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Subject: **PALEN SOLAR HOLDINGS, LLC'S SUPPLEMENTAL RESPONSE TO DATA REQUESTS 40D & 44**
PALEN SOLAR ELECTRIC GENERATING SYSTEM
DOCKET NO. (09-AFC-7C)

Enclosed for filing with the California Energy Commission is the electronic version of **PALEN SOLAR HOLDINGS, LLC'S SUPPLEMENTAL RESPONSE TO DATA REQUESTS 40D & 44**, for Palen Solar Electric Generating System (09-AFC-7C).

Sincerely,

Marie Fleming

PALEN SOLAR ELECTRIC GENERATING FACILITY
SPRING 2013 AVIAN SURVEY RESULTS SUPPLEMENT

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ABOUT BLOOM BIOLOGICAL, INC.

For over 35 years, Bloom Biological, Inc. (BBI) has provided biological consulting services to large and small clients. Our resume of services includes raptor and endangered species research, biological monitoring, impact assessment and permitting, conservation planning and geospatial analysis. Our innovative approach to our work has provided solutions to complex problems for clients and projects throughout a range of industries including alternative energy, residential development and the public sector. Collectively, the management and staff of BBI hold permits or memoranda of understanding for participating in the conservation and recovery of more than a dozen endangered or threatened species, as well as numerous other special-status species, in California and the western United States. Over the years, BBI has established an impeccable relationship with the resource agencies, project proponents, and environmental organizations by skillfully balancing the needs and objectives of land planning, resource conservation, and the public interest. In addition to our work in southern California, BBI biologists have worked throughout the western United States, and in Alaska, Peru, Ecuador, Belize, Costa Rica, India, Southeast Asia, and the western Pacific. BBI is a certified SBE.

TABLE OF CONTENTS

Tables

Exhibits

1.0 INTRODUCTION

Bloom Biological Inc. (BBI) was retained by Palen Solar Holdings to conduct Spring 2013 pre-construction avian field surveys for the Palen Solar Project located in the Chuckwalla Valley, Riverside County, California, for purposes of providing data to inform the development of a Bird and Bat Conservation Plan (BBCS). The surveys conducted were based on recommendations for Tier 3 field studies described in the U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines, in addition to guidance provided by the Renewable Energy Action Team (REAT) agencies specifically for the Palen Solar Project.

On July 22, 2013, BBI provided Palen Solar Holdings with a report of results from Spring 2013 Avian Survey Results (BBI, Inc. 2013). This is an addendum to that report which provides additional results and analyses, as requested by a REAT team data request. The aim of this document is to interpret the results of BBI's Spring 2013 avian surveys in a broader geographic and temporal context by comparing them with results from spring season surveys at nearby locations and with information about the avian community at a broader, regional level, from resources available on the Internet (e.g.,the eBIRD website).

2.0 METHODS

A complete description of the methodology implemented during BBI's Spring 2013 avian surveys at the Palen site and the survey site itself can be found in the Palen Spring 2013 Avian Survey Report, and will not be revisited here, save to compare differences in methodologies between our surveys and those presented from other studies.

2.1 Compilation of Regional Avian Survey Data

Survey reports from nearby study locations (primarily pre-construction surveys at other proposed energy sites) within the southern California deserts were reviewed to identify survey data that could be directly compared with or augment the results of BBI's Spring 2013 avian surveys at the Project site. BBI conducted 10-minute point count surveys (Small Bird Count, or SBC surveys), 8-hour fixed-point surveys (Bird Use Count, or BUC surveys), and mist-net surveys from April 8 to May 5, 2013 at the Project site. The main objective while reviewing reports was to identify as many studies as possible that provided results conducted within the region during a similar time-frame (i.e., spring migratory season), to provide a more comprehensive dataset of birds that may be present in the project vicinity and fly through the Project site.

Survey effort varied greatly among studies and this can influence the numbers of individuals and species observed. The most frequently conducted survey types in other reports included point count surveys (generally 10-minutes in duration) and fixed-point observation surveys (generally 8 hours in duration); these were the two types of survey data that we focused on. Data interpretation among surveys of varying methodologies can be challenging. To provide comparable measures of detection frequencies, we quantified and controlled for differences in survey effort among studies by reporting results as standardized measures of use or detection, such as the number of birds observed per survey, or per unit of surveying time. To this end, BBI recorded the following variables in relation to each set of survey data considered for use: (1) Survey type (point count, fixed-point, or incidental observations), (2) survey dates, (3) survey period length (length in time of one survey session), (4) number of stations, (5) survey radius (distance over which detections were recorded), (6) number of survey stations, and (7) number of times each station was surveyed.

2.2 eBIRD Website Data Synthesis

The eBIRD program (Sullivan et al., 2009) is a web-based citizen science program through which anyone can submit observations of birds. Records are peer-reviewed to ensure data quality. To identify bird species that could potentially be found on or near the Project site, BBI queried the eBIRD website (eBIRD 2013) to generate species frequency data for two major bird concentration areas within 60 miles of the Project site. These areas are the Salton

Sea Important Bird Area (SSIBA; 60 miles WSW) and the Lower Colorado River Globally Important Bird Area (LCRIBA, 40 miles ESE, see Exhibit 1). These areas are major concentration points for birds in the southern California deserts, primarily because of the water bodies and associated vegetation present. Although many of the species that occur at these locations may not be expected to occur at the project site, their mere proximity indicates that their presence at the Project site is a possibility. Further, the Chuckwalla Valley lies along a relatively (to surrounding areas) low-elevation corridor though which birds may travel between these two areas.

eBIRD data were used for the following two main purposes: (1) to generate a list of species with the potential to occur at or near the Project site during the spring season and (2) to present data that illustrate changes in relative abundance of these species among months within and surrounding the spring migratory season, including the months of February through June. To achieve these objectives, data for these months, and across all years of eBIRD data available (1900-2013) for the two IBAs of interest were queried on the eBIRD website. From these data, a complete list of species detected at either site during the time period of interest was compiled. In addition, frequency data were calculated for each species, during each month at the two IBA sites. Frequency data represent the proportion of checklists for which a given species was reported, out of all checklists reported to eBIRD during the month in question (all years combined). This metric does not incorporate abundance (numbers of individuals), but does indicate, for example, when a species becomes less frequently versus more frequently encountered during birdwatching excursions. This information is particularly relevant in assessing whether certain migratory species may have peaked in abundance prior to, during, or after, the time period during which BBI conducted spring 2013 surveys at the Project site, and provides a baseline for interpreting the standardized abundance values (e.g., individuals observed per hour, or per survey) resulting from spring surveys on the Project site.

3.0 RESULTS AND DISCUSSION

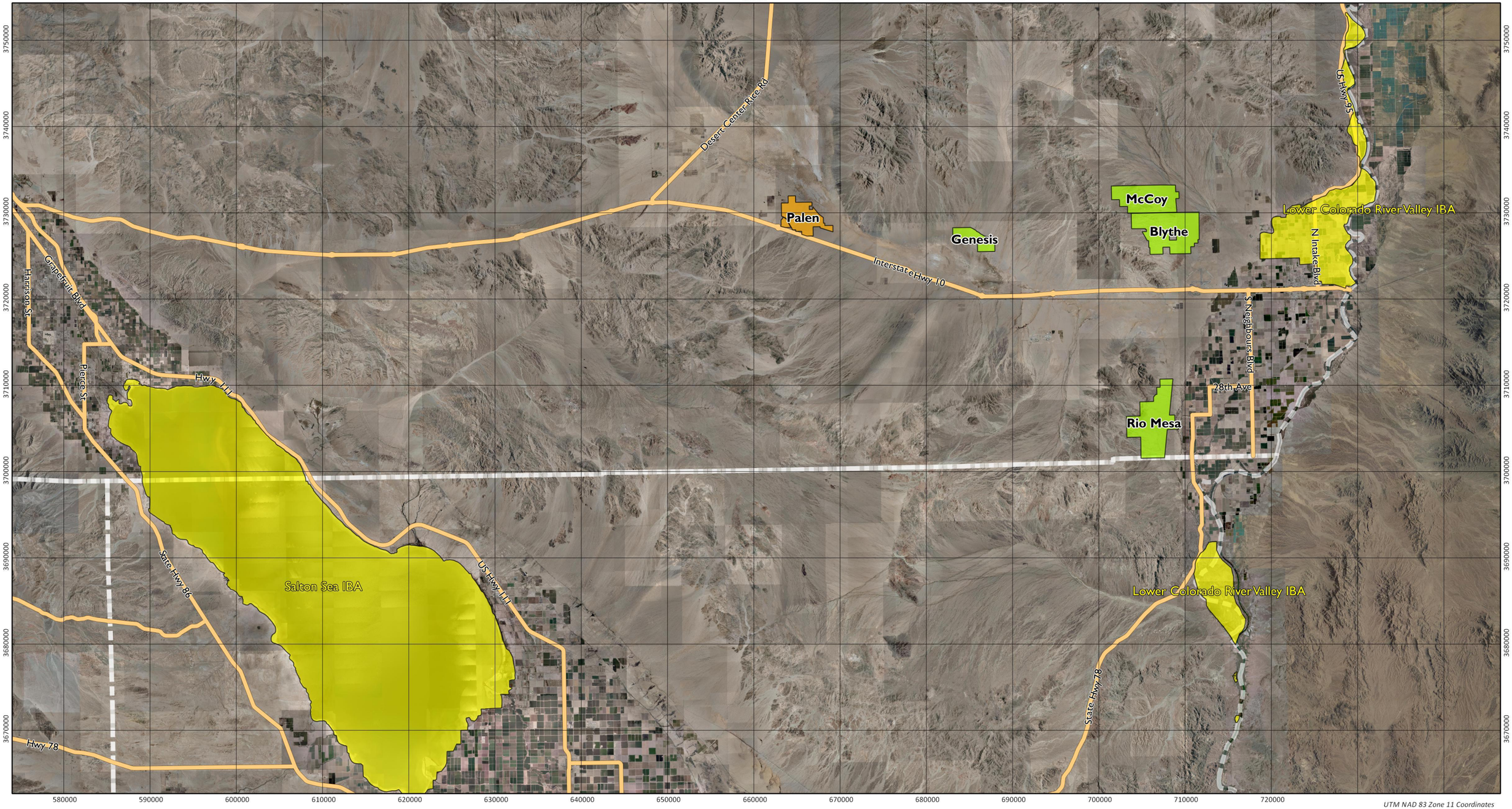
3.1 Summary of Regional Avian Survey Data

Survey data suitable for comparison with BBI's spring 2013 avian surveys at the Project site were found in 6 reports, encompassing 6 spring seasons at 5 distinct locations, including the Genesis Solar Energy Project (Tetra Tech EC and Karl 2009), Blythe Solar Power Project (AECOM 2010), McCoy Solar Energy Project (Tetra Tech EC, Inc. and Karl 2011), Palen Solar Power Project (EDAW AECOM 2009), and Rio Mesa Solar Electric Generating Facility (URS 2012a and URS 2012b). Data from the First Solar Desert Sunlight Solar Farm Project (Ironwood Consulting, Inc. 2009) were also reviewed but spanned multiple seasons and were not segregated by season. Data from the First Solar report were not included because they may indicate certain species are present in the spring which typically only occur at other times of year. These study area locations, as well as the two Important Bird Areas for which eBIRD data were summarized are displayed on a regional map in Exhibit 1. Summaries of the survey type(s) utilized in each study (including BBI's spring 2013 surveys at the Project site), and aspects of survey methodology and effort that are relevant to the analyses are provided below. The summaries provide BBI's best interpretation of the method`s based on the information provided in the reports, and all estimates of survey effort are accompanied with information on how the values were calculated.

3.1.1 Palen Solar Electric Generating Facility (PSEGS)

PSEGS data represent BBI's spring 2013 avian survey effort at the Project site, the complete methods of which are detailed in the Palen Spring 2013 Avian Survey Report (BBI Inc., 2013) and summarized below.

Weekly 10-minute point count surveys (SBC surveys) were conducted at 120 point count stations between April 8 and May 4, 2013, during which all bird species present at any distance from the survey station were recorded. Each station was surveyed 4 times (except one, which was surveyed only three times) for a total of 479 10-minute point count surveys ([119 station x 4 surveys] + [1 station x 3 surveys] = 479). The estimated distance to each detection was also recorded, allowing for results to be calculated separately for detections within 330 feet (100 meters) or at all distances. This aides in the comparison of survey results between ours and other studies presented herein.



Important Bird Areas

Proposal Solar Projects

Palen

Other Projects

UTM NAD 83 Zone 11 Coordinates
Author: Marcus C. England
Map Date: 29 July 2013
Aerial Photography: US Department of Agriculture

0 3 6 9 mi

1:425000

Exhibit 1: Southern California Deserts Avian Data Extraction Site Map

Palen Solar Energy Project | Riverside County, California

BBI

Fixed-point surveys were conducted four times per week, for 8 hours per day, at each of 6 stations, between April 8 and May 4, 2013. With few exceptions, in which some surveys were shortened due to weather, each station was surveyed 16 times 4 times per week for four weeks), for 8 hours per survey, for a total of 762 survey hours. Data were recorded differently for focal species (all raptors and other birds larger than an American Crow (*Corvus brachyrhynchos*) versus non-focal species (all non-raptors smaller than an American Crow). Focal species were recorded at all distances, whereas non-focal species were recorded only if they passed within 0.5 miles (800 meters) of the observer. For the purposes of comparison with results from other studies, we assumed that detection rates for smaller, non-focal species diminished almost completely beyond the 0.5-mile (800-meter) survey radius and that our results for all species are comparable with those obtained during unlimited-radius counts in other studies.

