

Campo Verde Solar Avian Survey Report 2011-2012

May 2012

Prepared for:

First Solar

1111 Broadway, Fourth Floor

Oakland, California 94607

Prepared by:

Heritage Environmental Consultants

2870 Emporia Court

Denver, CO 80238



Introduction

The Campo Verde Solar Project is a proposed 1,990 acre solar photovoltaic (PV) energy-generating facility (solar energy facility site) located in Imperial County approximately 7 miles southwest of the community of El Centro, California.

The Project would use First Solar PV modules that are generally non-reflective and convert sunlight into direct current (DC) electricity. The DC output of multiple rows of PV modules is collected through one or more combiner boxes and directed to an inverter that converts the DC electricity to alternating current (AC) electricity. From the inverter, the generated energy flows to a transformer where it is stepped up to distribution level voltage (approximately 34.5 kV). Multiple transformers are connected in parallel via 34.5 kV lines to the Project substation, where the power will be stepped up to 230 kV.

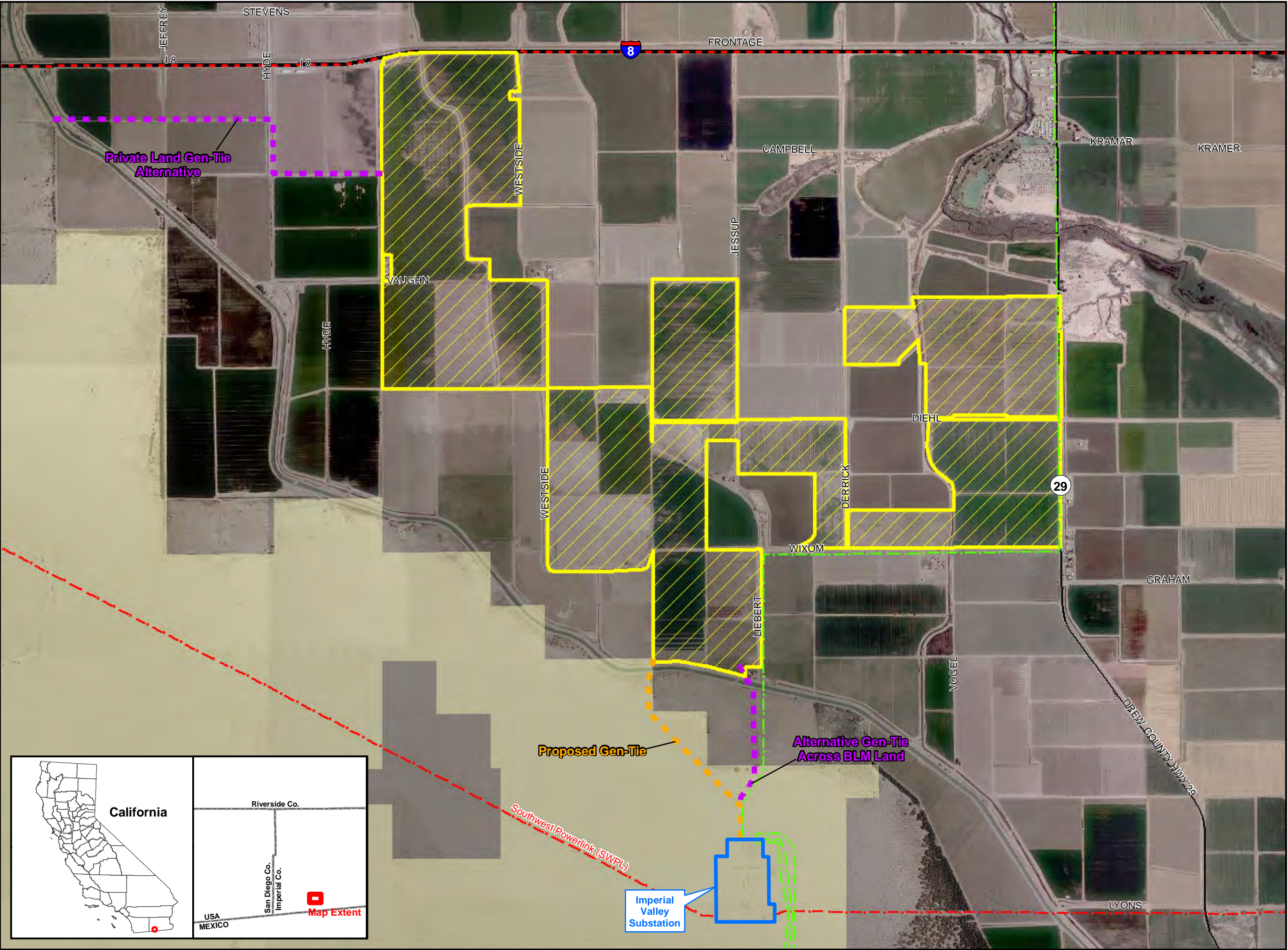
The Project will be interconnected to the regional transmission system via a new gen-tie line constructed to the Imperial Valley Substation. This interconnection will be accomplished via one of three potential options – two requiring rights-of-way across federal lands managed by the Bureau of Land Management (BLM) and one located entirely on private lands (**Figure 1**).

