteen point count transects were surveyed due to the Project's approximately 16 square-mile footprint. Each transect contained eight points that were at least 250 meters apart.

Transects were concentrated in areas with high potential for bird activities (e.g., washes, high vegetation areas). Figure 2 shows the distribution of transects relative to microphyll woodland, which were assumed to be areas of high potential for bird activities. Out of 128 total survey points, 58 (45%) were located within microphyll woodland, and an additional 36 (28%) were located within 100 meters of microphyll woodland.

Ten minutes were spent surveying a radius of 100 meters around each survey point. Birds were recorded as ≤50 meters away, ≥50 meters away (up to 100 meters), or as a fly-over. The surveys were conducted by two biologists. Surveyors scanned the sky and surrounding vegetation for perching birds and listened for calls. Survey starting and ending time, starting and ending temperature, cloud cover, and wind speeds were recorded on data sheets (Appendix B), along with any incidental sightings and species observed during transit between survey points.

SECTION 4 BIOLOGISTS' QUALIFICATIONS

Biologists' qualification criteria are listed below and resumes can be found in Appendix C:

- Familiarity with the vocalizations and plumage characteristics of adult and juvenile birds with a range that includes Southern California and the Mojave Desert.
- Sufficient education and field experience in Southern California ecology and biology to be able to identify likely local and migrant species and to understand wildlife behavior.

SECTION 5 RESULTS

A total of 81 bird species were observed at the project site and a total of 3,644 individuals were detected (Appendix D). No waterfowl (e.g., ducks, geese) or eagles were observed during the surveys, however one incidental observation of two individual golden eagles were observed in March during early spring botany surveys. The only waterbird observation was a flock of 14 white pelicans flying over the Project site during the spring survey. There were also no observations of large migrating flocks of raptors with the exception of turkey vultures (the largest being 20-30 individuals observed incidentally during early spring botany surveys). Special status bird observations included the state threatened Swainson's hawk (one individual observed during the spring survey) and state endangered Gila woodpecker (four individuals observed during the spring survey and one individual observed during the fall survey).

During the spring 2011 surveys, 68 bird species were detected with a total of 2,622 individuals. The most commonly observed species included: Tree swallow (660), Mourning dove (483), Ash-throated fly-catcher (304), Verdin (247), Black-tailed gnatcatcher (84), and Phainopepla (76).

During the fall 2011 surveys, 47 bird species were detected with a total of 1,022 individuals. The most commonly observed species included: Yellow-rumped warbler (184), House finch (143), Horned lark (114), Phainopepla (86), Verdin (83), and Black-tailed gnatcatcher (71),

Aerial foraging birds (swifts and swallows) detected during the surveys accounted for almost 30 percent of all spring season sightings. Tree swallow was the most common species recorded during the surveys. Doves and quail were the second most common group of birds detected, representing over 17 percent of all sightings. Migrant warblers represented less than 10 percent of all spring season sightings.

5.1 SPECIAL STATUS BIRD SPECIES

A total of 15 special status bird species were detected during spring and fall 2011 surveys including one waterbird species, seven raptor species, five passerine species, and two other species (Table 1). Species included the American white pelican, Cooper's hawk, Crissal thrasher, Ferruginous hawk, Gila woodpecker, Horned lark, Le Conte's thrasher, Loggerhead shrike, Lucy's warbler, Northern harrier, Peregrine falcon, Prairie falcon, Sharp-shinned hawk, Swainson's hawk, and Vaux's swift. An additional special status species, Merlin, was incidentally observed. The following species accounts are provided for the special status birds detected in spring and fall 2011. Observation locations for these species can be found in Figure 3 (spring) and Figure 4 (fall).

Table 1
Special Status Bird Species Observed During Spring and Fall 2011 Surveys

Common Name	Scientific Name	Federal Status	State Status	Spring Observations[1]	Fall Observations[1]
Waterfowl and Waterbirds					
American pelican	*Pelecanus erythrorhynchos*	--	SSC	14	0
Raptors					
Cooper's hawk	*Accipiter cooperii*	--	WL	1	0
Ferruginous hawk	*Buteo regalis*	BCC	WL	0	1
Northern harrier	*Circus cyaneus*	--	SSC	1	1
Peregrine falcon	*Falco peregrinus*	BCC	FP	0	1
Prairie falcon	*Falco mexicanus*	BCC	WL	1	6
Sharp-shinned hawk	*Accipiter striatus*	--	WL	0	1
Swainson's hawk	*Buteo swainsoni*	BCC	Threatened	1	0
Passerines					
Crissal thrasher	*Toxostoma crissale*	--	SSC	1	0
Horned lark	*Eremophila alpestris*	--	WL [2]	21	114 [2]
Le Conte's thrasher	*Toxostoma lecontei*	BCC	SSC	1	3
Loggerhead shrike	*Lanius ludovicianus*	BCC	SSC	45	16
Lucy's warbler	*Oreothlypis luciae*	BCC	SSC	2	2
Other					
Gila woodpecker	*Melanerpes uropygialis*	BCC	Endangered	6	1
Vaux's swift	*Chaetura vauxi*	--	SSC	28	-

CDFG - California Department of Fish and Game
USFWS - United States Fish and Wildlife Service
[1] Incidental observations are not included
BCC - Birds of Conservation Concern (USFWS)
SSC - Species of Special Concern (CDFG)
FP - Fully Protected (CDFG)
WL - Watch List (CDFG)
[2] Other subspecies of horned lark present during fall season. Resident subspecies is *E. a. leucansiptila*. *E. a. actia is on CDFG Watch List.*

5.1.1 American White Pelican

Regulatory Status: Federal - None; State – California Department of Fish and Game (CDFG) Species of Special Concern (SSC)

The American white pelican is found year round in California (Shuford and Gardali 2008). It breeds primarily in the interior of North America, southern Oregon, northeastern California, northern Utah, and western Nevada (Evans and Knopf 1993, AOU 1998, Parrish et al. 1999). In the west, the American white pelican winters primarily on the Pacific coast and lowlands from central California and southern Arizona to the south through Baja California and western Mexico to Nicaragua. Along the LCRV, American

white pelican is considered an uncommon transient, occasionally in large flocks, from March through May and late September through October (Rosenberg et al. 1991).

This species often forages cooperatively in shallow inland waters, such as river or lake edges, or open water areas in marshes. Degradation of breeding habitat has eliminated several major colonies in California.

A group of 14 American white pelicans were observed (fly-over) during the spring 2011 survey. It is believed that this was a group that wandered over the project site from the Colorado River floodplain to the east during their migration north to their Great Basin breeding grounds. There were no observations of American white pelicans during fall 2011 surveys. No suitable habitat for pelican is present within the BSA.

5.1.2 Northern Harrier

Regulatory Status: Federal - None; State - CDFG SSC

The Northern harrier breeds in North America from northern Alaska and Canada to the mid and lower latitudes of the United States, and south to northern Baja California. It prefers open habitats with lookout perches, such as shrubs or fence posts. These habitats include weedy borders of rivers, lakes, and streams, freshwater marshes, grasslands, weed fields, pastures, and some croplands (including alfalfa and melons). The Northern harrier flies slowly and close to the ground while hunting and takes small animals, birds, reptiles and insects by surprise. Destruction of wetland habitat, native grassland, and moist meadows, and burning and plowing of nesting areas during early stages of the breeding cycle are major reasons for the decline (Remsen 1978). Along the LCRV, northern harrier is a common transient and winter visitor throughout the valley from late August through March (Rosenberg et al 1991). One Northern harrier was observed during spring 2011 surveys (transect C) and one during the fall 2011 surveys (transect N).

5.1.3 Sharp-shinned Hawk

Regulatory Status: Federal - None; State - CDFG Watch List (WL)

The sharp-shinned hawk is widely distributed throughout the Northern hemisphere. Sharp-shinned hawks' wintering area includes the deserts of the American Southwest. Along the LCRV, this hawk is a common transient and winter resident from late March to early April and late September through February (Rosenberg et al. 1991). This hawk hunts from concealed perches or while flying low. It preys on small birds which it attacks by surprise in extremely quick strikes. One Sharp-shinned hawk was observed during the fall 2011 surveys (transect N).

5.1.4 Cooper's Hawk

Regulatory Status: Federal - None; State - CDFG WL

Cooper's hawks are uncommon, medium-sized accipiters. Although uncommon, they are widely distributed throughout the Northern hemisphere. Southeastern California is included in their wintering

range. They are typically solitary and hunt small birds and mammals in surprise attacks. They are typically found in woods and edges of woods, and increasingly around houses and bird feeders. Along the LCRV, Cooper's hawk is considered a fairly common transient and winter resident species from late August to late April and are associated with tall riparian trees, such as mature cottonwoods and willows (Rosenberg et al 1999). One Cooper's hawk was observed during the spring 2011 survey in the BSA along the eastern project boundary (transect O).

5.1.5 Swainson's Hawk

Regulatory Status: Federal – United States Forest Service (USFS) Sensitive, United States Fish and Wildlife Service (USFWS) Birds of Conservation Concern (BCC); State - CDFG Threatened

The Swainson's hawk breeds throughout much of the Rocky Mountains and western Great Plains, from southern Alberta and Saskatchewan in Canada to northern Mexico. Its breeding range in California is limited to the northern portion of the state. It is most often found in grasslands, shrubs, and agricultural areas, where both open land for foraging, and trees for roosting and nesting are available. Ground squirrels, gophers, voles, mice, small birds, lizards, and snakes are the majority of the hawk's prey. A decline in Swainson's hawk populations has been reported across much of the species' range over the past 50 years. Loss or degradation of nesting, foraging, wintering, and migration stop-over habitat are the primary reasons for the population decline; however, illegal shooting and electrocutions on power lines have contributed to fatalities. Along the LCRV, Swainson's hawk is an uncommon transient from mid-August to mid-October and from late March to mid-May in very small numbers (Rosenberg et al. 1991). There was one observation of a Swainson's hawk during spring 2011 surveys in the BSA (transect O).

5.1.6 Ferruginous Hawk

Regulatory Status: Federal - USFWS BCC; State - CDFG WL

Ferruginous hawks can be found in arid to semiarid regions, as well as grasslands and agricultural areas from southwestern Canada to northern Mexico. They breed from April to August, with dates varying with location. Along the LCRV, Ferruginous hawk is a uncommon transient and winter resident from mid-October to mid-March and late September through early April (Rosenberg et al. 1991). The area around Parker Dam and Blythe are consistent use areas for this species. Unlike most buteo hawks, the Ferruginous hawk often perches on the ground. It hunts from the air or a perch, primarily for small mammals in agricultural fields adjacent to the river (Rosenberg et al. 1991). There was one Ferruginous hawk observation during the fall 2011 survey in the BSA at the eastern end of transect B. Another Ferruginous hawk was incidentally observed one mile east of the BSA adjacent to the Bradshaw Trail.

5.1.7 Merlin

Regulatory Status: Federal - None; State - CDFG WL

Merlins mainly nest in trees in forests with open areas, and are typically more uncommon in open areas. They largely hunt small birds which they spot from perch or during low, fast flight. They are widely distributed throughout the Northern Hemisphere. Along the LCRV, merlin is considered a rare but regular transient and winter visitor from late September to early April (Rosenberg et al 1991).

Agricultural lands adjacent to riparian woodland or windrow trees or shrubs are the preferred habitat of this species. There was a single incidental Merlin observation during the fall 2011 surveys located near the eastern project boundary about 1.5 miles south of Bradshaw Trail.

5.1.8 Peregrine Falcon

Regulatory Status: Federal - USFWS BCC; State - CDFG Fully Protected (FP)

The Peregrine falcon's wintering range includes Southern California. Although the species suffered a sharp decline in the 1950s and 1960s from DDT poisoning, it has rebounded significantly and has been removed from the federal endangered-species list (Unitt 2004). It is a solitary bird that hunts primarily small or medium-size birds from perches or while in flight. Along the LCRV, peregrine falcon is a rare and irregular transient, winter resident and post-breeding visitor, most often recorded in the fall (Rosenberg et al. 1991). There was one Peregrine falcon observation during the fall 2011 surveys (south end of transect K). There is no suitable nesting habitat in the BSA.

5.1.9 Prairie Falcon

Regulatory Status: Federal - None; State - CDFG SCC

The Prairie falcon forages in open, arid regions of plains and nests in cliffs. It is most often observed in open scrub and grassland habitats. The prairie falcon has declined largely because of human disturbance of nest sites (Remsen 1978). It forages widely in desert, grassland, and agricultural habitats during the non-breeding season where quail, dove, and other bird prey are abundant. Along the LCRV, prairie falcon is an uncommon transient and winter visitor and breeds in the Mule Mountains west of the project site (Rosenberg et al. 1991). There was a single Prairie falcon observation during the spring 2011 surveys (transect B) and six observations during the fall 2011 surveys (transects C, F, J, M, N). There was one incidental sighting during fall located between transects A and B. There is no suitable nesting habitat in the BSA.

5.1.10 Other Raptor Species

Raptors as a group are listed as Fully Protected per CDFG Code. Turkey vulture (36 total sightings) and red-tailed hawk (31 total sightings) were the most frequently detected raptors during the point count surveys. Two individuals of golden eagle were incidentally detected in early March. Two Harris hawk were incidentally detected in early spring 4.1 miles east of the project site. California is on the fringe of the natural range of the Harris' Hawk (Patten and Erickson 2000). A few individuals of other common raptors were also detected: American kestrel (five detections) and great-horned owl (two detections), Western burrowing owl burrows were detected during the focused survey for this species. Two individual burrowing owls were detected incidentally during other field investigations.

5.1.11 Vaux's Swift

Regulatory Status: Federal - None; State - CDFG SSC

The Vaux's swift breeds from southeastern Alaska, southern British Columbia, northern Idaho, and western Montana south to central California. In S outhern California, it is a spring and fall migrant, and can occasionally occur in winter (Shuford and Gardali 2008). Along the LCRV, Vaux's swift is a common, but irregular spring migrant from mid-April to mid-May and an uncommon fall migrant from late August to late September (Rosenberg et al. 1991). Vaux's swifts usually roost and nest in large cavities in a variety of tree species and less frequently in artificial structures. This species forages over a variety of habitats during the breeding season, including over water at various heights where it searches for small flying insects. There were 28 Vaux's swifts observed (fly-overs) during the spring 2011 survey in the BSA. No suitable nest habitat occurs within the BSA.

5.1.12 Gila Woodpecker

Regulatory Status: Federal - USFWS BCC; State - Endangered

The Gila woodpecker is generally a permanent resident where found. Habitat includes desert mesas with large cacti or trees suitable for nesting, dry subtropical forests, riparian woodlands, and residential areas from central Arizona to the edges of neighboring states. In California it tends to be restricted to the riparian and wash woodlands along the Lower Colorado River Valley. It is considered a common resident where tall trees occur. Fruits, mistletoe, ants, beetles, and grasshoppers make up the Gila woodpecker's diet.

There were four observations of Gila woodpeckers during the spring 2011 survey (transects A, C, E, K) and one observation during the fall 2011 survey (transect L) in the BSA. Based on an estimate of 0.8 birds per square kilometer (Emlen 1974), there is sufficient suitable nesting habitat on site to support up to four nesting pairs of Gila woodpecker. While no nests were observed, their residential status indicates that this species likely nests in larger trees in the palo verde / ironwood woodland.

5.1.13 Horned Lark

Regulatory Status: Federal - None; State - CDFG WL

Horned larks are common in expansive open areas with barren or sparsely vegetated ground. They can be found year-round in most areas from southern Canada south. Along the LCRV, horned lark is a common but local breeder and common to abundant winter resident from August to March (Rosenberg et al. 1991). They are ground foragers, primarily eating weed and grass seeds. They feed insects to their young and will eat insects themselves, typically in summer. Horned larks are typically in flocks of up to hundreds. Male territories are established and defended as early as January-February. Nests are built by the female, usually on open ground near a clump of grass or other low feature. There were 21 observations of Horned larks in spring 2011 and 114 observations during the fall 2011 survey. Migrant flocks of horned larks from outside California are known to join California resident flocks during the winter; Rosenberg et al. (1991) indicates that the sonoran subspecies (*Eremophila alpestric leucansiptila*) is resident in the LCRV. It is unknown whether any of the individuals detected in the BSA during the surveys were of the California resident subspecies (*E.a. actia*) listed on the CDFG WL.

5.1.14 Crissal Thrasher

Regulatory Status: Federal - None; State - CDFG SSC

The Crissal thrasher is a non-migratory resident with a range from southeastern California and southern Nevada through western Texas and central Mexico. This species prefers habitats characterized by dense, low scrubby vegetation, such as desert and foothill scrub and riparian brush. The nest of the Crissal thrasher typically consists of an open cup of twigs, lined with finer vegetation, and placed in the middle of a dense shrub or bush. Loss of habitat due to clearing for agriculture or urban and suburban development threatens some populations. There was a single observation of Crissal thrasher made during the spring 2011 survey in the BSA (transect B).

5.1.15 Le Conte's Thrasher

Regulatory Status: Federal - BLM Sensitive, USFWS SSC; State - CDFG SSC

Le Conte's thrasher is found from southern Mono County, in western and southern parts of the San Joaquin Valley, and in the southern California deserts to the Mexican border. Within this range, its distribution is uncommon to rare locally (Zeiner et al. 1988-1990). This species is not migratory and typically occupies home ranges of approximately 100 acres in open desert wash, Joshua tree habitat with scattered shrubs, and assorted desert scrub habitats. Territories average 15 acres, with nests occurring in dense, spiny shrubs or densely branched cactus. This species uses scattered shrubs and cacti for cover, most frequently saltbush and cholla. It forages primarily on the ground for insects and other arthropods, but will also eat seeds, small lizards, and other small vertebrates. A Le Conte's thrasher was observed incidentally within the survey buffer portion of the BSA during the spring 2011 survey. There were three observations of Le Conte's thrasher during the fall 2011 survey in the BSA (transects D, J, N).

5.1.16 Loggerhead Shrike

Regulatory Status: Federal - USFWS BCC; State - CDFG SSC (nesting)

The Loggerhead shrike is a common year-round resident of grassland, agriculture, and desert scrub (Rosenberg et al. 1991). It prefers open habitat with scattered shrubs, trees, posts and other perches. This species occurs throughout central and southern California. Nests are well concealed and usually found in densely foliaged shrubs or trees, typically below 15 feet in height. It preys mostly on insects, but is also known to take small birds, mammals, and lizards. This species searches for prey from perches at least two feet above ground, swooping directly upon prey once located. It has also been known to hover in search of prey and occasionally hawk insects. It is known as the "butcher bird" for its habit of skewering prey on small twigs or barbed wire before consuming them (Unitt 2004). There were 61 observations of Loggerhead shrikes in the BSA during the 2011 surveys, including 45 during the spring surveys and 16 during the fall surveys.

5.1.17 Lucy's Warbler

Regulatory Status: Federal - None; State - CDFG SSC

Lucy's warbler breeds only in the southwestern United States (Arizona, southern New Mexico, southwestern Texas, extreme southern Nevada and Utah, and southeastern California) and adjacent northern Mexico (Dunn and Garrett 1997 *in* Shuford and Gardali 2008). Within the United States, it is most abundant in south-central Arizona (Price *et al.* 1995). Lucy's warblers migrate north from Mexico in the first half of March, coinciding with the leafing out of honey mesquite (Rosenberg et al. 1991). Breeding occurs mainly from mid-April to early July (Rosenberg et al. 1991, Johnson et al. 1997, Unitt 2004). Most depart the California breeding grounds by mid-July, but some do not migrate south until September (Rosenberg et al. 1991). Lowland riparian breeding habitat includes mesquite and willow "thickets", cottonwood-mesquite, cottonwood-willow gallery forests, cottonwoods, willows, and mid-elevation ash-walnut-sycamore-live oak associations and tamarisk thickets, while more arid habitats include (usually locally) larger stands of xero-riparian vegetation along dry desert washes or occasional upland mesquites, and rarely palo verde and ironwood (Johnson et al. 1997). This warbler is a cavity nester that uses unoccupied woodpecker nest sites and natural cavities in large trees. There were 18 Lucy's warbler observations during the 2011 surveys in the BSA, including 16 during the spring surveys and two during the fall surveys.

5.2 INCIDENTAL OBSERVATIONS

Some incidental observations were made during spring and fall bird point count surveys. These incidentals include observations that were made either between survey points or en route to the site. Although these species were not observed within the 100 meter range of a transect point, these observations provide further information as to a species' use of the BSA or adjacent agricultural fields.

Spring incidental observations included: gila woodpecker, loggerhead shrike, golden eagle, Harris hawk, yellow-headed blackbird, Cooper's hawk, red-tailed hawk nests, and burrowing owl burrows. Focused surveys for breeding golden eagles were negative. Historically-occupied eagle nest sites within a 10-mile radius of the Rio Mesa SEGF were vacant at the time of the 2011 surveys (WRI 2011).

Fall incidental observations included loggerhead shrike, prairie falcon, merlin, as well as red-tailed hawk nests. Sandhill cranes were observed flying approximately two miles east of the project site, heading north over agricultural fields. A ferruginous hawk was observed approximately one mile east of the BSA near Bradshaw Trail. Two Harris hawk were incidentally detected in early spring 4.1 miles east of the Project site.

SECTION 6 DISCUSSION AND CONCLUSIONS

The spring and fall surveys provide information on the relative abundance of species that use the Project BSA during the breeding and migratory seasons. During the spring 2011 breeding season survey, 69 bird species were detected including 12 special status species. During the fall 2011 migratory season survey, 47 species of birds were detected including 11 special status species. The majority of birds and species observed with the highest numbers and largest flocks were not special status species. One exception to this general observation is the Horned lark (135 total observations); however, as previously mentioned, it is not likely that many of the Horned larks observed were the CDFG Watch Listed California Horned lark subspecies since a non-sensitive subspecies is resident in the vicinity (Rosenberg et al. 1991). Spring migrant songbirds were a small portion of the spring survey sighting with the abundant yellow-rumped warbler being the dominant warbler detected. Aerial foraging birds (swifts and swallows) were the dominant songbird group documented in spring.

No Federally Threatened or Federally Endangered bird species were encountered on site during the surveys. Only two State-listed species were observed on site: one State Threatened Swainson's hawk and five State Endangered Gila woodpeckers.

A flock of 14 American white pelicans observed during the 2011 spring surveys was the only sighting of a waterbird species on, or flying over, the Project site. This is consistent with the expectation that waterbird presence at the Project site is limited to the occasional flyover of birds wandering from the agricultural fields or passing through during migration. A flock of sandhill cranes was observed in fall, approximately two miles east of the site flying over the agricultural fields. No waterbirds were observed at or over the Project site during the fall surveys when most waterbird species are present in the LCRV. This observation demonstrates general waterbird fidelity to the agricultural fields and Colorado River floodplain east of the Project site. Given the Project site's peripheral location in relation to typical waterbird habitat and the one mile buffer of desert habitat between the agricultural fields and the solar collectors, flyovers are likely to be infrequent. Shorebirds present in the LCRV typically follow the river valley, but their numbers are small compared with flocks that concentrate at the Salton Sea (Rosenberg et al. 1991, Patten et al 2006), which is located over 100 miles to the southwest of the Project site.

Raptor migration is often inconspicuous and poorly defined in the LCRV (Rosenberg et al. 1991). The Swainson's hawk, Cooper's hawk, Harris hawk, and Merlin detected during surveys are occasional migrants that are expected to use the site in small numbers. The site lies outside the main migration route of the Swainson's hawk and contains potential wintering habitat for Cooper's hawks and Merlins; however, the detection of only one individual of each species implies that they are not commonly present on site, especially when compared to other locales such as around Borrego Springs where tens to hundreds of Swainson's hawks can be seen each day on their migration from South America to the California Central Valley and Great Basin (Anza Borrego Natural History Association 2011, Unitt 2004). The most common raptors detected were turkey vulture, red-tailed hawk, and prairie falcon.

Most migrant flocks of birds fly at altitudes well above the proposed power tower height (760 feet/232 meters [m]). When migrating, neotropical songbirds tend to fly at night at relatively high altitudes (400 m to 2,000 m above ground level [AGL]) and many fly non-stop over the desert region unless they are low on fat reserves or poor weather forces them to the ground (Felix *et al.* 2008, Hardy et al. 2004). Upland

habitats, such as desert scrub, are not as attractive to migrating birds as riparian areas because of the comparatively lower abundance of food (DeLong *et al.* 2005). The flight altitude of wintering waterbirds would be generally less than 100 m AGL since these birds are moving from night roost sites along the river to forage in the agricultural fields during the day. The project site is not along the potential routes between waterbird winter roost sites and foraging areas. Migrating flocks of waterbirds usually fly at much higher altitudes (1200 to 5000 m AGL; Beason 1978). Most migrating raptors tend to soar on thermal uplifts and glide between these thermals. The altitude for overflying raptors can be variable, but it would usually be less than 300 m AGL. Actively foraging raptors would usually be flying below 100 m AGL. Northern harriers forage low to the ground (<30 m AGL). Prairie falcons and American kestrels catch their bird prey on the wing.

Based on relative abundance and flight behavior, bird species most at risk for potential mortality associated with the structures and operation of the power tower technology are swifts, swallows, common raptors (turkey vulture, red-tailed hawk), and possibly winter flocks of dove, quail, finches and horned larks.

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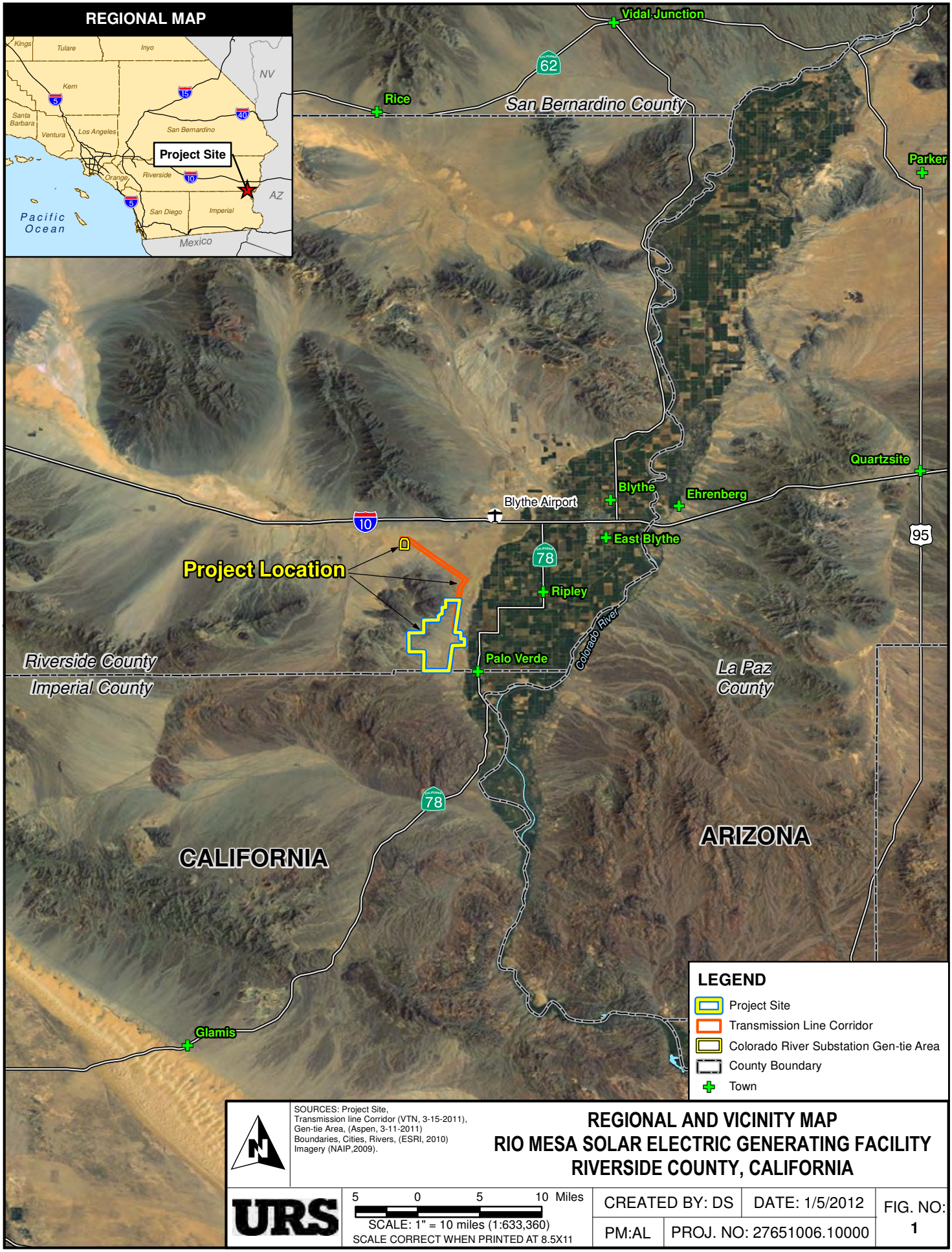
REGIONAL MAP
Kings
Tulare
Inyo
NV
Kern
Santa Barbara
Ventura
Los Angeles
San Bernardino
Project Site
Orange
Riverside
San Diego
Imperial
AZ
Pacific Ocean
Mexico
Vidal Junction
62
Rice
San Bernardino County
Parker
Quartzsite
Blythe
Ehrenberg
Blythe Airport
10
East Blythe
95
78
Project Location
Ripley
Colorado River
Riverside County
Imperial County
Palo Verde
La Paz County
ARIZONA
CALIFORNIA
Glamis
LEGEND
Project Site
Transmission Line Corridor
Colorado River Substation Gen-tie Area
County Boundary
Town
SOURCES: Project Site, Transmission line Corridor (VTN, 3-15-2011), Gen-tie Area, (Aspen, 3-11-2011) Boundaries, Cities, Rivers, (ESRI, 2010) Imagery (NAIP,2009).
REGIONAL AND VICINITY MAP
RIO MESA SOLAR ELECTRIC GENERATING FACILITY
RIVERSIDE COUNTY, CALIFORNIA
URS
5 0 5 10 Miles
SCALE: 1" = 10 miles (1:633,360)
SCALE CORRECT WHEN PRINTED AT 8.5X11
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DATE: 1/5/2012
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Category	Total
Bird Survey Points within Microphyll Woodland	58
Additional Bird Survey Points within 100 meters of Microphyll Woodland	36
Total Bird Survey Points	128

W. Area Power Administration - 115kV
Imperial Irrigation District - 115kV
Southern California Edison - 500kV
Imperial Irrigation District - 115kV
Bradshaw Trail
Bradshaw Trail
Hodges Drain
32nd Ave
34th Ave
78
Palo Verde
Riverside County
Imperial County
W. Area Power Administration 115kV

Bird Survey Points
- Bird Survey Points within Microphyll Woodland
- Bird Survey Points within 100 meters of Microphyll Woodland
- Additional Bird Survey Points
- Microphyll Woodland
- Extent of Microphyll Woodland Mapping

Project Features
- Project Site (approx. 7,539 ac.; approx. acres: 5,604 MWD, 1,625 BLM, 310 Private)
- Private Lands within the Project (approx. acres: 203 Site, 75 T-lin)
- Private Lands within the Project - Right of Entry Obtained (approx. 418 ac.)
- Private Land Owned by MWD (approx. 6,741 ac.)
- Bradshaw Trail within Project Site (2.15 miles, 200ft. corridor, 100ft. from c/l, 53 ac.)
- Bradshaw Trail Off Site
- Existing Gasline (50ft. easement corridor, gasline is off-centered, 12.5ft. west of eastern easement boundary)

Access Road Corridors to be Improved
- 34th Street Access Road Corridor to be Improved (1.02 mile, 200ft. corridor, 100ft. from c/l, 25 ac.)
- Bradshaw Trail Access Road Corridor to be Improved (2.96 miles, 200ft. corridor, 100ft. from c/l, 72 ac.)
- Drainage Crossing Upgrade (500ft. radius from centerpoint, 18 ac. each; 72 ac. total)

Proposed Project 230kV Transmission Line Corridor - (approx. 10 mi)
- Proposed Project 230kV Transmission Line Centerline (approx. 10 mi offsite)
- Proposed Project 230 kV Gen-tie Line Right-of-Way Corridor - approx. 115 ac. (100 ft. corridor, 50ft. from c/l; approx acres: 80 BLM, 35 Private)
- Newly Approved Colorado River Substation (77 ac.)
- Assumed Tie-in Area for Newly Approved Colorado River Substation (approx. 124 ac.)