During SBC surveys, biologists recorded the estimated height (in meters) of all birds recorded at the time of detection. The same was also done during BUC surveys for all focal species detections (all raptors and other birds larger in size than an American Crow. From these data, we calculated the mean, minimum and maximum flight heights (including only individuals that were flying) for each species detected on the PGEGS Project site during spring 2013 surveys.

3.1.2 Genesis Solar Energy Project (Genesis)

Weekly 10-minute point count surveys were conducted at 56 point count stations between March 21 and April 13, 2009, during which all bird species present within 330 feet (100 meters) of the survey station were recorded. Survey dates included March 21 – 24, 27, 29, 30, and April 4 – 7 and 11 – 13, 2009. Each station was surveyed four times during this period for a total of 224 10-minute point count surveys (56 stations x 4 surveys per station = 224). The results represent the number of individuals observed within 330 feet (100 meters) of the point count station for each species.

3.1.3 Blythe Solar Power Project (Blythe)

Structured bird survey data were not available and thus, survey effort was not quantified. Information gleaned from this study consists only of a list of bird species observed incidentally on-site during pre-construction biological surveys, and the exact dates over which these observations occurred was unclear, except that they occurred during the spring season of 2010. BBI combined species listed in two separate tables to generate a presence/absence list for bird species at the site. The two tables used were entitled: (1) Attachment 6: Wildlife Species Detected During Focused Desert Tortoise Surveys Spring 2010, and (2) Attachment F: Wildlife Species Detected within the Combined Survey Area.

3.1.4 McCoy Solar Energy Project (McCoy)

Weekly 10-minute point count surveys were conducted at 48 point count stations between April 12 and May 1, 2011. Each station was surveyed four times during this period for a total of 192 10-minute point count surveys (48 stations x 4 surveys per station = 192). The survey area was different for different species. Raptors and Common Ravens (*Corvus corax*) were recorded at all distances, while other bird species were recorded out to 660 feet (200 meters). For the purposes of comparing these survey data with spring 2013 survey data at the PGEGS Project site, we opted to treat these data as unlimited-radius point count data for all species, because detection rates for most smaller bird species decline dramatically beyond 200 meters. While this may result in estimates of abundance that are slightly lower than what would have been obtained in unlimited-radius counts, comparing these results with surveys based on a 100-meter radius survey area would almost certainly provide a more strongly biased comparison because a moderate number of smaller bird species can be detected in the 100-200 meter range by skilled observers.

Fixed-point raptor surveys lasting 30 minutes in duration were also conducted, but the methodology was not described adequately and the detection rates were very low. Normally raptor surveys are of longer duration, and it has been suggested that raptor survey periods of shorter duration do not provide results that are comparable with

surveys of longer duration. These results have been omitted from our quantitative analysis for these reasons, though species detected during these surveys are included in the list of species noted as present at the site.

3.1.5 Palen Solar Power Project (Palen SPP)

These are pre-construction avian surveys that were conducted on the Project site in 2009 for a formerly proposed energy project in the same location. Weekly 10-minute point count surveys were conducted at 48 point count stations between April 12 and May 8, 2009, during which all bird species present within 330 feet (100 meters) of the survey station were recorded. Each station was surveyed four times during this period for a total of 192 10-minute point count surveys (48 stations x 4 surveys per station = 192). The results represent the number of individuals observed within 330 feet (100 meters) of the point count station for each species.

3.1.6 Rio Mesa Solar Electric Generating Facility (Rio Mesa 2011)

Weekly 10-minute point count surveys were conducted at 128 point count stations between April 5 and May 5, 2011, during which all bird species present within 330 feet (100 meters) of the survey station were recorded. Each station was surveyed four times during this period for a total of 512 10-minute point count surveys (128 stations x 4 surveys per station = 512). The results represent the number of individuals observed within 330 feet (100 meters) of the point count station for each species.

3.1.7 Rio Mesa Solar Electric Generating Facility (Rio Mesa 2012)

Weekly 10-minute point count surveys were conducted at 128 point count stations between April 24 and May 26, 2012, during which all bird species present at any distance from the survey station were recorded. Each station was surveyed six times during this period for a total of 720 10-minute point count surveys (128 stations x 6 surveys per station = 720). The results represent the number of individuals observed at any distance from the point count station for each species.

Fixed-point surveys were conducted at two types of stations over different time periods during spring, 2012. Surveys of 8-hours in duration were conducted three days per week from February 21 to May 31, 2012 at four non-raptor stations, for a total of 1,376 hours of observation (4 stations x 43 surveys x 8 hours per survey = 1,376). Surveys of 8-hours in duration were also conducted four days per week between March 6 and April 30, 2012 at three raptor stations, for a total of 744 hours of observation (3 stations x 31 surveys x 8 hours per survey = 744). The difference between raptor and non-raptor stations was primarily related to the timing within the season during which surveys were conducted and the placement across the site and surrounding areas, with raptor stations being placed in areas where raptor movements were anticipated to be higher. Nonetheless the methodologies followed during surveys at each station were similar, with biologists recording all birds detected at all distances. For the purposes of comparison with BBI's survey data, we grouped raptor and non-raptor survey results from this study to provide a single estimate of abundance for each species based on the total number of individuals observed during surveys at both types of stations. These results encompass a substantial period of the early spring (i.e., February 21 through April 8) during which BBI did not conduct surveys at the PGEGS Project site and this may be a cause for some differences in abundance values between the sites for a given species.

For each observation made during point count surveys and fixed-point (raptor and non-raptor) surveys, flight height was estimated (in meters) and recorded. These data were summarized for comparison with flight height data on the PGEGS Project site from BBI's spring, 2013 surveys.

3.2 Regional and Seasonal Variation in Avian Diversity and Abundance

Comprehensive lists of all species detected during surveys and incidentally from each study site were prepared. In addition, complete lists of bird species detected at the Salton Sea and Lower Colorado River IBAs during the months of February through June were compiled from the eBIRD website. These lists were combined to generate a master

list of 336 species, each of which was present at one or more of the locations included. These species are listed in Table 1, with an indication of which site(s) they were present at. In total, 103 of these 336 species were detected on the PGEGS Project site during spring 2013 surveys. This number was higher than the number of bird species observed during 5 of the 6 studies reviewed from other energy sites in the region, with only the Rio Mesa 2012 surveys logging a greater number of species (119 total). However, due to differences in survey effort and timing, it is difficult to determine if these discrepancies reflect differences in actual site-specific avian diversity. In sharp contrast to species totals from the studies at energy sites, 302 bird species were detected at the Salton Sea IBA and 239 bird species were detected at the Lower Colorado River IBA during the months of February through June. However, the eBIRD IBA data encompass a much longer period of time (years 1900-2013) and a longer period of the spring (February through June, compared to the survey data from the studies reviewed. When eBIRD IBA observations only during the month of April are included, the numbers of species detected at the SSIBA and LCRIBA drop to 228 and 198, respectively.

A large proportion of bird species detected at one or both of the IBAs was not detected during avian surveys at any of the energy project sites summarized. This may largely be due to the fact that the IBAs encompass areas with optimal habitat for a diverse group of birds, which is precisely the reason why they have been designated as Important Bird Areas. The vast majority of birds that occurred only at the IBAs were shorebirds and waterfowl. Because both the Salton Sea and Lower Colorado River IBAs provide large water bodies, this is an intuitive outcome. In addition, a significant number of species detected only at the IBAs are rare, or only present in the region as vagrants. Such species may occur more broadly but evade detection. Alternatively, they may simply be drawn to the areas of best habitat, which also tend to be the areas that are most heavily visited by birdwatchers seeking that rare find.

Species-specific frequency data for the SSIBA and LCRIBA were extracted from the eBIRD website for the months of February through June, during the years 1900-2013. The vast majority of these data are from checklists submitted within the last 10 years. Data from multiple months were included to illustrate changes in species presence over time, and in particular, relative to the time at which spring surveys were conducted on the PGEGS Project site. Monthly frequency data (proportion of eBIRD checklists reporting the species) for all bird species detected at the SSIBA or LCRIBA between February and June (1900-2013) are presented in Table 2, alongside spring 2013 avian survey data from the PGEGS Project site. It is important to note that the eBIRD frequency values represent the probability of encountering a species, and are not directly comparable with the spring 2013 survey values, which represent measures of abundance (i.e., number of individuals detected per unit time). Nonetheless, the eBIRD data illustrate changes in the relative abundances of these species throughout the spring migratory season and provide an indication of whether BBI's spring 2013 surveys occurred before, during, or after the period of peak frequencies for a given species. During the February to June timeframe, birds that overwinter in the southern California deserts, but breed elsewhere, gradually become less frequently detected, while those that overwinter further south and breed in the area become more abundant. Likewise, species that merely migrate through these areas usually show a distinct increase in numbers during the month(s) when the bulk of their migratory activity in the area occurs.

The data in Table 2 indicate that migration for some species in the region likely occurred prior to the onset of spring 2013 surveys at the PGEGS Project site in early April. For example, the Snow Goose (*Chen caerulescens*) and Ross's Goose (*Chen rossii*), which over-winter at the Salton Sea, disappear almost entirely from this location between February (present in 38.4 and 24.4% of checklists) and April (present in only 8% and 2.9% of checkslists). A similar pattern was observed for these species in the Lower Colorado River IBA. Other species of waterfowl, such as the Cinnamon Teal (*Anas cyanoptera*) and Blue-winged Teal (*Anas discors*) which migrate through the region, generally reach peak detection frequencies at the Salton Sea during the month of April. Virtually all raptors that over-winter in the region and begin to migrate out of the area in the spring to breeding grounds elsewhere are detected less frequently in April compared to February, indicating that the onset of migration for these species occurs sometime between February and April. Though some over-wintering raptors may depart before February, it is expected that numbers during this month are fairly representative of the numbers that overwinter in the area. For example, Northern Harriers (*Circus* cyaneus) were reported in 47.9% of SSIBA checklists in the month of February, compared to 27.0% of checklists during April over the time period examined. A similar pattern is observed for this species at the LCRIBA as well, but it should be noted that the numbers at both locations continue to decline into May and June,

indicating that migration continues into this period, despite some individuals apparently departing early than this during a typical year. The Northern Harrier was only rarely observed on the PGEGS Project site during Spring 2013 surveys, but the trends suggest their migratory movements in the region may occur through March, April and May. A number of migrant songbirds, including the Western Kingbird (*Tyrannus verticalis*), Warbling Vireo (*Vireo gilvus*), Nashville Warbler (*Vermivora ruficapilla*), Wilson's Warbler (*Wilsonia pusilla*), Yellow Warbler (*Dendroica petechia*), Black-throated Gray Warbler (*Dendroica nigrescens*), and Western Tanager (*Piranga ludoviciana*) begin to appear in checklists as early as March, but show the largest increase in detection rate from March to April, and again from April to May, indicating that spring surveys beginning in April and lasting into May likely captured the initial major migratory pulses for these species, while summer surveys at the PGEGS Project site during May and June will have captured the remainder.

Table 1. Species Presence/Absence Matrix at Southern California Desert Locations

The following table lists all bird species detected at the Salton Sea Important Bird Area (SS) or the Lower Colorado River Important Bird area (LCR) at any point during the months of February through June, between the years 1900-2013. Additional bird species are included if they were listed as present on surveys or incidentally observed in one of the following spring avian survey reports: (1) Palen Solar Electric Generating Facility 2013 avian surveys (Palen 2013), (2) Palen SPP 2009 avian surveys (Palen 2009), (3) Rio Mesa Solar Electric Generating Facility 2011 avian surveys (Rio Mesa 2011), (4) Rio Mesa Solar Electric Generating Facility 2012 avian surveys (Rio Mesa 2012), (5) Blythe Solar Power Project 2010 biological surveys (Blythe 2010), (6) Genesis Solar Energy Project 2009 avian surveys (Genesis 2009), and (7) McCoy Solar Energy Project 2011 avian surveys (McCoy 2011). A "P" in the column for any of these sites indicates that the species in that row was detected on or near the site during the survey period (as defined in section 3.1 of this report for each site). Blank cells indicate the species was not detected at the site. Columns indicating sensitive species status include: Federally Endangered (FE), Federally Threatened (FT), California Endangered (CE), California Threatened (CT), California Fully Protected (CFP) and California Department of Fish and Wildlife Species of Special Concern (SSC). These pertain only to subspecies or forms of the species listed that occur in the region of the PGEGS Project site. Resident Status codes pertain to the species status in suitable habitat within the southern California deserts and include: migrants that are primarily present during the summer (S), migrants that are primarily present during the winter (W), migrants that pass through the region but are typically absent during the summer and winter months (M), and year-round residents (YR). Abundance codes pertain to the season of highest abundance (if applicable) and include: Common; very likely to be encountered in suitable habitat (C), Uncommon; substantial presence, but not always reliably encountered in suitable habitat (U), Rare; occurs consistently within the region, but is encountered infrequently (R), Vagrant; the region is out of the species' typical range, but detections occur infrequently (V), Irregular; occurrences of the species within the region fluctuate among years and are unpredictable, being completely absent in some years and relatively abundant in others (IRR), Accidental; the species has been detected in the region, but is unlikely to occur again (ACC).