The two gen-tie line alternatives that would cross BLM lands would originate at the Project substation/switchyard at the southern end of the Project site and would go south to the Imperial Valley Substation. Either of these two alternatives would be built as a double-circuit 230 kV line.

- The Alternative Gen-Tie across BLM land would follow the existing IID S-line and would be approximately 0.75 miles long (including about 0.4 miles of BLM land) crossing fallow agricultural land and native desert.
- The Proposed Gen-Tie Alternative would follow existing roads and would cross about one mile native desert (all BLM land). Both of these options are located entirely within a BLM-designated utility corridor.

The Private Land Gen-tie Alternative being considered is to develop a single-circuit 230 kV line originating on the western side of the Project site. It would cross approximately 1.75 miles of private lands to the west and would utilize available capacity on a line that has an approved right-of-way to the Imperial Valley Substation.

The BLM El Centro Field Office requested that avian use and abundance surveys be conducted to provide baseline data to be used in the National Environmental Policy Act (NEPA) analysis. The survey methodology was designed specifically for the Campo Verde Project based on the protocol provided and approved by the BLM (BLM 2010).



Legend

- Existing 500 kV Transmission Line
- Existing 230 kV Transmission Line
- Proposed Gen-Tie
- Gen-Tie Alternative
- Interstate
- Major Road
- County Boundary
- Campo Verde Solar Site

Jurisdictional Land Ownership

- Bureau of Land Management Land

Feet

Miles
State Plane Coordinate System
California Zone 6, NAD 83
Lambert Conformal Conic Projection
1983 North American Datum
Linear Unit: Foot US

CAMPO VERDE SOLAR PROJECT
FIGURE 1 - PROJECT LOCATION
Map Extent: Imperial County, California
Date: 04.25.12 Author: djb
...Maps\Avian and Mountain Plover Report Figure 1_Project Location

Methods

Avian use surveys were performed by qualified biologists experienced in the identification of North American birds by sight and sound. Point-count stations were located along four transects placed throughout the proposed Campo Verde Project Area (**Figure 2**). Transect locations were designed to sample all habitat types present within the Project Area with a focus on areas most likely to contain a high abundance and/or diversity of birds, while maintaining adequate spatial coverage of the entire Solar Facility Site and proposed Gen-tie Line corridors. Each transect was 1,250-meters in length with point-count locations spaced every 250-meters along transects. A total of 24 point-count stations were sampled during each survey event; with a total of four survey events during the winter survey season (December to January) and four survey events during the spring survey season (March to April).