Existing Transmission Lines
- 161 kV
- 500 kV
- City/Town
- County Boundary

Land Ownership
- US Bureau of Land Management (2,589 ac. with in project)
- Unclassified (5,749 ac. within project)
- PLSS Section Line

SOURCES: Project Site, Transmission Line Centerline, Transmission Line Corridor, MWD Land, Private Lands, Existing Gasline (VTN, 3-15-2011). CRS Substation & Potential Gen-tie Area (Aspen, 3-11-2011). Aerial Imagery (NAIP, 5-25-2009). County, State Boundaries, Roads, Bradshaw Trail (ESRI, 2007). Parcels (BLM, 2006). Land Ownership (BLM, 3-03-2011). Existing Transmission Lines (Platts, 2009). PLSS Sections (BLM, 12-11-2007). Survey Points, Microphyll Woodland (URS, 11-2011).

BIRD POINT COUNT TRANSECTS RELATIVE TO MICROPHYLL WOODLAND
RIO MESA SOLAR
ELECTRIC GENERATING FACILITY

URS

2500 0 2500 5000 Feet

SCALE: 1" = 5000' (1:60,000)
SCALE CORRECT WHEN PRINTED AT 11X17

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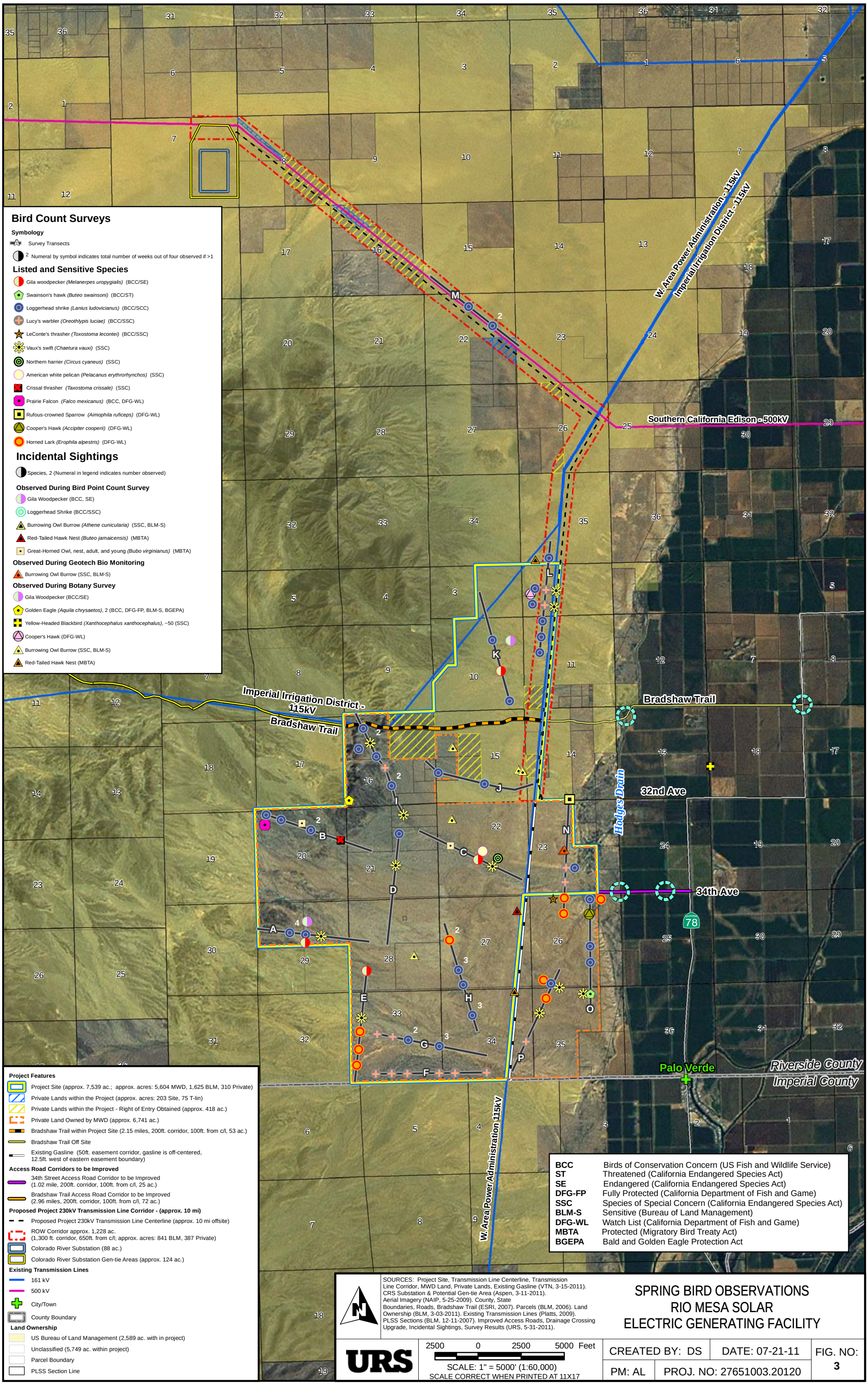
Bird Count Surveys
Symbology
Survey Transects
2 Numeral by symbol indicates total number of weeks out of four observed if >1
Listed and Sensitive Species
Gila woodpecker (Melanerpes uropygialis) (BCC/SE)
Swainson's hawk (Buteo swainsoni) (BCC/ST)
Loggerhead shrike (Lanius ludovicianus) (BCC/SCC)
Lucy's warbler (Oreothlypis luciae) (BCC/SSC)
LeConte's thrasher (Toxostoma lecontei) (BCC/SSC)
Vaux's swift (Chaetura vauxi) (SSC)
Northern harrier (Circus cyaneus) (SSC)
American white pelican (Pelacanus erythrorhynchos) (SSC)
Crissal thrasher (Taxostoma crissale) (SSC)
Prairie Falcon (Falco mexicanus) (BCC, DFG-WL)
Rufous-crowned Sparrow (Aimophila ruficeps) (DFG-WL)
Cooper's Hawk (Accipiter cooperii) (DFG-WL)
Horned Lark (Erophila alpestris) (DFG-WL)
Incidental Sightings
Species, 2 (Numeral in legend indicates number observed)
Observed During Bird Point Count Survey
Gila Woodpecker (BCC, SE)
Loggerhead Shrike (BCC/SSC)
Burrowing Owl Burrow (Athene cunicularia) (SSC, BLM-S)
Red-Tailed Hawk Nest (Buteo jamaicensis) (MBTA)
Great-Horned Owl, nest, adult, and young (Bubo virginianus) (MBTA)
Observed During Geotech Bio Monitoring
Burrowing Owl Burrow (SSC, BLM-S)
Observed During Botany Survey
Gila Woodpecker (BCC/SE)
Golden Eagle (Aquila chrysaetos), 2 (BCC, DFG-FP, BLM-S, BGEPA)
Yellow-Headed Blackbird (Xanthocephalus xanthocephalus), ~50 (SSC)
Cooper's Hawk (DFG-WL)
Burrowing Owl Burrow (SSC, BLM-S)
Red-Tailed Hawk Nest (MBTA)
W. Area Power Administration - 115kV
Imperial Irrigation District - 115kV
Southern California Edison - 500kV
Imperial Irrigation District - 115kV
Bradshaw Trail
Bradshaw Trail
Hodges Drain
32nd Ave
34th Ave
78
Palo Verde
Riverside County
Imperial County
W. Area Power Administration 115kV
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Project Features
Project Site (approx. 7,539 ac.; approx. acres: 5,604 MWD, 1,625 BLM, 310 Private)
Private Lands within the Project (approx. acres: 203 Site, 75 T-lin)
Private Lands within the Project - Right of Entry Obtained (approx. 418 ac.)
Private Land Owned by MWD (approx. 6,741 ac.)
Bradshaw Trail within Project Site (2.15 miles, 200ft. corridor, 100ft. from c/l, 53 ac.)
Bradshaw Trail Off Site
Existing Gasline (50ft. easement corridor, gasline is off-centered, 12.5ft. west of eastern easement boundary)
Access Road Corridors to be Improved
34th Street Access Road Corridor to be Improved (1.02 mile, 200ft. corridor, 100ft. from c/l, 25 ac.)
Bradshaw Trail Access Road Corridor to be Improved (2.96 miles, 200ft. corridor, 100ft. from c/l, 72 ac.)
Proposed Project 230kV Transmission Line Corridor - (approx. 10 mi)
Proposed Project 230kV Transmission Line Centerline (approx. 10 mi offsite)
ROW Corridor approx. 1,228 ac. (1,300 ft. corridor, 650ft. from c/l; approx. acres: 841 BLM, 387 Private)
Colorado River Substation (88 ac.)
Colorado River Substation Gen-tie Areas (approx. 124 ac.)
Existing Transmission Lines
161 kV
500 kV
City/Town
County Boundary
Land Ownership
US Bureau of Land Management (2,589 ac. with in project)
Unclassified (5,749 ac. within project)
Parcel Boundary
PLSS Section Line
BCC Birds of Conservation Concern (US Fish and Wildlife Service)
ST Threatened (California Endangered Species Act)
SE Endangered (California Endangered Species Act)
DFG-FP Fully Protected (California Department of Fish and Game)
SSC Species of Special Concern (California Endangered Species Act)
BLM-S Sensitive (Bureau of Land Management)
DFG-WL Watch List (California Department of Fish and Game)
MBTA Protected (Migratory Bird Treaty Act)
BGEPA Bald and Golden Eagle Protection Act
SOURCES: Project Site, Transmission Line Centerline, Transmission Line Corridor, MWD Land, Private Lands, Existing Gasline (VTN, 3-15-2011). CRS Substation & Potential Gen-tie Area (Aspen, 3-11-2011). Aerial Imagery (NAIP, 5-25-2009). County, State Boundaries, Roads, Bradshaw Trail (ESRI, 2007). Parcels (BLM, 2006). Land Ownership (BLM, 3-03-2011). Existing Transmission Lines (Platts, 2009). PLSS Sections (BLM, 12-11-2007). Improved Access Roads, Drainage Crossing Upgrade, Incidental Sightings, Survey Results (URS, 5-31-2011).
SPRING BIRD OBSERVATIONS
RIO MESA SOLAR
ELECTRIC GENERATING FACILITY
URS
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SCALE CORRECT WHEN PRINTED AT 11X17
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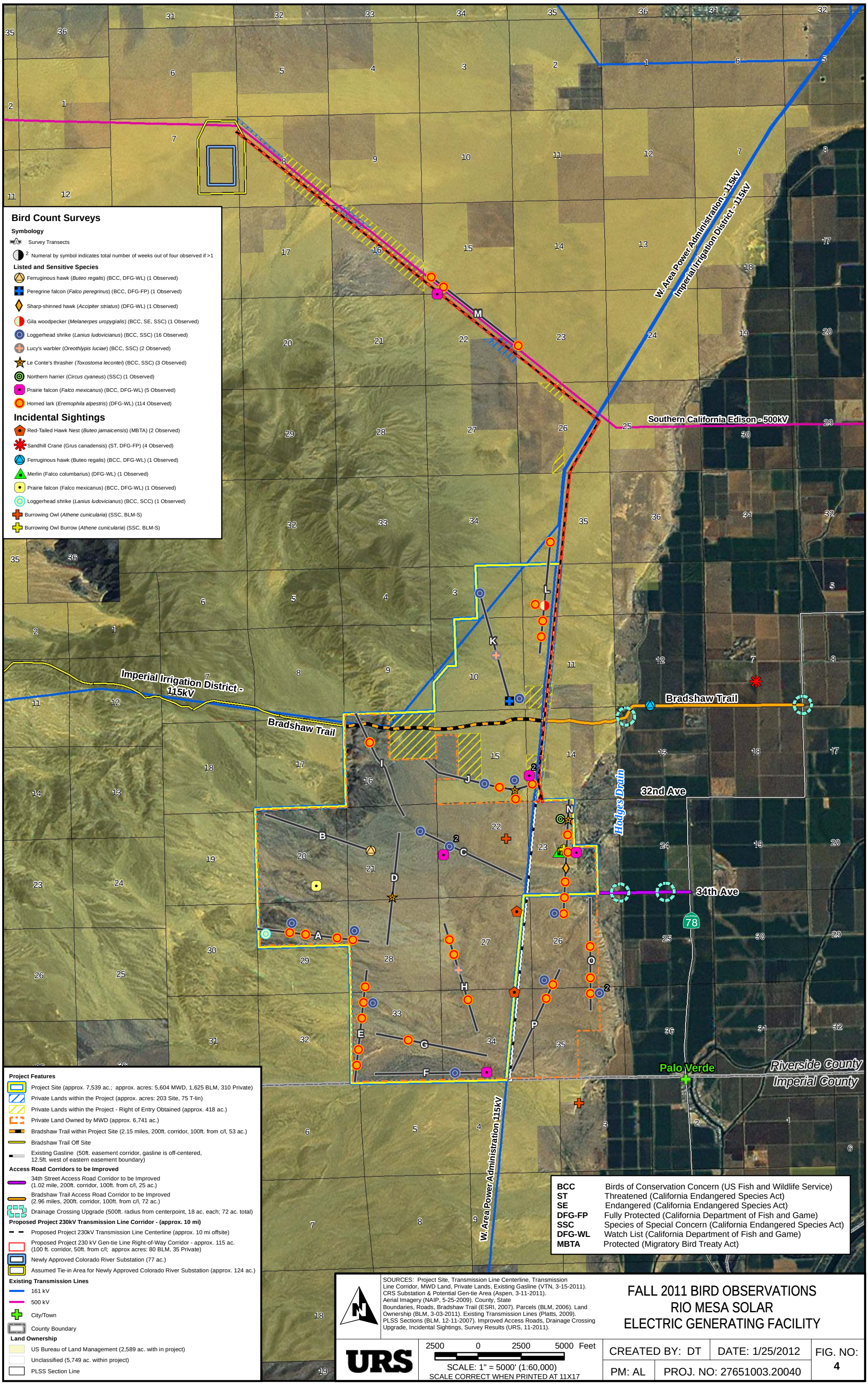
Bird Count Surveys
Symbology
Survey Transects
2 Numeral by symbol indicates total number of weeks out of four observed if >1
Listed and Sensitive Species
Ferruginous hawk (Buteo regalis) (BCC, DFG-WL) (1 Observed)
Peregrine falcon (Falco peregrinus) (BCC, DFG-FP) (1 Observed)
Sharp-shinned hawk (Accipiter striatus) (DFG-WL) (1 Observed)
Gila woodpecker (Melanerpes uropygialis) (BCC, SE, SSC) (1 Observed)
Loggerhead shrike (Lanius ludovicianus) (BCC, SSC) (16 Observed)
Lucy's warbler (Oreothlypis luciae) (BCC, SSC) (2 Observed)
Le Conte's thrasher (Toxostoma lecontei) (BCC, SSC) (3 Observed)
Northern harrier (Circus cyaneus) (SSC) (1 Observed)
Prairie falcon (Falco mexicanus) (BCC, DFG-WL) (5 Observed)
Horned lark (Eremophila alpestris) (DFG-WL) (114 Observed)
Incidental Sightings
Red-Tailed Hawk Nest (Buteo jamaicensis) (MBTA) (2 Observed)
Sandhill Crane (Grus canadensis) (ST, DFG-FP) (4 Observed)
Ferruginous hawk (Buteo regalis) (BCC, DFG-WL) (1 Observed)
Merlin (Falco columbarius) (DFG-WL) (1 Observed)
Prairie falcon (Falco mexicanus) (BCC, DFG-WL) (1 Observed)
Loggerhead shrike (Lanius ludovicianus) (BCC, SCC) (1 Observed)
Burrowing Owl (Athene cunicularia) (SSC, BLM-S)
Burrowing Owl Burrow (Athene cunicularia) (SSC, BLM-S)
W. Area Power Administration - 115kV
Imperial Irrigation District - 115kV
Southern California Edison - 500kV
Imperial Irrigation District - 115kV
Bradshaw Trail
Bradshaw Trail
Hodges Drain
32nd Ave
34th Ave
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Palo Verde
Riverside County
Imperial County
W. Area Power Administration 115kV
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Bradshaw Trail Access Road Corridor to be Improved (2.96 miles, 200ft. corridor, 100ft. from c/l, 72 ac.)
Drainage Crossing Upgrade (500ft. radius from centerpoint, 18 ac. each; 72 ac. total)
Proposed Project 230kV Transmission Line Corridor - (approx. 10 mi)
Proposed Project 230kV Transmission Line Centerline (approx. 10 mi offsite)
Proposed Project 230 kV Gen-tie Line Right-of-Way Corridor - approx. 115 ac. (100 ft. corridor, 50ft. from c/l; approx acres: 80 BLM, 35 Private)
Newly Approved Colorado River Substation (77 ac.)
Assumed Tie-in Area for Newly Approved Colorado River Substation (approx. 124 ac.)
Existing Transmission Lines
161 kV
500 kV
City/Town
County Boundary
Land Ownership
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SSC Species of Special Concern (California Endangered Species Act)
DFG-WL Watch List (California Department of Fish and Game)
MBTA Protected (Migratory Bird Treaty Act)
SOURCES: Project Site, Transmission Line Centerline, Transmission Line Corridor, MWD Land, Private Lands, Existing Gasline (VTN, 3-15-2011). CRS Substation & Potential Gen-tie Area (Aspen, 3-11-2011). Aerial Imagery (NAIP, 5-25-2009). County, State Boundaries, Roads, Bradshaw Trail (ESRI, 2007). Parcels (BLM, 2006). Land Ownership (BLM, 3-03-2011). Existing Transmission Lines (Platts, 2009). PLSS Sections (BLM, 12-11-2007). Improved Access Roads, Drainage Crossing Upgrade, Incidental Sightings, Survey Results (URS, 11-2011).
FALL 2011 BIRD OBSERVATIONS
RIO MESA SOLAR
ELECTRIC GENERATING FACILITY
URS
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Appendix A

BSE Rio Mesa Spring 2011 Bird Point Count Surveys			
Visit	**Survey Date**	**Survey Type**	**Survey Staff**
1	5-Apr-11	Bird Count	CM, DC, HR, JB, SA, SH
1	6-Apr-11	Bird Count	CM, DC, HR, JB, SA, SH
1	7-Apr-11	Bird Count	CM, DC, HR, JB, SA, SH
2	19-Apr-11	Bird Count	CM, DM, GH, RB, SA, SH
2	20-Apr-11	Bird Count	CM, DM, GH, RB, SA, SH
2	21-Apr-11	Bird Count	CM, DM, GH, RB, SA, SH
3	25-Apr-11	Bird Count	CM, DM, SA, SH
3	26-Apr-11	Bird Count	BO, CM, DM, RB, SH, SA
3	27-Apr-11	Bird Count	BO, CM, DM, RB, SA, SH
3	28-Apr-11	Bird Count	CM, RB
4	2-May-11	Bird Count	BO, CM, RB, RC
4	3-May-11	Bird Count	BO, CM, RB, RC, SA, SH
4	4-May-11	Bird Count	CM, DM, RB, RC, SA, SH
4	5-May-11	Bird Count	CM, DM
URS Staff: CM-Colleen Martin, DM-Dennis Miller, GH-Greg Hoisington, HR-Heather Rothbard, JB-Jessica Birnbaum, RB-Rick Bailey, RC-Ron Cummings, SA-Sundeep Amin, SH-Sean Harris			
Subcontractors: BO-Brody Olson			

BSE Rio Mesa Fall 2011 Bird Point Count Surveys			
Visit	**Survey Date**	**Survey Type**	**Survey Staff**
1	9-Nov-11	Bird Count	AO, DK, HR, RR
1	10-Nov-11	Bird Count	AO, DK, HR, JS, RB, RR
1	11-Nov-11	Bird Count	AO, DK, HR, JS, RB, RR
2	14-Nov-11	Bird Count	AO, CT, DK, HR, JS, RR
2	15-Nov-11	Bird Count	AO, CT, DK, HR, JS, RR
2	16-Nov-11	Bird Count	CT, DK, JS, RR
3	29-Nov-11	Bird Count	CM, DK, JS, RR
3	30-Nov-11	Bird Count	AO, CM, CT, DK, JS, RR
3	6-Dec-11	Bird Count	AO, DK, JS, RR
4	7-Dec-11	Bird Count	AO, DK, JS, RR
4	8-Dec-11	Bird Count	AO, CT, DK, JS, MM, RR
4	9-Dec-11	Bird Count	AO, CT, DK, JS, MM, RR
URS Staff: AO-Alicia Omlid, CM-Colleen Martin, CT-Carol Thompson, DK-David Kisner, HR-Heather Rothbard, JS-Julie Stout, MM-Mary McClanahan, RB-Rick Bailey, RR-Ryan Randall			

Rio Mesa Solar
Winter Bird Point Count Data Sheet 2011

Transect Letter: _____ Visit Number: _____ Site Conditions:
Date (MM/DD/YYYY): _____ Wind (starting): _____ Temperature (starting): _____
Observer (initials): _____ Wind (ending): _____ Temperature (ending): _____
Start Time: _____ Cloud Cover (%): _____

Point Number	Species Code	Start Time	End Time	Number of Individuals			Point Number	Species Code	Start Time	End Time	Number of Individuals		
				≤ 50m	≥ 50m	FLY-OVER					≤ 50m	≥ 50m	FLY-OVER

Notes: Species observed in transit:

Areas of Expertise	Endangered Species Surveys Exotic Predator Removal Construction Monitoring Biological Assessment
Total Years of Experience URS Other Firms	21 11 10
Education	BA / 1984 / Biological Sciences / California State University Chico California Teaching Credential / 1986 / Life Science / California State University Chico
Publications	Dispersal Capability of the California Gnatcatcher: A Landscape Analysis of Distribution Data. Western Birds 29:351-360, 1998. (P. Mock, coauthor). California Gnatcatcher Territorial Behavior. Western Birds 29:242-257, 1998. (M. Grishaver, K. Preston, P. Mock, and D. King, coauthors).
California Department of Fish and Game Authorization	Flat-tailed Horned Lizard (*Phrynosoma mcallii*); Presence/Absence Surveys, Handling for Data Collection, and Transport out of Harm's Way during Construction Monitoring. July, 2010.
Endangered Species Recovery Permit	U.S. Fish and Wildlife Service Recovery Permit Number TE-101151-1. California Gnatcatcher; Presence/Absence Surveys, and Nest Monitoring.
Overview	Mr. Bailey has 21 years of experience as an environmental biologist. His responsibilities include focused surveys for flat-tailed horned lizard, desert tortoise, California gnatcatcher, least Bell's vireo, and arroyo southwestern toad; exotic predator removal, vegetation mapping; and technical report preparation in conformance with CEQA, NEPA, and ESA.
Project Experience	Endangered/Sensitive Species Surveys Imperial Valley Solar: 10 mile linear transmission corridor and 6,500 acre solar site. Plaster City, California. Conducted focused surveys for flat-tailed horned lizard and rare plant species. Also monitored geotechnical and drilling crews to ensure avoidance of impacts. Recorded horned lizard locations and scat locations for the project. 2007-2010. CalNev Pipeline Expansion: 234 mile linear petroleum pipeline corridor. Clark County, Nevada and San Bernardino County, California. Conducted focused surveys for western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, California gnatcatcher, and arroyo toad. Additional surveys performed for habitat assessments and vegetation community classification. Recorded species locations for the project and produced the Biological Technical Report. 2008-2010. Calico Solar: 27 mile linear telecommunication corridor and 25,000 acre study area. Daggett to Pisgah, California. Conducted focused surveys for desert tortoise, recorded tortoise locations, health indicators, and scat/burrow locations for the project. Additional surveys performed for burrowing owl, golden eagle nests, and jurisdictional wetlands. 2007-2010. Colorado River Aqueduct, MWD of Southern California: 90 mile linear study area. Conducted focused surveys for desert tortoise and rare plant species. Recorded plant and tortoise locations, health indicators, and scat/burrow locations for the project. 2004-2005.

Southern California Edison Kramer-Victor Power Line Replacement:
32 mile linear transmission corridor. Kramer Junction to Victorville, California. Conducted focused surveys for desert tortoise and rare plant species. Also monitored construction crews to ensure compliance with Memorandum of Understanding. Recorded tortoise locations, health indicators, and scat/burrow locations for the project. 1989-1991.

AUSRA Solar Blunt-nosed Leopard Lizard Surveys
Conducted focused protocol surveys for blunt-nosed leopard lizard on 1.5 square mile site near Carrizo plain. 2007-2008.

San Mateo Lagoon Exotic Predator Control, San Clemente, California
Conducted surveys for arroyo toad, southwestern pond turtle, and tidewater goby. Managed field task to remove non-native predators from the lagoon. Species removed include bullfrog, crayfish, and catfish. Prepared summary report for the project. 2002.

Kinder Morgan Energy Partners Arroyo Toad Exclusion, Camp Pendleton, California
Conducted surveys for arroyo toad in and around pipeline construction area over a two-year period. Maintained pit traps and exclusion fencing to prevent take of arroyo toad. Conducted bullfrog removal from portions of San Mateo Creek. 2000.

Wylie Construction Sewage Treatment Facility, Camp Pendleton, California
Conducted focused surveys for arroyo toad in and around construction site. Maintained pit traps and exclusion fencing to prevent take of arroyo toad. 2000.

State Route 73 Water Quality Basins, Orange County, California
Conducted focused surveys for California gnatcatcher and monitored nest sites. Communicated with construction supervisors to avoid impacts to active nests. Prepared summary report for the project. 2002.

Multiple Species Conservation Plan (MSCP) California Gnatcatcher Population Census, San Diego, California
Conducted focused surveys for California gnatcatcher at conservation areas throughout San Diego County. Prepared final report of gnatcatcher population with discussion of the relative quality of the conservation areas. 2001.

Saint Michael's School Construction, Poway, California
Conducted focused surveys for California gnatcatcher and delineated territorial boundaries relative to construction. Prepared project report detailing conservation efforts on-site. 1999.

Federal Emergency Management Agency (FEMA) Fire Fuel Control, San Bernardino and Glendale, California
Conducted focused surveys for California gnatcatcher at proposed fire fuel management sites. Prepared final report for the project. 1999.

Emergency Storage Project, San Diego County Water Authority, San Diego, California
Conducted focused surveys for California gnatcatcher and arroyo southwestern toad. Survey area included vicinity of Lake Hodges and San Vicente Reservoir. Prepared portions of the Environmental Impact Report for the project. 1995.

Effects of Aircraft Noise on Least Bell's Vireo at Marine Corps Air Station Camp Pendleton, U.S. Department of the Navy, San Diego, California
Recorded behavioral data of least Bell's vireo biweekly over five months. Behavioral data was compared to onsite noise data to test for possible effects on the species by aircraft noise. 1995.

Rancho San Diego California Gnatcatcher Study, Home Capital Corporation
Collected behavioral field data on California gnatcatchers throughout the breeding and non-breeding seasons. Assisted in mist netting and color banding of approximately 114 individuals. Analyzed territory size data for a gnatcatcher population of approximately 25 pairs. 1992.

Miramar Landfill General Development Plan, City of San Diego, California
Conducted focused surveys for California gnatcatcher, San Diego fairy shrimp, San Diego mesa mint, San Diego button celery, and willowy monardella. Contributed to the biological technical report and environmental impact statement for the proposed facilities. 1993.

South County Landfills, City and County of San Diego, California
Conducted comprehensive field surveys for sensitive species and focused surveys for California gnatcatcher and arroyo southwestern toad in six proposed landfill sites. Prepared constraints level report for each site. 1994.