Table 1.									**Location**								
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Abundance**	**SS**	**LCR**	**Palen 2013**	**Palen 2009**	**RM 2011**	**RM 2012**	**Blythe 2010**	**Genesis 2009**	**McCoy 2011**
Black-bellied Whistling-Duck							S	V	P								
Fulvous Whistling-Duck						1	S	R	P								
Greater White-fronted Goose						1	W	R	P	P							
Snow Goose							W	C	P	P							
Ross's Goose							W	C	P	P							
Brant							M	R	P								
Cackling Goose							W	R	P								

Table 1.									**Location**								
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Abundance**	**SS**	**LCR**	**Palen 2013**	**Palen 2009**	**RM 2011**	**RM 2012**	**Blythe 2010**	**Genesis 2009**	**McCoy 2011**
Canada Goose							W	C	P	P							
Trumpeter Swan							M	ACC		P							
Tundra Swan							W	R	P	P							
Wood Duck							W	R		P							
Gadwall							W	C	P	P							
Eurasian Wigeon							W	R	P								
American Wigeon							W	C	P	P							
Mallard							YR	C	P	P				P			
Blue-winged Teal							M	R	P	P	P						
Cinnamon Teal							M	C	P	P							
Northern Shoveler							W	C	P	P	P						
Northern Pintail							W	C	P	P							
Green-winged Teal							W	C	P	P							
Canvasback							W	C	P	P							
Redhead						1	YR	U	P	P							
Ring-necked Duck							W	R	P	P							
Greater Scaup							W	R	P	P							
Lesser Scaup							W	C	P	P							
Surf Scoter							YR	R	P								
White-winged Scoter							YR	R	P								
Black Scoter							YR	V	P								
Long-tailed Duck							W	R	P								
Bufflehead							W	U	P	P	P						
Common Goldeneye							W	R	P	P							
Hooded Merganser							W	R	P	P							
Common Merganser							W	R	P	P							
Red-breasted Merganser							YR	R	P	P							
Ruddy Duck							YR	C	P	P							
Ring-necked Pheasant							YR	R	P								
California Quail							YR	R							P		
Gambel's Quail							YR	U	P	P	P		P	P	P	P	P
Red-throated Loon							W	R	P	P							

Table 1.									**Location**								
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Abundance**	**SS**	**LCR**	**Palen 2013**	**Palen 2009**	**RM 2011**	**RM 2012**	**Blythe 2010**	**Genesis 2009**	**McCoy 2011**
Pacific Loon							W	R		P							
Common Loon						1	M	R	P	P							
Yellow-billed Loon							W	V		P							
Pied-billed Grebe							YR	U	P	P							
Eared Grebe							W	C	P	P	P						
Horned Grebe							W	R	P	P							
Red-necked Grebe							W	V	P								
Western Grebe							YR	U	P	P							
Clark's Grebe							YR	U	P	P							
American White Pelican						1	W	C	P	P			P	P			
Brown Pelican	1		1				YR	U	P	P							
Neotropic Cormorant							W	V	P	P							
Double-crested Cormorant							YR	C	P	P				P			
Anhinga							W	V	P								
Magnificent Frigatebird							S	R	P	P							
American Bittern							YR	R	P	P							
Least Bittern						1	YR	R	P	P							
Great Blue Heron							YR	C	P	P				P			
Great Egret							YR	C	P	P	P			P			
Snowy Egret							YR	C	P	P	P						
Little Blue Heron							S	R	P								
Tricolored Heron							YR	R	P								
Reddish Egret							YR	R	P								
Cattle Egret							YR	C	P	P	P						
Green Heron							YR	U	P	P							
Black-crowned Night-Heron							YR	C	P	P							
White-faced Ibis							YR	U	P	P	P			P			
Roseate Spoonbill							YR	R	P								
Wood Stork						1	S	C	P								
Turkey Vulture							YR	C	P	P	P	P	P	P	P	P	P
Osprey							W	R	P	P	P			P	P		P

Table 1.									**Location**								
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Abundance**	**SS**	**LCR**	**Palen 2013**	**Palen 2009**	**RM 2011**	**RM 2012**	**Blythe 2010**	**Genesis 2009**	**McCoy 2011**
White-tailed Kite					1		YR	R	P	P							
Bald Eagle			1		1		W	R	P	P							
Northern Harrier						1	W	C	P	P	P	P	P	P	P	P	P
Sharp-shinned Hawk							W	R	P	P	P			P	P		
Cooper's Hawk							YR	U	P	P	P		P	P	P		
Common Black-Hawk							S	R		P							
Harris's Hawk							YR	ACC		P							
Red-shouldered Hawk							W	R	P	P	P						
Broad-winged Hawk							W	V		P							
Swainson's Hawk				1			M	U	P	P	P	P	P	P	P	P	P
Zone-tailed Hawk							W	V	P	P							
Red-tailed Hawk							YR	C	P	P	P		P	P	P	P	P
Ferruginous Hawk							W	R	P	P				P	P	P	
Golden Eagle					1		YR	R		P			P	P			P
American Kestrel							YR	U	P	P	P		P	P	P		P
Merlin							W	R	P	P	P			P			
Peregrine Falcon			1		1		YR	R	P	P				P			P
Prairie Falcon							YR	R	P	P	P	P	P	P	P	P	P
Black Rail				1	1		YR	R	P	P							
Clapper Rail	1		1	1	1		YR	R	P	P							
Virginia Rail							W	U	P	P							
Sora							W	U	P	P							
Common Gallinule							YR	U	P	P							
American Coot							YR	C	P	P	P			P			
Sandhill Crane				1	1	1	W	U	P	P				P			
Black-bellied Plover							W	C	P								
American Golden-Plover							M	R	P								
Pacific Golden-Plover							M	V	P								
Snowy Plover		1				1	S	U	P								
Semipalmated Plover							W	U	P	P	P						
Killdeer							YR	C	P	P	P			P	P		

Table 1.									**Location**								
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Abundance**	**SS**	**LCR**	**Palen 2013**	**Palen 2009**	**RM 2011**	**RM 2012**	**Blythe 2010**	**Genesis 2009**	**McCoy 2011**
Mountain Plover						1	W	R	P								
Black-necked Stilt							YR	C	P	P	P			P			
American Avocet							YR	C	P	P	P						
Spotted Sandpiper							W	U	P	P	P						
Solitary Sandpiper							M	R	P	P	P						
Wandering Tattler							M	R	P								
Spotted Redshank							M	V	P								
Greater Yellowlegs							W	C	P	P	P			P			
Willet							W	C	P	P							
Lesser Yellowlegs							W	U	P	P	P						
Whimbrel							M	C	P	P							
Long-billed Curlew							W	U	P	P				P			
Marbled Godwit							W	U	P	P							
Ruddy Turnstone							M	U	P								
Black Turnstone							M	R	P								
Surfbird							M	R	P								
Red Knot							M	R	P								
Sanderling							M	R	P								
Semipalmated Sandpiper							M	R	P								
Western Sandpiper							W	C	P	P	P						
Least Sandpiper							W	C	P	P	P			P			
Baird's Sandpiper							M	R	P								
Dunlin							M	C	P	P							
Stilt Sandpiper							M	R	P								
Ruff							M	V	P								
Short-billed Dowitcher							M	U	P								
Long-billed Dowitcher							W	C	P	P	P						
Wilson's Snipe							M	U	P	P							
Wilson's Phalarope							M	C	P	P	P						

Table 1.									**Location**								
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Abundance**	**SS**	**LCR**	**Palen 2013**	**Palen 2009**	**RM 2011**	**RM 2012**	**Blythe 2010**	**Genesis 2009**	**McCoy 2011**
Red-necked Phalarope							M	C	P	P	P						
Black-legged Kittiwake							M	R		P							
Laughing Gull							S	U	P								
Western Gull							W	R	P								
Bonaparte's Gull							M	U	P	P							
Little Gull							M	V	P								
Heermann's Gull							YR	R	P	P							
Mew Gull							W	R	P								
Ring-billed Gull							W	C	P	P							
California Gull							YR	C	P	P							
Herring Gull							W	C	P								
Thayer's Gull							W	R	P								
Lesser Black-backed Gull							W	V	P								
Yellow-footed Gull							S	C	P								
Glaucous-winged Gull							W	R	P								
Glaucous Gull							W	ACC	P								
Franklin's Gull							M	R	P	P							
Least Tern	1		1		1		S	R	P								
Gull-billed Tern						1	S	U	P	P							
Caspian Tern							S	C	P	P							
Black Tern						1	S	C	P	P							
Common Tern							M	C	P								
Forster's Tern							YR	C	P	P							
Royal Tern							M	ACC	P								
Elegant Tern							M	V	P								
Black Skimmer						1	S	U	P								
Rock Pigeon							YR	C	P	P				P			
Eurasian Collared-Dove							YR	C	P	P	P		P	P	P	P	P
Spotted Dove							M	V	P								
White-winged Dove							S	U	P	P	P		P	P	P	P	P
Mourning Dove							YR	C	P	P	P	P	P	P	P	P	P
Inca Dove							YR	R	P	P							
Common Ground-Dove							YR	U	P	P				P			
Ruddy Ground-Dove							YR	R	P								

Table 1.									**Location**								
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Abundance**	**SS**	**LCR**	**Palen 2013**	**Palen 2009**	**RM 2011**	**RM 2012**	**Blythe 2010**	**Genesis 2009**	**McCoy 2011**
Yellow-billed Cuckoo			1				M	R		P							
Greater Roadrunner							YR	C	P	P		P	P	P	P		P
Barn Owl							YR	U	P	P							
Western Screech-Owl							YR	R		P							
Great Horned Owl							YR	U	P	P	P		P	P	P	P	P
Burrowing Owl						1	YR	C	P	P	P				P	P	P
Long-eared Owl						1	YR	R		P							
Short-eared Owl						1	W	R								P	
Northern Saw-whet Owl							W	ACC	P								
Lesser Nighthawk							S	U	P	P	P		P	P	P	P	P
Common Poorwill							M	R	P	P			P	P	P	P	P
Mexican Whip-poor-will							M	R							P		
Vaux's Swift						1	M	U	P	P	P	P	P	P			P
White-throated Swift							YR	R	P	P	P		P	P	P		P
Black-chinned Hummingbird							M	R	P	P	P		P	P			
Anna's Hummingbird							W	U	P	P	P		P	P	P	P	
Costa's Hummingbird							YR	U	P	P	P	P	P	P	P	P	P
Calliope Hummingbird							M	R	P								
Rufous Hummingbird							M	R	P	P							
Allen's Hummingbird							M	ACC	P								
Belted Kingfisher							W	U	P	P	P						
Lewis's Woodpecker							W	R	P					P			
Acorn Woodpecker							YR	V	P								
Gila Woodpecker			1				YR	R	P	P			P				
Yellow-bellied Sapsucker							M	V	P	P							
Red-naped Sapsucker							W	R	P	P							

Table 1.									**Location**								
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Abundance**	**SS**	**LCR**	**Palen 2013**	**Palen 2009**	**RM 2011**	**RM 2012**	**Blythe 2010**	**Genesis 2009**	**McCoy 2011**
Ladder-backed Woodpecker							YR	U	P	P	P		P	P	P		P
Northern Flicker							W	U	P	P							
Olive-sided Flycatcher						1	M	R	P	P				P			
Greater Pewee							M	V	P								
Western Wood-Pewee							M	U	P	P				P			
Willow Flycatcher	1		1				M	U	P	P				P			
Hammond's Flycatcher							M	U	P	P	P						
Gray Flycatcher							M	R	P	P	P			P			
Dusky Flycatcher							M	R	P					P	P		P
Pacific-slope Flycatcher							M	C	P	P				P			
Black Phoebe							YR	C	P	P		P		P	P		
Eastern Phoebe							M	V	P	P							
Say's Phoebe							W	C	P	P	P		P	P	P		P
Vermilion Flycatcher						1	YR	R	P	P							
Dusky-capped Flycatcher							M	V	P								
Ash-throated Flycatcher							S	U	P	P	P	P	P	P	P	P	P
Brown-crested Flycatcher							M	V	P	P							
Tropical Kingbird							M	V	P	P							
Cassin's Kingbird							M	R						P			
Western Kingbird							S	C	P	P	P		P	P	P	P	P
Scissor-tailed Flycatcher							M	V		P							
Loggerhead Shrike						1	YR	U	P	P	P	P	P	P	P	P	P
Bell's Vireo	1		1				M	R	P	P							
Gray Vireo						1	M	R			P						
Plumbeous Vireo							M	R		P							
Cassin's Vireo							M	R	P	P					P		
Warbling Vireo							M	U	P	P	P		P	P	P	P	