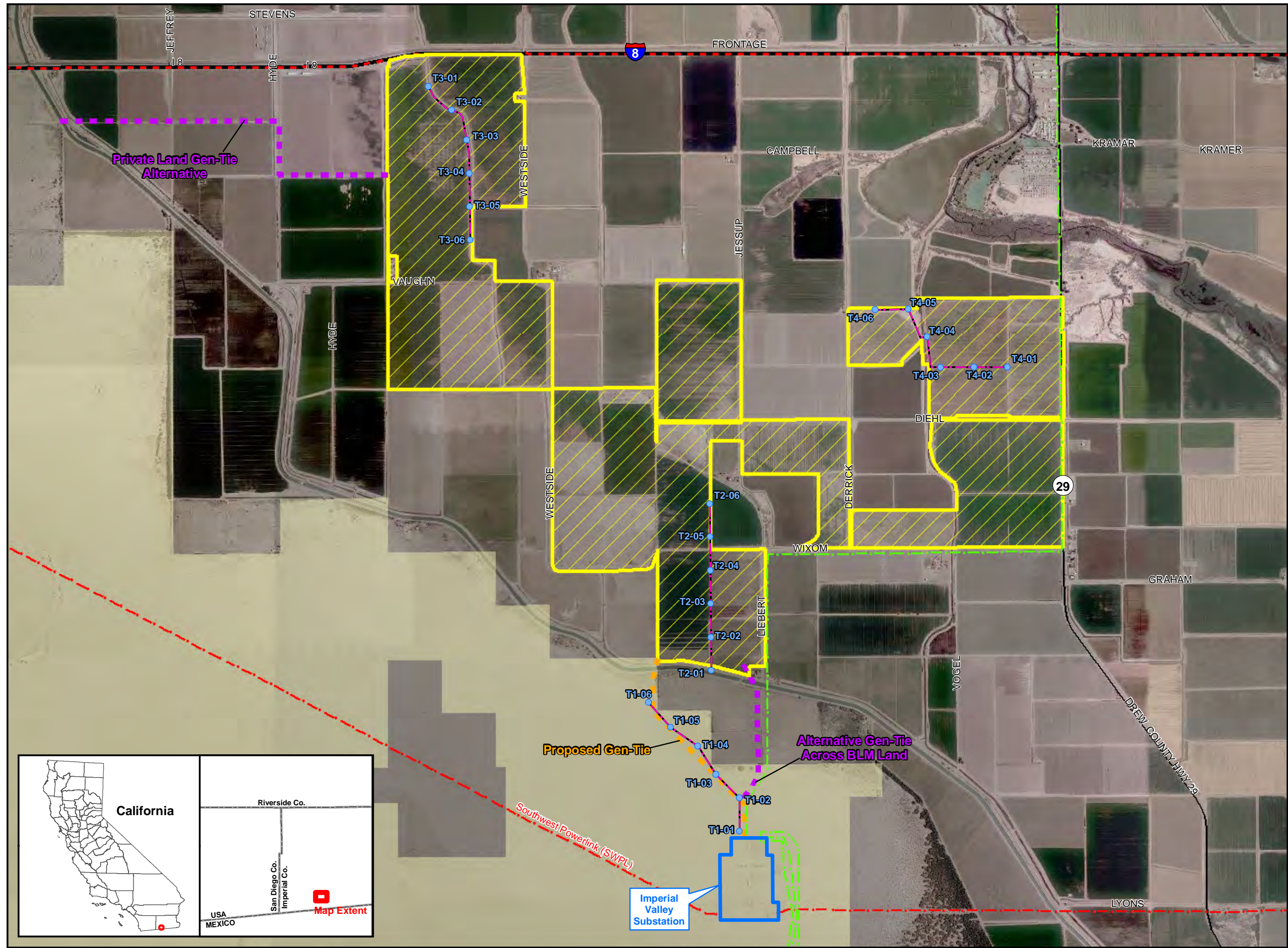
At each point count station, biologists recorded all birds seen or heard within a 100-meter radius over a 10-minute sampling period. Pairs or groups of birds were recorded as single detections to avoid issues resulting from statistical dependence. Both detections and individuals are reported here. Birds seen or heard outside of the 100-meter radius were recorded as incidental observations and contributed to the overall Campo Verde Solar Project species list, but were excluded from quantitative analyses. Birds that were seen or heard along transects, but between point-count stations, were also recorded as incidental observations. Point counts were generally performed within three and one-half hours of sunrise. Surveys were not performed during inclement weather conditions (more than light or intermittent rain, winds greater than 15 miles-per-hour).