Construction Monitoring

San Elijo Hills Open Space Management, San Marcos, CA
Implemented and managed conservation plan for natural areas of San Elijo Hills. Monitored fire fuel management task, invasive weed removal, habitat restoration, and prevention of unauthorized dumping. Conducted yearly on-site population census of California gnatcatcher to measure success of the conservation effort. Prepared yearly summary report. 2007.

Biological Construction Monitoring for Olivenhain Reservoir
Project biologist monitoring California gnatcatcher nesting locations in relation to construction activity. This information allowed client to avoid impacts to Federally-listed Threatened California gnatcatcher. 2005.

Biological Construction Monitoring for Dana Point Headlands
Project biologist monitoring California gnatcatcher nesting locations in relation to construction activity, public use areas, and conserved habitat. This information allowed client to avoid impacts to Federally-listed Threatened California gnatcatcher, and to measure the success of the project conservation effort. 2006 – 2011.

Biological Construction Monitoring for VertRep Facility, U.S. Navy/Stronghold Electric
Project biologist monitoring construction of a helicopter landing facility. Vernal pools, coastal sage scrub, and California gnatcatchers were the resources protected. 1999.

Biological Construction Monitoring of San Elijo Hills, San Elijo Hills, LCC
Implemented monitoring of wetlands permit conditions. 2004.

California Gnatcatcher Study, Skyline Wesleyan Lutheran Church
Collected field data to assess construction noise impacts on the species over three years. Mist netted and color banded gnatcatchers within the study area. Delineated territories on site and recorded breeding behavior, nesting success, and dispersal of young. Prepared a letter report detailing the breeding home range of each pair onsite prior to construction. 1993.

Kramer-Victor Powerline, Southern California Edison
Conducted surveys for desert tortoise, Mojave ground squirrel, and rare plants along the Kramer-Victor power corridor. Additionally, monitored construction crews to prevent take of desert tortoise. 1989.

Biological Assessment

Escondido Parks Master Plan, City of Escondido, Escondido, California
Conducted field surveys for sensitive biological resources in proposed park sites and conservation areas. 1990.

Upham San Marcos Project, Chester R. Upham, San Marcos, California
Participated in biological resources survey of 35-acre site. Collected vernal pool soil samples for a fairy shrimp re-hydration study. Contributed to biological technical report. 1992.

Biological Resource Inventory, City of Poway, California
Conducted focused surveys for California gnatcatcher throughout the city and sphere of influence. Mapped habitats and sensitive resources. 1990.

South Santa Fe Avenue Widening and Realignment, San Diego County Department of Public Works, San Diego, California
Conducted field surveys to determine the presence or absence of least Bell's vireo in the project area. Recorded faunal species list and provided photographic documentation of habitat quality. 1999.

Rancho Del Rey, City of Chula Vista, California
Participated in a vernal pool study that included floral inventory and soil sample collection for a fairy shrimp re-hydration study. 1990.

First San Diego River Improvement Plan, City of San Diego, California
Managed field task to collect data on a 20-acre revegetation site. Data used to determine whether the project met required standards for success. 1990 – 1994.

Jessica Birnbaum

Biologist/Environmental Planner

Areas of Expertise

•Biological Assessments
•Protocol Surveys for Special-Status Plant and Wildlife Species
•Habitat Restoration
•Environmental Planning/Permitting
•Vegetation/Rare Plant Surveys
•Environmental Compliance
•Water Quality Sampling
•Endangered Species Surveys and Habitat Assessment
•Environmental Impact/Technical Reports
•Level II Blunt-Nosed Leopard Lizard Surveyor
•Wetland Delineation
•Construction Compliance and Monitoring
•GPS and GIS mapping

Years of Experience

With URS: 3 Years
With Other Firms: 4 Years

Education

MS/Natural Resources: Planning and Interpretation/2007/ Humboldt State University
BS/Biology/2002/Trinity College

Permits

California Department of Fish and Game Scientific Collecting Permit SC-801043-02
Level II Surveyor: Blunt-nosed leopard lizard survey protocol.
CDFG Flat-tailed horned lizard permit.

Overview

Mrs. Birnbaum is a Biologist and Environmental Planner at URS' Santa Barbara Office. She provides environmental assessment of planning projects (CEQA, NEPA and environmental regulations, permitting, and compliance) and fieldwork. She has supported document preparation, including editing for clarity and accuracy and writing portions of documents. Mrs. Birnbaum's position at URS also involves botanical and wildlife surveys, endangered species habitat assessment, wetland delineations, vegetation and stream monitoring, and habitat restoration.

Project Specific Experience

Biological Resource Reports/Environmental Planning

Antelope Solar Project Biological Resources Assessment Report, Lancaster, CA. Fotowatio Renewable Ventures (FRV). June 2011. Drafted sections of Biological Resources Assessment Report for a proposed PV solar generating facility in Antelope Valley, California. Key issues of concern included loss of burrowing owl habitat and loss of foraging habitat for Swainson's hawks.

Annendale Solar Site Biological Due Diligence, Fresno, CA. Pacific Valley, January 2011: Conducted habitat assessment and biological constraints analysis for a proposed solar development site.

Marine Life Protection Act (MLPA) South Coast Study Region (SCSR) EIR, Point Conception to Mexico Border, CA, California Department of Fish and Game, August 2010: Wrote sections of an EIR analyzing impacts of the Fish and Game Commission's Marine Protection Areas (MPAs) located in 2,351 square miles of coastal waters and includes waters and seafloor from the shoreline (mean high tide) to three miles offshore. The project included analysis of the following effected issues areas; air quality, consumptive uses (commercial and recreational fisheries), cultural resources, ecosystems, habitats and species of concern, population and housing, public services and utilities, recreation and research, vessel traffic, and water quality.

Western Goleta Slough Wetland Restoration Project, Santa Barbara County, CA, The Land Trust for Santa Barbara County, November 2008 – November 2010: Supported preparation of environmental documents, including the Project Description and Restoration Plan. Mrs. Birnbaum also assisted in obtaining environmental permits, including Streambed Alteration Agreement (SAA) with CCC, ACOE Section 404 Permit, and Santa Barbara County Coastal Development Permit.

Nextlight's Antelope Valley Solar Ranch One Project EIR, Los Angeles County, CA, November 2008-September 2010: Drafted Biological Resources section of an EIR for a proposed PV solar generating facility in Antelope Valley, California. Key issues of concern

included loss of wildflower field habitat, loss of foraging habitat for sensitive grassland birds, and the potential impact upon horned lizards, an endangered species. URS submitted the biota report, which contained botanical survey results, to County SEATAC. Assisted with responding to comments (RTC) from SEATAC and LA County on Biota Report and EIR.

Newhall Ranch EIS/EIR, June 2008-March 2010: URS was retained by a land development firm to prepare a joint EIS/EIR and supporting documentation evaluating the issuance of a long-term 404 permit and master 1600 agreement. Mrs. Birnbaum is a supporting biologist and planner on the project, aiding in the drafting of environmental review documents.

Ekwill Street and Fowler Road Extensions Project, California Department of Transportation and the City of Goleta, October 2008-September 2009: The City of Goleta's (City's) Community Services Department is proposing infrastructure improvements in a portion of the City called "Old Town." Wrote Biological Environment section of EIR/EA.

Assistant Planner, Lassen Wind Project, Lassen County, CA, Sacramento Municipal Utility District, Time and Materials, March–May 2008: Aided in the preparation of the Bureau of Land Management (BLM) Right-of-Way Application and Plan of Development (POD) for a 150- to 300-MW wind power project on BLM land.

Solar PV Site Feasibility Analysis, California, NextLight Renewable Power, LLC, February–April 2008: Prepared a report summarizing the results of identifying and prioritizing potential development sites, identifying county contacts, and preliminary consultations with agency representatives. Consulted with county planners to identify local opportunities or constraints for solar photovoltaic development and conducted field investigations of potential sites. The site facility would generate 50 to 100 MW and cover 80 to 240 acres.

Phase 3 EIR, Solano Wind Project, Collinsville-Montezuma Hills Wind Resource Area, Near Rio Vista, CA, for SMUD, November 2007–June 2008: The district proposes to permit and construct up to 84 wind turbine generators (WTGs) on 4,655 acres. Mrs. Birnbaum assisted URS planners in regard to CEQA requirements, preparing and distributing the Final EIR, and developing siting plans for the WTGs. She also monitored on-site construction activities to ensure compliance with environmental standards and surveyed the area for burrowing owls.

John Garcia Environmental Studies Center Project, Environmental Checklist, Rio Linda, CA, for Grant Joint Union High School District, January–February 2008: This regional environmental study center on 70 acres provides for the study of indigenous plants, animals, reptiles, fishes, and migratory birds. Mrs. Birnbaum drafted CEQA/NEPA Environmental Checklist for the project, detailing all

issues (biological resources, noise, traffic, etc.) that must be addressed before construction may take place.

Botanist

Rare Plant Survey, Bakersfield to Palmdale, CA. California High Speed Train Project, High Speed Rail Authority. February-June 2011. Performed rare plant surveys and vegetation community mapping for various segments along the High Speed rail alignments from Bakersfield to Palmdale, CA.

Botanical Survey, Sonoran/Colorado Desert, CA. Palo Verde Mesa Solar Project, Brightsource Energy. March 2011. Performed focused botanical surveys. Documented existing vegetation and rare plant occurrences in compliance with USFWS and CDFG botanical survey protocol. Also documented weed populations.

Botanical Survey, Sonoran/Colorado Desert, CA. Imperial Valley Solar Project, Tessera Solar North America. February, March and September 2010. Performed focused botanical surveys for a 6,500 acre site in the Sonoran/Colorado Desert near Plaster City, CA. Documented existing vegetation and rare plant occurrences in compliance with USFWS and CDFG botanical survey protocol. Also documented weed populations.

Calico Solar Project, Tessera Solar North America. Mojave Desert, CA. March 2010. Performed focused botanical surveys for an 8,230 acre site in the Mojave Desert near Newberry Springs, CA. Documented existing vegetation and rare plant occurrences in compliance with USFWS and CDFG botanical survey protocol.

Botanical Survey, California Valley Solar Ranch Project, Carrizo Plain, San Luis Obispo County, March – September 2009: Led crew of 3-6 biologists surveying for special-status plant species on approximately 3,000 acre site and mapped vegetation communities. Authored the botanical survey report for submittal to SunPower and San Luis Obispo County.

Vegetation Restoration Monitoring, Santa Barbara, CA. Santa Barbara Airport Wetland Restoration Project, City of Santa Barbara, June 2008-Present: Assisted in restoration for 65 acres of wetland, coastal sage scrub, and riparian habitats. Monitoring program consisting of point-intercept transect and quadrat data collection and maintenance monitoring. Participated in native seed collection. Supporting the production of annual reports detailing restoration success.

Wetland Biologist

Wetland Delineation, Calvada Springs, CA. Hidden Hills Solar Project, BrightSource Energy. February 2011. Performed wetland delineation and jurisdictional analysis. Assisting author for wetland delineation report.

Wetland Delineation, Lancaster, CA. Antelope Solar Project, Fotowatio Renewable Ventures (FRV). January 2011. Performed wetland delineation and jurisdictional analysis for 320 acre site. Lead author for wetland delineation report.

Wetland Delineation, Fresno to Bakersfield, CA. California High Speed Train Project, High Speed Rail Authority. April-July 2010. Performed wetland delineation, jurisdictional analysis and mapping for various segments along the High Speed rail alignments form Fresno to Bakersfield, CA.

Wetland Delineation and Jurisdictional Determination Report for PCB Remediation – Seacliff Area, Gaviota, CA. Former Hercules Gas Plant, Shell Exploration and Production Company. June 2010: Managed and performed a wetland delineation for a 0.19 acre site along Cañada de La Heurta. Lead author for wetland delineation report.

Wetland Delineation, Santa Barbara, CA. San Jose Creek Bikeway, City of Goleta. November 2009: Managed and performed wetland delineation for a 0.5 acre site in Goleta Slough. Lead author for wetland delineation report.

Nextlight's Antelope Valley Solar Ranch One Project, Los Angeles County, CA, January 2009: Performed jurisdictional determination mapping for a 2,000 acre site in the Mojave Desert.

Wetland Delineation Mapping, Santa Barbara, CA. Santa Barbara Airport Wetland Restoration Project, City of Santa Barbara, Novemeber 2008-February 2009: Performed wetland delineation mapping for 40 acres in Goleta Slough. Aided in authoring the summarization report.

Stormwater Monitoring, Santa Barbara, CA. Santa Barbara Airport Wetland Restoration Project, City of Santa Barbara, June 2008-Present: Assisted in restoration for 65 acres of wetland, coastal sage scrub, and riparian habitats. Conducted stormwater sampling throughout airport impact areas and drafting report.

Lower Ventura River Algae Inventory, October 2008-February 2010: Surveys of freshwater algae in the lower Ventura River in an effort to determine the effects of tertiary-treated effluent on algal distribution and abundance. Performed monthly algae surveys, including analyzing site conditions, collecting water samples, and calculating stream flow.

Jurisdictional Determination, California Valley, CA. California Valley Solar Ranch, SunPower Corporation Systems, July 2009: Performed jurisdictional determination and mapping for a 4,575 acre site in the Carrizo Plain. Assisted with jurisdictional determination report.

Special-Status Wildlife Biologist

Swainson's Hawk Survey, Five Points, CA. Solar Project, Pacific Valley. June 2011: Performed surveys of nest structures suitable for Swainson's hawks surrounding a potential solar project site to search for evidence of nesting. Active Swainson's hawk nests and nesting behavior were noted.

Blainville's Horned Lizard (Coast Horned Lizard) Survey, Los Angeles County, CA. Nextlight's Antelope Valley Solar Ranch One Project, June 2011: Performed focused Blainville's horned lizard survey for a 2,000 acre site in the Mojave Desert.

Mojave Fringe-toed lizard Survey, Blythe, CA. Solar Project, Brightsource Energy. June 2011: Performed presence/absence surveys for Mojave fringe-toed lizards.

Burrowing Owl Survey, Blythe, CA. Solar Project, Brightsource Energy. May-June 2011: Performed habitat assessment and protocol transect surveys for burrowing owls.

Desert Tortoise Survey, Blythe, CA. Solar Project, Brightsource Energy. April-May 2011: Performed USFWS protocol 100% coverage desert tortoise surveys. Responsible for data collection and analysis as team leader.

Tidewater Goby Presence/Absence Survey, Santa Barbara, CA. Tecolotito Creek Desilting Project, Santa Barbara County Flood Control. October 2010: Performed presence/absence USFWS protocol surveys for tidewater goby in Atascadero Creek. Large water body protocol. 22 hours.

Tidewater Goby Presence/Absence Survey, Santa Barbara, CA. Santa Barbara Airport Tidal Basin Restoration Demonstration Project, City of Santa Barbara. October 2010: Performed presence/absence USFWS protocol surveys for tidewater goby in an experimental tidal basin adjacent to Tecolotito Creek. Medium water body protocol. 5 hours.

Flat-Tailed Horned Lizard Survey, Sonoran/Colorado Desert, CA. Imperial Valley Solar Project, Tessera Solar North America. September 2010: Performed focused flat-tailed horned lizard surveys for a 6,500 acres site in the Sonoran/Colorado Desert near Plaster City, CA. Documented horned lizard sign according to established survey protocol.

Desert Tortoise Survey, Mojave Desert, CA. Calico Solar Project, Tessera Solar North America. April - May 2010: Performed USFWS protocol 100% coverage desert tortoise surveys on an 8,230 acre site and 23,000 acre relocation area in the Mojave Desert near Yucca, CA. Responsible for data collection and analysis as team leader.

Tidewater Goby Presence/Absence Survey, Santa Barbara, CA, Creek Desedimentation Project, Santa Barbara County Flood Control, August -October 2009: Performed presence/absence U.S. Fish and Wildlife Service protocol surveys for tidewater goby in all locations prior to construction in San Pedro, San Jose, and Atascadero creeks. Large water body protocol. Assisted in authoring the final report. 22 hours.

Southern Steelhead Habitat Assessment, Ekwill Street and Fowler Road Extensions Project, California Department of Transportation and the City of Goleta, October 2008-September 2009: Conducted habitat assessment of Old San Jose Creek for suitable Southern Steelhead habitat.

Blunt-Nosed Leopard Lizard Surveys, Bakersfield, CA, Hydrogen Energy California (HECA), May – September 2009: The HECA project is an Integrated Gasification Combined Cycle power plant that will take petroleum coke, biomass, coal or blends of each, combined with non-potable water to convert them into hydrogen and carbon dioxide (CO2). The hydrogen gas will be used to fuel a net 250-megawatt power station that will provide new, clean electric power to 150,000 homes in the local community. Conducted protocol level surveys for blunt-nosed leopard lizard.

Blunt-Nosed Leopard Lizard Surveys, California Valley, CA, Renewable Energy, March – September 2009: Conducted protocol level surveys for blunt-nosed leopard lizard.

Tidewater Goby and Fish Relocation, Santa Barbara, CA. Santa Barbara Airport Tecolotito and Carneros Creek Relocation Project, City of Santa Barbara. July-November 2008: Captured and relocated tidewater gobies and other fish species from Tecolotito and Carneros Creeks. Performed initial presence/absence USFWS protocol surveys for tidewater goby in all locations prior to construction. Performed presence/absence protocol surveys for tidewater goby in all locations after construction. Medium water body protocol. 145 hours.

Tidewater Goby Presence/Absence Survey, Santa Barbara, CA. Santa Barbara Airport Tidal Basin Restoration Demonstration Project, City of Santa Barbara. October 2008: Performed presence/absence USFWS protocol surveys for tidewater goby in an experimental tidal basin adjacent to Tecolotito Creek. Medium water body protocol. 5 hours.

Tidewater Goby Presence/Absence Survey, Santa Barbara, CA. Goleta Slough EIR and San Pedro Creek Desilting Project, Santa Barbara County Flood Control. July 2008: Performed presence/absence USFWS protocol surveys for tidewater goby in reaches of San Pedro, San Jose, and Atascadero creeks for the Goleta Slough EIR and San Pedro Creek Desilting. Medium and large water body protocol. 18 hours.

Desert Tortoise Surveys, 550 mw Solar Thermal Site in Johnson Valley, CA, Renewable Energy, June-July 2008: Performed USFWS protocol desert tortoise surveys on a 9,315 acre site and 10 mile long transmission and gas routes.

Small Mammal Surveys, California Valley, CA, Renewable Energy, July 2008: 250 MW solar ranch, which would be located in San Luis Obispo County's California Valley. Conducted small mammal surveys for the proposed project site.

Desert Tortoise Surveys, San Bernardino Mojave Desert CA, Renewable Energy, May 2008: Protocol biological surveys for a large-scale solar project site being considered in the San Bernardino County, California. Conducted presence/absence surveys for desert tortoise.

Desert Tortoise Surveys, CalNev Pipeline Project, Las Vegas to San Bernadino, Kinder-Morgan, Biological Resources, March – April 2008: Kinder Morgan Energy Partners, L.P. is expanding the 550-mile CALNEV pipeline system. Conducted presence/absence surveys for desert tortoise. Survey covered 150 miles of Desert Tortoise habitat, approximately 500 feet wide, and covered the possible routes for the pipeline.

General Biological Surveys/Biological Assessments

Construction Monitoring and General Biological Resource Surveys, Urban Levee Geotechnical Evaluation Program in Woodland, CA, DWR, March 2008 – June 2008: DWR's geotechnical exploration, includes testing and analysis of state and federal levees. Monitored drill crews to ensure that no sensitive biological resources were compromised. Survey efforts concentrated upon monitoring for giant garter snake, valley elderberry beetle, riparian brush rabbit, tri-colored blackbird, bank swallow and San Joaquin kit fox.

California Emergency Levee Erosion Repair, Stockton and Sacramento, CA, for California Department of Water Resources, 2007 – 2008: Conducted biological field surveys for kit foxes and elderberry plants, for the Sacramento and American Rivers in the central valley region.

Professional Societies/Affiliates

Botanical Society of America
California Native Plant Society

Specialized Training

2010: Basic Wetland Delineation Training (40-hour), Wetland Training Institute, San Diego, Ca.
2010: Flat-Nosed Leopard Lizard Survey Training, Bureau of Land Management, El Centro, Ca.

2009: Blunt-Nosed Leopard Lizard Identification Workshop, Wildlife Society, Bakersfield, Ca
2009: Introduction to the Second Edition of the Manual of California Vegetation Workshop, CNPS, John Sawyer, Tod Keeler-Wolf, and Julie Evans, Yolo, Ca
2009: Measuring and Monitoring Plant Populations and Vegetation Workshop, California Native Plant Society 2009 Conservation Conference, John Willoughby, Sacramento, Ca
2008: Clean Water Act Regulatory Updates, presented by the Association of Environmental Professionals, Ventura, Ca

Languages

Basic conversational/written proficiency in French and Spanish.

Chronology

6/08- Present: URS Corporation, Santa Barbara, CA.
11/07 – 6/08: URS Corporation, Sacramento, CA.
01/05 – 08/07: Masters of Science study, Humboldt State University.
06/04 – 11/04: Biological Technician, USDA Forest Service – Sierra Nevada Research Center, Quincy, CA.
06/03 – 10/03: Team Leader, Student Conservation Association – Seeds of Success, Prineville, Oregon.

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Jessica_birnbaum@urscorp.com

Brody Olson, BS

Biologist

Brody Olson was first introduced to tortoise work by his brother Kolby Olson in 2009. For his first project he worked in Desert Center for Kathy Simon, and Chris Blandford, owners of Ironwood Consulting. in 2010, he started tortoise work again as a Biological Monitor, doing mostly fence monitoring and clearance surveys, at the Ivanpah Solar project. He is presently working as another subcontractor with URS at the Rio Mesa Solar project doing the preliminary presence/absence surveys for desert tortoise. Brody hopes to continue to do work involving desert tortoises, as well as expanding his field experience into other areas, like botany and bird surveys.

Education

BS, Clinical Laboratory Sciences, University of Wisconsin- Madison, 2007

Language Certificate, Spanish, Malaca Instituto, 2009

Desert Tortoise

Desert Center Solar—10/25/2009–10/30/2009 (Desert Center, CA)

Independent Contractor: 50 hours of presence/absence surveys conducted.

Ivanpah SEGS— 3/29/2011-4/25/2011, 5/4/2011-5/8/2011 (San Bernardino County, CA)

Independent Contractor: 124.5 hours of fence/construction monitoring, 89 hours of clearance surveys, 44.5 hours of Raven/Carcass surveys, 40 wild Desert Tortoises seen (33 adult, 7 juvenile), 12 tortoises found.

Rio Mesa SEGS— 4/25/2011-5/4/2011, 5/9/2011-present (Blythe, CA)

Independent Contractor: 132 hours of presence/absence surveys conducted thus far, 1 adult tortoise seen; 25.5 hours of bird surveys conducted as well, birds observed include Ash-throated flycatchers, Verdins, Turkey Vultures, Mourning Doves, Nighthawks, Barn Swallows, and Brown-headed Cowbirds.

Areas of Expertise
Ornithology, Herpetology, Small Mammal Trapping, Vernal Pool Branchiopods, Biological Monitoring, State and Federal Endangered Species Acts, California Fish and Game Codes and the Migratory Bird Treat Act.

Years of Experience

With URS 4 Years

With Other Firms/Agencies 4 years

Education

B.S./2004/ Wildlife Management and Conservation / Humboldt State University

Registration/Certification
USFWS Recovery Permit No. (TE-181714)
Issue / Expiration Dates: 2009/2013

- California Gnatcatcher
- Least Bell's Vireo (nesting)
- Stephen's Kangaroo Rat
- Vernal Pool Branchiopods

Supplemental Education/Training

- Mine Safety and Health Administration Training (Oct. 2011)
- Southwestern Willow Flycatcher Identification Workshop by Southern Sierra Research Station (2006)

Carol Thompson
Wildlife Biologist

OVERVIEW
Ms. Thompson has an extensive background in field research, ecological studies and biological monitoring. As a biologist, Ms. Thompson has participated in projects that include protocol USFWS special status species surveys for avian, mammalian, reptilian, vernal pool branchiopod and botanical species. She has prepared numerous biological reports and assessments that demonstrate compliance with the following: Western Riverside Multiple Species Habitat Conservation Plan (MSHCP), City of San Diego Multiple Species Conservation Program (MSCP), Section 7 and 10 of the Endangered Species act (ESA). Carol has also demonstrated compliance with the California Fish and Game Codes, California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), and the California Energy Commission (CEC). The following describes Ms. Thompson's experience in detail.

PROJECT SPECIFIC EXPERIENCE

BNSF/COLTON-SLOVER DUE DILIGENCE STUDY, SAN BERNARDINO, CALIFORIA
BNSF retained URS to provide due diligence consulting related to a potential purchase of approximately 808 acres of land including 746 acres of existing CPC plant and over 50 acres of drainage and habitat areas. Ms. Thompson assisted in identifying potential suitable habitat areas for special status species, primarily the Delhi Sands Flower Loving Fly, San Bernardino Kangaroo Rat, Coastal California Gnatcatcher Santa Ana Woolley Star, Least Bell's Vireo, Santa Ana Sucker and Burrowing Owl.

PIO PICO ENERGY CENTER PROJECT, SAN DIEGO COUNTY, CALIFORNIA
The Pio Pico Energy Center retained URS to assist them with the environmental review process. The Pio Pico Energy Center Project contained areas that included coastal sage scrub, riparian habitat and potential vernal pools. Ms. Thompson completed USFWS protocol avian surveys (Least Bell's Vireo and California Gnatcatcher) and vernal pool branchiopods surveys within the entire study area.

SOUTH PERRIS INDUSTRIAL PROJECT, RIVERSIDE COUNTY, CALIFORNIA

The proposed South Perris Industrial Project (Project) consists of the development of three distribution centers within the City of Perris, Riverside County, California. The project study area is located with the MSHCP. Accordingly, surveys for vernal pools and fairy shrimp to demonstrate consistency with the MSHCP (Section 6.1.2, Volume I) was obligated. Ms. Thompson conducted two full wet-season samplings for large branchiopods (e.g., fairy shrimp) that are listed as threatened or endangered under the federal Endangered Species Act FESA) (e.g., Riverside fairy shrimp [*Streptocephalus woottoni*], Santa Rosa Plateau fairy shrimp *linderiella santarosae*] and vernal pool fairy shrimp [*Branchinecta lynchi*]).

AV SOLAR RANCH ONE (AVSR1), LANCASTER, CA

Carol Thompson conducted a pre-construction Burrowing Owl survey within AVSR1 project limits to supplement the installation of solar panels and the east well. Pre-construction surveys followed the currently accepted *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993). Ms. Thompson also conducted Coast Horned Lizard (*Phyrnosoma coronatum blainvillii*) within project limits. The Coast Horned lizard is currently a Federal Special Concern species (FSC) and a California Special Concern species (DFG-CSC). During construction, Ms. Thompson acted as a biological monitor where she conducted project-related actions that have potential to adversely affect biological resources, inspect active construction areas for trapped wildlife including pipes or other structures that may contain special-status species; survey for and mark sensitive biological resource areas and monitor at appropriate intervals during construction to ensure no impacts occurred.

TEMECULA MEDICAL CENTER PROJECT, TEMECULA, CA

The Temecula Medical Center Project is a proposed 186,490 square foot medical facility to be located within the City of Temecula, Riverside County, California. Ms. Thompson acted as a biological monitor to oversee all project-related actions that have potential to adversely affect biological resources. Monitoring included inspecting active construction areas where wildlife may have become trapped or injured. During construction, oversee and/or supervise the inspection of any habitat, pipes or other structures that may contain special-status species. Ms. Thompson also performed Least Bell's Vireo

surveys, nest monitoring surveys, marked sensitive biological resource areas and monitored at appropriate intervals during construction to ensure no impacts occurred.

SANTA SUSANA FIELD LABORATORY PROJECT, THOUSAND OAKS, CA

Ms. Thompson performed biological monitoring during manual auguring and excavation of test pits. Primary monitoring activities included habitat clearance for the California Gnatcatcher prior to geological field work.

SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT AND BUREAU OF LAND MANAGEMENT LAND EXCHANGE AT THE UPPER SANTA ANA RIVER WASH

The Final Upper Santa Ana River Wash Land Management and Habitat Conservation Plan's Environmental Impact Report (Wash Plan) addressed land use activities throughout a roughly 4,467-acre portion of San Bernardino County, California. As part of the implementation of Wash Plan, the BLM and District are executing a *Land Exchange*. As described, the *Land Exchange* shall secure the establishment of a contiguous corridor from SBKR designated critical habitat (DCH) along Plunge Creek southward through BLM Areas of Critical Environmental Concern (ACEC) and numerous Santa Ana River Woolly Star Preservation Area (WSPA) Units which connect with DCH along the Santa Ana River. As such, Ms. Thompson supported the completion of formal Section 7 consultation to identify and assesses the potential direct, indirect, and cumulative effects of the *Land Exchange* on the federally endangered Santa Ana River woolly-star, the Slender-horned spineflower, SBKR and modification of SBKR DCH in accordance with 50 CFR 402.14(c).

Areas of Expertise

Botany and Plant Systematics, Ornithology, Applied Ecology

Years of Experience

With URS: 1 Year
With other firms: 3 Years
Non-firm field research: 3 Years

Education

BS, Biology – California State University, Chico – Chico, CA

Additional Training

- Plant Systematics, 2011, CSU Chico; course included the revised taxonomic treatments for the 2nd Edition of The Jepson Manual
- Bird Banding Techniques Workshop, 2010, Klamath Bird Observatory
- Ecology of California Bats, 2008, San Francisco State University – Sierra Nevada Field Campus
- Rare Plant Assessments Workshop, 2008, California Native Plant Society and Northern California Botanists
- Northern California Botanists Symposium, 2008
- Bird Banding Workshop – Age Determination by Plumage Characteristics, 2008, CSU Chico
- Plant Diversity and Identification, 2007, CSU Chico
- Riparian Habitat Joint Venture Conference, 2007
- Wetland Delineation Certification Course, 2006, Wetland Training Institute, Inc.