Table 1.									**Location**								
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Abundance**	**SS**	**LCR**	**Palen 2013**	**Palen 2009**	**RM 2011**	**RM 2012**	**Blythe 2010**	**Genesis 2009**	**McCoy 2011**
Red-eyed Vireo							M	V		P							
Black-throated Magpie-Jay							M	ACC	P								
Western Scrub-Jay							W	V		P							
Pinyon Jay							M	V	P								
American Crow							W	R	P	P				P			
Common Raven							YR	U	P	P	P	P	P	P	P	P	P
Horned Lark							YR	C	P	P	P	P	P	P	P	P	P
Purple Martin						1	M	R				P		P			
Tree Swallow							W	C	P	P	P	P	P	P	P	P	P
Violet-green Swallow							M	R	P	P	P			P	P	P	P
Northern Rough-winged Swallow							M	U	P	P	P		P	P	P	P	P
Bank Swallow				1			M	R	P	P				P		P	
Cliff Swallow							S	C	P	P	P	P	P	P	P	P	P
Cave Swallow							M	V	P								
Barn Swallow							M	C	P	P	P	P	P	P	P	P	P
Verdin							YR	C	P	P	P	P	P	P	P	P	P
Red-breasted Nuthatch							W	R	P								
Cactus Wren							YR	C	P	P	P		P	P	P		P
Rock Wren							YR	U	P	P				P	P		
Canyon Wren							YR	R		P	P			P			
Bewick's Wren							W	R	P	P				P			
House Wren							W	U	P	P							
Marsh Wren							YR	C	P	P				P			
Blue-gray Gnatcatcher							W	U	P	P	P		P	P			P
Black-tailed Gnatcatcher							YR	U	P	P	P		P	P	P	P	P
Golden-crowned Kinglet							W	IRR	P								
Ruby-crowned Kinglet							W	U	P	P	P	P	P	P	P		
Western Bluebird							W	R	P					P			
Mountain Bluebird							W	R	P					P			
Swainson's Thrush							M	R	P	P							

Table 1.									**Location**								
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Abundance**	**SS**	**LCR**	**Palen 2013**	**Palen 2009**	**RM 2011**	**RM 2012**	**Blythe 2010**	**Genesis 2009**	**McCoy 2011**
Hermit Thrush							W	R	P	P							
American Robin							W	R	P	P							
Gray Catbird							M	V	P								
Northern Mockingbird							YR	C	P	P	P	P	P	P	P	P	P
Sage Thrasher							W	R	P					P	P		
Bendire's Thrasher						1	W	R	P								
Curve-billed Thrasher							W	R	P								
Crissal Thrasher						1	YR	R	P	P			P	P			
Le Conte's Thrasher						1	YR	R			P		P	P	P	P	P
European Starling							YR	C	P	P	P		P	P	P		P
American Pipit							W	C	P	P	P			P			
Sprague's Pipit							M	V	P								
Cedar Waxwing							W	U	P	P							
Phainopepla							YR	U	P	P	P	P	P	P	P	P	P
Orange-crowned Warbler							M	C	P	P	P	P	P	P	P		P
Nashville Warbler							M	U	P	P	P			P	P		
Virginia's Warbler							M	R		P							
Lucy's Warbler							S	R	P	P	P		P	P			P
Northern Parula							M	V	P	P							
Yellow Warbler						1	M	U	P	P	P			P	P		P
Cape May Warbler							M	V	P								
Yellow-rumped Warbler							W	C	P	P	P	P	P	P	P	P	P
Black-throated Gray Warbler							M	U	P	P	P			P			
Townsend's Warbler							M	U	P	P	P		P	P			
Hermit Warbler							M	R	P		P	P	P				
Palm Warbler							M	V	P	P							

Table 1.									**Location**								
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Abundance**	**SS**	**LCR**	**Palen 2013**	**Palen 2009**	**RM 2011**	**RM 2012**	**Blythe 2010**	**Genesis 2009**	**McCoy 2011**
Black-and-white Warbler							M	R		P							
American Redstart							M	R	P	P							
Ovenbird							M	V	P								
Northern Waterthrush							M	V	P								
MacGillivray's Warbler							M	R	P	P	P		P	P	P		
Common Yellowthroat							YR	U	P	P	P			P	P		
Wilson's Warbler							M	U	P	P	P	P	P	P	P		P
Painted Redstart							M	ACC	P								
Yellow-breasted Chat						1	M	R	P	P	P						
Green-tailed Towhee							W	R	P	P							
Spotted Towhee							M	R	P						P		
Abert's Towhee							YR	C	P	P					P		
Rufous-crowned Sparrow							YR	R					P				
Chipping Sparrow							W	R	P	P			P	P	P		P
Brewer's Sparrow							W	U	P	P	P	P	P	P	P	P	P
Vesper Sparrow						1	W	R	P	P	P						
Lark Sparrow							W	R	P	P	P		P				
Black-throated Sparrow							YR	U	P	P	P	P	P	P	P	P	P
Cassin's Sparrow							M	V			P						
Clay-colored Sparrow							W	R		P							
Sage Sparrow							W	U	P	P				P			
Savannah Sparrow							W	U	P	P	P		P	P		P	
Fox Sparrow							W	R	P								
Song Sparrow							YR	U	P	P				P			
Lincoln's Sparrow							W	R	P	P							
White-throated Sparrow							W	R	P								
Harris's Sparrow							W	R	P								

Table 1.									**Location**								
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Abundance**	**SS**	**LCR**	**Palen 2013**	**Palen 2009**	**RM 2011**	**RM 2012**	**Blythe 2010**	**Genesis 2009**	**McCoy 2011**
White-crowned Sparrow							W	C	P	P	P		P	P	P	P	P
Golden-crowned Sparrow							W	R	P	P							
Dark-eyed Junco							W	U	P	P				P			
Summer Tanager						1	S	R	P	P							
Western Tanager							M	U	P	P	P			P			P
McCown's Longspur							W	R	P								
Lapland Longspur							W	R	P								
Smith's Longspur							W	V	P								
Chestnut-collared Longspur							W	R	P								
Rose-breasted Grosbeak							M	V		P							
Black-headed Grosbeak							M	U	P	P	P		P	P	P		P
Blue Grosbeak							S	U	P	P			P	P			
Lazuli Bunting							M	U	P	P				P			
Indigo Bunting							M	IRR		P				P			
Dickcissel							M	V		P							
Red-winged Blackbird							YR	C	P	P	P	P	P	P	P		P
Tricolored Blackbird						1	M	R	P								
Western Meadowlark							YR	U	P	P				P		P	P
Yellow-headed Blackbird						1	YR	R	P	P	P		P	P			
Brewer's Blackbird							W	C	P	P	P		P	P	P		P
Great-tailed Grackle							YR	U	P	P	P		P	P	P	P	P
Bronzed Cowbird							S	R	P	P							
Brown-headed Cowbird							S	U	P	P	P		P	P			
Hooded Oriole							S	U	P	P	P		P	P			

Table 1.									Location								
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Abundance**	**SS**	**LCR**	**Palen 2013**	**Palen 2009**	**RM 2011**	**RM 2012**	**Blythe 2010**	**Genesis 2009**	**McCoy 2011**
Bullock's Oriole							S	C	P	P	P	P	P	P			
Baltimore Oriole							M	V	P	P							
Scott's Oriole							S	R	P	P				P			P
Red Crossbill							W	IRR	P							P	
Pine Siskin							W	IRR	P	P							
Lesser Goldfinch							YR	U	P	P	P		P	P			P
Lawrence's Goldfinch							W	R	P	P							
American Goldfinch							W	R	P	P							
House Finch							YR	C	P	P	P	P	P	P	P		P
House Sparrow							YR	C	P	P				P			P
							Species Totals		**302**	**239**	**103**	**30**	**70**	**119**	**69**	**43**	**63**

Table 2. eBIRD Spring Season Species Frequency Data for Salton Sea and Lower Colorado River IBAs

The following table lists all bird species detected at the Salton Sea Important Bird Area (Salton Sea IBA)) or the Lower Colorado River Important Bird Area (Lower Colorado River IBA) at any time during the months of February through June, between the years 1900-2013. Additional bird species are included if they were detected during spring 2013 Small Bird Count (SBC) or Bird Use Count (BUC) surveys at the Palen Solar Electric Generating Facility (Palen 2013). Measures of abundance for species observed during Palen 2013 surveys represent the average number of individuals observed at all distances per point count survey (SBC column), or per hour of surveying (BUC column). Frequency data for each month at the Salton Sea IBA and the Lower Colorado River IBA represent the proportion of submitted checklists in which the species was observed. The total number of submitted checklists is indicated parenthetically below each month. Abundance data (Palen 2013) and frequency data (IBAs) are not directly comparable, as discussed in the text of Section 3.1 of this report. Monthly frequency data are presented mainly to provide an indication of how species presence changes through the spring season, for comparison with Palen 2013 survey data collected during April and early May. Columns indicating sensitive species status include: Federally Endangered (FE), Federally Threatened (FT), California Endangered (CE), California Threatened (CT), California Fully Protected (CFP) and California Department of Fish and Wildlife Species of Special Concern (SSC). These pertain only to subspecies or forms of the species listed that occur in the region of the PGEGS Project site. Resident Status codes pertain to the species status in suitable habitat within the southern California deserts and include: migrants that are primarily present during the summer (S), migrants that are primarily present during the winter (W), migrants that pass through the region but are typically absent during the summer and winter months (M), and year-round residents (YR).

Table 2.								Palen 2013		Salton Sea IBA					Lower Colorado River IBA				
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**SBC Ind. per survey**	**BUC Ind. per hour**	**Feb.**	**Mar.**	**Apr.**	**May**	**Jun.**	**Feb.**	**Mar.**	**Apr.**	**May**	**Jun.**
										(242)	(167)	(137)	(134)	(112)	(96)	(116)	(150)	(168)	(103)
Black-bellied Whistling-Duck							S	-	-	-	-	0.007	-	0.000	-	-	-	-	-

Table 2.								Palen 2013		Salton Sea IBA					Lower Colorado River IBA				
Common Name	FE	FT	CE	CT	CFP	SSC	Resident Status	SBC Ind. per survey	BUC Ind. per hour	Feb.	Mar.	Apr.	May	Jun.	Feb.	Mar.	Apr.	May	Jun.
										(242)	(167)	(137)	(134)	(112)	(96)	(116)	(150)	(168)	(103)
Fulvous Whistling-Duck						1	S	-	-	-	-	0.051	0.045	0.071	-	-	-	-	-
Greater White-fronted Goose						1	W	-	-	0.045	0.012	-	-	0.009	-	0.001	-	0.000	-
Snow Goose							W	-	-	0.384	0.126	0.080	0.037	0.027	0.156	0.026	0.013	-	-
Ross's Goose							W	-	-	0.244	0.096	0.029	-	-	0.042	0.017	-	-	-
Brant							M	-	-	-	0.048	0.139	0.119	0.098	-	-	-	-	-
Cackling Goose							W	-	-	0.033	0.012	-	-	0.009	-	-	-	-	-
Canada Goose							W	-	-	0.112	0.036	0.029	0.022	-	0.167	0.044	0.040	0.030	-
Trumpeter Swan							M	-	-	-	-	-	-	-	0.010	-	-	-	-
Tundra Swan							W	-	-	0.045	0.006	-	-	-	0.031	-	-	-	-
Wood Duck							W	-	-	-	-	-	-	-	-	-	-	0.006	0.000
Gadwall							W	-	-	0.194	0.174	0.270	0.224	0.161	0.323	0.259	0.107	0.065	-
Eurasian Wigeon							W	-	-	0.008	0.006	-	-	-	-	-	-	-	-
American Wigeon							W	-	-	0.368	0.335	0.321	0.127	0.071	0.135	0.147	0.080	0.012	-
Mallard							YR	-	-	0.219	0.281	0.365	0.463	0.286	0.375	0.310	0.193	0.137	0.097
Blue-winged Teal							M	-	-	0.074	0.150	0.212	0.045	0.036	-	0.026	0.014	0.024	-
Cinnamon Teal							M	-	-	0.318	0.443	0.489	0.403	0.330	0.167	0.284	0.133	0.083	0.029
Northern Shoveler							W	-	-	0.690	0.671	0.650	0.343	0.268	0.323	0.224	0.073	0.006	-
Northern Pintail							W	-	-	0.562	0.317	0.219	0.246	0.161	0.250	0.155	0.027	0.024	-
Green-winged Teal							W	-	-	0.442	0.371	0.387	0.112	0.063	0.312	0.233	0.073	0.018	-
Canvasback							W	-	-	0.095	0.060	0.052	0.007	0.009	0.146	0.147	0.047	-	0.010
Redhead						1	YR	-	-	0.136	0.168	0.314	0.313	0.313	0.104	0.112	0.133	0.137	0.068
Ring-necked Duck							W	-	-	0.008	0.006	0.022	-	0.009	0.219	0.086	0.027	0.018	0.010
Greater Scaup							W	-	-	0.029	0.036	0.029	0.007	-	0.021	0.009	0.007	0.012	-
Lesser Scaup							W	-	-	0.223	0.257	0.219	0.075	0.062	0.125	0.069	0.053	0.006	0.000
Surf Scoter							YR	-	-	0.004	0.012	0.036	0.038	0.045	-	-	-	-	-
White-winged Scoter							YR	-	-	-	0.024	0.007	0.015	0.009	-	-	-	-	-
Black Scoter							YR	-	-	0.008	-	-	-	-	-	-	-	-	-
Long-tailed Duck							W	-	-	-	-	0.007	0.022	0.027	-	-	-	-	-
Bufflehead							W	0.006	-	0.083	0.090	0.102	0.022	-	0.177	0.172	0.060	0.030	-
Common Goldeneye							W	-	-	0.165	0.084	0.022	0.030	-	0.167	0.086	0.020	0.012	-