Results

Winter Surveys

Winter survey events occurred during four weeks in December and January (surveys were performed on December 6 and 20, 2011 and January 5 and 24, 2012). A total of 24 points were sampled during each survey event. Weather was generally conducive to avian surveys; temperatures ranged between 33-67° F and winds ranged between 0-5 miles per hours (mph). Surveys began at sunrise each day (~0625-0645) and were completed approximately 3.5 hours later (~1000-1015).

A total of 628 detections (6.54 detections per point) and 1,990 individuals (20.73 individuals per point) were recorded during the surveys, comprised of 47 species (**Appendix A**). On average 3.31 species were recorded per point. All metrics remained relatively consistent week to week. **Table 1** presents summary statistics broken down by each survey week.



- Legend**
- Avian Point-Count Station
 - Avian Survey Transect
 - Existing 500 kV Transmission Line
 - Existing 230 kV Transmission Line
 - Proposed Gen-Tie
 - Gen-Tie Alternative
 - Interstate
 - Major Road
 - County Boundary
 - ▨ Campo Verde Solar Site
- Jurisdictional Land Ownership**
- Bureau of Land Management Land

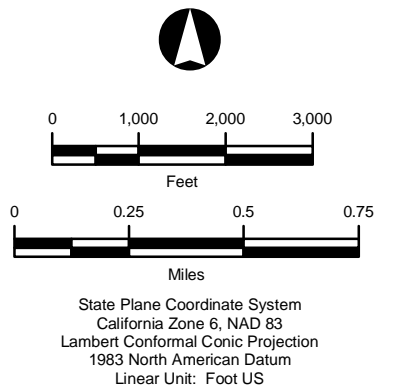


Table 1 – Summary of Winter Survey Results

Survey Date	Detections	Detections per Point	Individuals	Individuals per Point	Species	Species per Point
December 6, 2011	174	7.25	570	23.75	24	3.46
December 20, 2011	142	5.92	551	22.96	25	3.04
January 5, 2012	137	5.71	410	17.08	20	3.25
January 24, 2011	175	7.29	459	19.13	25	3.50
WINTER TOTAL	628	6.54	1,990	20.73	47	3.31

Western Meadowlark (*Sturnella neglecta*) was the most frequently detected species (165 total detection; 1.72 detections per point). Other frequently detected species include Savannah Sparrow (*Passerculus sandwichensis*; 160 detections, 1.67 detections per point), Horned Lark (*Eremophila alpestris*; 61 detections, 0.64 detections per point), Killdeer (*Charadrius vociferus*; 30 detections, 0.31 detections per point), and Yellow-rumped Warbler (*Setophaga coronata*; 27 detections, 0.28 detections per point). The most widespread species included Western Meadowlark (54 points, 56.25%), Savannah Sparrow (52 points, 54.17%), and Horned Lark (34 points, 35.42%). Savannah Sparrows were by far the most numerous species during the winter survey (524 observed; 26.3% of all individuals observed). Other numerous species included Horned Lark (347 observed, 17.4% of all individuals observed), Red-winged Blackbird (*Agelaius phoeniceus*; 235 observed, 11.8% of all individuals observed) and Western Meadowlark (227 observed, 11.4% of all individuals observed).