COLLEEN M. MARTIN

Staff Ecologist / Botanist

Ms. Martin has an extensive botanical and wildlife background – including field surveys, research, and ecological studies. Ms. Martin is a graduate from California State University, Chico. Colleen has participated in a variety of field work, including rare plant surveys; bird banding; bat mist-netting; vegetation mapping; wetland delineations; desert tortoise presence/absence surveys; post-construction bat and avian fatality surveys on wind energy facilities; and general botanical and wildlife surveys. Over the last six years, Colleen has worked on numerous biological reports, including Environmental Impact Report/Environmental Impact Statements, Natural Environmental Studies, Wetland Delineations, Restoration Plans, Biological Resource Assessments, Biological Constraints Reports, Arborist Survey Reports, and various field survey summary reports.

Colleen has training in plant identification, classification, and taxonomy; keying; and conducting general and protocol-level rare plant surveys. She is familiar with the native California flora and has conducted botanical surveys in both northern and southern California habitats. She has recently participated in a "Plant Systematics" course at California State University, Chico that included the revised taxonomic treatments for the 2nd Edition of The Jepson Manual. Colleen has also attended training courses in conducting "Rare Plant Assessments" and "Plant Diversity and Identification".

Colleen spent the 2010 and 2011 field season conducting surveys in the Mojave Desert, including vegetation mapping, rare plant surveys, avian point counts, and wetland delineations, and is familiar with the flora and fauna of Mojave Desert communities. Colleen has also worked on a number of projects addressing impacts to sensitive species that occur in the Mojave Desert, including desert tortoise, and is familiar with protocol-level survey methodologies and field techniques.

Colleen has training in conducting wetland delineations and has performed formal wetland delineations in accordance with the Army Corps of Engineers 1987 three-parameter methodology to delineate jurisdictional waters of the U.S. on projects in both northern and southern California habitats, including the Mojave Desert. In 2006 she attended a "Wetland Delineation Certification Course" with the Wetland Training Institute, Inc., which included both a lecture and field training component.

Colleen also has training in avian identification and has been birding for over six years. She is a member of The Audubon Society and the Chico

Technical Proficiencies

- Protocol-level rare plant surveys
- Use of The Jepson Manual and other plant keys
- Formal wetland delineations
- Bird banding
- Protocol-level burrowing owl surveys
- Protocol-level peregrine falcon surveys
- Avian breeding territory mapping and nest surveys
- Protocol-level desert tortoise presence/absence surveys
- Small mammal trapping
- Bat trapping and handling
- Bat emergence surveys
- Use of *AnaBat* acoustic monitoring equipment and *AnaLook* to analyze bat calls
- Protocol-level invertebrate wet season sampling
- Protocol-level arborist surveys
- Collection of fish samples using electroshocking, gill nets, and seining
- Analysis of owl pellets and identification of prey species

Professional/Academic Memberships

- California Native Plant Society
- Northern California Botanists
- The Wildlife Society
- Audubon Society
- Bat Conservation International
- Western Bat Working Group
- Western Bird Banding Association
- Chico State Birding Club

State Birding Club. Colleen has conducted surveys for Burrowing Owl (BUOW) in northern and southern California and has experience assessing areas for suitable BUOW habitat; identifying, sexing, and aging BUOW; and locating signs of BUOW. Colleen also has experience banding, handling, and processing birds, including aging and sexing birds based on plumage characteristics. She works at a northern saw-whet owl and a passerine banding station, both of which are long-term research projects located in northern California studying the migration of northern saw-whet owl and passerine species in the region. Colleen has been banding since 2006 and is currently working towards being subpermitted.

PROJECT SPECIFIC EXPERIENCE

Rio Mesa Solar Project, URS Corporation

The Rio Mesa Project is a proposed solar project located on 14,000 acres in the Mojave Desert. In the spring and summer of 2011, Colleen participated in avian point count surveys, vegetation community mapping, BUOW surveys, Mojave fringe-toed lizard surveys, and jurisdictional delineation surveys for Waters of the U.S. for the proposed project.

California High-Speed Rail Authority's High Speed Train Project, URS Corporation

The California High-Speed Rail Authority (Authority) was created in 1996 to develop a plan for the construction, operation, and financing of a statewide, inter-city high-speed passenger train system. The Authority and the FRA completed a Program level Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for a proposed California High Speed Train (HST) System in 2005 as the first-phase of a tiered environmental review process for the California HST System. Colleen conducted special-status plant surveys, vegetation community mapping, and wetland delineation surveys along the proposed Project route from Palmdale to Los Angeles (e.g., between Union Station, Los Angeles, California and Palmdale, California) in support of preparation of a Project Level EIR/EIS. Colleen evaluated the onsite habitat conditions and determined the potential for occurrence of common and special-status species, their habitats, and other special aquatic resource areas (e.g., Clean Water Act and CFGC jurisdictional features) within the proposed Project's study area, which included Mojave Desert, coastal sage scrub, and chaparral communities. Colleen prepared the Biological Resources section of the EIR/EIS and the Focused Special-Status Plant Survey Report and participated in the preparation of the Natural Environmental Study Report for the proposed Project route from Palmdale to Los Angeles.

Granite Wind Energy Generation Project, URS Corporation
Colleen prepared the Biological Resources section of the Environmental Impact Statement/Environmental Impact Report for the proposed Granite Wind Project. Granite Wind, LLC is making an application for a right-of-way grant for long-term commercial wind energy development from the Bureau of Land Management (BLM), Barstow District, California Field Office for the installation of a new wind energy generation facility and an application to San Bernardino County for a Conditional Use Permit for a commercial wind energy facility. The proposed facility will include the following: access roads; underground electrical collection system and communication lines; up to 28 wind turbines and pad mount transformers; over head transmission line; operations and maintenance building; electrical interconnection/switchyard; electrical substation; and two permanent meteorological masts. The proposed project is located in the Mojave Desert and will occur on lands administered by the BLM, as well as private lands, and has the potential to impact special-status species, including desert tortoise, golden eagle, and migrating bat and avian species.

Pio Pico Energy Center Project, URS Corporation
The Pio Pico Energy Center (PPEC) is a simple-cycle electrical generating facility that is contracted under a 20-year power purchase agreement with San Diego Gas & Electric in response to their 2009 Request for Offers. PPEC is designed to directly satisfy the San Diego area peaking and load-shaping generation current and long-term requirements. The PPEC site will be located in Chula Vista, California, along the southeastern city boundary of Chula Vista. Colleen conducted surveys for special-status plants and the endangered quino checkerspot butterfly and participated in the preparation of the Biological Resources section of the Application for Certification for the project.

Foothill Associates, Chico, CA
While working with Foothill Associates, Colleen conducted field surveys identifying sensitive habitats and suitability of habitats to support special-status species; wrote species accounts for avian, mammalian, invertebrate and fish species; and wrote reports for biological resource assessments, biological constraints letters, arborist surveys, wetland delineations, Section 7 Biological Analyses, and 90-Day reports. Colleen participated in protocol-level rare plant surveys and listed invertebrate wet-season sampling and performed formal wetland delineations in accordance with the Army Corps of Engineers 1987 three-parameter methodology to delineate jurisdictional waters of the U.S.. Colleen also conducted onsite biological monitoring during waste removal of a historic burn dump, ensuring that special-status species were not impacted during clean-up activities.

Ronald R. Cummings

Senior Wildlife Biologist

Areas of Expertise

Wildlife field survey
NEPA Analysis
ESA Section 7 Consultation
Biological Evaluations
Biological Assessments
Habitat management

Years of Experience

With URS: 2 Years
With Other Firms: 20 Years

Education

BS/General Biology/1985/Oregon State University, Corvallis, OR

Registration/Certification

Loss Prevention System (LPS)
HAZWOPER 40-hour
Shell Yellow Book Safety
Smith Driver Safety
PASSPORT Contractor Safety
e-RAILSAFE System
BNSF Contractor Orientation
Level II Surveyor: Blunt-nosed leopard lizard survey protocol.

Overview

Ronald Cummings' educational and professional background provide an experience base in special status species surveys, habitat analysis, environmental impact assessment, NEPA analysis, and the management and logistics of survey field crews. Mr. Cummings is currently employed as a Senior Wildlife Biologist in the Santa Barbara office within the Central Coast Operations of URS Corporation.

Mr. Cummings has over twenty-one years of experience in wildlife and fisheries management, including 18 years as a wildlife biologist with USDA Forest Service and two years as a fresh water fishery volunteer with the Peace Corps in Ecuador, South America, and two years with URS Corporation. He has extensive experience in field surveys for various wildlife species; project and sub-watershed level NEPA analysis for determining effects and mitigations for species and habitats, including writing Biological Evaluations (BE), Biological Assessments (BA), and portions of Environmental Assessments (EA); and some experience writing portions of Environmental Impact Statements (EIS). Mr. Cummings has experience in writing habitat assessments; habitat improvement projects; wildlife surveys; program planning; employee supervision; ESA Section 7 Consultation with USDI FWS; cooperation with other agencies such as NPS, CDFG, BLM, Caltrans, PG&E, local Governments and private individuals. He has a general knowledge of West Coast habitats and species, with emphasis on the following Federally Listed species: Northern spotted owl, San Joaquin kit fox, giant kangaroo rat, blunt nosed leopard lizard, desert tortoise, and valley elderberry longhorn beetle. Mr. Cummings has experience with other wildlife species endemic to the Sierra Nevada range, the San Joaquin Valley, and Mojave Desert.

Project Specific Experience

Wildlife Surveys: December 15, 2008 to present.

- **Imperial Valley Solar (IVS), Tessera Solar North America; El Centro, CA;** Performed 11 days of protocol surveys for the flat-tailed horned lizard (*Phrynosoma mcallii*) during August and September, 2010. Carefully scanned 25 meter square plots for horned lizards and lizard droppings to determine presence, habitat condition, and provide data on relative population across the 6,500 acre project site.
- **Antelope Valley Solar Ranch 1, First Solar; Antelope Valley, CA;** Performed cover board surveys of Blainville's horned lizard (*Phrynosoma blainvillii*) on 345 acres of the project site. Deployed over 500 cover boards on a 50 x 50 meter grid and checked them for the presence of horned lizards and other reptiles as part of special-status species mitigation measures. Three survey days plus a full day of cover board deployment during September and October, 2010.

- **Calico Solar Project, Tessera Solar North America; San Bernardino County, CA**: Protocol surveys of an 8,230 acre project site and 14,770 acres of potential relocation areas for desert tortoise over a 5.5 week period. Personally located 8 tortoises and observed dozens more, along with burrows, pallets, scats, tracks, and carcasses. Hiked an average of 8-12 miles/day over variable terrain, including steep, rocky, and rugged areas. Performed as team lead for one week, which included filling out data forms, taking GPS waypoints and photographs of tortoise data, in addition to supervising the survey crew of 4 biologists. April - May, 2010.
- Assessed approximately 50 potential desert tortoise burrows on the project site. Located tortoises both above ground and in burrows, noted tortoise sign (tracks, scat, and remains). Used a burrow scope on approximately 10 burrows. March 18-19, 2010.
- Surveyed the 8,230 acre project site for burrowing owls, sensitive plant species, and sign of kit fox and desert tortoise. Located tortoises above ground and in burrows. Gained familiarity with tortoise sign (scat, tracks, burrow configuration, and remains). January-February, 2010.
- **Westside, Whitney Point, Sagospe, and Ruby Solar Sites; Pacific Valley LLC; Fresno and Los Angles Counties, CA**: Performed Swainson's hawk surveys on 3 solar project sites (Westside, Whitney Point and Sagospe) in Fresno County to confirm nesting status and foraging areas. Performed Swainson's hawk surveys and nesting bird surveys on the Ruby site in Los Angles County. April-May, 2010.
- **California High Speed Train**; **URS/HMM/Arup Joint Venture**; **Fresno to Bakersfield, CA**: Supervised a field crew of 2-4 biologists during 3 weeks of habitat assessments for the proposed route of the Fresno-Bakersfield segment of the High Speed Train project. Focus species included San Joaquin kit fox, giant kangaroo rat, burrowing owl, Swainson's hawk, fairy shrimp, and several other species. March, 2010.
- **Biological Due Diligence; WDG Capital Partners; West Mojave area, CA**: Performed biological due diligence surveys on 6 proposed solar sites in the west Mojave area. Sites were approximately 320 acres in size. Surveys were to assess the general biological and botanical condition of the sites, and note potential biological constraints including special status species and habitats. Wrote letter reports summarizing findings. February, 2010.
- **Wetland Restoration Project; Santa Barbara Airport; Santa Barbara, CA.** Performed monitoring of revegetation success for an ecological restoration project at the Santa Barbara Airport, entered the data into computer spreadsheets, and collected native plant seeds to use for continuing revegetation work on that project (9 days, 2010).
- **Former Hercules Gas Plant; SEPCO; Canada de la Huerta, Gaviota Coast, CA.** Monitored the removal of willow bushes at the Hercules environmental remediation site, previously the site of a natural gas processing plant (2 days, October, 2009). Assessed biological resources around proposed lay-down site on existing fill pad (1 day, February, 2010).

- **California Valley Solar Ranch Project; SunPower Corporation, Systems; San Luis Obispo County, CA**: Participated in botanical surveys, wintering bird surveys, nesting bird surveys, burrow surveys, kit fox spotlighting, and blunt-nosed leopard lizard surveys on the 3,000 acre project site. Performed monitoring and detection of the San Joaquin kit fox via spotlight surveys (3 nights), burrow surveys (2 days), and automatic camera stations (5 weeks set up and take down). Assisted in the supervision of the survey crew of 12 to 24 biologists during 17 weeks of blunt-nosed leopard lizard surveys. Coordinated rental cars and hotel rooms, developed the survey schedule, performed safety briefings, and ensured data forms were filled out appropriately. Organized and summarized survey data on a weekly basis and at the end of the survey season. Responded and adapted to challenges such as last-minute personnel changes and weather events to complete the surveys on time and within protocol. Qualified as a Level II surveyor for blunt-nosed leopard lizard. May – Sept, 2009.
- **Algae Sampling; Oaji Sanitation District, Ventura County; Ventura River, CA**. Measured water quality parameters including temperature, turbidity, conductivity, and growth of vegetation and algae in the Ventura River for the Oaji Sanitation District (3 days, 2009). Assisted in the writing of the final report.
- **EME Cuyama PV; Suzanne Elledge Planning & Permitting Services, Inc.; Cuyama, CA.** Performed biological resources assessment survey of the 320-acre site to determine presence of special status wildlife, plants, and habitats. Wrote the resulting Biological Resources Assessment (BRA) document. September, 2009.
- **Santa Ynez Habit Mapping; Rincon Corporation; Santa Ynez, CA.** Performed a habitat assessment on a 1.1 acre parcel for a proposed gas station. Identified vegetation communities, general botanical and wildlife species present, and wrote the resulting Habitat Assessment and Sensitive Species Review. June, 2009.
- **HECA 2; Hydrogen Energy, California; Buttonwillow, CA**: Performed general wildlife surveys for sign of special-status species on the approximately 1,000-acre project site (January, 2009). Participated in protocol blunt-nosed leopard lizard surveys on a portion of the site, May – June, 2009, and again during the juvenile blunt-nosed leopard lizard survey season August-September, 2010.
- **Antelope Valley Solar Ranch I; NextLight Renewable Power, LLC; Antelope Valley, CA.** Participated in botanical surveys, wintering bird surveys, nesting bird surveys, burrow surveys, and burrowing owl surveys on the 1,920 acre site. Performed an inventory of Joshua tree seedlings on a 22 acre area within the project site. Assisted in the preparation of related project analysis documents including Biological Constraints Analysis (BCA) and Burden of Proof for Sensitive Ecological Areas within Los Angles County (SEABOP). December, 2008 to August, 2009.

Special-Status Wildlife Species Experience:

Flat-tailed horned lizard (*Phrynosoma mcallii*): 80 survey hours:

- 1 day survey training in El Centro, CA. Observed FTHL in the field and learned to identify tracks, scat, and habitat characteristics. An additional 1.5 days of protocol-specific FTHL survey training took place on August 19-20, prior to 11 survey days in August and September, 2010.

Desert tortoise (*Gopherus agassizii*): 216 protocol survey hours, 40 hours of construction monitoring, plus 16 hours of burrow scoping:

- Calico Solar Project, east of Barstow, CA. Personally located 8 tortoises, and observed an estimated 60 more plus numerous burrows, carcasses, and scats of various age classes. Able to assess suitable habitat and differentiate tortoise burrows from those of other species.
- Horizon Wind tortoise monitoring: monitored the removal of five temporary meteorological towers (MET) in desert tortoise habitat near Barstow, CA, to ensure tortoises and tortoise habitat were not harmed during the operation. Observed one desert tortoise.
- Attended the Desert Tortoise Handling Workshop November 8-9th, 2010, in Ridgecrest, CA (sponsored by the Desert Tortoise Council). Scored 94.6% on the final exam (online).

Blunt-nosed leopard lizard (*Gambelia sila*): 530 survey hours:

- Attended survey protocol training in Bakersfield, May, 2009. Level II BNLL survey qualified.
- California Valley Solar Ranch project: 400 surveys hours. Supervised the crew of 12-24 biologists during BNLL survey efforts in California Valley.
- HECA 2 project: 130 survey hours.
- Observed adult and juvenile BNLL in the field an estimated 8 times during training and at a reference site in the Carrizo Plains National Monument.

Burrowing owl (*Athene cunicularia*): 136 survey hours:

- Antelope Valley, Larsen Ranch Site: 40 dedicated survey hours.
- Calico Solar project site: 96 survey hours.
- Larsen Ranch Site, Calico Solar, Pacific Valley Solar, High Speed Train: 128 survey hours; observed burrowing owls during general bird/wildlife surveys.
- California Valley site: 400 survey hours; observed burrowing owls almost daily during blunt-nosed leopard lizard surveys.

Swainson's hawk (*Buteo swainsoni*): 40 survey hours:

- Pacific Valley Solar (3 sites): 24 dedicated survey hours.
- High Speed Train: 16 hours.

San Joaquin kit fox (*Vulpes macrotis mutica*): 34 survey hours:

- California Valley Solar: 18 hours spotlight surveys, 16 hours burrow surveys, and 5 weeks of motion-sensitive automatic camera station monitoring. Observed kit foxes (adults and young) and sign frequently during 400 hours of blunt-nosed leopard lizard surveys.

- Able to identify kit fox burrows, natal dens, scat, tracks, and suitable habitat.

Giant kangaroo rat (*Dipodomys ingens*):

- California Valley Solar: 16 hours burrow surveys and mapping of GKR precincts. Observed numerous GKR precincts and sign during 400 hours of blunt-nosed leopard lizard surveys.
- Able to identify GKR burrow complexes, haystacks, and seed caches.

Other Special-Status Wildlife Species Surveyed:

- Pacific fisher
- Northern spotted owl
- California spotted owl
- Great gray owl
- Peregrine falcon
- Bald eagle
- Northern goshawk
- Willow flycatcher
- Western pond turtle
- California red-legged frog
- Yosemite toad
- Limestone salamander
- Valley elderberry longhorn beetle

Professional Societies/Affiliates

The Wildlife Society: member

Awards

"Beyond War Award", Peace Corps, 1987
Returned to OSU in 1992 for one term to complete wildlife management courses required to qualify as a District Wildlife Biologist. Made the Deans List.

Languages

English
Conversational Spanish

Specialized Training

2010 Desert Tortoise Handling Workshop
2010 Smith Driver Safety Training
2010 Loss Prevention System (LPS)
2010 Flat-tailed horned lizard survey protocol
2009 Blunt-nosed leopard lizard survey protocol
2009 Shell "Yellowbook" Safety Training
2009 PASSPORT Contractor Safety Orientation
2009 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) (Refresher completed in February, 2010)
2000 Managing Forested Ecosystems
1999 Wildlife Habitat and Plant Management
1999 Leadership Improvement Training

1998 Fire Behavior S-290
1996 Ecosystem Management Workshop
1995 40-Hour Supervisory Training
1993 Resource and Fuels Interaction

Chronology

12/2008 – Current: URS Corporation, Santa Barbara, California
06/2006 – 12/2008: Advanced Living Solutions, Mariposa, California (Self Employed)
09/1992 – 06/2006: USDA Forest Service, Sierra National Forest, North Fork, California
02/1989 – 09/1992: USDA Forest Service, Winema National Forest, Klamath Falls, Oregon
09/1985 – 10/1987: Peace Corps, Ecuador, South America
06/1985: Graduate from Oregon State University, BS General Biology

Contact Information

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Ronald_cummings@urscorp.com

Areas of Expertise

Wildlife Biology, Biological Monitoring, Biological Resource Assessment, Desert Tortoise Surveys, and Flora and Fauna Identification

Years of Experience

With URS: 4 Years

Education

MS/Biology/California State University Long Beach

BS/Ecology and Environmental Biology/ California State University Long Beach

Registration/Certification

- Desert Tortoise Council Tortoise Handling Workshop
- Tracking Flat-tailed Horned Lizards Workshop, BLM El Centro Office July 8, 2010
- Rare Pond Species Survey Techniques (California tiger salamander, Red-legged frog, Western pond turtle)

DENNIS MILLER

Ecologist

OVERVIEW

Mr. Miller has an extensive background in field research and ecological studies. As a biologist Mr. Miller has participated in projects which include vegetation mapping, small mammal trapping, vernal pool branchiopod surveys, and protocol USFWS special status species surveys for Desert Tortoise, avian and botanical surveys. He has prepared numerous biological reports, assessments, to demonstrate compliance with the Federal Energy Regulatory Commission (FERC), Federal Railroad Administration (FRA), Federal Highway Administration (FHWA), California High-Speed Rail Authority (Authority), California Department of Transportation (Caltrans), California Costal Commission (CCC), state and federal Endangered Species Acts, and Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Mr. Miller has participated in consultation with regulating agencies including California Department of Fish and Game (CDFG), U.S. Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS). The following describes Mr. Miller's experience in greater detail.

PROJECT SPECIFIC EXPERIENCE

Solar Power Plant AFC – Imperial County, CA.

Field biologist conducting flat-tailed horned lizard and rare plant surveys in support of an Application for Certification for an 800MW thermal generating facility covering 7,000 acres in Imperial County.

Caithness, LLC., Soda Mountain Solar Project, CA.

Biologist for a proposed 6,700 acre solar site. Performed protocol desert tortoise surveys, rare plant surveys, and wetlands and other waters determinations. Caithness LLC, is in the process of obtaining authorization to construct and operate the Soda Mountain Solar Project - a proposed 350 megawatt ("MW") solar electric power generating facility on federal lands managed by the U.S. Department of Interior, BLM, in San Bernardino County. The Project consists of about 6,700 acres, located approximately 5 miles southwest of Baker, California along Route I-15.

Kinder Morgan Energy Partners, CALNEV Pipeline Project, CA and NV.

Field biologist for a proposed 280-mile jet fuel pipeline from Colton, CA to Las Vegas, NV. Performed protocol desert tortoise surveys, rare plant surveys, and wetlands and other waters determinations along the Project length.

SES Solar One Energy Project AFC – Barstow, CA.
Biologist assisting with data analysis and report preparation in support of an Application for Certification for a solar power plant project in San Bernardino County. Project involved intensive surveys for desert tortoise, Mohave ground squirrel, and rare plants on a 16,000-acre project site and 100-mile transmission line.

San Bernardino Valley Water Conservation District and Bureau of Land Management Land Exchange at the Upper Santa Ana River Wash.
Conducted biological field surveys, data collection and prepared Biological Assessment and Biological Technical Reports to document compliance with NEPA, CEQA, and federal Endangered Species Acts for the land exchange at the Upper Santa Ana River Wash. Disclosed and evaluated the onsite habitat conditions and determined the potential for occurrence of common and special status species, their habitats, and other special aquatic resource areas (e.g., Clean Water Act and CFGC jurisdictional features) within the proposed Project's study area.

Carrizo Energy, LLC; San Luis Obispo County: Senior Biologist.
Mr. Miller is assisting Carrizo Energy, LLC, to gain environmental permits to license and build their Carrizo Energy Solar Farm (CESF). Mr. Miller has performed small mammal trapping and reporting to document compliance the federal and state Endangered Species Acts for the proposed Project. The project consists of approximately 195 Compact Linear Fresnel Reflector (CLFR) solar concentrating lines, associated steam drums, steam turbine generators (STGs), air-cooled condensers (ACCs), and infrastructure, producing up to a nominal 177 megawatts (MW) net. The CESF is located in an unincorporated area of eastern San Luis Obispo County, west of Simmler and northwest of California Valley, California.

Verizon Wireless- Vasquez canyon site, Saugus, Los Angeles County, CA.
Conducted field surveys for biological resources at the proposed Project site. The field surveys and data collection supported the installation of cell phone tower pad and shelter and the Project's anticipated 500 foot physical ground disturbance footprint. Disclosed and evaluated the onsite habitat conditions and determined the potential for occurrence of common and special status species, their habitats, and other special aquatic resource areas (e.g., Clean Water Act and CFGC jurisdictional features) within the proposed Project's study area.

Ausra Energy, San Luis Obispo County, CA.
Field Biologist for an Application for Certification for a 180 MW solar generating facility located in San Luis Obispo County. Performed rare plant surveys, vegetation community mapping, and initial kit fox and blunt nose leopard lizard habitat suitability assessments. Performed protocol blunt nose leopard lizard surveys.

Ausra Energy, Imperial County, CA.
Field Biologist for a 7000 acre solar generating facility. Performed protocol flat tail horned lizard surveys, vegetation community mapping, rare plant surveys, and wetland and other waters delineations.

Sunpower, LLC., Solar Project.
Field biologist for a proposed 4,500 acre solar site. Performed protocol adult blunt nose leopard lizard surveys.

Sean M. Harris

Contact Information

seanmharris@yahoo.com
(702) 376-8626 (cell)

Educational Background

2004-2006 Master of Science In Biological Sciences

University of Nevada, Las Vegas

Emphasis: Evolutionary and Ecological Biology / Herpetology/ Conservation
Masters Thesis: "Habitat Selection by the Relict Leopard Frog (*Rana onca*): Habitat Use at Two Scales" 800+ radio-telemetry relocation nights, data analysis with SPSS, SAS, Microsoft Excel, and Microsoft Access, Vegetation assessment by species and density.
GPA 3.82

1999-2004 Bachelor of Science In Biological Sciences

University of Nevada, Las Vegas

Emphasis: Integrative and Organismal Biology / Herpetology
Projects: In January 2004 I began working on a project that I would continue through 2006 as my Masters thesis. I performed most of the data collection and preliminary research before I graduated with my Bachelors Degree.
GPA 3.1

Work Experience

June 2010 – Present Wildlife Biologist
URS Corporation

Project Experience

Couch's Spadefoot Toad Survey, BrightSource Energy – Palo Verde, CA: Field lead biologist for couch's spadefoot toad surveys and potential habitat assessment. Visual encounter surveys for adult toads, eggs, tadpoles and toadlets were performed at pools formed by thunderstorms. Surveys were conducted during both nighttime and daylight hours.

Mojave Fringe-Toed Lizard Survey, BrightSource Energy – Palo Verde, CA: Field lead biologist for Mojave fringe-toed lizard surveys within windblown sands habitat. A general habitat assessment was conducted in addition to these surveys.

Burrowing Owl Survey, BrightSource Energy – Palo Verde, CA: Field lead biologist for Spring burrowing owl burrow and individual surveys. Initial surveys for BUOW burrows were conducted while phase 3 surveys were conducted at each burrow in order to determine activity of burrow by burrowing owls.

Desert Tortoise Survey, BrightSource Energy – Palo Verde, CA: Field co-lead biologist for Spring desert tortoise surveys in support of Application for certification for a solar energy facility located within Riverside County. A total of approximately 250 survey hours was accrued for this effort. This brings my total desert tortoise experience to over 1,000+ hours.

Migratory Bird Point Count Survey, BrightSource Energy – Palo Verde, CA: Lead biologist for four rounds of spring bird count surveys.

Fairy Shrimp Survey and Identification, Pio Pico – San Diego, CA: Staff biologist conducting 15 hours of fairy shrimp surveys and identification. These hours put me over the necessary 20 hours of surveying in order to apply for a fairy shrimp survey permit.

Fairy Shrimp Survey and Identification, Menlo Equities – San Diego, CA: Staff biologist conducting multiple hours of fairy shrimp surveys and identification of *B. sandiegonensis*.

Jurisdictional Delineation, Bethel X – El Centro, CA: Staff biologist conducting a jurisdictional delineation of recently plowed lands.

Burrowing Owl Burrow Survey and Initial Assessment, Bethel X – El Centro, CA: Staff biologist conducting an initial habitat assessment as well as a preliminary burrowing owl survey.

Biological Monitoring For Desert Tortoise, Calico Solar Energy Facility AFC and EIS, San Bernardino County, CA: Conducted multiple days of biological monitoring for desert tortoise individuals and burrows during construction activities.

Biology/NEPA/CEQA Environmental Planning Projects

Calico Solar Energy Facility AFC and EIS, San Bernardino County, CA: Staff biologist on survey team in support of an Application for Certification for an 800MW thermal generating facility located within San Bernardino County. The project will cover 15,000 acres and will include over 36,000 solar dishes.

State Route 125 Revegetation Program – Otay Mesa, CA: Staff biologist conducting qualitative and quantitative monitoring of a revegetation site along the Otay River. Vegetation types being restored include coastal sage scrub, freshwater marsh, and southern willow scrub.

IVS Energy Facility AFC and EIS, Imperial County, CA: Staff biologist for biological surveys in support of an Application for Certification for an 800MW thermal generating facility located within Imperial County. The project will cover 7,000 acres and will include 12,000 – 36,000 solar dishes. Project included flat-tailed horned lizard focused surveys, vegetation mapping, and rare plant surveys.