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										(242)	(167)	(137)	(134)	(112)	(96)	(116)	(150)	(168)	(103)
Hooded Merganser							W	-	-	-	0.018	-	-	-	0.084	-	0.007	-	-
Common Merganser							W	-	-	0.012	0.018	0.000	-	-	0.260	0.034	-	0.012	-
Red-breasted Merganser							YR	-	-	0.008	0.060	0.080	0.067	0.036	0.000	0.034	0.020	0.012	-
Ruddy Duck							YR	-	-	0.496	0.593	0.679	0.493	0.321	0.250	0.198	0.113	0.095	0.030
Ring-necked Pheasant							YR	-	-	0.037	0.048	0.029	0.045	0.036	-	-	-	-	-
California Quail							YR	-	-	-	-	-	-	-	-	-	-	-	-
Gambel's Quail							YR	0.056	0.016	0.240	0.222	0.343	0.448	0.268	0.115	0.259	0.380	0.399	0.272
Red-throated Loon							W	-	-	-	-	-	-	0.009	0.011	0.017	-	-	-
Pacific Loon							W	-	-	-	-	-	-	-	0.073	0.026	0.020	-	-
Common Loon						1	M	-	-	-	-	0.022	0.075	0.027	0.156	0.069	0.073	0.006	0.010
Yellow-billed Loon							W	-	-	-	-	-	-	-	0.011	0.009	0.000	-	-
Pied-billed Grebe							YR	-	-	0.202	0.168	0.241	0.239	0.259	0.552	0.284	0.233	0.315	0.175
Eared Grebe							W	0.045	-	0.595	0.611	0.686	0.619	0.375	0.063	0.103	0.167	0.185	0.058
Horned Grebe							W	-	-	0.012	0.018	0.000	-	0.009	0.052	0.034	-	-	-
Red-necked Grebe							W	-	-	-	0.024	-	-	-	-	-	-	-	-
Western Grebe							YR	-	-	0.264	0.293	0.270	0.284	0.339	0.115	0.121	0.087	0.101	0.136
Clark's Grebe							YR	-	-	0.087	0.132	0.204	0.276	0.250	0.208	0.172	0.153	0.190	0.175
American White Pelican						1	W	-	-	0.537	0.659	0.526	0.455	0.554	0.125	0.181	0.033	0.024	0.010
Brown Pelican	1		1				YR	-	-	0.393	0.234	0.204	0.381	0.527	-	-	-	-	0.010
Neotropic Cormorant							W	-	-	0.008	0.042	0.044	0.030	0.009	0.073	-	0.007	-	-
Double-crested Cormorant							YR	-	-	0.649	0.659	0.620	0.694	0.580	0.562	0.362	0.313	0.214	0.117
Anhinga							W	-	-	-	-	0.022	0.007	-	-	-	-	-	-
Magnificent Frigatebird							S	-	-	-	-	-	-	0.000	-	-	-	-	0.001
American Bittern							YR	-	-	0.029	0.006	0.051	0.037	0.027	0.000	0.009	0.000	-	-
Least Bittern						1	YR	-	-	0.008	0.018	0.080	0.090	0.116	-	0.043	0.047	0.185	0.165
Great Blue Heron							YR	-	-	0.595	0.749	0.737	0.769	0.723	0.427	0.328	0.240	0.292	0.233
Great Egret							YR	-	0.001	0.574	0.605	0.526	0.634	0.562	0.375	0.284	0.167	0.185	0.204
Snowy Egret							YR	0.006	-	0.438	0.521	0.547	0.672	0.607	0.198	0.216	0.107	0.119	0.049
Little Blue Heron							S	-	-	-	-	-	0.007	-	-	-	-	-	-

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Tricolored Heron							YR	-	-	-	0.012	0.007	-	0.027	-	-	-	-	-
Reddish Egret							YR	-	-	0.004	-	-	-	0.009	-	-	-	-	-
Cattle Egret							YR	-	-	0.376	0.287	0.292	0.433	0.375	0.031	0.026	0.020	0.012	0.019
Green Heron							YR	-	-	0.157	0.156	0.219	0.336	0.268	0.031	0.009	0.034	0.149	0.136
Black-crowned Night-Heron							YR	-	-	0.215	0.192	0.285	0.358	0.366	0.104	0.044	0.027	0.048	0.029
White-faced Ibis							YR	-	0.034	0.409	0.293	0.314	0.381	0.518	0.167	0.138	0.127	0.161	0.146
Roseate Spoonbill							YR	-	-	0.004	0.030	0.051	0.015	0.009	-	-	-	-	-
Wood Stork						1	S	-	-	-	-	-	0.030	0.143	-	-	-	-	-
Turkey Vulture							YR	1.721	2.232	0.285	0.293	0.365	0.410	0.339	0.271	0.491	0.460	0.423	0.252
Osprey							W	0.006	-	0.190	0.150	0.175	0.067	0.143	0.083	0.112	0.120	0.065	0.019
White-tailed Kite					1		YR	-	-	0.107	0.030	0.058	0.022	0.018	0.000	0.026	0.027	0.024	0.019
Bald Eagle			1		1		W	-	-	0.021	-	-	-	-	0.094	0.009	0.007	0.018	-
Northern Harrier						1	W	0.006	0.026	0.479	0.335	0.270	0.104	0.080	0.542	0.276	0.153	0.083	0.010
Sharp-shinned Hawk							W	-	0.005	0.021	0.036	0.008	-	-	0.042	0.018	0.047	-	-
Cooper's Hawk							YR	-	0.013	0.112	0.060	0.058	0.030	-	0.042	0.035	0.060	0.024	0.010
Common Black-Hawk							S	-	-	-	-	-	-	-	-	-	0.007	-	-
Harris's Hawk							YR	-	-	-	-	-	-	-	-	0.009	0.000	0.000	-
Red-shouldered Hawk							W	-	0.003	0.012	-	0.007	0.000	0.009	0.010	-	0.007	-	-
Broad-winged Hawk							W	-	-	-	-	-	-	-	-	-	0.007	-	-
Swainson's Hawk				1			M	0.201	0.140	-	0.030	0.030	0.015	-	-	-	0.080	0.006	0.000
Zone-tailed Hawk							W	-	-	0.008	0.006	-	-	-	-	-	0.007	-	0.010
Red-tailed Hawk							YR	0.151	0.164	0.355	0.180	0.124	0.104	0.054	0.260	0.172	0.180	0.143	0.049
Ferruginous Hawk							W	-	0.001	0.050	0.006	-	-	-	0.021	-	-	-	-
Golden Eagle					1		YR	-	-	-	-	-	-	-	-	0.000	-	-	-
American Kestrel							YR	0.011	0.010	0.525	0.365	0.343	0.455	0.321	0.115	0.147	0.120	0.131	0.117
Merlin							W	-	-	0.079	0.036	0.022	-	-	0.032	0.000	0.000	-	-
Peregrine Falcon			1		1		YR	-	-	0.157	0.108	0.095	0.090	0.116	0.021	0.017	0.007	0.006	0.000
Prairie Falcon							YR	0.067	0.051	0.058	0.018	0.015	0.007	0.018	0.011	-	0.020	0.012	0.010
Black Rail				1	1		YR	-	-	-	0.006	-	-	-	-	0.052	0.053	0.012	0.010

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Clapper Rail	1		1	1	1		YR	-	-	0.062	0.042	0.058	0.097	0.107	0.042	0.069	0.100	0.113	0.078
Virginia Rail							W	-	-	0.042	0.036	0.088	0.067	0.018	0.042	0.069	0.094	0.107	0.039
Sora							W	-	-	0.091	0.144	0.212	0.045	-	0.083	0.061	0.047	0.024	-
Common Gallinule							YR	-	-	0.157	0.192	0.277	0.299	0.357	0.062	0.060	0.073	0.131	0.184
American Coot							YR	-	-	0.645	0.605	0.679	0.612	0.527	0.771	0.586	0.540	0.381	0.301
Sandhill Crane				1	1	1	W	-	-	0.103	0.012	0.007	-	-	0.011	0.001	-	-	-
Black-bellied Plover							W	-	-	0.504	0.521	0.635	0.463	0.152	-	-	-	-	-
American Golden-Plover							M	-	-	-	-	-	0.037	-	-	-	-	-	-
Pacific Golden-Plover							M	-	-	0.000	-	0.007	-	-	-	-	-	-	-
Snowy Plover		1				1	S	-	-	0.037	0.114	0.336	0.239	0.295	-	-	-	-	-
Semipalmated Plover							W	0.006	-	0.095	0.126	0.496	0.336	0.045	-	-	0.013	-	-
Killdeer							YR	0.022	-	0.558	0.551	0.591	0.687	0.571	0.188	0.216	0.173	0.268	0.087
Mountain Plover						1	W	-	-	0.112	0.024	-	-	-	-	-	-	-	-
Black-necked Stilt							YR	-	-	0.603	0.743	0.810	0.843	0.732	-	0.009	0.060	0.113	0.020
American Avocet							YR	-	-	0.579	0.647	0.723	0.694	0.571	0.021	0.095	0.073	0.036	0.019
Spotted Sandpiper							W	0.017	-	0.132	0.126	0.219	0.321	0.036	-	0.034	0.047	0.131	0.000
Solitary Sandpiper							M	0.006	-	-	-	0.007	-	-	-	0.001	0.027	0.006	-
Wandering Tattler							M	-	-	-	-	0.007	0.015	-	-	-	-	-	-
Spotted Redshank							M	-	-	-	-	-	0.001	-	-	-	-	-	-
Greater Yellowlegs							W	0.011	0.003	0.488	0.419	0.365	0.201	0.214	0.083	0.078	0.040	0.018	-
Willet							W	-	-	0.289	0.401	0.562	0.336	0.304	-	-	0.027	0.018	0.010
Lesser Yellowlegs							W	-	-	0.207	0.269	0.263	0.052	0.009	-	-	0.013	-	-
Whimbrel							M	-	-	0.004	0.096	0.328	0.254	0.223	-	0.009	0.020	-	-
Long-billed Curlew							W	-	0.001	0.293	0.210	0.219	0.254	0.384	0.010	-	0.001	0.006	0.039
Marbled Godwit							W	0.011	-	0.376	0.371	0.445	0.396	0.277	-	-	0.014	-	-
Ruddy Turnstone							M	-	-	0.025	0.030	0.095	0.134	0.000	-	-	-	-	-
Black Turnstone							M	-	-	0.017	0.006	0.000	0.037	0.009	-	-	-	-	-
Surfbird							M	-	-	-	0.006	-	-	-	-	-	-	-	-
Red Knot							M	-	-	-	0.006	0.088	0.075	-	-	-	-	-	-
Sanderling							M	-	-	0.017	0.000	0.037	0.060	0.009	-	-	-	-	-

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Semipalmated Sandpiper							M	-	-	-	-	-	0.008	0.009	-	-	-	-	-
Western Sandpiper							W	0.061	-	0.194	0.323	0.730	0.403	0.098	-	-	0.020	0.006	-
Least Sandpiper							W	0.034	-	0.463	0.557	0.679	0.201	0.036	0.146	0.129	0.067	0.012	-
Baird's Sandpiper							M	-	-	-	0.006	-	0.007	-	-	-	-	-	-
Dunlin							M	-	-	0.107	0.078	0.277	0.172	0.009	0.010	0.009	-	-	-
Stilt Sandpiper							M	-	-	0.091	0.066	0.175	0.104	-	-	-	-	-	-
Ruff							M	-	-	0.025	-	0.000	-	-	-	-	-	-	-
Short-billed Dowitcher							M	-	-	-	0.012	0.204	0.082	0.018	-	-	-	-	-
Long-billed Dowitcher							W	0.006	-	0.405	0.449	0.606	0.396	0.098	0.135	0.129	0.067	0.012	-
Wilson's Snipe							M	-	-	0.041	0.048	0.007	-	-	0.073	0.103	0.020	0.012	-
Wilson's Phalarope							M	-	-	0.012	0.012	0.197	0.291	0.277	-	-	0.013	0.018	-
Red-necked Phalarope							M	-	-	0.004	0.006	0.190	0.351	0.045	-	-	0.013	-	-
Black-legged Kittiwake							M	-	-	-	-	-	-	-	0.011	-	-	-	-
Laughing Gull							S	-	-	0.054	0.036	0.095	0.172	0.295	-	-	-	-	-
Western Gull							W	-	-	0.050	0.030	0.029	0.045	0.045	-	-	-	-	-
Bonaparte's Gull							M	-	-	0.074	0.198	0.394	0.396	0.161	-	0.017	0.013	0.006	-
Little Gull							M	-	-	0.009	-	-	0.007	0.036	-	-	-	-	-
Heermann's Gull							YR	-	-	0.050	0.024	0.058	0.075	0.080	-	-	-	-	0.010
Mew Gull							W	-	-	0.025	0.006	0.008	-	-	-	-	-	-	-
Ring-billed Gull							W	-	-	0.702	0.701	0.635	0.612	0.429	0.302	0.181	0.087	0.024	0.010
California Gull							YR	-	-	0.558	0.563	0.620	0.575	0.446	-	0.026	0.001	0.024	0.010
Herring Gull							W	-	-	0.521	0.539	0.285	0.112	0.018	-	-	-	-	-
Thayer's Gull							W	-	-	0.058	0.036	0.036	0.001	-	-	-	-	-	-
Lesser Black-backed Gull							W	-	-	0.062	0.012	0.036	-	-	-	-	-	-	-
Yellow-footed Gull							S	-	-	0.215	0.102	0.131	0.373	0.420	-	-	-	-	-
Glaucous-winged Gull							W	-	-	0.120	0.102	0.080	0.007	-	-	-	-	-	-
Glaucous Gull							W	-	-	0.045	0.012	0.015	0.001	-	-	-	-	-	-
Franklin's Gull							M	-	-	-	0.006	0.066	0.090	0.063	-	-	0.020	0.012	-
Least Tern	1		1		1		S	-	-	-	-	-	0.052	0.054	-	-	-	-	-
Gull-billed Tern						1	S	-	-	-	0.096	0.401	0.522	0.446	-	-	0.007	-	-