The most common species (as described above) are common agricultural associates. Native habitats (primarily Creosote Bush Scrub and Stabilized Desert Dunes) exhibited relatively low avian abundance and diversity when compared to the overall project metrics: 79 detections (3.29 detections per point), 110 individuals (4.58 individuals per point), and 32 total species observed (2.17 species per point). In native habitats, Blue-gray Gnatcatchers (*Polioptila caerulea*) were the most frequently detected species (22 detections, 0.92 detections per point), the most widespread species (12 points, 50.0%), and the most numerous species (24 individuals, 21.8% of all individuals observed).

Two special status species were observed during the surveys (not including California Species of Concern). Burrowing Owl (*Athene cunicularia*), which was previously known to occur and breed in the Project Area, is a State-Endangered species. This species was recorded as an incidental observation during the winter surveys (this species was not recorded at any point-count stations). Observations of this species during winter surveys further confirm the species' year-round status in and around the Project Area.

Loggerhead Shrikes (*Lanius ludovicianus*), a BLM Sensitive Species, were observed at four (4) points during the winter surveys (5 detections, 5 individuals). Four (4) of these observations occurred in agricultural habitat on private lands, one (1) of these detections occurred in native habitat on BLM lands.

Spring Survey

Spring survey events occurred on four weeks in March and April (Surveys were performed on March 8, 14 and 21 and April 5, 2012). A total of 24 points were sampled during each survey event. Weather was generally conducive to avian surveys; Temperatures ranged between 35-73° F and winds ranged between 0-15 miles per hours (mph), though were generally less than 5 mph. Surveys began at sunrise each day (~0600-0700) and were completed approximately 3-3.5 hours later (~0930-1100).

A total of 868 detections (9.04 detections per point) and 2,739 individuals (28.53 individuals per point) were recorded during the spring surveys, comprised of 53 species (**Appendix A**). On average 4.82 species were recorded per point. **Table 2** presents summary statistics broken down by each survey week.

Table 2 – Summary of Spring Survey Results

Survey Date	Detections	Detections per Point	Individuals	Individuals per Point	Species	Species per Point
March 8, 2012	195	8.13	685	28.54	35	4.71
March 14, 2012	214	8.92	851	35.46	28	4.63
March 21, 2012	220	9.17	555	23.13	33	4.88
April 5, 2012	239	9.96	648	27.00	28	5.08
Spring TOTAL	868	9.04	2,739	28.53	53	4.82

Red-winged Blackbird was the most frequently detected species (197 total detection; 2.05 detections per point). Other frequently detected species include Western Meadowlark (*Sturella neglecta*; 170 detections, 1.77 detections per point), Savannah Sparrow (65 detections, 0.68 detections per point), Unidentified Swallow (Hirundininae sp.; 52 detections; 0.54 detections per point), and Long-billed Curlew (*Numenius americanus*; 47 detections, 0.49 detections per point). Western Meadowlark was the most widespread having been observed at 63 points (65.63%). Other widespread species include Red-winged Blackbird (56 points, 58.33%), Unidentified Swallow (31 points, 32.29%), Northern Rough-winged Swallow (*Stelgidopteryx serripennis*; 29 points, 30.21%), Savannah Sparrow (27 points, 28.13%), and Horned Lark (27 points, 28.13%). Red-winged Blackbirds were by far the most numerous species during the spring survey (969 observed; 34.69% of all individuals observed). Other numerous species included Long-billed Curlew (386 observed, 13.82% of all individuals observed) and Western Meadowlark (208 observed, 7.45% of all individuals observed).

As was observed in the winter surveys, the most common species were common agricultural associates. Native habitats (primarily Creosote Bush Scrub and Stabilized Desert Dunes), which were sampled at least in proportion to availability, exhibited relatively low avian abundance and diversity when compared to the overall project metrics: 85 detections (3.54 detections per point), 241 individuals (10.04 individuals per point), and 23 total species observed (2.88 species per point). In native habitats, Unidentified Swallows were the most frequently detected species (13 detections, 0.54 detections per point) and the most widespread species (10 points, 41.67%). Red-winged Blackbirds were the most numerous species (143 individuals, 59.34% of all individuals observed).