May 2007 – June 2010 <u>Devils Hole Pupfish Biologist (Fisheries Biologist II)</u>
Nevada Department of Wildlife (NDOW)

<u>Field Work</u>

Perform research on hybrid pupfish as surrogates to Devils Hole pupfish
Perform research on Cyprinodon Nevadensis mionectes
I have approximately 5 different studies to determine how global climate change and groundwater pumping will affect reproduction and other life history traits of these pupfish.
I also have a study on going to determine how the two diseases, lymphosarcoma (leukemia) and nephrocalcinosis (kidney stones) affect the pupfish and what age is most susceptible.
I have many physiological ongoing studies on egg, larvae and adult pupfish (of both species) in regards to evolving to some of the harshest temperatures and lowest dissolved oxygen habitats in the world.
Conduct larval surveys at Devils Hole
Conduct adult pupfish surveys
In charge of restoring the Hoover Dam Refuge for Devils Hole pupfish
I rear eggs and larvae to increase Devils Hole pupfish population (and C. mionectes pupfish)
Help perform other surveys for many different organisms (including amphibians, rare fishes, and mammals) within Nevada

<u>Administrative Work</u>

Write NSF grants
Present research findings to the Incident Command Team and managers
Be an active part of the conservation team for the Devils Hole pupfish
Journal searches

Feb. – May 2007 <u>Desert Tortoise Line Distance Sampling (LDS) Field Crew Leader</u>
Great Basin Institute (GBI)

<u>Field Work</u>

Work in conjunction with USFWS and UNR to perform annual line distance sampling survey for Desert Tortoises

Refurbish eight kilometers of training lines with Styrofoam tortoises in order to train field techs in LDS methodology and tortoise observations
Perform radio-telemetry on approximately 40 tortoises during the course of the LDS for statistical G(o) purposes
Lead and teach a crew of 18 field techs in the methodology of LDS, compass orienteering, Mojave wildlife and plant ecology, and radio-telemetry of Desert Tortoises

Feb. – Oct. 2006 <u>Environmental Specialist II</u>
SWCA Environmental Consulting

<u>Field Work</u>
Desert Tortoise Surveying – 100+ hours of surveying for individuals/sign
Bat Acoustic Surveying (Project leader)– Setting up Anabat systems, collecting and interpreting data
Bat Mortality Surveying (Project leader)
Water Quality and Vegetation Identification – Springs surveying in the Spring Mountains
Migratory Raptor Surveys – Species Identification
Endangered Botanical Surveys – Presence/absence surveys and species identification
BLM Vegetation Plots – Species identification and annual production analysis

<u>Administrative Work</u>
Attending meetings and being part of the Relict Leopard Frog Conservation Team – Group of herpetologists dedicated to conserving the Relict Leopard Frog (*Rana onca*) in its natural and historic range
Journal Searches
Writing NEPA documents – Focusing on affected environment and biological Assessments
NEPA Course Certification
Desert Tortoise Council Workshop

Jan. 2004 – Aug. 2006 <u>Graduate Research Assistant</u> (Masters Work)
University of Nevada, Las Vegas

<u>Field Work</u>
Assess Vegetation species/densities at Blue Point Spring (within the Lake Mead National Recreation Area) on the macro and microhabitat scale.
Capture animals at night by hand with the use of headlamps and flood lights.
Uniquely identify individuals by insertion of PIT tags under the skin of each frog.
Fit frogs with radio-telemetry units
Relocate frogs approximately every other night with radio-telemetry

Species identification – Other herp species that were seen needed to be identified and recorded.

Data Analysis

Create multiple field forms throughout the project
Enter data from field surveys into Microsoft Access Database that I created
Use SPSS and SAS software to analyze data

Professional Papers

I was a part of writing the Relict Leopard Frog Conservation Assessment and Strategy (CAS).

Administrative Work

Journal searches
Attending meetings and being part of the Relict Leopard Frog Conservation Team

Interagency Collaboration

Southern Nevada Water Authority
Arizona Fish and Game
Nevada Division of Wildlife
U.S. Fish and Wildlife Service
National Park Service
Environmental Consultants: Parsons, SWCA, Wildlands Int.

Jan. 2006 – May 2006 Lead Biologist
University of Nevada, Las Vegas

Field Work

The goal of this project was to perform an interdisciplinary study linking the biology, geology, archaeology and landscape architecture of Paiute Valley. These data were used to preliminarily assess the impact of local and regional development within Paiute Valley.
I was the lead biologist on this project and most of my field work was observational due to the winter months in which the study was performed.
I was able to determine a potential link between biological fauna and geological volcanic rock formations which will be looked at more closely in future studies.

Administrative Work

This study took place during unfavorable desert biological conditions, so much of the information was taken from previous collections and studies, therefore, extensive literature and journal reviews were necessary as well as personal communication with professors and other researchers.

10 Aug. 2004 – 13 Aug. 2004 Biological Consultant
Wildland International

Field Work
Amphibian surveys along the Muddy River and its tributaries
Determine the species that are seen during visual encounter surveys
Determine if the Relict Leopard Frog (*Rana onca*) inhabit these areas

Volunteer Work

February 2007 Volunteer for SNWA and USFWS Desert Tortoise Excavation
Southern Nevada Water Authority (SNWA) and United States Fish and Wildlife Service (USFWS)

Field Work
I performed 100% tortoise coverage surveys of a parcel and participated in several burrow excavations in order to reduce the risk of roadway tortoise mortality.

February 2007 Volunteer for Moapa Dace surveys with SNWA
Southern Nevada Water Authority (SNWA)

Field Work
I went out to the Muddy Springs with Zane Marshall and Aaron Ambos from SNWA to help perform a yearly Moapa Dace survey for the USFWS.
I was asked to differentiate between multiple species of native and invasive fish in these waterways

June 2005 – Aug. 2005 Field Mammalogist Volunteer
Southern Nevada Water Authority (SNWA) and Advanced Field Mammalogy class (UNLV)

Field Work
I was the only student in an Advanced Field Mammalogy class during this summer
My instructor and I volunteered with the SNWA to go in the field almost every week for 5 days a week
We used Sherman live traps to survey many of the basins in the Northern Nevada area

Identification of individuals to the species level
I also took genetic samples, dissected, skinned, and stuffed animals for museum specimens

March 2010 – Present <u>United States Fish and Wildlife Service Dive Team Volunteer</u>

<u>Field Work</u>
I am currently a volunteer diver for USFWS
I am one of only six biologists that are able to dive in the Devils Hole, NV
I help conduct biannual counts for adult Devils Hole pupfish
I have also started a video documentation of the underwater habitats of Devils Hole, the only habitat for the Devils Hole pupfish

Awards/ Certifications

Conservation Achievement Award (2009) – American Fisheries Society (Western Division)
Open Water SCUBA Certification (2009)
Advanced Open Water SCUBA Certification (2009)
Mixed Gas (Nitrox) SCUBA Certification (2009)
Cavern/Intro to Cave Diving Certification (2010)
Full Cave Diving Certification (2010)
United States Fish and Wildlife Service Volunteer SCUBA Diver (2010)

Continuing Education

Flat-tailed Horned Lizard Survey Techniques Workshop, 2011
Fairy Shrimp Identification Workshop, 2011
Wetland Delineation Training from Wetland training Institute, INC, 2010
Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop, 2006

Posters and Presentations

Casa de Cultura. November 2008. Cuatrocienegas, Mexico. Desert Fishes Council meeting: "The State of Devils Hole and the Devils Hole Pupfish in 2008." Barret, Paul J.; Bower, Mike; Wilson, Kevin P.; Wullschleger, John; Sjoberg, Jon; Harris, Sean.

University of Nevada, Las Vegas. May 2006. Las Vegas, Nevada. Master of Science Oral Defense: "Habitat Selection by the Relict Leopard Frog (*Rana onca*): Habitat Use at Two Scales"

Humboldt State University. January 2006. Arcata, California. Declining Amphibians Population Task Force (DAPTF) meeting: "Habitat Selection by the Relict Leopard Frog (*Rana onca*): Assessing Effects of Dense Vegetation Encroachment"

Lake Mead National Recreation Area, Boulder City, Nevada. December 2005. Presentation of finding to the Relict Leopard Frog Conservation Team (RLFCT): "Assessing the Effects of Vegetation Encroachment on Relict Leopard Frog (*Rana onca*) Populations"

University of Nevada, Las Vegas. September 2004. Las Vegas, Nevada. University of Nevada, Las Vegas Graduate Student Symposium: "Habitat Selection by the Relict Leopard Frog (*Rana onca*): A Precursor the Habitat Management"

References

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Heather Rothbard

Botanist / Environmental Scientist / Planner

Areas of Expertise

- 401/404 Jurisdictional Delineations
- Biological Surveys and Desert Tortoise and Burrowing Owl
- Habitat Enhancement and Restoration Site Development
- Monitoring and Management
- NEPA Documentation
- Phase I Environmental Site Assessments
- Integrated Natural Resource Management Plans
- Pest Management Plans
- Biological Reviews

Years of Experience

With URS: 1 year
With Other Firms: 7 Years

Education

BS/Botany: Emphasis in Environmental Science and Ecology / 2003/ Arizona University, Tempe, Arizona

Training

UXO Training, 2011
40-hour HAZWOPER Training, 2008 and 8-hr Refresher, 2009 and 2011
Yellow-billed Cuckoo Survey Training, 2010
DoD Plant Conservation Workshop, 2009
Wetland Delineation Training, 2008
Desert Tortoise Survey and Handling Workshop, 2007
Chiricahua Leopard Frog Survey Training, 2007
Southwestern Willow Flycatcher Survey Training, 2007
Integrated Weed Management Workshop, 2007
USFWS Biological Assessment Workshop
Southwest Noxious Weed Short Course, 2006, 2007
Red Brome (*Bromus rubens*) Grass Symposium, 2006
Arizona Wildfire Academy, 2006
Sahara Mustard (*Brassica tournefortii*) Workshop, 2005

Overview

Ms. Rothbard has more than eight years of experience in botanical/biological survey and environmental regulatory compliance. Her experience includes rare and sensitive plant surveys, noxious weed surveys, percent cover surveys, rangeland studies including flora identification, habitat enhancement and restoration site development, monitoring, and management, biomass and species diversity data collection, biological surveys for desert tortoise and burrowing owl, National Environmental Policy Act (NEPA) documentation, environmental site assessments, Section 404 delineation and permitting including ephemeral washes, intermittent and perennial steams, and freshwater, tree-dominated wetlands, Phase I Environmental Site Assessments, Integrated Natural Resource Management Plans and Pest Management Plans, and biological reviews. Ms. Rothbard has managed and performed numerous plant surveys, 401/404 jurisdictional delineations, managed and performed a biological and soil salinity study on a major oilseed crop for the USDA-ARS, and held responsibility for arthropod collection and identification, identification of native and non-indigenous plants, soil and plant root collection for mycorrhizal fungi detection, and vegetation sampling and monitoring at sites in the Phoenix metro and surrounding area for the Central Arizona Phoenix Long-Term Ecological Research Project (CAP-LTER). Vegetative areas of study include low to high desert, chaparral, coastal chaparral, juniper/pinyon pine, coniferous and hardwood forests, grasslands, and rangelands.

Project Specific Experience

Clean Water Act Section 404 Delineation and Permitting

Ms. Rothbard has prepared Section 401/404 jurisdictional delineations for waters of the U.S., including ephemeral washes, intermittent and perennial steams, and freshwater, tree-dominated wetlands. She has also prepared nationwide and individual permit applications. Her Section 404 work includes projects in Arizona, Oklahoma, California, and South Carolina.

National Environmental Policy Act

Ms. Rothbard has prepared National Environmental Policy Act (NEPA) environmental assessments (EAs), Integrated Natural Resource Management Plans (INRMPs), and technical studies for environmental impact statements (EISs) for water distribution and collection, utility, development, aviation, and transportation projects in Arizona, Hawaii, Oklahoma, Nevada, Kansas, California, and Japan. Clients include municipalities, transportation departments, United States Air Force Bases, United States Naval Bases, United States Marine Corps Air Stations, National Guard Training Facilities, and private developers.

Restoration/Habitat Enhancement

Ms. Rothbard has served as assistant project manager/field manager for restoration and habitat enhancement projects for United States Marine Corps Stations, United States Border Protection, and private developers in California and Arizona. Projects include habitat enhancement for endangered species, wetland creation and monitoring, invasive plant removal and monitoring, and developing plans for restoration/habitat enhancement sites.

Botanical/Biological Surveys

Ms. Rothbard has conducted numerous botanical surveys including noxious weed, rare plant, percent cover, and rangeland diversity surveys in Arizona, California, and New Mexico. Vegetative areas include low to high desert, coastal-shrub chaparral, coastal dunes, juniper/pinyon pine, coniferous forest, grasslands, and rangelands. Clients include utilities, railroads, local, state, and federal land management departments. Ms. Rothbard has also conducted several biological surveys for desert tortoise (*Gopherus agassizii*), burrowing owl (*Athene cunicularia*), and habitat for threatened and endangered bat species in California and Arizona.
Environmental Site Assessments

Ms. Rothbard has conducted Phase I Environmental Site Assessments (ESAs) of undeveloped, industrial, residential, and commercial facilities in Arizona. Clients included municipalities, commercial developers, Native American Tribes, and residential developers.

December 2010 – Present: Botanist/Wetlands Scientist ,URS Corporation, San Diego, California

May 2009 - 2010: Botanist/Environmental Scientist/Planner, AMEC Earth & Environmental, Inc., San Diego, California

2006 – May 2009: Botanist/Environmental Scientist/Planner, AMEC Earth & Environmental, Inc., Tempe, Arizona

2005 - 2006: Botanist/Forestry Planner, Arizona Public Service, Cottonwood, Arizona

2004 - 2005: Field Research Technician, International Institute for Sustainability, Arizona State University, Tempe, Arizona

2002 – 2004: Research Technician, USDA-ARS Water Conservation Lab., Phoenix, Arizona.

National Environmental Policy Act

Environmental Review (ER) for Construction of a Type III Fuelling System at Marine Corps Air Station Iwakuni, Iwakuni, Japan (2010). Ms. Rothbard is the environmental scientist preparing an ER that addresses the construction of a Type III Fuelling System at MCAS Iwakuni, Japan. The ER includes a detailed assessment of impacts related to constructing a Type III Fuelling System and associated supporting structures in the old airfield in order to support the MCAS Iwakuni Base Master Plan and Mission to support refueling of large aircraft including C-5s and KC-130s. The ER is being prepared in accordance with Japan

Environmental Governing Standards (JEGS) and Executive Order (EO) 12114 (*Environmental Effects Abroad of Major Federal Actions*).

Environmental Assessment (EA) for the Beddown of the 604th ASOC at Wheeler Army Airfield, O'ahu, Hawaii (2010). Ms. Rothbard was the environmental scientist preparing an EA that addressed relocation of the 604th Air Support Operations Center (ASOC) from Korea to Wheeler Army Airfield. The EA includes a detailed assessment of impacts related to renovation of two historic buildings, renovation of a motorpool parking area, construction of an additional parking area, and the addition of personnel, radios, and vehicles to Wheeler Army Airfield, training sites on O'ahu, and the surrounding area**.**

Transboundary Environmental Information Document for Drinking Water Distribution Expansion to Unserved Areas, Colonia Luis Donaldo Colosio, Border Environment Cooperation Commission (BECC), Nogales, Sonora, Mexico. (2009): Ms. Rothbard was the environmental scientist for a Transboundary EID for the BECC to address potential environmental impacts of the proposed expansion of the drinking water distribution system into unserved areas of Colonia Luis Donaldo Colosio in Nogales, Sonora. The EID presents potential impacts that are likely to occur on both the US and Mexico sides of the border. AMEC is working to meet BECC's aggressive schedule for completion of this EID. The EID is being reviewed by EPA Region 9.

Transboundary Environmental Information Documents for Expansion of Drinking Water Distribution and Disinfection System in Colonia Esperanza and Improvements to Wastewater Collection and Treatment Systems Juárez Municipality, Border Environment Cooperation Commission, Colonia Esperanza and Juárez Municipality, Chihuahua, Mexico (2010): Ms. Rothbard assisted in the preparation of EIDs to address potential environmental impacts of the proposed expansion of the drinking water distribution system and the addition of a chlorination unit in Colonia Esperanza and Improvements to wastewater collection and treatment systems in Juárez Municipality. The EIDs present potential impacts that are likely to occur on both the US and Mexico sides of the border. The inclusion of two EIDs for neighboring areas under a single contract allowed for cost savings. As part of a separate contract, BECC is conducting water quality modeling for the multiple treatment plants within Juárez Municipality. AMEC will work with BECC to incorporate the findings of this modeling into the EID.

Transboundary Environmental Information Document for Construction of a Wastewater Collection System in Reynosa, Tamaulipas, Border Environment Cooperation Commission, Reynosa, Tamaulipas, Mexico (2009-2010): Ms. Rothbard assisted in the preparation for a NEPA compliant transboundary EID to address the impacts of construction of a wastewater collection system within a portion of Reynosa that does not currently have wastewater collection or treatment. This project is receiving funding from the Border Environment Cooperation Commission (BECC). BECC receives federal

funds from the U.S. and Mexico for projects that improve environmental conditions within the U.S.-Mexico border region

EA for T-10 Hush House, Tinker Air Force Base, Oklahoma (2008). Ms. Rothbard assisted in the preparation of an EA that addresses refurbishment of a T-10 hush house at Tinker Air Force Base. Refurbishment of the hush house is proposed to address an increase in engine testing. The EA includes a detailed assessment of impact related to noise and vibration associated with operation of the hush house and the potential impacts of noise and vibration on the air traffic control tower that will be constructed near the hush house. The EA had a challenging four month schedule, which AMEC met.

EA for Proposed Construction of Two Readiness Centers, Field Maintenance Shop, and Regional Training Institute, Florence Military Reservation, Pinal County Arizona (2008): Ms. Rothbard assisted in the preparation of an EA at Florence Military Reservation for the construction of training and administrative facilities. The EA was prepared in accordance with NEPA, Council on Environmental Quality (CEQ) Regulations, Army Regulation (AR) 200-1 on Environmental Protection and Enhancement (revised August 2007), Department of Defense (DoD) Instruction 4715.3 (Environmental Conservation Program), and the National Guard Bureau (NGB) NEPA Handbook (revised June 2006). One challenge of this EA was an extremely short schedule.

EA of New Facilities at Yuma International Airport, Yuma, Arizona, Merrick & Company/TEPA/Department of Homeland Security Customs and Border Protection (2009): Ms. Rothbard is assisting in preparing an Environmental Assessment to address Custom and Border Protection Air and Marine Section's construction of new facilities and operations at the Yuma International Airport. The proposed action includes construction of facilities needed to fly and maintain helicopters and fixed wing aircraft and the operation of that aircraft for border security activities. Ms Rothbard is the environmental scientist for this effort

Diamond Valley Speed Racing, Marathon Racing, LLC, Diamond Valley, Nevada (2007). Ms. Rothbard prepared numerous resource sections of an EA for BLM land in Diamond Valley, Nevada. The project area was within the jurisdiction of BLM's Battle Mountain Field Office.

Environmental Information Document, Wastewater System Expansion Program Conventional Gravity Sewer Collection System (2008–2012), Lake Havasu City Arizona: Ms. Rothbard prepared an Environmental Information Document (EID) update for the second five-year period of Lake Havasu City's Wastewater System Expansion Program. AMEC is preparing the EID in accordance with the Arizona Water Infrastructure Finance Authority's guidelines. Since the program is receiving federal funds through the Clean Water State Revolving Fund, the EID must be NEPA compliance. Ms. Rothbard is the environmental scientist for this effort.

Winter Storm Management/Operations Plan and EA, Arizona – Statewide, Arizona Department of Transportation (2008). AMEC was awarded the development of a Winter Storm Management/ Operations Plan and EA for the implementation of that plan. Ms. Rothbard prepared the NEPA portion for this project. Preparation of the EA for this project will consist of collecting, reviewing, and evaluating data to define environmental thresholds related to such factors as air quality, socioeconomic factors, water quality, and biological resources. In concert with the evaluation of environmental issues, AMEC's winter storm management specialists will be reviewing winter storm management alternatives regarding cost, including long-term costs such as impacts to pavement, and effectiveness.

Three EAs for Consolidated Wing Headquarters, New Control Tower, and Realignment of Air Depot Boulevard, Tinker Air Force Base, Oklahoma (2008): Ms. Rothbard is the environmental scientist for preparation of EAs for three projects at Tinker Air Force Base. The projects include construction of a consolidated wing headquarters, construction of a new control tower, and realignment of Air Depot Boulevard. The project is being performed under the requirements of the Air Force Center for Environmental Excellence.

EA Revision for Construction of Consolidated Fuel Overhaul and Repair Facility, Tinker Air Force Base (2007) Oklahoma: Ms. Rothbard was the environmental scientist for revision of an EA for construction of a consolidated fuel overhaul and repair facility. This project is being performed under the requirements of the Air Force Center for Environmental Excellence (AFCEE). The project will impact a wetland; therefore, AMEC's scope of work includes preparation of a Finding of No Practicable Alternative (FONPA) and inclusion of wetland mitigation in the EA.

EA for BRAC Actions, Luke Air Force Base, Arizona (2007): Ms. Rothbard assisted in the preparation of an EA for Base Realignment and Closure (BRAC) actions at Luke Air Force Base (AFB) affecting aircraft inventory, aircraft flight operations, and associated mission realignment.

507th KC-135 Transfer EA, Tinker Air Force Base, Oklahoma (2007): Ms. Rothbard assisted in the preparation of an EA for the proposed expansion of the airfield/apron fuel hydrant system; construction of Air Force Reserve Command and Air National Guard squadron operations, operations support squadron, life support storage, and life support work area; construction of a new hangar; and building renovation under the requirements of the Air Force Center for Environmental Excellence.

51st Avenue Intersection Improvements, City of Glendale, Glendale, Arizona (2007): Ms. Rothbard was the environmental scientist/botanist for environmental work, including native plant surveys and biological assessments, related to projects involving intersection improvements at 51st Avenue and Northern Avenue and 51st Avenue and Camelback. The project sponsor, the City of Glendale, was applying for federal funds for

these projects; therefore review through the Arizona Department of Transportation's Local Government Program was necessary.

Transboundary Environmental Site Assessment for Construction of a Water Distribution and Wastewater Collection System in Tecate, Border Environment Cooperation Commission, Tecate, Baja California (2007): Ms. Rothbard prepared a NEPA compliant environmental assessment (EA) to address the impacts of construction of a water distribution and wastewater collection system within colonias of Tecate, Baja California. This project is receiving funding from the Border Environment Cooperation Commission (BECC). BECC receives federal funds from the U.S. and Mexico for projects that improve environmental conditions within the U.S.-Mexico border region.

Clean Water Act Section 404 Delineation and Permitting

Preliminary Jurisdictional Determination and Delineation of Jurisdictional Waters of the US and Waters of the State of California, Rio Mesa Solar Electric Generating Facility, Blythe, Riverside County, California (2011): Ms. Rothbard performed field reconnaissance for a preliminary determination of the jurisdictional status and delineation of the boundaries of Waters of the United States (WUS) and Waters of the State of California (WSC) on the site of the proposed Rio Mesa SEGF. The 11,277-acre study area includes the property, a transmission-line corridor and survey buffers. The assessment was performed for permitting requirements under Section 404 and 401 of the Clean Water Act and Section 1602 of the California State Fish and Game Code.

Preliminary Determination and Delineation of Jurisdictional Waters of the US and Waters of the State of California, Jurupa Community Services District Regional Park, Mira Loma, Riverside County, California (September 2009): Ms. Rothbard performed field reconnaissance for a preliminary determination of the jurisdictional status and delineation of the boundaries of Waters of the United States (WUS) and Waters of the State of California (WSC) on the site of the proposed Jurupa Community Services District Regional Park (Eastvale Community Park). The 89.95-acre study area includes the Property and areas immediately adjacent including Citrus Street to the north, Hamner Avenue to the east, private property to the west, and the Santa Ana River to the south. The assessment was performed for permitting requirements under Section 404 and 401 of the Clean Water Act and Section 1602 of the California State Fish and Game Code.

Preliminary Determination and Delineation of Jurisdictional Waters of the US and Waters of the State of California, Moreno MDP-Line K Project, Moreno Valley, Riverside County, California. (2009): Ms Rothbard performed field reconnaissance for preliminary determination of the jurisdictional status and delineation of the boundaries of Waters of the United States (WUS) and Waters of the State of California (WSC) for the Moreno MDP-Line K Project. AMEC was contracted by Riverside County Flood Control and Water Conservation District to perform this assessment on the approximately 38.7-acre project site. The project area includes the Property and areas immediately adjacent including Ironwood

Avenue to the north, Oliver Street to the west, undeveloped property to the east, and the State Highway 60 to the south. An assessment of the area of jurisdictional waters within the project boundary, including general information on permitting requirements under Section 404 and 401 of the Clean Water Act and Section 1602 of the California State Fish and Game Code, was determined by Ms. Rothbard. No project design information was available at the time this report was written so no analysis of impacts or analysis of permitting requirements was performed.

Section 404 Jurisdictional Delineation, Arizona State Lands Department, 303 Peoria East, Maricopa County, Arizona (2008): Ms. Rothbard served as field reconnaissance leader to identify and establish boundaries of Section 404 jurisdictional areas on the 4,600 acre project site. Jurisdictional areas are identified and delineated in accordance with the USACE's 1987 Wetland Delineation Manual, the USACE's 2001 guidelines for conducting JDs in the arid southwest, USACE's 2006 Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, and USACE's June 2007 Rapano's Guidance Memorandum. Ms. Rothbard prepared the results of the JD in a technical report. The technical report includes a description of the project area drainage features including width, depth, substrate, vegetation characteristics, hydrology, and connectivity to the Agua Fria and New Rivers.

Arkoma Connector Pipeline Environmental Field Surveys, MarkWest Energy Partners, L.P. - Atoka, Bryan, and Coal Counties, Oklahoma, AMEC Paragon. (December 2007 – February 2008): Botanist/Environmental Scientist. The Arkoma Connector Pipeline will provide transportation for natural gas from the Woodford field in southeastern Oklahoma to major interstate pipeline systems and will consist of one 24-inch diameter pipeline, approximately 50 miles in length, one compressor station of approximately 10,000 horsepower, and associated pipeline support facilities, including a pig launcher and receiver, and metering equipment. Environmental components of the survey program include land use, wetlands delineation, and threatened and endangered species habitat delineation in accordance with the US Army Corp of Engineers, US Fish and Wildlife Service, and FERC regulations. The surveys were conducted in areas along the proposed pipeline 300 ft ROW.

Maricopa County Department of Transportation, Power Road and Guadalupe Road Bridge Expansion, Mesa, Arizona (2008): Ms. Rothbard was monitoring construction activities for compliance with conditions of Clean Water Act Section 404 Nationwide Permit Numbers 12 and 14 and general conditions of Section 401 Water Quality Certification. Construction activities include widening the bridges that cross the floodway that flows underneath Power Road and Guadalupe Road. Ms. Rothbard's participation included tri-weekly site visits and weekly reporting of site conditions for three months.

McEntire Joint National Guard Base, Base-wide Wetland Delineation, National Guard Bureau, Columbia, South Carolina

(2007): Ms. Rothbard conducted wetland delineation surveys of wetlands and other waters of the U.S. within the Common Installation Footprint per the methods described in the 1987 U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual at McEntire Joint National Guard Station in South Carolina. Her participation in these surveys included identifying plant species, determining soil color and texture, completing wetland data report forms, and reviewing the wetland delineation report. Section 404 Jurisdictional Delineation Shadow Ridge Subdivision, Millennia Investment Corporation, Mohave County, Arizona (2007). Ms. Rothbard was the environmental scientist/botanist for a Section 404 Jurisdictional Delineation for waters of the United States associated with the development of a 165 acre subdivision in the unincorporated town of Scenic, Arizona. AMEC was selected to assist the client in resolving Clean Water Act Section 404 violations that occurred when portions of the site were graded prior to issuance of a Section 404 permit. AMEC's services included field reconnaissance to identify and establish boundaries of Section 404 jurisdictional areas on the project site and identification of biological resources.

Section 404 Permitting WACOG Air Industrial Park, AMEC Infrastructure/Lake Havasu City (2007): Ms. Rothbard was the environmental scientist/botanist for Clean Water Act Section 404 permitting services related to the development of an industrial park near the Lake Havasu City airport. AMEC's environmental services for this project included review of previous environmental documents for the project area, review of grant funding pathways to determine if NEPA documentation is necessary, and preparation of a Section 404 individual permit application. The Section 404 documentation included verification of previously delineated limits of waters of the United States, an environmental assessment (EA) prepared in accordance with U.S. Army Corps of Engineers guidelines, and a compensatory mitigation and monitoring plan.

Section 404 Jurisdictional Delineation, Florence Military Reservation, Pinal County, Arizona (2007): Ms. Rothbard completed a Section 404 Jurisdictional Delineation for waters of the United States, at 20 utility road crossings at Florence Military Reservation, using the U.S. Army Corps of Engineers guidelines for determining waters of the United States in arid regions.

Section 404 Jurisdictional Delineation and Permitting, Prospectors Road, Pinal County, Arizona (2007): Ms. Rothbard served as environmental scientist/botanist for a Section 404 Jurisdictional Delineation and permit application associated with improvements to Prospectors Road in Apache Junction, Arizona. Ms. Rothbard's responsibilities included the field reconnaissance for the jurisdictional delineation, botanical survey, and production of a Section 404 Jurisdictional Delineation report and permit application.

Natural Resources Survey, Management, and Documentation

Integrated Natural Resources Management Plans, United States Navy, Naval Weapons Station, Seal Beach Detachment Corona, California (2010): Ms. Rothbard is serving as the primary environmental scientist for the revision and completion of an Integrated Natural Resources Management Plan for Naval Weapons Station Seal Beach Detachment Corona, near Norco, California. The INRMP documents natural resources within the installation and serves as a tool for the United States Navy. In addition to the INRMP, Ms. Rothbard is preparing a NEPA compliant EA for implementation of the INRMP.