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Caspian Tern							S	-	-	0.393	0.479	0.650	0.679	0.652	-	0.009	0.034	0.048	0.039
Black Tern						1	S	-	-	-	-	0.190	0.455	0.250	-	-	-	0.036	-
Common Tern							M	-	-	-	-	0.007	0.015	0.018	-	-	-	-	-
Forster's Tern							YR	-	-	0.112	0.096	0.314	0.448	0.411	0.000	-	0.040	0.089	0.039
Royal Tern							M	-	-	-	-	-	-	0.000	-	-	-	-	-
Elegant Tern							M	-	-	-	0.000	-	-	-	-	-	-	-	-
Black Skimmer						1	S	-	-	-	0.006	0.088	0.351	0.455	-	-	-	-	-
Rock Pigeon							YR	-	-	0.256	0.246	0.234	0.366	0.223	0.021	0.043	0.047	0.036	0.058
Eurasian Collared-Dove							YR	0.028	-	0.264	0.216	0.248	0.321	0.241	0.031	0.103	0.087	0.149	0.049
Spotted Dove							M	-	-	-	-	-	-	0.009	-	-	-	-	-
White-winged Dove							S	0.061	0.025	0.029	0.054	0.146	0.410	0.348	-	0.017	0.320	0.696	0.699
Mourning Dove							YR	0.263	0.136	0.438	0.425	0.489	0.590	0.455	0.083	0.345	0.567	0.667	0.612
Inca Dove							YR	-	-	0.062	0.078	0.139	0.112	0.089	-	-	-	0.030	-
Common Ground-Dove							YR	-	-	0.256	0.192	0.270	0.351	0.232	0.001	0.009	0.033	0.024	0.019
Ruddy Ground-Dove							YR	-	-	0.025	0.048	0.058	0.037	0.018	-	-	-	-	-
Yellow-billed Cuckoo			1				M	-	-	-	-	-	-	-	-	-	-	-	0.107
Greater Roadrunner							YR	-	-	0.202	0.198	0.234	0.239	0.241	0.177	0.198	0.240	0.196	0.146
Barn Owl							YR	-	-	0.091	0.048	0.088	0.119	0.080	-	-	0.033	0.012	0.019
Western Screech-Owl							YR	-	-	-	-	-	-	-	-	-	-	0.018	-
Great Horned Owl							YR	-	-	0.005	0.024	0.022	0.022	0.018	0.104	0.121	0.080	0.095	0.146
Burrowing Owl						1	YR	0.022	0.017	0.269	0.210	0.321	0.463	0.304	0.021	-	-	0.024	0.029
Long-eared Owl						1	YR	-	-	-	-	-	-	-	-	-	-	0.006	-
Short-eared Owl						1	W	-	-	-	-	-	-	-	-	-	-	-	-
Northern Saw-whet Owl							W	-	-	0.004	-	-	-	-	-	-	-	-	-
Lesser Nighthawk							S	0.011	0.007	-	0.006	0.255	0.410	0.259	-	0.009	0.087	0.286	0.350
Common Poorwill							M	-	-	-	-	0.000	-	-	-	-	0.000	0.012	0.019
Mexican Whip-poor-will							M	-	-	-	-	-	-	-	-	-	-	-	-
Vaux's Swift						1	M	0.056	0.009	-	-	0.088	0.037	-	-	-	0.013	0.030	-
White-throated Swift							YR	0.022	0.004	0.029	0.006	0.036	0.060	0.045	0.031	0.069	0.053	0.036	0.019

Table 2.								Palen 2013		Salton Sea IBA					Lower Colorado River IBA				
Common Name	FE	FT	CE	CT	CFP	SSC	Resident Status	SBC Ind. per survey	BUC Ind. per hour	Feb.	Mar.	Apr.	May	Jun.	Feb.	Mar.	Apr.	May	Jun.
										(242)	(167)	(137)	(134)	(112)	(96)	(116)	(150)	(168)	(103)
Black-chinned Hummingbird							M	-	-	-	0.006	0.095	0.075	0.080	-	0.052	0.147	0.202	0.184
Anna's Hummingbird							W	-	0.001	0.128	0.096	0.146	0.149	0.062	0.104	0.241	0.213	0.089	0.029
Costa's Hummingbird							YR	0.017	-	0.017	0.054	0.058	0.067	0.071	0.000	0.043	0.047	0.018	-
Calliope Hummingbird							M	-	-	-	-	0.007	-	-	-	-	-	-	-
Rufous Hummingbird							M	-	-	-	0.042	0.066	-	-	-	0.001	-	-	-
Allen's Hummingbird							M	-	-	-	0.006	-	-	-	-	-	-	-	-
Belted Kingfisher							W	-	-	0.264	0.168	0.124	0.000	-	0.177	0.112	0.073	0.018	-
Lewis's Woodpecker							W	-	-	0.008	-	0.015	-	-	-	-	-	-	-
Acorn Woodpecker							YR	-	-	-	-	-	0.007	-	-	-	-	-	-
Gila Woodpecker			1				YR	-	-	0.083	0.048	0.102	0.119	0.080	0.052	0.147	0.100	0.196	0.301
Yellow-bellied Sapsucker							M	-	-	0.004	-	-	-	-	0.000	-	-	-	-
Red-naped Sapsucker							W	-	-	0.017	-	-	-	-	0.031	-	-	-	-
Ladder-backed Woodpecker							YR	0.011	0.003	0.074	0.054	0.161	0.164	0.054	0.156	0.198	0.213	0.244	0.252
Northern Flicker							W	-	-	0.211	0.108	0.051	-	-	0.188	0.129	-	-	0.010
Olive-sided Flycatcher						1	M	-	-	-	-	0.007	0.112	0.009	-	-	0.007	0.018	0.010
Greater Pewee							M	-	-	0.004	-	-	-	-	-	-	-	-	-
Western Wood-Pewee							M	-	-	-	-	0.058	0.313	0.107	-	-	0.020	0.274	0.058
Willow Flycatcher	1		1				M	-	-	-	-	-	0.119	0.054	-	-	-	0.155	0.214
Hammond's Flycatcher							M	0.006	-	-	-	0.044	0.067	-	-	-	0.027	0.030	-
Gray Flycatcher							M	0.006	-	0.029	0.018	0.029	0.007	-	-	-	0.047	0.024	-
Dusky Flycatcher							M	-	-	-	-	0.022	0.007	-	-	-	-	-	-
Pacific-slope Flycatcher							M	-	-	-	-	0.117	0.142	0.027	-	0.009	0.020	0.167	0.029
Black Phoebe							YR	-	-	0.512	0.437	0.394	0.500	0.375	0.396	0.457	0.127	0.083	0.078
Eastern Phoebe							M	-	-	0.008	-	-	-	-	0.031	0.026	-	-	-
Say's Phoebe							W	0.028	0.001	0.434	0.150	0.102	0.187	0.098	0.250	0.198	0.067	0.113	0.087

Table 2.								Palen 2013		Salton Sea IBA					Lower Colorado River IBA				
Common Name	FE	FT	CE	CT	CFP	SSC	Resident Status	SBC Ind. per survey	BUC Ind. per hour	Feb.	Mar.	Apr.	May	Jun.	Feb.	Mar.	Apr.	May	Jun.
										(242)	(167)	(137)	(134)	(112)	(96)	(116)	(150)	(168)	(103)
Vermilion Flycatcher						1	YR	-	-	0.033	0.013	0.007	0.015	0.018	0.062	0.001	0.040	0.012	-
Dusky-capped Flycatcher							M	-	-	0.008	-	-	-	-	-	-	-	-	-
Ash-throated Flycatcher							S	0.173	0.008	0.012	-	0.131	0.119	0.080	0.010	0.164	0.260	0.321	0.252
Brown-crested Flycatcher							M	-	-	-	-	-	0.007	-	-	-	-	0.083	0.184
Tropical Kingbird							M	-	-	-	0.018	-	-	-	-	-	-	-	0.010
Cassin's Kingbird							M	-	-	-	-	-	-	-	-	-	-	-	-
Western Kingbird							S	0.045	0.010	-	0.168	0.482	0.582	0.464	-	0.043	0.333	0.381	0.194
Scissor-tailed Flycatcher							M	-	-	-	-	-	-	-	-	-	-	-	0.010
Loggerhead Shrike						1	YR	0.592	0.050	0.306	0.132	0.102	0.142	0.277	0.125	0.034	0.047	0.077	0.184
Bell's Vireo	1		1				M	-	-	-	0.006	-	-	-	-	0.043	0.120	0.167	0.107
Gray Vireo						1	M	-	-	-	-	-	-	-	-	-	-	-	-
Plumbeous Vireo							M	-	-	-	-	-	-	-	-	-	0.007	0.006	-
Cassin's Vireo							M	-	-	-	-	0.051	0.037	-	-	-	0.020	0.042	-
Warbling Vireo							M	0.034	0.001	-	0.030	0.124	0.224	-	-	-	0.053	0.190	0.019
Red-eyed Vireo							M	-	-	-	-	-	-	-	-	-	-	-	0.010
Black-throated Magpie-Jay							M	-	-	-	-	-	0.007	-	-	-	-	-	-
Western Scrub-Jay							W	-	-	-	-	-	-	-	-	0.026	0.007	-	-
Pinyon Jay							M	-	-	0.004	-	-	-	-	-	-	-	-	-
American Crow							W	-	-	0.004	-	-	-	-	0.000	-	0.013	0.006	-
Common Raven							YR	0.508	0.848	0.207	0.222	0.241	0.284	0.187	0.250	0.276	0.273	0.220	0.078
Horned Lark							YR	1.341	0.556	0.186	0.102	0.146	0.157	0.098	0.031	0.017	0.014	0.030	0.019
Purple Martin						1	M	-	-	-	-	-	-	-	-	-	-	-	-
Tree Swallow							W	0.274	0.353	0.364	0.329	0.299	0.060	0.018	0.250	0.328	0.353	0.101	-
Violet-green Swallow							M	-	0.016	0.013	0.072	0.029	0.007	-	0.052	0.190	0.060	0.065	0.010
Northern Rough-winged Swallow							M	0.045	0.014	0.260	0.371	0.496	0.485	0.330	0.063	0.241	0.413	0.310	0.359
Bank Swallow				1			M	-	-	0.009	0.012	0.095	0.067	-	-	-	0.020	0.036	-
Cliff Swallow							S	1.145	0.167	0.095	0.222	0.321	0.373	0.339	0.010	0.078	0.240	0.310	0.233