One (1) special status species was observed during the spring surveys (not including California Species of Concern). Burrowing Owl (*Athene cunicularia*), which was previously known to occur and breed in the Project Area, is a State-Endangered species. This species was recorded at seven (7) points (7 detections, 10 individuals).

Conclusions

Species observed generally conformed to avian communities that have been observed in and around the Campo Verde Project Area during other field efforts and were primarily representative of avian communities typically associated with agricultural habitats. Special status species that were recorded were all species expected or previously known to occur in and around the Campo Verde Project Area before the avian surveys.

Avian abundance and diversity was generally low in the Campo Verde Project Area during the winter surveys, particularly in native habitats, which would be crossed by the proposed Gen-tie line. As expected, avian abundance and diversity were higher during spring surveys. There were 9.04 detections per point during spring compared to 6.54 detections per point during winter. There were 53 species (4.82 species per point) in spring compared to 47 species (3.31 species per point) in winter.

A total of 88 species have been observed in the Campo Verde Project Area including species incidentally observed during the avian surveys as well as other survey efforts (**Appendix A**).

Appendix A – Campo Verde Avian Species List

Common Name	Scientific Name	Recorded During Winter Avian Surveys	Recorded During Spring Avian Surveys	Status ¹
American Avocet	<i>Recurvirostra Americana</i>			
Abert's Towhee	<i>Pipilo aberti</i>	X	X	
American Coot	<i>Fulica americana</i>			
American Kestrel	<i>Falco sparverius</i>	X	X	
American Pipit	<i>Anthus rubescens</i>			
Anna's Hummingbird	<i>Calypte anna</i>			
Bank Swallow	<i>Riparia riparia</i>			
Barn Swallow	<i>Hirundo rustica</i>		X	
Belted Kingfisher	<i>Megaceryle alcyon</i>			
Black Phoebe	<i>Sayornis nigricans</i>	X	X	
Black-necked Stilt	<i>Himantopus mexicanus</i>			
Black-tailed Gnatcatcher	<i>Polioptila melanura</i>			
Blue Grosbeak	<i>Passerina caerulea</i>			
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	X	X	
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>		X	
Brown-headed Cowbird	<i>Molothrus ater</i>			
Burrowing Owl	<i>Athene cunicularia</i>		X	SE, SS
California Gull	<i>Larus californicus</i>		X	
Canada Goose	<i>Branta canadensis</i>	X		
Cattle Egret	<i>Bubulcus ibis</i>	X	X	
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>		X	
Common Grackle	<i>Quiscalus quiscula</i>		X	
Common Ground Dove	<i>Columbia passerina</i>		X	
Common Moorhen	<i>Gallinula chloropus</i>			
Common Raven	<i>Corvus corax</i>	X	X	
Common Yellowthroat	<i>Geothlypis trichas</i>		X	
Cooper's Hawk	<i>Accipiter cooperii</i>		X	
Crissal Thrasher	<i>Toxostoma crissale</i>		X	
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	X		
European Starling	<i>Sturnus vulgaris</i>	X	X	
Ferruginous Hawk	<i>Buteo regalis</i>			
Gambel's Quail	<i>Callipepla gambelii</i>		X	
Great Blue Heron	<i>Ardea herodias</i>	X		
Great Egret	<i>Ardea alba</i>	X	X	
Great-tailed Grackle	<i>Quiscalus mexicanus</i>			