Integrated Pest Management Plan Update, Kansas Army National Guard, Statewide, Kansas (2009): Ms. Rothbard was the environmental scientist responsible for the completion of an update to the Kansas Army National Guard's Statewide Integrated Pest Management Plan (IPMP). The IPMP's objective includes providing guidance necessary to operate and maintain effective management of pests and invasive species via the judicious application of chemical and non-chemical control techniques. The IPMP outlines procedures intended to manage pests while minimizing the potential for adverse environmental consequences. The IPMP also establishes standard operating procedures addressing the proper methods for storage, handling, mixing, and applying control agents. Ms. Rothbard prepared the IPMP update in compliance with Department of Defense (DoD) Instruction 4150.7, *DoD Pest Management Program* and Army Regulation 200-5, *Pest Management*.

Environmental Services Applications - Six Rivers National Forest Trinity County Bridges and 3R, Trinity County, Jacobs Civil/Federal Highway Administration (2008): Ms. Rothbard was the biologist for AMEC's environmental services related to the replacement of 5 bridges and roadway improvements within the Six Rivers National Forest. Ms. Rothbard prepared application documents for both the California Department of Fish and Game's Notification of Lake or Streambed Alteration and California Regional Water Quality Control Board's 401 Water Quality Certification.

Integrated Natural Resources Management Plans, Arizona Department of Emergency and Military Affairs, Camp Navajo and Florence Military Reservation, Arizona (2007-2009): Ms. Rothbard was serving as the primary environmental scientist for completion of Integrated Natural Resources Management Plans (INRMPs) for Camp Navajo, near Bellemont Arizona, and Florence Military Reservation, near Florence, Arizona. The INRMPs document natural resources within the installations and serve as a tool for the Arizona Army National Guard to manage those resources. In addition to the INRMPs, Ms. Rothbard is preparing National Environmental Policy Act (NEPA) compliant Environmental Assessments (EAs) for implementation of the INRMPs. Restoration/Habitat Enhancement

Endangered Willowy Monardella Habitat Enhancement, MCAS Miramar, San Diego, CA: (2009-2010). Ms. Rothbard is the field manager for this enhancement project with the overall goal to protect existing populations of willowy monardella (*Monardella linoides* ssp. *viminea*)

and improve current habitat conditions so that these populations can expand. Ms Rothbard manages and participates in censusing, mapping, and conducting habitat assessments of existing willowy monardella populations and assisted in the development of ongoing enhancement and monitoring techniques.

Spring Canyon Riparian Restoration Project, San Diego County, CA (2009-1010):, AMEC has conducted multiyear protocol and sensitive species surveys, wetland delineations, and regulatory permitting. As part of the overall mitigation for project impacts, AMEC has planned and implemented wetland creation, restoration, and enhancement of over 5 acres of riparian wetlands in Spring Canyon. Ms. Rothbard is the field manager for this 5-acre site that has restored, enhanced, and created riparian habitat mitigation associated with impacts from border fence projects. Long-term activities include habitat enhancement, monitoring, and reporting.

Imperial Irrigation District Managed Marsh Planting, Calipatria, CA: (2009). Ms Rothbard served as Assistant Project Manager for developing and planting of a 365 acre created marsh. The Imperial Irrigation District is developing over 900 acres of a Managed Marsh for the benefit of certain listed species, including the Yuma Clapper Rail and the California Black Rail. This project encompasses 365 acres in 20 cells, and is Phase 1 of the larger 900 acre project. AMEC began the planting in early September 2009, with a required completion date of October 31, 2009, which was met. This schedule required the development of a planting and water management plan that would assure the plants adequate water during the hot weather, yet without excessively inundating plants in the lower portions of the cells. AMEC completed the project on schedule, and with excellent survivorship and health of the introduced plant material. Ms Rothbard supervised the field crews in the planting activities, and handled daily water management tasks in accordance with the needs of the plants and in collaboration with the client. AMEC has subcontracted with a variety of local farmers and support personnel, creating a broad base of local support and involvement, which is of considerable benefit to the Imperial Irrigation District.

Botanical/Biological Surveys

San Diego Air Force Space Surveillance Station Revegetation, Brown Field, San Diego (2010-2011): Ms. Rothbard performed biological surveys and is assisting with compliance with the revegtation requirement and Biological Opinion at this lead clean-up site at Brown Field in south San Diego County.

Vegetation mapping, spring and fall rare plant, desert tortoise, burrowing owl, point bird counts, and Mojave fringe-toed lizard surveys at the Rio Mesa Solar Electric Generating Facility, Blythe, Riverside County, California (2011): Ms. Rothbard served as Task Manager for rare plant surveys and performed surveys f several species on the site of the proposed Rio Mesa SEGF. The 11,277-acre study area includes the property, a transmission-line corridor and survey buffers. Ms Rothbard also helped prepare the Biological Resources Technical Report and Application for Certification submitted to the California Energy Commission.

Vegetation mapping and rare plant survey, Sunset Cliffs Park. San Diego (2011): Ms. Rothbard performed biological surveys and prepared a biological report and revegetation plan for this park improvement project on Point Loma in San Diego.

Mira Sorrento Parkway, San Diego, CA (2011): Monitoring ecologist responsible for annual and semi-annual monitoring and reporting. This project involves the revegetation of several acres of coastal sage scrub along a newly created road on property managed by the City of San Diego.

Thurgood Marshall Middle School Wetland Revegetation, San Diego (2011): Monitoring ecologist responsible for annual and maintenance monitoring and reporting. This project involves the revegetation of a creekbed and adjacent wetlands along Caroll Canyon Creek. Work beign performed for san Diego Unified School District.

Burrowing Owl Presence/Absence Survey of the Lake Havasu City Wastewater System Expansion Program Conventional Gravity Sewer Collection System (2010), Lake Havasu City Arizona: Ms. Rothbard served as Assistant Project Manager/Field Leader for conducting Burrowing Owl (*Athene cunicularia*) presence/absence pre-construction surveys for sewer pipe installation in the eastern section of Lake Havasu City. Ms Rothbard also prepared a biological assessment outlining recommendations and instructions according to Arizona Burrowing Owl Working Group's *Burrowing Owl Project Clearance Protocol.*

Dye Road Burrowing Owl Clearance Surveys, Ramona, California. (Summer and Winter 2009): Ms. Rothbard performed biological surveys in the right of way footprint for the realignment of Dye Road. These surveys included summer and wintering presence/absence surveys for burrowing owl (*Athene cunicularia*) Ms Rothbard followed California Fish and Game Burrowing Owl Consortium Guidelines.

Rare Plant Survey, San Vicente Road, Poway, California. San Diego County. (2009): Ms. Rothbard performed rare plant surveys along 7 miles of right of way along San Vicente Road in Poway, California. Plants surveyed for included a dozen species on the San Diego County Sensitive Species List.

Vegetation Identification through Airborne Photography, Statewide, Arizona. Private Client (2009): Ms. Rothbard is managing and performing plant identification along 180-miles of right-of-way using airborne photographs, taken by helicopter. The project includes identifying vegetation to species, determining dominant species, and determining percent cover by vegetation type. All plant identification, vegetative habitat determination, and technical writing was performed by Ms. Rothbard. Under this contract, Ms. Rothbard assembled a training manual and training presentation to aid technicians in vegetation identification within and around 4,000 miles of right-of-way using the airborne photographs. Ms. Rothbard will quality control all vegetation identification before submittal to end client.

Noxious Weed Survey for Palo Verde-North Gila 500kV Conductor Maintenance Project, Arizona Public Service and BLM Yuma Field Office, Yuma to Gila Bend, Arizona (May 2006, July 2008, March 2009, and 2010): Ms. Rothbard is managing and performing a noxious weed survey in the right of way of a high voltage power line that extends from Yuma to Gila Bend. All plant identification, vegetative habitat determination, and technical writing was performed by Ms. Rothbard. Under this contract AMEC performed a survey in 2008 and will perform additional surveys in 2009 and 2010. The surveys are being performed in accordance with an agreement between the APS Land Department and the United States Bureau of Land Management (BLM). For purposes of this survey, noxious and invasive weeds are defined as species included on the Arizona Department of Agriculture's (ADA) Prohibited, Regulated, and Restricted Noxious Weeds List, and the Noxious Weed List for the Yuma Field Office (YFO) of the BLM. The project received funding through Arizona Public Service however all data collection was performed on state and federal lands including BLM and the Yuma Proving Grounds.

Revegetation Assessment, Gallup, McKinley County, New Mexico (November-December 2008): Ms. Rothbard managed and performed vegetation surveys within the project site and at nearby point bars to evaluate vegetation recovery resulting from reseeding activities conducted by BNSF Railroad in November 2006. The surveys were conducted to evaluate project site recovery using a random meter^2 plot method to determine if percent cover was within the parameters as specified by the 2006 USACE 404 permit requirements for the project site. Ms. Rothbard prepared a report that summarizes information on the recorded occurrence of species, native status, and comparisons between, the project site and a nearby undisturbed site to evaluate vegetation recovery to pre-construction conditions. In addition, recommendations and suggestions were given for future evaluation and timeline of vegetation recovery at the site.

Palmdale Power Plant Biological Surveys, Palmdale, California. (April 2008, March 2010): Ms. Rothbard performed biological surveys in the right of way of a high voltage power line. These surveys included rare and sensitive plants, desert tortoise (*Gopherus agassizii*), and burrowing owl (*Athene cunicularia*) surveys.

Threatened and Endangered Species Surveys, United States/Mexico Border Fence Project – Tucson Sector, Gulf South Research Corporation (GSRC)/U.S. Army Corps of Engineers Fort Worth District, Pima and Santa Cruz Counties, Arizona (2009): AMEC has worked as a sub-consultant to GSRC to perform biological surveys along portions of the border fence within the Tucson Sector. Ms. Rothbard performed biological surveys along the United States and Mexico Border for T&E species including Pima pineapple cactus (*Coryphantha scheeri var ropustispina*), Acuna cactus (*Echinomastus erectocentrus var acunensis*), Chiricahua leopard frog (*Rana chiricahuensis*) and habitat for threatened and endangered bat species.

Rare Plant Survey of 6 Mow Areas for the Prescott 500kV Transmission Line Maintenance Project, Chino Valley Ranger District, Prescott National Forest, Arizona. (Spring 2006): Ms. Rothbard managed and performed a plant survey for rare and sensitive plant species in the right of way of a high voltage power line. All plant identification, vegetative habitat determination, and technical writing was performed by Ms. Rothbard. The project received funding through Arizona Public Service however all data collection was performed on the Prescott National Forest.

Rangeland Survey of the Roswell Grazing Allotment, BLM Roswell Field Office, New Mexico (Oct 2005): Ms. Rothbard performed plant identification, biomass determination, and species richness and diversity classification on grazing allotments in the Roswell, New Mexico area. Funding was provided by the BLM Roswell Field Office however the project was managed by Southwest Botanical Research, Chino Valley, Arizona.

Arizona State University Central Arizona Project – Long-Term Ecological Research, Phoenix, Arizona (2004-2005): Ms. Rothbard performed arthropod collections and identification, native and non-indigenous plant identification, vegetation sampling and monitoring at over 32 sites in the Phoenix Metro Area. Funding was provided by the National Science Foundation however all work was managed and performed by the International Institute for Sustainability at Arizona State University.

Environmental Site Assessments

City of Phoenix On-Call Environmental Site Assessments and Biological Surveys (2006, multiple projects): Ms. Rothbard is assisting in numerous Phase I Environmental Site Assessments for the City of Phoenix. For these projects, the City of Phoenix has asked that AMEC include requirements of the All Appropriate Inquiry Rule into the assessments. This contract involves properties associated with Light Rail Transit, the Community Noise Reduction Program, and Tres Rios. The properties include right-of-way in urban areas, undeveloped parcels, residential parcels, and agricultural land.

Publications

Dierig, D.A., Tomasi, P.R., Dahlquist, G.H., Dawson, H.K*. Measurements of *Lesquerella* Interspecific Hybrids and Parents. Abstract 2003.

Dierig, D.A., Rodriguez, D., Foster, M.A., Grieves, C.M., **Dawson, H.K***., Rodriguez, R. Effects of Salinity on *Lesquerella* at Three Locations. Agronomy Abstracts. 2003.
*Dawson was Ms. Rothbard's married name at the time of publication.

Additional Experience

Bird Banding, Riverside, March 2010 (5 hours)
Birch Aquarium – Volunteer (20 hours/month), May 2009 to 2010. Tidepool Associate and Aquarist Assistant. Identify, handle, and maintain enclosures of Southern California coastal marine vertebrates and invertebrates.

San Diego Oceans Foundation/Hubbs Seaworld – Volunteer (8 hours/month), August 2009 to present. White Sea Bass Restoration Project. Regular maintenance and feeding of juvenile white sea bass, in 2 pens in San Diego Bay, for release into the Pacific Ocean.

San Diego Natural History Museum – Volunteer (20 hours/month) Oct 2009 to April 2010. Marine Mammal and Bird Naturalist aboard whale watching cruises. Locate and identify marine mammals, birds, and fishes during a weekly four-hour cruise.

Project Wildlife, San Diego, CA – Volunteer (40 hours/month) – August 2009 to present. Raptor Rehabilitator, Care Center assistant , and bird rescue. Rehabilitate raptors at home, rescue of birds, including shore and seabirds, and general care of birds in the care center.

Gregory Hoisington, MS

Ecologist, Permitting Specialist

Areas of Expertise

Biological Resource Assessment and Identification; Environmental Documentation; Permitting, Compliance, and Construction Monitoring.

Years of Experience

With URS: 5 Years

With Other Firms: 2 Years

Education

MS, Biology, 2004, California State University, Long Beach.

BS, Ecology and Environmental Biology, 2001, California State University Long Beach.

Overview

Mr. Hoisington's professional experience includes interdisciplinary projects in biological resource identification and assessment, special aquatic resource delineation; biological permitting and compliance; environmental document preparation; and construction monitoring. Greg has participated in, and directed, natural resource field surveys for both common and sensitive fauna and flora species, as well as wetlands and waters determinations for a wide range of projects in a diversity of habitats within CA, NV, and UT. Mr. Hoisington's experience includes preparation of environmental documents for compliance with California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), Federal Emergency Management Administration (FEMA), California Energy Commission (CEC), Federal Energy Regulatory Commission (FERC), state and federal Endangered Species Acts, California Department of Transportation (Caltrans), and Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Greg has also prepared permit applications and participated in consultation with regulating agencies including California Department of Fish and Game (CDFG), U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and California Coastal Commission (CCC).

Project-Specific Experience

Rio Mesa Solar, Palo Verde, CA.
Performed avian point count surveys and jurisdictional delineations for wetlands and waters of the U.S. and State.

Caithness Solar, LLC., Soda Mountain Solar Project, Baker, CA.
Lead Field Biologist for a 6,500 acre solar generating facility. Performed protocol desert tortoise surveys, rare plant surveys, and wetlands and other waters delineation. Authored the Jurisdictional Delineation Report and Biological Resources Report. Led a crew ranging from 6-14 people.

Sunpower, LLC., Solar Project, Carizzo Plain, CA.
Field Biologist for a 4,500 acre solar generating facility. Performed protocol adult blunt nose leopard lizard surveys.

Ausra Energy, Solar Project, San Luis Obispo County, CA.

Field Biologist for a proposed solar generating facility. Performed rare plant surveys, vegetation community mapping, and initial kit fox and blunt nose leopard lizard habitat suitability assessments. Performed subsequent protocol blunt nose leopard lizard surveys.

Ausra Energy, Solar Project, Imperial County, CA.

Field Biologist for a proposed 7000 acre solar generating facility. Performed protocol flat tail horned lizard surveys, vegetation community mapping, rare plant surveys, and wetland and other waters delineation.

Ausra Energy, Solar Project, San Bernardino County, CA.
Field Biologist for a proposed 15,000 acre solar generating facility. Performed protocol desert tortoise surveys, vegetation community mapping, rare plant surveys, and wetland and other waters delineation.

Florida Power and Light, Transmission Line Upgrade, Blythe, CA.
Lead Field Biologist for wetlands and other waters delineation along a 67-mile transmission line alignment. Performed protocol desert tortoise surveys and rare plant surveys. Drafted the Biology Application for Certification (AFC) section for the Federal Energy Regulatory Commission filing, Biological Assessment, California Energy Commission Data Requests, and Mitigation and Monitoring plans.

TransCanada and Imperial Irrigation District, Natural Gas Pipeline, Southern CA.
Field biologist for desert tortoise and rare plant species and wetlands and other waters delineation along a proposed 80-mile and separate 45-mile liquefied natural gas pipeline. Authored the Biology and Hydrology AFC sections, responded to data requests/comments, and resubmitted the sections for certification.

Kinder Morgan Energy Partners (KMEP), Orange CA.
Provided in-house biological and permitting support within the KMEP Orange, CA office. Provided initial site biological and special aquatic resource constraints analyses for Pipeline Integrity/Anomaly sites requiring pipeline excavation/repair. Inspections and repairs occur along KMEP's extensive pipeline network spanning several thousands of miles within CA, AZ, TX, NV, and WA. Identified potential USACE, RWQCB, CDFG, CCC, and Bay Conservation Development Commission (BCDC) permitting requirements for special aquatic resources at pipeline inspection sites. Coordinated biological and permitting requirements and timelines with KMEP project managers to facilitate pipeline inspection and repair within mandated, time-sensitive Department of Transportation (DOT) pipeline repair constraints. Assigned and coordinated project consultants, coordinated site biological and special aquatic resource assessments and reporting, and reviewed consultant reports.

California High Speed Rail Authority, Palmdale to Los Angeles.
Lead Biologist for wetlands and waters delineation along the Palmdale to Los Angeles proposed high speed rail route. Authored the jurisdictional determination report for submittal to USACE, RWQCB, and CDFG.

California High Speed Rail Authority, Fresno to Bakersfield.
Technical Task Leader for wetlands and waters delineation along the Fresno to Bakersfield proposed high speed rail route.

BNSF/UPRR, Tehachapi Pass Second Main Track Project, Tehacapi, CA.
Lead Biologist. Performed a wetlands and waters delineation along a 25-mile stretch of tracks proposed for expansion. Authored a jurisdictional determination report for submittal to USACE, RWQCB, and CDFG.

Florida Power and Light, Transmission Line Upgrade, Lancaster, CA.
Lead biologist for a rare plant survey along a 60-mile transmission line proposed for upgrade. Developed and implemented field methods, coordinated field efforts, led field surveys, and coordinated with regulators including CDFG and USFWS regarding field surveys.

Caltrans, I-405 Widening Project, Orange County, CA.
Lead Biologist for wetlands and waters delineation along a 17-mile proposed alignment. Authored the jurisdictional determination report for submittal to USACE, RWQCB, and CDFG.

Caltrans, Newport Road Interchange Project, Riverside County, CA.
Lead Biologist for wetlands and waters delineation for a proposed interchange improvement project. Authored the jurisdictional determination report and permit applications for submittal to USACE, RWQCB, and CDFG.

Kinder Morgan Energy Partners, CALNEV Pipeline Project, CA and NV.
Field Biologist and task leader along a proposed 280-mile jet fuel pipeline from Colton, CA to Las Vegas, NV. Performed protocol desert tortoise surveys, rare plant surveys, and wetlands and other waters delineation along portions of the Project length.

Southern California Edison, Palmdale, CA.
Field Biologist. Performed vegetation community mapping along a 43-mile transmission line proposed for capacity upgrades. Compiled data and vegetation maps for submission to the California Public Utility Commission.

Pacific Gas and Electric, North Baja Natural Gas Pipeline, Southern California and Western Arizona.
Lead Biologist. Led field monitoring of experimental vegetative seeding plots and bi-annual botanical surveys for revegetation along a constructed 87-mile pipeline corridor pursuant to CDFG Lake and Streambed Alteration Agreement, USFWS BO, and FERC and California State Lands Commission (CSLC) FEIS requirements. Compiled and analyzed all data and authored botanical reports.

PPM Energy, Inc., Wind Development, San Diego County, CA.
Field Biologist. Performed site feasibility surveys and flora/fauna sampling activities to identify common and sensitive wildlife and plant

species on BLM-administered land proposed for a large-scale wind-energy development project. Identified required biological surveys, planned biological sampling events, and identified relevant environmental studies required for NEPA/CEQA compliance. Developed avian field sampling protocols including point count observation areas and coverage, and completed avian data collection at all project observation locations every two weeks for one year.

Caltrans SR-47 Schuyler Heim Bridge Replacement Project, Port of Los Angeles, CA.
Lead Biologist. Performed wetlands and other waters jurisdictional determination and authored the jurisdictional determination report for submittal to USACE, RWQCB, and CDFG. Authored an Essential Fish Habitat Assessment for submittal to the National Marine Fisheries Service and prepared USACE, RWQCB, CDFG, and CCC permit applications.

Pio Pico Energy, LLC., Natural Gas Power Plant, Otay, CA.
Lead Biologist. Performed wetlands and waters delineation for a proposed natural gas power plant with transmission line, water, and natural gas linear appurtenances. Authored the jurisdictional determination report for AFC submittal.

Chevron San Ardo Crude Pipeline, Coalinga, CA.
Field Biologist. Performed biological monitoring for California tiger salamander, California red- legged frog, and San Joaquin kitfox during geotechnical drilling investigations along a proposed 57-mile pipeline.

Southern California Edison, Palmdale, CA.
Field Biologist. Performed vegetation community mapping along a 43 mile transmission line proposed for upgrades. Compiled data and vegetation maps for submission to the California Public Utility Commission.

Chevron Guadalupe Restoration Project, Guadalupe, CA.
Field Biologist. Assisted with California red-legged frog eyeshine surveys within an estuarine habitat along the Santa Maria River and performed construction monitoring for areas containing state and federally listed plants.

U.S. Air Force, Edwards Air Force Base, Lancaster, CA.
Field Biologist. Prepared and implemented a field research plan to address predation of the desert tortoise by the common raven. Performed population density estimates of ravens, movement patterns, and nest searches for tortoise remains.

Union Pacific Railroad, Mesquite, NV.
Field Biologist. Performed wetland and waters delineations along a proposed 32-mile railroad line extending northwest from Mesquite, NV.

PPM Energy, Wind Development, Palm Springs, CA.

Field Biologist. Developed and implemented field methods for protocol desert tortoise surveys and special status plant and animal surveys. Coordinated field efforts and performed sensitive species surveys on approximately 6 acres slated for wind development. Coordinated with agencies including CDFG and USFWS.

U.S. Army Corps of Engineers, Otay CA.
Authored a baseline condition report on aquatic, wetland, and riparian habitats within a proposed Otay Mesa Watershed Special Area Management Plan (SAMP). The document included a Planning Level Delineation and Landscape Level Functional Assessment within the Otay Watershed. The USACE and County of San Diego are corroborating on the development of the SAMP in order to streamline the CWA permitting process within the Otay watershed.

Orange County Department of Public Works, Huntington Beach and Talbert Channel Cathodic Protection and Coating Repair Project.
Lead Biologist. Performed a wetlands and other waters jurisdictional determination and biological resource evaluation for Huntington Beach and Talbert flood control channels. Performed an eelgrass survey within tidally-influenced portions of the channel and authored an eelgrass survey report. Authored a jurisdictional determination report for submittal to USACE, RWQCB, CDFG, and CCC. Prepared USACE, RWQCB, CDFG, and CCC permit applications.

Orange County Department of Public Works, Santiago Road Culvert Replacement Project.
Lead Biologist. Performed a wetlands and other waters jurisdictional determination and biological resource evaluation for a culvert replacement along Santiago Road. Authored a jurisdictional determination report for submittal to USACE, RWQCB, and CDFG. Prepared USACE, RWQCB, and CDFG permit applications.

City of Glendale, Fairmont Avenue Bridge Extension Project, Glendale CA
Lead Biologist. Performed wetlands and waters jurisdictional determination and prepared CDFG, USACE, and RWQCB permit applications for the Fairmont Avenue roadway extension, which spans Verdugo Wash and the LA River. Performed Migratory Bird Treaty Act preconstruction clearance surveys as well as biological monitoring for permit compliance throughout the duration of the Project.

Utah Department of Transportation, St. George, UT.
Lead Biologist. Performed protocol desert tortoise surveys along a 2-mile stretch of I-15 proposed for lane additions. Authored a biotechnical report summarizing methods and results of the survey for submittal to USFWS.

Panoche Energy Center, Fresno CA.

Drafted a Biological Resource Mitigation Implementation and Monitoring Plan (BRMIMP) and Worker Environmental Awareness Plan (WEAP) for a 20-acre site proposed for a new gas-fired power plant. Performed preconstruction clearance and biological monitoring for initial site clearing and grading.

CalTrans, San Luis Obispo and Riverside Counties, CA.
Lead Biologist. Performed site biological assessments for common and special status plant and wildlife species for independent transportation improvement projects for US 101/McCoy Lane Interchange improvement, Redlands Boulevard improvement, Gilman Springs Road improvement, Palomar Road widening, I-215/Newport Road, US 101/SR 46 W, and US 101/SR 46 E interchange improvement projects. Authored environment documents (NES-MIs) and prepared responses to comments.

Federal Emergency Management Agency (FEMA), Sonoma, Sacramento, and Napa Counties, CA.
Field Biologist. Performed site assessments for Federally-listed flora and fauna species on four river projects that received extensive flood damage. Site assessments consisted of habitat suitability and presence/absence surveys for federally-listed species including central California steelhead ESU, CA red-legged frog, CA Freshwater shrimp, bald eagle, and northern spotted owl. Species effects determinations for each site were determined, and recommendations for inclusion in a Programmatic Biological Assessment or individual Section 7 Endangered Species Act consultation with NMFS and/or USFWS were made. Authored Biological Assessments for two projects for submittal in Section 7 ESA consultation.

Federal Emergency Management Agency (FEMA), Marin County, CA.
Field Biologist. Performed site assessments for Federally-listed Threatened or Endangered Flora and Fauna Species on 12 marine and freshwater projects within Marin County, CA. Site assessments consisted of habitat suitability assessments and presence/absence surveys for federally-listed species including central California steelhead ESU, Coho Salmon, CA red-legged frog, CA freshwater shrimp, clapper rail, and Baker's larkspur. Species effects determinations were made for each site and recommendations for inclusion in a Programmatic Biological Assessment or individual Section 7 Endangered Species Act consultation with National Marine Fisheries Service and/or U.S. Fish and Wildlife Service were made. Authored Biological Assessments for six projects requiring Section 7 ESA consultation.

Arctic Slope Regional Corporation (ASRC Lynx, Inc), Alaska.
Field Biologist. Performed marine mammal monitoring surveys for shipping operations associated with oil exploration activities along the north slope of Alaska in the Arctic Ocean. Documented all observed mammals in accordance with the conditions stipulated by the NOAA Incidental Harassment Authority Permit under the Marine Mammal

Protection Act.

Santa Barbara Airport, Santa Barbara, CA.
Field Biologist. Assisted in a fish identification and relocation project to relocate estuarine fishes from two intertidal wetland sites planned for runway construction disturbance to an undisturbed, adjacent wetland location. Assisted with the relocation of fishes, including the listed tidewater goby.

County of Santa Barbara, Santa Barbara, CA .
Field Biologist. Assisted in the design, construction, and implementation of a central California steelhead ESU fish passage through an existing, impassible bridge barrier. Utilized natural rock formations and also engineered rock and pool formations to facilitate fish passage up an approximately 15- foot vertical gradient.

Los Angeles Department of Public Works, Marina del Rey Tide Gate Rehabilitation Project, Marina del Rey, CA.
Lead Biologist. Performed an eelgrass, *Caulerpa* spp., and sensitive marine biological resource survey for the Marina del Rey tide gate improvement project pursuant to Coastal Development Permit (CDP) conditions. The survey consisted of benthic surveying and mapping along transects within an approximate 50,000 sq. ft. project area. Authored a letter report of findings for submittal to the California Coastal Commission.

Seales Mineral Project, Tronas, CA.
Lead Biologist. Performed site reconnaissance and biological permit compliance analysis for a borax and sodium sulfate mining operation that impacts avian species protected by state and federal ESAs, MBTA, and CDFG Code Sections 3500 and 3800 *et seq*. Presented data and fatal flaws analysis to perspective buyers of the mining operation.

Mission College, Sylmar, CA.
Authored the Biology section of an EIR prepared for an expansion of the Los Angeles Mission College. Performed biological resource assessments for general and sensitive floral and fauna within the project area and also delineated wetlands and other waters. Authored a jurisdictional determination report and drafted for submittal to the USACE. Compiled and responded to public comments.

Los Angeles County Department of Public Works, Tuna Canyon Road Repair and Culvert Replacement Project.
Performed a jurisdictional delineation for wetlands and other waters and authored a jurisdictional determination report. Prepared USACE, RWQCB, and CDFG permit applications.

Calpine Energy, Riverside, CA.
Prepared a biological resources mitigation implementation and monitoring plan (BRMIMP) as well as a worker environmental awareness plan (WEAP). Assisted with biological resource monitoring for construction

activities associated with an Electric Generating Facility installation. Performed construction monitoring for sensitive biological resources.

Hunter's Point Naval Station, San Francisco, CA.
Performed burrowing owl protocol surveys and vegetation composition mapping on 176 acres within the Hunter's Point Navy Base. Performed passive Burrowing Owl relocation methods in order to relocate the sensitive species from within the project construction area. Performed vegetation identification for dominant species suspected of radioactive isotopic uptake in order to clear the vegetation for remediation activities.

CalTrans, Paso Robles, CA.
Performed biological survey activities to identify sensitive wildlife and plant species on land proposed for two separate transportation overpass improvement projects (US 101/SR 46 W and US 101/SR 46 E) located in Paso Robles, California. Identified required biological surveys, performed biological surveys for sensitive wildlife and botanical species, identified relevant environmental studies required for NEPA/CEQA compliance, authored relevant environmental documentation (NES-MI), and responded to comments.