Table 2.								Palen 2013		Salton Sea IBA					Lower Colorado River IBA				
Common Name	FE	FT	CE	CT	CFP	SSC	Resident Status	SBC Ind. per survey	BUC Ind. per hour	Feb.	Mar.	Apr.	May	Jun.	Feb.	Mar.	Apr.	May	Jun.
										(242)	(167)	(137)	(134)	(112)	(96)	(116)	(150)	(168)	(103)
Cave Swallow							M	-	-	0.004	-	-	0.022	-	-	-	-	-	-
Barn Swallow							M	0.318	0.139	0.116	0.263	0.365	0.299	0.045	-	0.017	0.193	0.185	-
Verdin							YR	0.765	0.077	0.351	0.323	0.321	0.425	0.366	0.146	0.345	0.367	0.310	0.301
Red-breasted Nuthatch							W	-	-	0.012	-	-	-	-	-	-	-	-	-
Cactus Wren							YR	0.078	-	0.112	0.162	0.139	0.239	0.152	0.010	-	0.020	0.012	0.029
Rock Wren							YR	-	-	0.037	0.012	-	0.007	-	-	0.009	-	0.012	-
Canyon Wren							YR	-	-	-	-	-	-	-	0.021	0.026	0.013	0.018	0.010
Bewick's Wren							W	-	-	0.012	0.012	0.044	0.030	0.009	0.042	0.103	0.067	0.125	0.165
House Wren							W	-	-	0.029	0.012	0.022	0.007	-	0.021	0.103	0.040	-	-
Marsh Wren							YR	-	-	0.314	0.365	0.358	0.440	0.339	0.250	0.267	0.220	0.214	0.175
Blue-gray Gnatcatcher							W	0.034	0.004	0.136	0.090	0.044	0.007	0.009	0.031	0.043	0.033	-	0.010
Black-tailed Gnatcatcher							YR	0.235	-	0.066	0.072	0.161	0.194	0.170	0.240	0.336	0.300	0.298	0.301
Golden-crowned Kinglet							W	-	-	0.008	-	-	-	-	-	-	-	-	-
Ruby-crowned Kinglet							W	-	0.004	0.190	0.078	0.058	0.030	-	0.135	0.172	0.053	-	-
Western Bluebird							W	-	-	0.025	0.006	0.007	-	-	-	-	-	-	-
Mountain Bluebird							W	-	-	0.041	0.012	-	-	-	-	-	-	-	-
Swainson's Thrush							M	-	-	-	-	0.022	0.082	-	-	-	-	0.036	-
Hermit Thrush							W	-	-	0.004	-	0.044	0.015	-	-	0.009	0.013	-	-
American Robin							W	-	-	0.116	0.030	0.051	0.015	-	0.032	0.121	0.040	-	-
Gray Catbird							M	-	-	0.008	-	-	-	-	-	-	-	-	-
Northern Mockingbird							YR	0.006	0.001	0.260	0.293	0.343	0.440	0.277	0.083	0.052	0.033	0.107	0.068
Sage Thrasher							W	-	-	0.021	0.012	-	-	-	-	-	-	-	-
Bendire's Thrasher						1	W	-	-	0.008	-	-	-	-	-	-	-	-	-
Curve-billed Thrasher							W	-	-	0.008	-	-	-	-	-	-	-	-	-
Crissal Thrasher						1	YR	-	-	0.021	0.006	0.015	0.022	0.036	0.094	0.164	0.160	0.137	0.097
Le Conte's Thrasher						1	YR	0.128	0.014	-	-	-	-	-	-	-	-	-	-
European Starling							YR	0.123	0.045	0.298	0.263	0.277	0.358	0.196	0.031	0.043	0.060	0.113	0.019
American Pipit							W	-	0.001	0.269	0.174	0.153	0.007	-	0.125	0.112	0.027	-	-

Table 2.								Palen 2013		Salton Sea IBA					Lower Colorado River IBA				
Common Name	FE	FT	CE	CT	CFP	SSC	Resident Status	SBC Ind. per survey	BUC Ind. per hour	Feb.	Mar.	Apr.	May	Jun.	Feb.	Mar.	Apr.	May	Jun.
										(242)	(167)	(137)	(134)	(112)	(96)	(116)	(150)	(168)	(103)
Sprague's Pipit							M	-	-	0.021	0.000	-	-	-	-	-	-	-	-
Cedar Waxwing							W	-	-	0.029	0.018	0.022	0.015	-	-	-	0.013	0.024	-
Phainopepla							YR	0.022	-	0.054	0.084	0.080	0.075	0.054	0.115	0.103	0.093	0.101	0.019
Orange-crowned Warbler							M	0.056	0.004	0.161	0.174	0.241	0.119	-	0.042	0.078	0.200	0.036	-
Nashville Warbler							M	0.022	-	-	0.012	0.161	0.067	-	-	-	0.107	0.030	-
Virginia's Warbler							M	-	-	-	-	-	-	-	-	-	-	0.006	-
Lucy's Warbler							S	-	-	-	-	-	0.007	-	-	0.190	0.280	0.310	0.136
Northern Parula							M	-	-	-	0.007	-	-	-	-	-	-	0.006	-
Yellow Warbler						1	M	0.006	0.001	0.012	-	0.109	0.381	0.027	-	0.009	0.087	0.327	0.282
Cape May Warbler							M	-	-	0.005	-	-	-	-	-	-	-	-	-
Yellow-rumped Warbler							W	0.179	0.068	0.508	0.401	0.343	0.149	-	0.292	0.422	0.413	0.083	-
Black-throated Gray Warbler							M	-	0.001	-	0.030	0.139	0.007	-	-	-	0.027	0.006	-
Townsend's Warbler							M	0.034	-	-	-	0.044	0.157	0.009	-	-	0.007	0.048	-
Hermit Warbler							M	-	-	-	-	0.029	0.067	-	-	-	-	-	-
Palm Warbler							M	-	-	0.004	-	-	-	-	-	-	-	0.000	-
Black-and-white Warbler							M	-	-	-	-	-	-	-	-	-	0.007	0.000	-
American Redstart							M	-	-	0.029	0.007	0.022	-	-	0.000	-	-	-	-
Ovenbird							M	-	-	0.012	-	-	-	-	-	-	-	-	-
Northern Waterthrush							M	-	-	-	-	0.001	-	-	-	-	-	-	-
MacGillivray's Warbler							M	-	-	-	-	0.073	0.052	-	-	-	0.020	0.095	-
Common Yellowthroat							YR	0.011	-	0.161	0.281	0.343	0.396	0.304	0.011	0.129	0.400	0.506	0.563
Wilson's Warbler							M	0.212	0.005	0.004	0.042	0.212	0.418	0.009	-	0.069	0.200	0.369	-
Painted Redstart							M	-	-	0.012	-	-	-	-	-	-	-	-	-
Yellow-breasted Chat						1	M	-	0.004	-	-	-	0.045	0.071	-	-	0.073	0.494	0.515
Green-tailed Towhee							W	-	-	-	-	0.007	0.007	-	-	-	0.047	0.036	-

Table 2.								Palen 2013		Salton Sea IBA					Lower Colorado River IBA				
Common Name	FE	FT	CE	CT	CFP	SSC	Resident Status	SBC Ind. per survey	BUC Ind. per hour	Feb.	Mar.	Apr.	May	Jun.	Feb.	Mar.	Apr.	May	Jun.
										(242)	(167)	(137)	(134)	(112)	(96)	(116)	(150)	(168)	(103)
Spotted Towhee							M	-	-	0.012	0.006	-	0.007	0.009	-	-	-	-	-
Abert's Towhee							YR	-	-	0.343	0.251	0.285	0.403	0.339	0.260	0.371	0.440	0.524	0.495
Rufous-crowned Sparrow							YR	-	-	-	-	-	-	-	-	-	-	-	-
Chipping Sparrow							W	0.017	-	0.029	0.054	0.102	0.022	-	-	0.017	0.047	0.006	-
Brewer's Sparrow							W	0.240	0.041	0.008	0.018	0.058	0.022	-	-	0.017	0.093	0.018	-
Vesper Sparrow						1	W	-	-	0.021	0.024	-	-	-	0.021	-	-	-	-
Lark Sparrow							W	-	0.003	0.037	0.036	0.073	0.045	0.080	-	-	0.020	0.018	-
Black-throated Sparrow							YR	0.006	-	0.004	0.012	0.007	-	-	0.010	0.017	0.007	0.006	0.010
Cassin's Sparrow							M	-	-	-	-	-	-	-	-	-	-	-	-
Clay-colored Sparrow							W	-	-	-	-	-	-	-	-	-	-	0.006	-
Sage Sparrow							W	-	-	0.004	-	-	-	-	0.042	0.009	0.007	-	-
Savannah Sparrow							W	0.028	0.008	0.281	0.138	0.102	0.007	0.009	0.031	0.035	0.040	0.006	-
Fox Sparrow							W	-	-	0.008	0.006	0.022	-	-	-	-	-	-	-
Song Sparrow							YR	-	-	0.248	0.257	0.387	0.440	0.295	0.177	0.267	0.313	0.381	0.447
Lincoln's Sparrow							W	-	-	0.037	0.072	0.036	-	-	0.073	0.129	0.080	0.006	-
White-throated Sparrow							W	-	-	0.008	0.018	0.001	-	-	-	-	-	-	-
Harris's Sparrow							W	-	-	0.000	-	-	-	-	-	-	-	-	-
White-crowned Sparrow							W	0.028	-	0.405	0.275	0.234	0.045	-	0.177	0.172	0.220	0.071	-
Golden-crowned Sparrow							W	-	-	0.004	-	-	-	-	-	0.000	-	-	-
Dark-eyed Junco							W	-	-	0.062	0.019	0.051	-	-	0.010	-	0.007	-	-
Summer Tanager						1	S	-	-	-	-	-	0.007	-	-	-	0.027	0.095	0.165
Western Tanager							M	0.006	-	-	-	0.102	0.284	0.018	-	-	0.027	0.179	0.039
McCown's Longspur							W	-	-	0.017	-	-	-	-	-	-	-	-	-
Lapland Longspur							W	-	-	0.029	-	-	-	-	-	-	-	-	-

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Smith's Longspur							W	-	-	0.008	-	-	-	-	-	-	-	-	-
Chestnut-collared Longspur							W	-	-	0.037	-	-	-	-	-	-	-	-	-
Rose-breasted Grosbeak							M	-	-	-	-	-	-	-	-	-	-	-	0.001
Black-headed Grosbeak							M	0.011	-	-	0.006	0.182	0.231	-	-	-	0.060	0.167	-
Blue Grosbeak							S	-	-	-	-	0.029	0.134	0.152	-	-	0.047	0.315	0.369
Lazuli Bunting							M	-	-	-	-	0.073	0.090	-	-	-	0.047	0.137	-
Indigo Bunting							M	-	-	-	-	-	-	-	-	-	-	0.036	0.097
Dickcissel							M	-	-	-	-	-	-	-	-	-	-	-	0.010
Red-winged Blackbird							YR	0.022	0.003	0.360	0.389	0.416	0.545	0.384	0.188	0.198	0.427	0.554	0.505
Tricolored Blackbird						1	M	-	-	-	-	-	0.007	-	-	-	-	-	-
Western Meadowlark							YR	-	-	0.388	0.341	0.299	0.358	0.295	0.167	0.095	0.073	0.042	0.010
Yellow-headed Blackbird						1	YR	0.006	-	0.041	0.084	0.226	0.328	0.286	0.010	0.052	0.233	0.393	0.252
Brewer's Blackbird							W	0.006	-	0.174	0.174	0.204	0.187	0.134	0.052	0.026	0.014	0.006	-
Great-tailed Grackle							YR	0.335	0.101	0.401	0.401	0.401	0.597	0.411	0.219	0.310	0.460	0.667	0.573
Bronzed Cowbird							S	-	-	-	-	0.051	0.127	0.098	-	-	0.000	-	-
Brown-headed Cowbird							S	0.011	0.005	0.054	0.114	0.277	0.373	0.295	-	0.034	0.267	0.583	0.456
Hooded Oriole							S	0.006	-	-	0.012	0.080	0.097	0.080	-	-	0.014	0.024	0.087
Bullock's Oriole							S	0.034	0.003	-	0.042	0.212	0.201	0.107	-	-	0.147	0.262	0.233
Baltimore Oriole							M	-	-	-	-	-	0.007	-	-	-	-	0.006	-
Scott's Oriole							S	-	-	0.004	-	-	-	-	-	-	-	-	0.010
Red Crossbill							W	-	-	0.008	-	-	-	-	-	-	-	-	-
Pine Siskin							W	-	-	0.004	-	0.015	0.015	-	-	-	-	0.018	-
Lesser Goldfinch							YR	0.050	0.003	0.041	0.066	0.109	0.090	0.018	0.010	0.155	0.107	0.083	0.019
Lawrence's Goldfinch							W	-	-	-	0.006	0.001	-	-	-	-	0.020	0.012	-
American Goldfinch							W	-	-	0.012	-	0.007	0.007	-	-	0.017	0.007	0.012	-
House Finch							YR	0.223	0.059	0.248	0.275	0.285	0.343	0.223	0.094	0.310	0.253	0.333	0.214

Table 2.								Palen 2013		Salton Sea IBA					Lower Colorado River IBA				
Common Name	FE	FT	CE	CT	CFP	SSC	Resident Status	SBC Ind. per survey	BUC Ind. per hour	Feb.	Mar.	Apr.	May	Jun.	Feb.	Mar.	Apr.	May	Jun.
										(242)	(167)	(137)	(134)	(112)	(96)	(116)	(150)	(168)	(103)
House Sparrow							YR	-	-	0.260	0.204	0.292	0.328	0.223	0.021	0.043	0.027	0.065	0.019

3.3 Point Count Survey Data Comparisons

Point count surveys lasting 10-minutes in duration and with a 100-meter radius survey area were conducted in the spring seasons at Palen SPP (2009), Genesis (2009), and Rio Mesa (2011). Results from these surveys are displayed in Table 3, with BBI's spring 2013 point count (Palen 2013) survey results for all detections occurring within 100 meters of the station. Point count surveys with an unlimited-radius survey area were conducted at McCoy (2011) and Rio Mesa (2012). Results from these surveys are displayed in Table 4, with BBI's spring 2013 point count (Palen 2013) survey results for detections occurring at all distances.

These data are most informative in regard to small to medium-sized bird species, for which this survey type is best suited to evaluate. Nonetheless, results are reported for all species, mainly because most of the studies reviewed did not conduct fixed-point surveys, which are better suited to evaluating the abundance of raptors and other large birds. For comparing small birds among site, the most accurate data are likely in Table 3, with the survey area limited to 100 meters, because an unlimited survey radius leaves open the possibility that variability in observer detection abilities at different distances could lead to biased results. Nonetheless, the purpose of including the unlimited-radius point count data at all is because they provide the only means to evaluate differences in standardized abundance measures between the PGEGS Project site and others in the region for which 100-meter radius survey data were not available. For large birds, the unlimited-radius point count data in Table 4 are likely to provide a better comparison among sites than the 100-meter point count data because raptors and other large birds may be wary of approaching within 100 meters of an observer in the field.