Common Name	Scientific Name	Recorded During Winter Avian Surveys	Recorded During Spring Avian Surveys	Status ¹
Greater Roadrunner	<i>Geococcyx californianus</i>			
Greater Yellowlegs	<i>Tringa melanoleuca</i>	X	X	
Green Heron	<i>Butorides virescens</i>			
Horned Lark	<i>Eremophila alpestris</i>	X	X	
House Finch	<i>Carpodacus mexicanus</i>	X	X	
House Sparrow	<i>Passer domesticus</i>	X		
House Wren	<i>Troglodytes aedon</i>	X		
Killdeer	<i>Charadrius vociferus</i>	X	X	
Lark Sparrow	<i>Chondestes grammacus</i>	X	X	
Least Sandpiper	<i>Calidris minutilla</i>	X		
Loggerhead Shrike	<i>Lanius ludovicianus</i>	X	X	SS, SC
Long-billed Curlew	<i>Numenius americanus</i>	X	X	
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>		X	
Mallard	<i>Anas platyrhynchos</i>	X	X	
Mountain Plover	<i>Charadrius montanus</i>	X		
Mourning Dove	<i>Zenaida macroura</i>	X	X	
Northern Flicker	<i>Colaptes auratus</i>			
Northern Harrier	<i>Circus cyaneus</i>	X		
Northern Mockingbird	<i>Mimus polyglottos</i>			
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>		X	
Northern Shoveler	<i>Anas clypeata</i>	X		
Orange-crowned Warbler	<i>Oreothlypis celata</i>	X		
Prairie Falcon	<i>Falco mexicanus</i>	X		SC
Red-tailed Hawk	<i>Buteo jamaicensis</i>	X	X	
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	X	X	
Ring-billed Gull	<i>Larus delawarensis</i>		X	
Rock Dove	<i>Columbia livia</i>		X	
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>	X	X	
Rough-legged Hawk	<i>Buteo lagopus</i>			
Savannah Sparrow	<i>Passerculus sandwichensis</i>	X	X	
Say's Phoebe	<i>Sayornis saya</i>	X	X	
Snowy Egret	<i>Egretta thula</i>	X	X	
Snowy Plover	<i>Charadrius nivosus</i>	X		
Song Sparrow	<i>Melospiza melodia</i>		X	
Tree Swallow	<i>Tachycineta bicolor</i>		X	
Turkey Vulture	<i>Cathartes aura</i>	X	X	
Unidentified Bird	<i>Aves</i> sp.	X	X	
Unidentified Calidris Sandpiper	<i>Calidris</i> sp.	X		

Common Name	Scientific Name	Recorded During Winter Avian Surveys	Recorded During Spring Avian Surveys	Status ¹
Unidentified Duck	<i>Anatinae</i> sp.		X	
Unidentified Hawk	<i>Accipitridae</i> sp.	X		
Unidentified Sparrow	<i>Eberizidae</i> sp.	X	X	
Unidentified Swallow	<i>Hirundinidae</i> sp.	X	X	
Vesper Sparrow	<i>Pooecetes gramineus</i>	X	X	
Verdin	<i>Aurparus flaviceps</i>	X	X	
Violet-green Swallow	<i>Tachycineta thalassina</i>	X	X	
Western Kingbird	<i>Tyrannus verticalis</i>		X	
Western Meadowlark	<i>Sturnella neglecta</i>	X	X	
Western Tanager	<i>Piranga ludovciana</i>			
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>		X	
White-faced Ibis	<i>Plegadis chihi</i>		X	
White-tailed Kite	<i>Elanus leucurus</i>		X	
White-throated Swift	<i>Aeronautes saxatalis</i>	X		
White-winged Dove	<i>Zenaida asiatica</i>			
Yellow-rumped Warbler (Audubon's)	<i>Dendroica coronata auduboni</i>	X	X	

Footnotes

¹BGEPA = Protected under the Bald and Golden Eagle Protection Act; SC = CDFG Species of Concern, SE = State-endangered; SS = BLM Sensitive Species; FE = Federally-endangered; All species, except Rock Dove and European Starling, are protected under the Migratory Bird Treaty Act.