Specialized Training
Desert Tortoise Council Tortoise Handling Workshop. Nov, 2007
Flat Tailed Horned Lizard Monitor Training – Administered by Bureau of Land Management, El Centro, CA. April 30, 2007
Caulerpa taxifolia Identification Training – Administered by NMFS, Long Beach, CA. March 8, 2007; Recertified 2008, 2009, 2010, 2011.
Project Management Training (PM100) March 2006 Tetra Tech EC, Inc.
Project Management Training (PM200) April 2006 Tetra Tech EC, Inc.
CEQA 16-Hour Training Workshop – Successful CEQA Compliance, UCLA Extension Course
40-Hour HAZWOPER, December, 2004
8-Hour HAZWOPER Refresher 2005-2010
Chevron Loss Prevention Systems (LPS) Training August 10, 2007
38-Hour Army Corp of Engineers Wetland Delineation and Management Training Program, Richard Chinn Environmental Training
Nuclear Health Physics Radiation Protection Training Program, 1990 Institute for Resource Management (IRM)
NAUI Advanced Scuba Diver and California State University, Long Beach AAUS Scientific Research Diver

Publications

Hoisington, G. and C. Lowe. 2005. Distribution, abundance, and population structure of the round stingray, *Urolophus halleri,* near a thermal discharge at Seal Beach, CA. Marine Environmental Research.

Lowe, C., G. Moss, **G. Hoisington**, J. Vaudo, D. Cartamil, M. Marcotte, Y. Papastamatiou. 2007. Caudal spine shedding periodicity and site

fidelity of round stingrays, *Urobatis halleri* (Cooper), at Seal Beach, California: implications for stingray-related injury management. Bulletin of the Southern California Academy of Sciences.

Contact Information:

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Areas of Expertise	Wildlife Biology Renewable Energy Projects
Total Years of Experience	
URS	<1
Other Firms	6
Education	BS/Biological Science/2005/California Polytechnic State University
Registration/Certification	
Overview	Ms. Stout has over 6 years of experience conducting biological resource surveys and preparing reports. Ms. Stout conducts desert tortoise surveys, wetland delineations, wildlife surveys, and rare plant surveys. Her avian experience includes raptor nest monitoring and conducting surveys for breeding and migrating birds including western snowy plover, California least terns, western burrowing owls, and greater sage-grouse. Her mammalian experience includes acoustic and mist netting surveys for bats and radio tracking pygmy rabbits. Ms. Stout has conducted critical issues analyses for renewable energy projects throughout southern California and prepared environmental permitting documents including Biological Assessments, Environmental Assessments, Environmental Impact Reports, and Environmental Impact Statements.
Project Experience	**Federal**

San Clemente Island Fuel Storage and Transfer Pipeline
Conducted surveys for rare plants and migrating birds along a fuel pipeline route. Prepared a Biological Assessment and the biological resources section of an Environmental Assessment for the project.
Rebecca Loomis, 619-556-9968, Rebecca.l.loomis@navy.mil

Naval Hospital Camp Pendleton
Prepared a worker education brochure to comply with a biological opinion for impacts to the coastal California gnatcatcher. Conducted construction monitoring to ensure compliance with the gnatcatcher biological opinion and ensure a water of the U.S. and vernal pool on site were not being impacted. Conducted breeding bird surveys prior to clearing and grading in vegetated areas to prevent violations of the Migratory Bird Treaty Act.
Rebecca Loomis, 619-556-9968, Rebecca.l.loomis@navy.mil

Naval Base Coronado and Point Loma BRAC EA
Prepared the biological resources sections for Base Realignment and Closure Environmental Assessments. Resources of concern included California least terns, western snowy plovers, and Essential Fish Habitat.

Chocolate Mountain Aerial Gunnery Range
Prepared a Biological Opinion for impacts to desert tortoises due to military training activities at a training area in the northern portion of CMAGR. Participated in a cultural resource survey for this project.

BLM West Chocolate Mountain Geothermal Lease
Prepared the special status plants existing conditions section of the Programmatic Environmental Impact Statement.

Environmental Protection Agency Circuit Rider Program
Involved in learning program to improve water treatment systems at Indian Reservations in southern California.

Energy Projects

Meteorological Tower near Beatty, Nevada
Installed acoustic bat monitoring and conducted ongoing maintenance and data gathering.

Meteorological Tower near Barstow, California
Conducted surveys for rare plants and desert tortoises at two meteorological tower sites. Conducted construction monitoring for desert tortoise for the installation of two meteorological towers. Prepared the biological resources section of an Environmental Assessment.
Nancy Wong, nancy.wong@altagas.ca

Ruby Pipeline in Oregon, Nevada, and Utah
Conducted stream and wetland delineations, habitat and biotic soil crust mapping, breeding bird surveys, noxious weed survey and mapping, electrofishing and salvage for Lahontan cutthroat, raptor nest monitoring, and pygmy rabbit radio tracking.

Wind Project near Big Timber, Montana
Conducted a habitat assessment, acoustic bat monitoring, and completed acoustic bat data analysis and report.

Aliso Canyon Gas Storage Project
Assisted in preparation of the biological resources section of the Environmental Impact Report.

Solar Energy Projects in Kern, Monterey, and San Luis Obispo counties
Conducted a habitat assessment survey and prepared a survey report and critical issues analysis.

California Public Utilities Commission Ivyglen Transmission Line
Biotechnical report third party review and assisted in preparation of the biological resources existing conditions EIS/EIR section.

Solar Sites in Los Angeles County near Lancaster, California
Conducted habitat assessment and prepared biological critical issues analysis report.

Salmon River Wind Project
Conducted greater sage-grouse lek count surveys.

Recurrent Solar Projects, Kern County, California
Conducted habitat assessment, wetland delineation, rare plant surveys, and burrowing owl surveys.

Mineral Mountains, Utah
Conducted noxious weed surveys.

Iberdrola Meteorological towers near Las Vegas, Nevada
Conducted desert tortoise presence/absence surveys.
Amy Parsons

Iberdrola Silurean/Sidewinder meteorological towers near Barstow, California
Conducted desert tortoise presence/absence surveys.
Amy Parsons

Ohio Wind Farm
Preconstruction bat mist netting for Indiana bats.

Energia Sempra Juarez Transmission Line
Conducted habitat assessment survey and prepared survey report.

Solar Project near Tucson, Arizona
Conducted native plant inventory survey.

Pattern Energy Ocotillo Express Wind Project
Conducted burrowing owl surveys for meteorological tower installation
Natalie McCue, (713) 308-4281, Natalie.mccue@patternenergy.com

Ormat, Orni 21 Geothermal Project, Imperial County, California
Conducted burrowing owl surveys for geothermal well pads.

Kern River Gas Pipeline
Conducted revegetation monitoring using linear sampling.

Professional Associations

Awards

Publications

David A. Kisner

Project Ecologist, Santa Maria Biology Group Leader

Areas of Expertise

- Permitting and Environmental Analysis
- Birds of the United States
- Site Assessment and Monitoring of Endangered Birds of California
- Habitat Assessment
- Wildlife Surveys
- Botanical Assessment
- Permit Compliance
- Construction Monitoring

Years of Experience

With URS: 7 Years
With other firms: 12 Years

Education

MS/Ecology/2004/San Diego State University

BA/Biology, Evolution, & Ecology/1994/University of California, Santa Barbara

Specialized Training

- Blunt-nosed Leopard Lizard Identification Workshop May 2009
- *Rana* Capture and PIT Tag Training with Dr. Rathbun October 2006
- CNPS Vegetation Mapping and Classification Workshop August 2005
- Southwestern Willow Flycatcher Workshop May 1999
- CLE International Endangered Species Act review December 2008

Overview

Mr. Kisner is a project ecologist who has been the Biology Task Manager on numerous CEQA/NEPA projects in southern California. His areas of expertise include evaluating impacts to special status species and habitats, developing mitigation and monitoring plans, and acquiring project approvals from state and federal resource agencies. He has extensive experience working with threatened and endangered plant and animal species within southern California. David completed his Master's in Ecology examining the impact of the non-native Giant Reed (*Arundo donax*) on the riparian bird community. David is currently managing the biology portion of environmental documents associated with power development, is involved with numerous soil remediation and restoration project, and oversees the Santa Maria Biology Group.

Project Specific Experience

Project Management

- **Biology Task Manager, Hydrogen Energy California (HECA) Application for Certification, Kern County** – Managed and authored section for Application for Certification (AFC) assessing biological impacts associated with 473 acre power plant and associated linears. Authored Biological Assessment and 2081 application for impacts to listed species. Conducted surveys for blunt-nosed leopard lizards, Swainson's hawk, rare plants, kit fox, and small mammals. March 2008 to present.
- **Biology Task Manager, Allan Hancock College Public Safety Complex Supplemental EIR and Construction Monitoring, Santa Barbara County** – Managed and authored section of Supplemental EIR assessing biological impacts associated with proposed training facility. March 2009 to present.
- **Designated Biologist, CPV Sentinel Energy Project, Riverside County** – Managed and oversaw biological mitigation management of impacts associated with 37 acre power plant and associated linears. Managed successful relocation of over 500 small mammals, development of Burrowing Owl avoidance measures, and conducted preconstruction surveys. Authored and presented worker awareness video. June 2011 to present.
- **Interim Avian Usage Study Lead, Rio Mesa Power Project, Riverside County** – coordinated and managed field efforts for four week survey of solar power project to determine winter bird usage of proposed site. November-December 2011.
- **Biology Task Manager, Watson Cogeneration Steam and Electric Reliability Project, Application for Certification, Los Angeles County** – Responsible for managing the biological portion of the AFC through the CEC Certification process for the 2.5 acre "brownfield" site. January 2009 to Present.

- **Biology Task Manager, EIV for DOE funded project, Monterey County** – Assessed biological resources for NEPA Environmental Information Volume prior to potential funding for confidential project in the Monterey Bay area.
- **Biology Task Manager, General Electric Solar Project Mitigated Negative Declaration, Kern County** – Managed and authored the biology report for incorporation into the Mitigated Negative Declaration. Report assessed biological impacts associated with 280 acre solar power project and linears. Conducted surveys for rare plants, general wildlife, and jurisdictional waters/wetlands. March 2009 to present.
- **Biology Task Manager, Sentinel Energy Project Application for Certification, Riverside County** – Managed and co-authored section for AFC document assessing biological impacts associated with 37 acre power plant and associated linears. Assisted with successful negotiation regarding water resource impacts on sensitive habitat with Fish and Wildlife. Conducted rare plant and general wildlife surveys. The California Energy Commission has approved the project; construction is waiting on final air permits. January 2007 to present.
- **Wildlife Task Manager for the Guadalupe Dunes Restoration Project, San Luis Obispo County** – Organized, coordinated, and oversaw wildlife monitoring and permit compliance of 2,700 acre soil remediation site. Communicated with On-site Environmental Coordinator regarding restoration, monitoring, coordinating operations with wildlife monitors, and reporting of sensitive species found on site. Oversaw monitoring efforts for Western Snowy Plovers, California Red-legged Frogs, small mammal trapping and numerous other sensitive species. Involved with rare plant and red-legged frog surveys, general habitat assessments, and small mammal trapping. February 2006 to December 2008.
- **Biology Task Manager, San Gabriel Generating Station Application for Certification, San Bernardino County** – Managed and co-authored section for AFC assessing biological impacts associated with 17 acre power plant. February 2005 to May 2009.
- **Designated Biologist, SCE Mountainview Power Project, San Bernardino County** – Organized and oversaw biological monitoring of 18 mile gas line and power plant construction site. Ensured construction was conducted according to permit conditions and worked with client and regulatory agencies to address biological concerns. April 2004 to April 2006.
- **Project Manager, Delhi Sands Restoration, San Bernardino County** –- Organized and oversaw the successful restoration for SCE of a half-acre site for the federally endangered Delhi Sands Flower-loving Fly. Restoration monitoring required annual reporting to the CEC, UFWS, and CDFG. April 2006 to February 2009.
- **Project Manager, West Figueroa Bird Usage Study for the City of Santa Barbara** – Conducted winter, spring, and breeding bird

surveys to determine species usage and habitat values prior to proposed creek enhancement and native plant restoration efforts. January 2006 to July 2006.

- **Project Manager and Lead Biologist for CalTrans SR 118/23 Widening Project, Ventura County** – surveyed 5 miles of riparian habitat for Least Bell's Vireo and Willow Flycatchers. Managed project, contract biologist, and report production. 2004.

Sensitive Wildlife Species Survey Experience

Steelhead (*Oncorhynchus mykiss*)
Over 10 positive contact hours and relocation in San Luis Obispo and Santa Barbara Counties.

Western Spadefoot (Toad) (*Spea hammondii*)
Over 10 positive contact hours in Santa Barbara, Fresno and Kern Counties.

Arroyo Toad (*Bufo microscaphus californicus*)
Over 15 positive contact hours in Santa Barbara and San Diego Counties.

California Red-legged Frog (*Rana aurora draytonii*)
Over 40 positive contact hours in San Luis Obispo and Santa Barbara Counties.

Pacific Pond Turtle (*Actinemys marmorata*)
Over 10 positive contact hours in San Luis Obispo, Santa Barbara, and Ventura, Counties.

Desert Tortise (*Gopherus agassizii*)
400+ survey hours, 2 positive contact hours in San Bernardino County.

Blainville's Horned Lizard (Coast Horned; *Phrynosoma blainvillii*)
Over 30 positive contact hours in San Luis Obispo, Santa Barbara, Ventura and San Diego, Counties.

Blunt-nosed Leopard Lizard (*Gambelia sila*)
3 confirmed sightings in Kern County.

California Legless Lizard (*Anniella pulchra*)
Over 20 positive contact hours in Santa Barbara and Riverside Counties.

Least Bell's Vireo (*Vireo bellii pusillus*)
Over 350 positive contact hours in Santa Barbara, Ventura, Riverside, Los Angeles, and San Diego Counties.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)
Over 175 positive contact hours in Santa Barbara, Ventura, Riverside, Los Angels and San Diego Counties.

Western Snowy Plover (*Charadrius alexandrinus nivosus*)
Over 130 positive contact hours in San Luis Obispo, Santa Barbara, Ventura, and San Diego counties

California Least Tern (*Sterna antillarum browni*)
Over 30 positive contact hours in Ventura and San Diego Counties.

Swainson's Hawk (*Buteo swainsoni*)
Over 10 positive contact hours in Kern County.

Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*)
Over 15 positive contact hours in Kern County.

San Joaquin Kit Fox (*Vulpes macrotis mutica*)
Over 5 positive contact hours in Kern County.

Botanical Experience

- **Guadalupe Restoration Project, San Luis Obispo County** – Conducted active and passive restoration assessments and assist with population censuses for State Threatened surf thistle and beach spectaclepod, and Federally Endangered and State Threatened La Graciosa thistle. Oversaw construction activity to ensure minimization of impact and avoidance of sensitive species. February 2006 to December 2008.

- **Santa Clara River Habitat Mapping, Ventura County** - Conducted several rapid assessments and mapped vegetation according to the Sawyer and Keeler-Wolf classification method along the Santa Clara River from the esturary to Newhall Ranch, including the Piru Creek tributary in Fall 2005.

- **Santa Barbara Airport / Goleta Slough quantitative restoration monitoring, Santa Barbara County** –Assisted with quantitative data collection on restoration transects through out the salt marsh and transition habitats. Spring 2004 and 2005.

- **Santa Barbara County Planning and Development, Santa Barbara County –** Conducted baseline surveys of proposed project sites to determine habitat function and value. November 1996 to August 1999.

Publication

Gaede, P., Kisner, D., and Ranson, H. 2010. Northern Goshawk: First Nesting Record for Santa Barbara County and Current Breeding Status In Southern California. Western Birds 41:240–246.

Contact Information

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Mary H. McClanahan

Senior Environmental Scientist

Areas of Expertise

- Natural Resource Assessment
- Ecological Restoration/Native Species Establishment
- Botanical and Wildlife Surveys
- Hazardous and Radioactive Waste Remediation
- Environmental Assessment and Compliance
- Due Diligence Environmental Audits
- NEPA/CEQA
- Vegetation/Invasive Weed Management/Erosion Control
- University Lecturer–Environmental Science

Years of Experience

With URS: Since 2009
With Other Firms: >25 Years

Education

- MS, Plant Science, California State University, Fresno/1999 (with Distinction)
- BS, Range Science, University of Idaho, Moscow/1981

Overview

Ms. McClanahan has been engaged in natural resource assessment, habitat evaluation, abandoned and existing mine regulatory compliance, and hazardous waste and low-level radioactive waste assessment and remediation. Her work has included reclamation and restoration of mining and other drastically disturbed lands, due diligence surveys for mines and industrial properties, erosion control, water quality monitoring, plant and wildlife surveys, wetland delineation and ecological assessment of wildland communities. She has helped establish QA/QC protocols for various sampling programs. She has prepared environmental assessment reports in accordance with the National Environmental Policy Act, the California Environmental Quality Act, the Endangered Species Act, Clean Water Act, Clean Air Act, and various state, Department of Defense and Department of Energy environmental regulations.

She has been engaged in planning and conducting field studies on vegetation, soils, wetlands, rangeland resources, aquatic species, and threatened and endangered plants and animals. She has developed specifications restoration of native plants—primarily perennial grasses—at mines, hazardous waste repositories, and construction sites, and has restored native vegetation on riparian ecosystems.

Ms. McClanahan has taught courses in environmental science at the university level and lectured on the ecological principles involved in establishing native plant communities in severely disturbed ecosystems. She has been the ecology/biology advisor to university and high school instructors on riparian restoration projects. Since 2003 she has been a co-officer of a small non-profit environmental organization involved in riparian restoration and cleanup of the San Joaquin River. She regularly participates in hikes and bird-watching events sponsored by the Fresno Chapter of the National Audubon Society.

Project Specific Experience

BIOLOGICAL & BOTANTICAL SURVEYS

Senior Environmental Scientist, Boardman to Hemingway Transmission Line Project, Idaho Power Corporation, Eastern Oregon and Southwest Idaho, 2011: For a proposed 500 kilovolt electric transmission line from a proposed substation on the Columbia River near Boardman, Oregon to an existing substation in southwest Idaho, conducted field surveys along the 300-mile proposed corridor to identify and map existing plant communities and identify special status plants, noxious weeds, potential wetlands, and important wildlife habitats. Assisted in identifying burrows of burrowing owls, badgers, and coyotes and in identifying nests of ground-nesting birds and reptiles. Estimated percent cover of dominant plant species and documented existing plant

communities. All information was input into a Trimble GeoXT handheld GPS unit for later GIS mapping.

Senior Environmental Scientist, Proposed Photovoltaic Power Facility, PG&E Corporation, San Joaquin Valley, California, 2011: Conducted biological surveys for burrowing owls and San Joaquin kit fox as part of a due-diligence environmental analysis of a proposed solar power generating facility.

Senior Environmental Scientist, Proposed Gravel Mine, Carmelita Resources, Reedley, California, 2010. For a CEQA report, conducted technical review of existing Biological Resources Report for a proposed gravel mine along the King's River in eastern Fresno County. Also conducted a field survey of the property, documenting existing plant communities and identifying potential special status plants and animals.

Senior Environmental Scientist, California High Speed Train, Fresno to Bakersfield, CA 2011: Ms. McClanahan conducted botanical and wetland surveys along the corridor from Fresno to Bakersfield for the proposed High Speed Train.

Project Manager, Vegetation and GIS Mapping, San Joaquin River Conservancy, Fresno, California, 2000-2001: Managed a crew of biologists and GIS specialists conducting field mapping and GIS mapping of dominant plant communities on Conservancy property along both sides of an 11 mile reach of the San Joaquin River, including mapping the spread of the invasive plants scarlet wisteria (*Sesbania pucinea*) and giant reed (*Arundo donax*) over a two year period.

Environmental Consultant, Aquatic Weed Herbicide Study, Fresno Irrigation District, Fresno, California 2000: Conducted an extensive analysis on FID canals to document the efficacy of several aquatic herbicides in the control of filamentous algae and submersed aquatic weeds. Gathered data weekly on water conditions and the health of riparian plant communities, and provided recommendations for future management of canals.

Restoration Scientist, Camp Pashayan Riparian Restoration Monitoring, The Bay Institute, Fresno, California, 2002: Monitored the condition and survival of cottonwood and Valley oak plantings at Camp Pashayan on the San Joaquin River through one growing season. Collected weekly data on changes in groundwater levels, soil moisture, soil quality, plant health, and rooting depth.

ENVIRONMENTAL DUE DILIGENCE AUDITS

Environmental Scientist, McDermitt Mercury Mine Environmental Closure Audit, Placer Dome Minerals Inc., McDermitt, Nevada,

1993: Investigated mine facility operation and process areas, identified environmental permits applicable to closure, evaluated client's compliance with permit conditions, and identified additional closure issues and remaining potential environmental liabilities.

Environmental Scientist, Environmental Due Diligence Audit, Conda Phosphate Fertilizer Plant, Agrium, Inc., Soda Springs, Idaho, 1994: As part of a pending property transfer, conducted preliminary environmental assessment to determine potential environmental liability to natural resources at a phosphate plant site and tailings impoundment.

Environmental Scientist, Environmental Due Diligence Audit, Confidential Client, Industrial Properties in Hawaii, Saipan, and Guam, 1996: Prior to a property transfer, conducted site assessments at various construction properties in order to determine the extent of environmental liability. Quantified the amount of waste oil and other waste hydrocarbons on the property.

VEGETATION ESTABLISHMENT/RECLAMATION

Senior Environmental Scientist, Sandpoint North and South Project, Sandpoint, Idaho, Idaho Transportation Department, 2011. Assisted Idaho Transportation Department in identifying suitable soils for vegetating welded wire baskets along a section of road to be permanently vegetated. Helped in determining best laboratory methods for analysis of soil nutrients and in interpreting soil analytical reports.

Environmental Scientist, California Water Institute. California Regional Water Quality Control Board. 2005-2006. Designed and prepared planting specifications for vegetation buffers around tailwater catchment basins to intercept nitrogen-laden runoff from irrigated fields to reduce nitrogen contamination of surface water and groundwater.

Environmental Scientist, Tailings Modernization Project, Salt Lake City, Utah, Kennecott Utah Copper Corporation, 1994. Conducted habitat assessments to describe the existing natural vegetation communities in areas to be impacted by tailings containment facility expansion. Sampled and analyzed soils to identify topsoils suitable for reclamation. Provided specifications for reclamation and erosion control seedings for the stabilization and reclamation of whole and underflow tailings from copper ore processing. Provided technical support for establishment of mitigated wetlands.

Reclamation Scientist, Environmental Restoration Program, U.S. Department of Energy's Idaho National Engineering Laboratory, Idaho Falls, Idaho. Provided seeding and soil specifications and design to prevent erosion and permanently cover chemically and radioactively

contaminated waste that had been inappropriately deposited in the 1960's. Also prepared detailed monitoring plan for the vegetated cover.

Reclamation Scientist, Uranium Mill Tailing Remediation Action Project, U.S. Department of Energy, Slick Rock and Rifle Sites, Colorado: Conducted a field reconnaissance on the status and condition of reclamation following seeding and planting at two site in Colorado where uranium mill tailings had been remediated, including estimates of ground cover, species composition, and the potential for future erosion for both upland and wetland areas, and provided technical advice on methods to achieve full compliance in areas where reclamation requirements had not yet been met.

Reclamation Scientist, Weldon Spring Site Remedial Action Project, U.S. Department of Energy, St. Charles, Missouri: Provided specifications for seeding at the project site, including short-term erosion control seedings with annual cereal grain, long-term seedings with non-native perennial grasses for interim operations, and permanent seedings of native, tallgrass prairie species following site closure. Also designed a soil-vegetation cover of native tallgrass prairie species for a permanent radioactive and chemical waste repository at the site. Designed cover to minimize maintenance, provide erosion protection, limit invasion of weedy and woody species for a period of 500 years. Provided recommendations for species mix, soil depth and quality, seeding maintenance, and vegetation monitoring techniques.

Reclamation Scientist, Phoenix Mine Reclamation, Newmont Mining Corporation, Battle Mountain, Nevada, 1993. Working with mine and Bureau of Reclamation officials, provided technical advise regarding practices to reclaim mined areas and mine waste areas at a large open pit silver mine to meet legal reclamation requirements.

Reclamation Scientist, De-Na-Zin and Gateway Mines, Sunbelt Mining Company, Farmington, New Mexico: Provided technical expertise and field support in the monitoring of reclamation for final closure of these two coal mines in northwestern new Mexico, in accordance with requirements of the New Mexico mining and minerals Division and federal SMCRA regulations.

Reclamation Scientist, U.S. EPA, Eagle Mine CERCLA Site, Southern Colorado: Reviewed current reclamation plans for stabilizing and reseeding abandoned roaster piles and mine tailings. Based on this information and a site reconnaissance survey, recommended modifications in reclamation techniques, seed mixtures, and monitoring methods to obtain compliance with EPA site requirements.

WATER QUALITY PROJECTS

Environmental Scientist, Fresno River Water Quality Monitoring and Ecological Assessment, California Water Quality Control Board, Madera County, California, 2004: As the project's Principle Investigator and working with a team of university scientists, conducted year-long water quality monitoring, nutrient source identification, and flow level monitoring on the Fresno River and Hensley Lake, to determine sources and concentrations of nitrates, phosphates, and bacteria. Developed project's Quality Assurance Project Plan and Health and Safety Plan and oversaw all aspects for project work and project report.

Environmental Scientist, Food Processing Industry Wastewater Contamination Study. California Regional Water Quality Control Board. 2002. Studied corn roots' ability to absorb nitrogen from irrigation waters originating from food processing industry.

MINING PROPERTY VALUATION

Technical Expert, Oil and Natural Gas Property Valuation, Light Stephenson v United States, U.S. Department of Justice, Texas: Conducted an extensive review of the value of an oil/gas field in west Texas. Wrote detailed evaluation assessment of the property's value based on project commodity price assumptions.

Technical Expert, Coal Property Valuation, Lake Se Smet Coal Mine, Texaco Coal, Wyoming: Investigated market and resource values of an undeveloped coal property "taken" as a result of Alluvial Valley Floor designation. Researched options for the property, including identification of federal coal for exchange, development, and valuation of adjacent coal not affected by AVF designation, and market analysis to determine compensation value of property.

Technical Expert, Coal Property Valuation, Commonwealth Edison Coal Company, Wyoming: For the owners of an undeveloped coal property, conducted a market research analysis to determine a rational selling price for the coal resource. Factors investigated included transportation costs, mine development costs, long-term contracts and spot prices for similar Btu coal in the Western U.S., and selling prices for similar properties.

Technical Expert, Land Valuation, Zuni Indian Tribe v United States, U.S. Department of Justice, Arizona and New Mexico: Researched mineral and agricultural land values and ownership patterns at the time of European settlement of extensive tracts of land in new Mexico and Arizona and prepared reports on the estimated historic land value.

ENVIRONMENTAL REPORT PREPARATION (NEPA/CEQA)

Environmental Scientist, Integrated Site Assessment, Pittsburg-Liberty Abandoned Mine and Millsite, Humboldt-Toiyabe National Forest, Bridgeport, CA, 2010. Described plant communities, aquatic resources, wetlands, and sensitive plant and animal species in the vicinity of an abandoned mine and millsite on National Forest lands, as part of an overall United States Department of Agriculture program.

Senior Environmental Scientist, Industrial Site Railroad Spur Expansion, City of Hanford, Hanford, California, 2009: for an Initial Study under CEQA, performed biological study and document review for proposed for railroad spur expansion. Visited site, documented vegetation, potential wetlands, and potential wildlife habitat; conducted search of California Natural Diversity Database and Fish and Wildlife Service files, gathered information on needed permits, and provided recommendations for best management practices at the site.

Senior Environmental Scientist, Proposed Wind Generation Facility, Searchlight, Nevada, 2009. Prepared environmental reports on plant communities and potential habitat in the Mojave Desert for special-status species for an EIS at proposed site.

Environmental Scientist, Initial Study Preparation, California Department of Toxic Substances Control, Former Metals Recovery Incinerator, Mojave, California, 2010. Under the California Environmental Quality Act, prepared an Initial Study for the remediation of a former metals recovery facility operated from 1970 until 1990. Smelting/incineration and open burning of scrap materials to salvage aluminum, copper and lead resulted in the contamination of a large area surrounding the facility with dioxins/furans and metals. The Initial Study focused on potential impacts to special status species such as the Desert Tortoise and Joshua Trees.

Environmental Scientist, Design of Low-level Radioactive Waste Storage Facility, Southwestern Compact, Mojave Desert, California, 1995: Conducted a preliminary environmental assessment to determine the potential presence of Threatened and Endangered plant species in Ward Valley in the Mojave Desert, potentially impacted by the construction of the facility.

Environmental Scientist, Gold Mine Development, Noranda Minerals Inc., Sawtooth National Forest, Idaho, 1994: Prepared a draft environmental assessment of a proposed gold mine on National Forest lands. Gathered information on the site's geology, soils, climate, vegetation and range resources, wildlife resources, and threatened and endangered species potentially impacted by the mine development.

Environmental Scientist, Rail Yard Expansion, Southern Pacific Railroad, Kansas City, Missouri: Analyzed field data and prepared

Draft Environmental Assessment reports describing wetlands, floodplains, and threatened and endangered species potentially impacted by railroad construction.

Environmental Scientist, NEPA Documentation Management, U.S. Department of Energy, Idaho Falls, Idaho, Idaho National Engineering Laboratory, 1991: Analyzed, reviewed, and prepared written comments addressing the adequacy of various Environmental Assessments and Environmental Impact Statements prepared by other consulting firms for the Department of Energy and the Department of Defense, involving transportation and storage of hazardous and radioactive materials and waste.

ENVIRONMENTAL TECHNICAL LITIGATION SUPPORT

Environmental Scientist, Technical Litigation Support, Rocky Mountain Arsenal Litigation, Shell Oil Company, Denver, Colorado: Researched contemporaneous technical documents to identify historical environmental damage to natural resources (fish, waterfowl, vegetation, surface water, soils) from the manufacture of chemical warfare agents by the United States Army (GB, VX mustard gas) in the 1940s and 1950s, and the later manufacture of insecticides by Shell Oil Company (endrin, dieldrin, parathion, DBCP) at a 20,000 acre facility 10 miles north of Denver. Conducted fish, soil, sediment and vegetation sampling, conducted preliminary analysis of soils and sediments from Basin F liquid chemical disposal lagoon for presence of toxic breakdown products.

Environmental Scientist, Technical Litigation Support, Ekotek Superfund Site, Confidential Client, Salt Lake City, Utah, 1995: Managed a project team that was providing legal counsel with technical information regarding contaminant levels, groundwater and soil investigations, underground storage tank assessment, aerial photograph interpretation, GIS map production, and contaminant source identification. Worked to establish innocent landowner defense for client at a former oil refinery/oil recycling facility.

Environmental Scientist, Mine Litigation Support Pursuant to CERCLA Action, Blackbird Mine, Noranda Minerals, Inc., Salmon, Idaho, 1994: Researched mine ownership and mine production history, based on decades-old mine company documents, quantifying tonnage of waste rock and tailings and miles of underground mine excavations at a cobalt mine operated since the late 1800's. Prepared comprehensive history of mine operations and prepared written testimony in consultation with expert witnesses, the client, and the client's attorneys.

Environmental Scientist, Abandoned Mine Environmental Site Assessment, Casey Gold Mine, Davis Wright Tremaine, Boise County, Idaho, 1993: Performed environmental site assessment of an

abandoned gold mine on the Boise National Forest to assess existing environmental liabilities associated with the property. Investigation included historical document review, site reconnaissance, and soil and water sample collection.

Environmental Scientist, Mine History Documentation, Madison County Lead Mine, Anschutz Mining Company, Madison County, Missouri,: Researched the operational history of a lead mine and smelter in operation for more than 100 years. Prepared site history and provided technical support for expert witness testimony.

Technical Expert, Health and Safety and Environmental Compliance Development, Idaho National Engineering Laboratory, U.S. Department of Energy, Idaho Falls, Idaho: For the INEL's primary construction management contractor, provided project management and technical oversight for the preparation of more than 70 health and safety and environmental compliance procedures to ensure the contractor's compliance with applicable federal and state environmental and worker safety regulations.

LOW-LEVEL RADIOACTIVE/HAZARDOUS WASTE

Ecologist/Reclamation Specialist, Site Evaluation and Design of Soil/Vegetation Cover, North Carolina Low-level Radioactive Waste Disposal Facility, Chem-Nuclear Systems, Raleigh, North Carolina: Designed vegetative/soil cover for above-grade repository to provide permanent storage for low-level radioactive waste and hazardous waste. Conducted survey of existing native soils in repository's footprint. Provided detailed requirements for soil quality and soil depth and estimated root depth. Prepared seeding and planting specifications. Provided projections of long-term ecological stability of vegetative cover, including the potential for disruption from invasion of weeds and woody plants and burrowing mammals such as moles, voles, groundhogs, foxes, and coyotes.

Ecologist/Reclamation Specialist, Site Evaluation and Design of Soil/Vegetation Cover, Central Midwest Low-level Radioactive Waste Disposal Facility, Chem-Nuclear Systems, Charleston, Illinois: For hazardous and low-level radioactive waste repositories, designed permanent vegetative/soil covers to provide long-term protection to the repositories while minimizing erosion and maintenance. Studied the effects of evapotranspiration and root development to select appropriate species and soil depth. Predicted long-term ecological impacts to the covers. Analyzed long-term impacts to soil/vegetation systems resulting from potential increases in UV light, acid rain, climate change, plant community succession, burrowing vertebrate and invertebrate intrusion, root impacts, and tree fall.

Environmental Scientist, Silver Bow Creek/Butte Area Superfund Site, Atlantic Richfield Company, Butte, Montana: Assessed and evaluated historic soil chemistry data on a mine Superfund site in Montana. Investigated the extent of soils contamination and assisted in the development of a work plan for future remediation. Also evaluated soils from borrow sources to determine suitability as fill in remediation actions for a Time Critical Removal action.

ASBESTOS SURVEYS/REMEDIATION

Environmental Specialist, Asbestos Survey of State-owned Buildings, California Office of the State Architect, Northern California: Surveyed 2,600 state-owned buildings for the presence of asbestos containing materials in northern California. Following completion of the survey, managed the report preparation effort to apprise the State Architects Office of the quantity, location, and condition of all asbestos containing materials found during the survey, and provided cost estimates for abatement.

Environmental Specialist, Asbestos Abatement, Medford Main Post Office, U.S. Postal Service, Medford, Oregon: Oversaw the removal of large quantities of asbestos containing materials from a regional post office. Acting as the owner's representative, monitored the safe removal of asbestos by the abatement contractor while the post office continued normal operations. Provided quality control, air monitoring, and safety oversight for the project.

Environmental Specialist, Asbestos Surveys and Abatement, State of Idaho Division of Public Works, various cities in Idaho: Conducted asbestos surveys, assessment, and abatement oversight. Work was conducted primarily at the State's higher education institutions, including the University of Idaho, Boise State University, and the College of Northern Idaho.

Environmental Specialist, Asbestos Surveys, LDS Church, Idaho, Oregon, and Washington: Conducted asbestos survey and assessment at numerous church owned buildings in the Pacific Northwest. Assisted the client in procuring the services qualified abatement contractors and provided owner's representative and on-site abatement contractor oversight services.

Professional Societies/Affiliates

California Native Grasslands Association (Board of Directors, 2000-2005, President, 2004)
California Groundwater Resources Association, (Secretary, San Joaquin Valley Chapter, 2002-2005)
RiverTree Volunteers (Corporate Officer, 2003-current)
Central Sierra Watershed Committee (2002-2006)

International Erosion Control Association
California Invasive Pest Plant Council
California Native Plant Society
Society for Range Management
California Chapter, Society for Ecological Restoration

Chronology

2009 – Present: URS Corporation, Senior Environmental Scientist, Fresno, California
2006 – 2007: CSU Fresno, Environmental Science Lecturer, Fresno, California
2001 – 2006: California Water Institute, Environmental Scientist, Fresno, California
1999 – 2003: Private Environmental Consultant, Fresno, California
1985 – 1996: Senior Environmental Specialist, Morrison Knudsen Corporation, Boise, Idaho
1976 – 1984: Rangeland Technician, U.S.D.A. National Forest Service, Payette and Caribou National Forests, Idaho

Areas of Expertise	Environmental Planning & Restoration Biological Surveys
Experience	
URS	<1
Other Firms/ Organizations	4
Education	MA Geography: Resource Management & Environmental Planning/2010/San Francisco State University Bachelor of Landscape Architecture/2005/University of Oregon
Certification	

Overview

Ms. Omlid is a Biologist in the URS San Diego office. She has supported document preparation (Biological Technical Report, Application for Certification, Desert Tortoise Translocation Plan), including editing for clarity and accuracy, and writing survey summary reports. Ms Omlid's position at URS also involves protocol surveys for special status wildlife species, avian point count surveys, botanical surveys, and vegetation monitoring on restoration projects. Her experience includes planning at the local level with the Port of San Francisco and she has performed environmental volunteer field work (i.e. habitat restoration, biological surveys (wildlife & vegetation), water quality monitoring) from San Diego, California to Portland, OR prior to joining URS. Ms. Omlid's educational background was ecologically and biogeographically focused as exemplified by courses in Applied Ecology, Biogeography, Watershed Assessment & Restoration, GIS for Environmental Analysis, Environmental Management, Natural Resource Management, and Tree & Plant Identification. Graduate-level research project topics include: identifying which low-impact design stormwater BMPs could be optimally located in a study area of San Francisco using GIS, taking tree cores to determine growth rate differences in trees infected/not infected with pitch canker, identifying street tree species and associated perceived street tree health, and the effects of climate change on vegetation in Costa Rica. Her education also provided familiarity with environmental laws and policies, as well as experience with geographic and biological field methods.

Experience

Santa Margarita River Vegetation Study – Camp Pendleton, CA (URS). Staff biologist performing vegetation mapping (ranking vegetation density on transects) along the Santa Margarita River. (2011)

Sonoran West Solar Electric Generating facility – Blythe, CA (URS). Staff biologist shadowing botany surveys for this approximately 4,000 acre site. Future work will consist of desert tortoise, burrowing owls, avian point count, and Mojave fringe-toed lizard surveys. (2011-present)

Rio Mesa Solar Electric Generating facility - Blythe, CA (URS). Staff biologist performing burrowing owl, Mojave fringed-toed lizard, avian point count, and Couch's spadefoot toad surveys, and shadowing experienced botanists during botany surveys. Assisting in the writing and editing of associated technical documents, and entering data into spreadsheets for this approximately 11,000-acre project site near Blythe, CA. (2011- present)

Mira Sorrento Place – San Diego, CA (URS). Staff biologist performing vegetation surveys to determine vegetative cover for a coastal sage scrub/upland scrub/riparian scrub restoration site. Duties also include analyzing associated data and helping to assemble the annual report. (Summer 2011)

Dana Point Headlands Habitat Restoration – Dana Point, CA (URS). Staff biologist performing surveys to determine vegetative cover and container plant success for a coastal sage scrub restoration site. (Summer 2011)

San Diego River Park Foundation - San Diego, CA. Volunteer. Taking inventory and mapping locations of invasive species with GPS. (Fall 2010 & Spring 2011)

California Native Plant Society - San Diego, CA. Volunteer. Rare plant surveys and vegetation sampling. (Spring 2011)

Johnson Creek Watershed Council & Xerces Society - Portland, OR. Volunteer biological monitor for freshwater mussels. Identifying mussel species and recording dimensions in an effort to understand the status of mussels in the watershed. (August 2010)

City of Portland - Portland, OR. Volunteer. Riparian restoration (invasive species removal and planting natives) along the Willamette River. (Summer 2010)

Middle Fork Willamette Watershed Council - Eugene, OR. Volunteer water quality monitor. Taking stream samples and using field equipment (i.e. turbidity meter, conductivity meter, titrator) to determine pH, temperature, DO, conductivity & turbidity. (Spring 2010)

Oregon State University - Corvallis, OR. Volunteer field assistant to a PhD Student in the Water Resource Engineering department. Installing wetland wells and collecting groundwater level data outside Eugene, OR. (January 2010 – June 2010)

Port of San Francisco – San Francisco, CA. Student Intern. Student intern providing support to Senior Port Planning and Engineering staff on planning projects. Writing fact sheets, producing presentation graphics, creating PowerPoint presentations, conducting site research (i.e. gathering maps and site plans), reviewing environmental documents, facilitating community meetings, and researching case studies for planning projects. Other duties included editing the *San Francisco Stormwater Design Guidelines*, monitoring plant cover and density of *Suaeda californica* to determine whether restoration efforts were successful. (January 2007 - September 2009)

Professional Associations

Association of Environmental Professionals, Member
California Native Plant Society, Member

Specialized Training

Desert Tortoise Council's Surveying, Monitoring, and Handling Techniques Workshop 2011

First Aid and CPR Training

Areas of Expertise	Raptor Ecology Burrowing Owl Biology Restoration Biology
Total Years of Experience URS Other Firms	3 1 2 U.S. Forest Service U.S. Fish and Wildlife Service San Dieguito River Park
Education	BS/Biology with concentration in Ecology/2011/California State University, San Marcos, Cum Laude
Certification	Completion of Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop
Overview	Mr. Randall has 3 years of ecology experience, focusing primarily on California wildlife including many species of raptors in San Diego County and shorebirds in central California. He led a habitat restoration effort for coastal cactus wren for the San Dieguito River Park and has worked with several sensitive shorebird species in central California National Wildlife Refuges. Ryan Randall has worked with such federal agencies as United States Fish and Wildlife Service, U.S. Forest Service Cleveland National Forest, and U.S. Geological Survey. Mr. Randall has many hours of raptor nest monitoring and radio-telemetry experience with raptor species with the U.S. Forest Service, and has experience surveying for several listed species including the coastal California gnatcatcher. Most recently, Mr. Randall has performed a variety of biological surveys for large-scale solar projects located in the Sonoran Desert.
Experience	**San Diego Christmas Bird Count** (December 2011). Participated in 2011 annual Christmas bird count organized by the San Diego Audubon Society. **Sonoran West Solar Electric Generating System** (Fall 2011). Participated in fall rare plant surveys alongside qualified botanists for this approximately 5,500-acre project site near Blythe, CA. **Rio Mesa Solar Electric Generating facility** (2011– present). Performed burrowing owl, Mojave fringed-toed lizard, and Couch's Spadefoot toad surveys, data entry and analysis for this approximately 11,000-acre project site near Blythe, CA. Participated in rare plant surveys alongside experienced biologists. **State Route 76 Biological Monitoring** (July 2011 – present). Performed biological monitoring in relation to impacts to federally listed species (coastal California gnatcatcher, least bell's vireo, southwestern willow flycatcher, arroyo toad) and designated critical habitat for this highway improvement project located along the San Luis Rey River Valley in unincorporated San Diego County. **Dana Point Headlands Coastal California Gnatcatcher Surveys and Revegetation Monitoring** (July 2011 – August 2011). Performed biological monitoring as part of a yearly assessment of a 24.4 acre revegetation project. Plant line intercept transects were used to estimate percent cover in creation and enhancement areas. **Undergraduate Research Assistant** (January 2011 – May 2011)

California State University San Marcos - Dr. Tracey Brown. Lizard husbandry and digestive ecology studies including feeding trials and analyses.

Biological Technician (March 2010 – June 2010). **U.S. Forest Service** - Cleveland National Forest, CA. Raptor surveys and nest monitoring for Golden Eagle, Peregrine Falcon, Prairie Falcon. Banding and radio tracking Golden Eagles.

Intern (January 2010 – June 2010). **Wildlife Research Institute** - Ramona, CA
Hawk Watch: aiding public in raptor identification and proper use of spotting scopes. Cleveland National Forest: habitat restoration for endangered coastal California Gnatcatcher. Burrowing Owl artificial burrow monitoring.

Biology Intern (June 2009 – August 2009). **U.S. Fish and Wildlife Service** - Newark, CA
Conducted Western Snowy Plover surveys, shorebird banding of Caspian Tern, invasive plant control at Farallon National Wildlife Refuge, Pacific Tree Frog surveys at Ellicott Slough National Wildlife Refuge, and endangered butterfly surveys (Lange's Metalmark butterfly) and endangered plant seed collection at Antioch Dunes National Wildlife Refuge.

Intern (June 2009 - August 2009). **U.S. Geological Survey** - Newark, CA
Shorebird banding and nest monitoring of Forster's Terns as part of a study on the effects of Mercury contamination in the San Francisco Bay.

Student Intern (January 2009 – May 2009). **San Dieguito River Park** - Escondido, CA. Organized and performed habitat restoration for the coastal cactus wren, and at various mitigation sites. Trail and irrigation systems building and maintenance. Creation and assessment of firebreaks and park patrol. Aided in invasive plant removal.

Honors and Awards

Dean's List, Golden Key International Honour Society

Areas of Expertise	Habitat Restoration and Mitigation Monitoring Special Status Species Surveys and Habitat Assessments Vegetation Mapping and Botanical Surveys Jurisdictional Delineations Biological Assessments, Biological Technical Reports, and other technical report writing
Total Years of Experience URS Other Firms	7 3 4
Education	BS/1998/Ecology, Behavior, and Evolution/University of California, San Diego
Supplemental Education/Training	Fairy Shrimp of California Identification Course by Mary Belk (2011) Vernal Pool Flora and Habitat Restoration by Wetland Training Institute (2010) Blunt-nosed leopard lizard Identification Workshop by the Wildlife Society (2009) Wetland Delineation Workshop by Wetland Training Institute (2008) Flat-tailed horned lizard Identification Training by the BLM (2008) Desert Tortoise Handling Workshop by Desert Tortoise Council (2007)
Registration/Certification	California Department of Fish and Game (CDFG) Scientific Collectors Permit #SC-009178 CDFG Rare, Threatened, and Endangered Plant Voucher Collecting Permit #09012. Level 2 Blunt-nosed Leopard Lizard Surveyor
Overview	Sundeep Amin is a biologist/restoration ecologist with over four years of professional experience working as a biologist, restoration ecologist, project manager, and/or project crew supervisor on an assortment of projects throughout Southern California, including projects in Nevada and Arizona. His main areas of expertise include habitat restoration, mitigation monitoring, botanical surveys, biological constraints analyses, and sensitive species surveys (floral and faunal). Mr. Amin is also experienced in technical report writing, client/agency interaction, and project management. He has worked on projects for a variety of clients including all branches of the military, private developers, utility companies, and local, State, and Federal agencies. He is familiar with State and Federal regulations such as the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), Federal and California Endangered Species Acts (FESA and CESA), Migratory Bird Treaty Act (MBTA), and Natural Community Conservation Plans (NCCP).

Select Project Experience

Desert Tortoise and Desert Rare Plant Experience

Rio Mesa Solar AFC – Blythe, CA. Biologist responsible for organizing and leading a crew of up to 16 biologists conducting protocol desert tortoise surveys, burrowing owl surveys, Mojave fringe-toe lizard surveys, and avian point counts over an approximately 11,000 acre site. Other tasks conducted include Couch's spadefoot toad surveys, vegetation mapping, jurisdictional delineation, and report preparation. **(2011-present)**

Calico Solar Project AFC – Barstow, CA. Biologist responsible for leading a crew of 20 to 28 biologists conducting protocol desert tortoise surveys over

approximately 20,000 acres of land. A total of approximately 370 hours was spent conducting protocol desert tortoise surveys. Other tasks include data analysis and biological resources report preparation in support of an Application for Certification for a solar power plant project in San Bernardino County. Reports prepared include the biological technical report, a baseline biological report, a biological assessment, a raven management plan, and weed management plan. Also participated in jurisdictional waters survey along a proposed transmission line. Project involved intensive surveys for desert tortoise, Mohave ground squirrel, burrowing owls, and rare plants on a 8,000-acre project site and 100-mile transmission line in the Mojave Desert. **(2008-Present)**

Soda Mountain Solar– Mojave Desert, California. Field biologist conducting desert tortoise and rare plant surveys in support of solar energy project in the Mojave Desert, east of Barstow, California. A total of approximately 20 hours were spent conducting focused desert tortoise surveys. **(2009)**

Kinder Morgan California-to-Nevada (Cal-Nev) Pipeline – Mojave Desert of California and Nevada. Field biologist conducting desert tortoise presence/absence and rare plant surveys over portions of a 233-mile fuel pipeline project from Colton, CA to Las Vegas, NV. Other duties included leading desert tortoise survey crews, assisting with least Bell's vireo surveys, assisting with jurisdictional delineations, investigating potential other potentially jurisdictional waters along the entire pipeline length, and assisting with preparation of associated technical documents. **(2008)**

Nextlight Fort Mojave Solar – Laughlin, NV. Biologist conducting preliminary special status species habitat assessments of a potential solar site and associated transmission line in the Eastern Mojave Desert. Potential habitat for desert tortoise, burrowing owl, southwestern willow flycatcher, Bell's vireo, other riparian bird species, and rare plants was identified during the reconnaissance surveys. **(2010-Present)**

Nautilus Solar – Kern County, CA. Biologist conducting vegetation mapping and special status species habitat assessments of two approximately 80 acre solar sites in the Mojave Desert. Other tasks involved preparing a Biological Technical Report and Incidental Take Permit. **(2010-present)**

Imperial Valley Solar-Thermal Plant AFC – Imperial County, CA. Field biologist conducting rare plant and flat-tailed horned lizard surveys in support of an Application for Certification for an 800MW thermal generating facility covering 7,000 acres in Imperial County. Other tasks included biological monitoring for well drilling, data analysis and preparation of assorted documents including a raven management plan and weed management plan in support of the Application for Certification. **(2008-Present)**

California City – California City, CA. Biologist performing desert tortoise presence/absence and zones of influence surveys on three sections of land in the California City area. Other work included habitat assessments for rare plants that may potentially occur on-site and blooming season rare plant surveys. **(2006)**

Other Desert Experience

San Manuel General Plan – San Manuel, AZ. Biologist working as part of a team to map the vegetation of over 25,000 acres of various Sonoran Desert habitat, including the identification of potentially jurisdictional water features for later assessment. Other duties included writing sections of a long-term river management plan to address issues with the x mile portion of the San Manuel River that crosses the site. The work was commissioned by BHP Billiton in anticipation of the closing of the local copper mine, and subsequent sale of land to expand the town of San Manuel, Arizona. **(2007)**

Rancho Vistoso Xero-Riparian Habitat Assessment – Oro Valley/Tucson, AZ. Biologist providing a habitat assessment and technical report for a parcel of land owned by the client in order to determine the boundaries of various levels of xero-riparian habitat in accordance with city code to allow maximum use of the land. **(2007)**

RMC Lancaster – Lancaster, CA. Biologist responsible for the vegetation mapping along a proposed natural gas pipeline through developed and undeveloped areas. Duties also included identifying potential constraints, and the preparation of a biological constraints analysis. **(2007)**

Lewis Operating Corporation – Apple Valley, CA. Biologist conducting Phase III burrowing owl surveys on an undeveloped parcel of land containing disturbed creosote bush scrub habitat. **(2007)**

Richland Communities, Avanti – Lancaster, CA. Biologist working as part of a team to conduct Phase III BUOW and clearance surveys on a 350-acre parcel of abandoned agricultural land. **(2006-2007)**

Richland Communities, Hathaway – Palmdale, CA. Biologist providing support by writing up a biological constraints report with data collected by a fellow biologist. **(2006)**

Las Vegas Valley Water District Native Plant Salvage – Pahrump and Las Vegas NV. Restoration ecologist and crew supervisor overseeing the salvage of western honey mesquite trees and several thousand native shrubs for transplant into the Las Vegas Springs Preserve. Over one hundred mesquite trees ranging from a few feet to over fifteen feet were successfully boxed and moved. Salvaged native shrubs included creosote bush, burrow brush, ephedra, and several cacti and yucca species. **(2005-2006)**

Bureau of Land Management Las Vegas Buckwheat Salvage – Las Vegas, NV. Restoration ecologist and crew leader in charge of the salvage of one thousand sensitive Las Vegas buckwheat (*Eriogonum corymbosum*) shrubs. Salvage of shrubs was initiated in order to preserve a large population of Las Vegas Buckwheat that would otherwise have been lost to development. **(2005-2006)**

Organ Pipe National Monument Border Fence Installation Plant Salvage and Restoration – Lukeville, AZ. Restoration ecologist and assistant project manager responsible for quarterly monitoring of restoration sites along the US-Mexico border. Duties included Sonoran Desert plant species seed collection and dispersal, exotic plant control, inspection of salvaged plants, and creation of status

reports. **(2004-2006)**

Professional Associations

California Native Plant Society, Member
Society for Ecological Restoration, California, Member
Southern California Botanists, Member
Wildlife Society, Member

Spring and Fall 2011 Point Count Survey Results for the Rio Mesa Solar Electric Generating Facility Project[1]					
Common Name	**Scientific Name**	**Special Status**	**Spring Observations**	**Fall Observations**	**Total Observations**
Waterbirds					
Totipalmates:	**Order Pelecaniformes**				
American white pelican	*Pelecanus erythrorhynchos*	SSC	14		14
Raptors					
Vultures & Hawks	**Order Accipitriformes**				
Turkey vulture	*Cathartes aura*		34	2	36
Northern harrier	*Circus cyaneus*	SSC	1	1	2
Sharp-shinned hawk	*Accipiter striatus*	WL		1	1
Cooper's hawk	*Accipiter cooperii*	WL	1		1
Swainson's hawk	*Buteo swainsoni*	BCC, ST	1		1
Red-tailed hawk	*Buteo jamaicenis*		17	14	31
Ferruginous hawk	*Buteo regalis*	WL, BCC		1	1
Falcons	**Order Falconiformes**				
American kestrel	*Falco sparverius*		2	3	5
Merlin	*Falco columbarius*	WL		1 (incidental)	1 (incidental)
Prairie falcon	*Falco mexicanus*	BCC, WL	1	6	7
Peregrine falcon	*Falco peregrinus*	BCC, FP		1	1
Golden eagle	*Aquila chrysaetos*	FP, BCC, WL	2 (incidental)		2
Owls:	**Order Strigiformes**				
Great horned owl	*Bubo virginianus*		2		2
Other Non-Passerines					
Chicken-like Birds:	**Order Galliformes**				
Gambel's quail	*Callipepla gambelii*		53	39	92
Doves:	**Order Columbiformes**				
Rock pigeon	*Columba livia*			1	1
Mourning dove	*Zenaida macroura*		483	20	503
White-winged dove	*Zenaida asiatica*		33		33
Eurasian collared-dove	*Streptopelia decaocto*		3		3
Cuckoos:	**Order Cuculiformes**				
Greater roadrunner	*Geococcyx californianus*		1	1	2
Nightjars and Relatives:	**Order Caprimulgiformes**				
Lesser nighthawk	*Chordeiles acutipennis*		18		18
Common poorwill	*Phalaenoptilus nuttallii*		1		1
Swifts and Hummingbirds:	**Order Apodiformes**				
Vaux's swift	*Chaetura vauxi*	SSC	28		28
White-throated swift	*Aeronautes saxatalis*		8		8
Black-chinned hummingbird	*Archilochus alexandri*		4		4
Anna's hummingbird	*Calypte anna*		15	4	19
Costa's hummingbird	*Calypte costae*		1		1
Woodpeckers and Relatives:	**Order Piciformes**				
Gila woodpecker	*Melanerpes uropygialis*	BCC, SE	4	1	5
Ladder-backed woodpecker	*Picoides scalaris*		14	5	19
Northern flicker	*Colaptes auratus*			3	3
Passerines					
Songbirds:	**Order Passeriformes**				
Say's phoebe	*Sayornis saya*		9	46	55
Ash-throated flycatcher	*Myiarchus cinerascens*		304	26	330
Western kingbird	*Tyrannus verticalis*		38	1	39
Loggerhead shrike	*Lanius ludovicianus*	BCC, SSC	58	16	74
Warbling vireo	*Vireo gilvus*		4		4
Common raven	*Corvus corax*		7	6	13
Phainopepla	*Phainopepla nitens*		76	86	162
Western bluebird	*Sialia mexicana*			9	9
European starling	*Sturnus vulgaris*		2		2
Northern mockingbird	*Mimus polyglottos*		8	6	14
Le Conte's thrasher	*Toxostoma lecontei*	BCC, SSC	1	3	4
Crissal thrasher	*Toxostoma crissale*	SSC	1		1
Cactus wren	*Campylorhynchus brunneicapillus*		23	7	30
Rock wren	*Salpinctes obsoletus*			12	12
Bewick's wren	*Thryomanes bewickii*			5	5
Verdin	*Auriparus flaviceps*		247	83	330

Spring and Fall 2011 Point Count Survey Results for the Rio Mesa Solar Electric Generating Facility Project[1]					
Common Name	**Scientific Name**	**Special Status**	**Spring Observations**	**Fall Observations**	**Total Observations**
Blue-gray gnatcatcher	*Polioptila caerulea*		8	2	10
Black-tailed gnatcatcher	*Polioptila melanura*		84	71	155
Tree swallow	*Tachycineta bicolor*		660		660
Northern rough-winged swallow	*Stelgidopteryx serripennis*		3		3
Barn swallow	*Hirundo rustica*		18		18
Cliff swallow	*Petrochelidon pyrrhonota*		62		62
Ruby-crowned kinglet	*Regulus calendula*		1		1
Horned lark	*Eremophila alpestris*	WL	21	114	135
American goldfinch	*Carduelis tristis*			3	3
Lesser goldfinch	*Carduelis psaltria*		14	1	15
House finch	*Carpodacus mexicanus*		36	143	179
House sparrow	*Passer domesticus*			9	9
White-crowned sparrow	*Zonotrichia leucophrys*		22	11	33
Savannah sparrow	*Passerculus sandwichensis*		6		6
Chipping sparrow	*Spizella passerina*		6	1	7
Brewer's sparrow	*Spizella breweri*	BCC	38		38
Lark sparrow	*Chondestes grammacus*		1		1
Black-throated sparrow	*Amphispiza bilineata*		9	15	24
Sage sparrow	*Amphispiza belli*			40	40
Rufous-crowned sparrow	*Aimophyla ruficeps*		3		3
Abert's towhee	*Pipilo aberti*			2	2
Orange-crowned warbler	*Vermivora celata*		5		5
Lucy's warbler	*Vermivora luciae*	BCC, SSC	15	2	17
Yellow-rumped warbler	*Dendroica coronata*		20	184	204
Townsend's warbler	*Dendroica townsendi*		2		2
Hermit warbler	*Dendroica occidentalis*		1		1
MacGillivray's warbler	*Oporornis tolmiei*		7		7
Wilson’s warbler	*Wilsonia pusilla*		19		19
Black-headed grosbeak	*Pheucticus melanocephalus*		2		2
Blue grosbeak	*Guiraca caerulea*		1		1
Hooded oriole	*Icterus cucullatus*		3	12	15
Bullock’s oriole	*Icterus bullockii*		11		11
Red-winged blackbird	*Agelaius phoeniceus*		8		8
Brewer's blackbird	*Euphagus cyanocephalus*		2	1	3
Western meadowlark	*Sturnella neglecta*			2	2
Great-tailed grackle	*Quiscalus mexicanus*		5		5
Brown-headed cowbird	*Molothrus ater*		12		12
Totals			2,622	1,022	3,644

[1]Incidental observations are not included with the exception of the merlin and golden eagle

SE – State Endangered (California Endangered Species Act)

ST – State Threatened (California Endangered Species Act)

BCC - Birds of Conservation Concern (U.S. Fish and Wildlife Service)

FP - Fully Protected (California Department of Fish and Game)

SSC – Species of Special Concern (California Department of Fish and Game)

WL – Watch List (California Department of Fish and Game)

= Over 100 individuals observed