Table 3. Point Count Survey Data (100-meter Radius)

The following table lists all bird species observed in at least one of the studies reviewed for this report. This list does not include species that were only observed at the Salton Sea or Lower Colorado IBAs based on eBIRD data. The data presented pertain only to birds detected within 100 meters of the survey station during 10-minute point count surveys reported in one of the following four studies: (1) Palen Solar Electric Generating Facility 2013 avian surveys (Palen 2013), (2) Palen SPP 2009 avian surveys (Palen 2009), (3) Genesis Solar Energy Project 2009 avian surveys (Genesis 2009), and (4) Rio Mesa Solar Electric Generating Facility 2011 avian surveys (Rio Mesa 2011). Measures of abundance include the total numbers of individuals observed (# Individuals) and the standardize measure of the mean number of individuals observed per survey (Individuals/survey). Measures of survey effort used to calculate standardized measures of abundance for each study are described in Section 3.1 of this report. Columns indicating sensitive species status include: Federally Endangered (FE), Federally Threatened (FT), California Endangered (CE), California Threatened (CT), California Fully Protected (CFP) and California Department of Fish and Wildlife Species of Special Concern (SSC). These pertain only to subspecies or forms of the species listed that occur in the region of the PGEGS Project site. Resident Status codes pertain to the species status in suitable habitat within the southern California deserts and include: migrants that are primarily present during the summer (S), migrants that are primarily present during the winter (W), migrants that pass through the region but are typically absent during the summer and winter months (M), and year-round residents (YR).

Table 3.									# Individuals				Individuals/survey			
Common Name	FE	FT	CE	CT	CFP	SSC	Resident Status	Palen 2013	Palen 2009	Genesis 2009	Rio Mesa 2011	Palen 2013	Palen 2009	Genesis 2009	Rio Mesa 2011
Mallard							YR	0	0	0	0	-	-	-	-
Bufflehead							W	0	0	0	0	-	-	-	-

Table 3.								**# Individuals**				**Individuals/survey**			
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Palen 2013**	**Palen 2009**	**Genesis 2009**	**Rio Mesa 2011**	**Palen 2013**	**Palen 2009**	**Genesis 2009**	**Rio Mesa 2011**
Gambel's Quail							YR	6	0	0	53	0.034	-	-	0.104
Eared Grebe							W	8	0	0	0	0.045	-	-	-
American White Pelican						1	W	0	0	0	14	-	-	-	0.027
Double-crested Cormorant							YR	0	0	0	0	-	-	-	-
Great Blue Heron							YR	0	0	0	0	-	-	-	-
Great Egret							YR	0	0	0	0	-	-	-	-
Snowy Egret							YR	0	0	0	0	-	-	-	-
White-faced Ibis							YR	0	0	0	0	-	-	-	-
Turkey Vulture							YR	13	0	3	34	0.073	-	0.013	0.066
Osprey							W	0	0	0	0	-	-	-	-
Northern Harrier						1	W	1	0	1	1	0.006	-	0.004	0.002
Sharp-shinned Hawk							W	0	0	0	0	-	-	-	-
Cooper's Hawk							YR	0	0	0	1	-	-	-	0.002
Red-shouldered Hawk							W	0	0	0	0	-	-	-	-
Swainson's Hawk				1			M	6	0	1	1	0.034	-	0.004	0.002
Red-tailed Hawk							YR	1	0	0	17	0.006	-	-	0.033
Ferruginous Hawk							W	0	0	0	0	-	-	-	-
Golden Eagle					1		YR	0	0	0	0	-	-	-	-
American Kestrel							YR	0	0	0	2	-	-	-	0.004
Merlin							W	0	0	0	0	-	-	-	-
Peregrine Falcon			1		1		YR	0	0	0	0	-	-	-	-
Prairie Falcon							YR	4	0	0	1	0.022	-	-	0.002
Unidentified Falcon								0	0	0	0	-	-	-	-
American Coot							YR	0	0	0	0	-	-	-	-
Sandhill Crane				1	1	1	W	0	0	0	0	-	-	-	-
Semipalmated Plover							W	1	0	0	0	0.006	-	-	-
Killdeer							YR	4	0	0	0	0.022	-	-	-
Black-necked Stilt							YR	0	0	0	0	-	-	-	-
Spotted Sandpiper							W	1	0	0	0	0.006	-	-	-
Solitary Sandpiper							M	1	0	0	0	0.006	-	-	-
Greater Yellowlegs							W	1	0	0	0	0.006	-	-	-
Long-billed Curlew							W	0	0	0	0	-	-	-	-
Marbled Godwit							W	2	0	0	0	0.011	-	-	-
Western Sandpiper							W	11	0	0	0	0.061	-	-	-
Least Sandpiper							W	3	0	0	0	0.017	-	-	-
Long-billed Dowitcher							W	1	0	0	0	0.006	-	-	-
Rock Pigeon							YR	0	0	0	0	-	-	-	-
Eurasian Collared-Dove							YR	0	0	0	3	-	-	-	0.006
White-winged Dove							S	5	0	0	33	0.028	-	-	0.064
Mourning Dove							YR	17	11	0	483	0.095	0.057	-	0.943
Common Ground-Dove							YR	0	0	0	0	-	-	-	-
Greater Roadrunner							YR	0	1	0	1	-	0.005	-	0.002
Great Horned Owl							YR	0	0	0	2	-	-	-	0.004
Burrowing Owl						1	YR	0	0	0	0	-	-	-	-
Lesser Nighthawk							S	1	0	0	18	0.006	-	-	0.035

Table 3.								**# Individuals**				**Individuals/survey**			
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Palen 2013**	**Palen 2009**	**Genesis 2009**	**Rio Mesa 2011**	**Palen 2013**	**Palen 2009**	**Genesis 2009**	**Rio Mesa 2011**
Common Poorwill							M	0	0	0	1	-	-	-	0.002
Vaux's Swift						1	M	10	7	0	28	0.056	0.036	-	0.055
White-throated Swift							YR	3	0	0	8	0.017	-	-	0.016
Black-chinned Hummingbird							M	0	0	0	4	-	-	-	0.008
Anna's Hummingbird							W	0	0	0	15	-	-	-	0.029
Costa's Hummingbird							YR	3	2	0	1	0.017	0.010	-	0.002
Unidentified Hummingbird								3	0	1	0	0.017	-	0.004	-
Lewis's Woodpecker							W	0	0	0	0	-	-	-	-
Gila Woodpecker			1				YR	0	0	0	4	-	-	-	0.008
Ladder-backed Woodpecker							YR	2	0	0	14	0.011	-	-	0.027
Olive-sided Flycatcher						1	M	0	0	0	0	-	-	-	-
Western Wood-Pewee							M	0	0	0	0	-	-	-	-
Willow Flycatcher	1		1				M	0	0	0	0	-	-	-	-
Hammond's Flycatcher							M	1	0	0	0	0.006	-	-	-
Gray Flycatcher							M	0	0	0	0	-	-	-	-
Dusky Flycatcher							M	0	0	0	0	-	-	-	-
Pacific-slope Flycatcher							M	0	0	0	0	-	-	-	-
Black Phoebe							YR	0	1	0	0	-	0.005	-	-
Say's Phoebe							W	1	0	0	9	0.006	-	-	0.018
Ash-throated Flycatcher							S	18	2	2	304	0.101	0.010	0.009	0.594
Cassin's Kingbird							M	0	0	0	0	-	-	-	-
Western Kingbird							S	7	0	0	38	0.039	-	-	0.074
Loggerhead Shrike						1	YR	32	1	14	58	0.179	0.005	0.063	0.113
Warbling Vireo							M	6	0	0	4	0.034	-	-	0.008
American Crow							W	0	0	0	0	-	-	-	-
Common Raven							YR	12	9	2	7	0.067	0.047	0.009	0.014
Horned Lark							YR	159	141	119	21	0.888	0.734	0.531	0.041
Purple Martin						1	M	0	0	0	0	-	-	-	-
Tree Swallow							W	48	3	17	660	0.268	0.016	0.076	1.289
Violet-green Swallow							M	0	0	4	0	-	-	0.018	-
Northern Rough-winged Swallow							M	7	0	18	3	0.039	-	0.080	0.006
Bank Swallow				1			M	0	0	0	0	-	-	-	-
Cliff Swallow							S	162	5	52	62	0.905	0.026	0.232	0.121
Barn Swallow							M	29	4	5	18	0.162	0.021	0.022	0.035
Verdin							YR	107	4	0	247	0.598	0.021	-	0.482
Cactus Wren							YR	8	0	0	23	0.045	-	-	0.045
Rock Wren							YR	0	0	0	0	-	-	-	-
Canyon Wren							YR	0	0	0	0	-	-	-	-
Bewick's Wren							W	0	0	0	0	-	-	-	-
Marsh Wren							YR	0	0	0	0	-	-	-	-
Blue-gray Gnatcatcher							W	6	0	0	8	0.034	-	-	0.016
Black-tailed Gnatcatcher							YR	37	0	2	84	0.207	-	0.009	0.164
Ruby-crowned Kinglet							W	0	2	0	1	-	0.010	-	0.002

Table 3.								# Individuals				Individuals/survey			
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Palen 2013**	**Palen 2009**	**Genesis 2009**	**Rio Mesa 2011**	**Palen 2013**	**Palen 2009**	**Genesis 2009**	**Rio Mesa 2011**
Western Bluebird							W	0	0	0	0	-	-	-	-
Mountain Bluebird							W	0	0	0	0	-	-	-	-
Northern Mockingbird							YR	0	4	2	8	-	0.021	0.009	0.016
Sage Thrasher							W	0	0	0	0	-	-	-	-
Crissal Thrasher						1	YR	0	0	0	1	-	-	-	0.002
Le Conte's Thrasher						1	YR	5	0	0	1	0.028	-	-	0.002
European Starling							YR	1	0	0	2	0.006	-	-	0.004
American Pipit							W	0	0	0	0	-	-	-	-
Phainopepla							YR	0	2	0	76	-	0.010	-	0.148
Orange-crowned Warbler							M	10	4	0	5	0.056	0.021	-	0.010
Nashville Warbler							M	4	0	0	0	0.022	-	-	-
Lucy's Warbler							S	0	0	0	15	-	-	-	0.029
Yellow Warbler						1	M	1	0	0	0	0.006	-	-	-
Yellow-rumped Warbler							W	30	2	0	20	0.168	0.010	-	0.039
Black-throated Gray Warbler							M	0	0	0	0	-	-	-	-
Townsend's Warbler							M	6	0	0	2	0.034	-	-	0.004
Hermit Warbler							M	0	1	0	1	-	0.005	-	0.002
MacGillivray's Warbler							M	0	0	0	7	-	-	-	0.014
Common Yellowthroat							YR	1	0	0	0	0.006	-	-	-
Wilson's Warbler							M	34	4	0	19	0.190	0.021	-	0.037
Yellow-breasted Chat						1	M	0	0	0	0	-	-	-	-
Rufous-crowned Sparrow							YR	0	0	0	3	-	-	-	0.006
Chipping Sparrow							W	3	0	0	6	0.017	-	-	0.012
Brewer's Sparrow							W	40	8	9	38	0.223	0.042	0.040	0.074
Lark Sparrow							W	0	0	0	1	-	-	-	0.002
Black-throated Sparrow							YR	0	5	83	9	-	0.026	0.371	0.018
Sage Sparrow							W	0	0	0	0	-	-	-	-
Savannah Sparrow							W	5	0	0	6	0.028	-	-	0.012
Song Sparrow							YR	0	0	0	0	-	-	-	-
White-crowned Sparrow							W	5	0	0	22	0.028	-	-	0.043
Dark-eyed Junco							W	0	0	0	0	-	-	-	-
Western Tanager							M	0	0	0	0	-	-	-	-
Black-headed Grosbeak							M	1	0	0	2	0.006	-	-	0.004
Blue Grosbeak							S	0	0	0	1	-	-	-	0.002
Lazuli Bunting							M	0	0	0	0	-	-	-	-
Indigo Bunting							M	0	0	0	0	-	-	-	-
Red-winged Blackbird							YR	3	0	0	8	0.017	-	-	0.016
Western Meadowlark							YR	0	0	0	0	-	-	-	-
Yellow-headed Blackbird						1	YR	0	0	0	0	-	-	-	-
Brewer's Blackbird							W	1	0	0	2	0.006	-	-	0.004
Great-tailed Grackle							YR	12	0	0	5	0.067	-	-	0.010
Brown-headed Cowbird							S	2	0	0	12	0.011	-	-	0.023
Hooded Oriole							S	1	0	0	3	0.006	-	-	0.006
Bullock's Oriole							S	5	1	0	11	0.028	0.005	-	0.021

Table 3.								# Individuals				Individuals/survey			
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Palen 2013**	**Palen 2009**	**Genesis 2009**	**Rio Mesa 2011**	**Palen 2013**	**Palen 2009**	**Genesis 2009**	**Rio Mesa 2011**
Scott's Oriole							S	0	0	0	0	-	-	-	-
Red Crossbill							W	0	0	1	0	-	-	0.004	-
Lesser Goldfinch							YR	5	0	0	14	0.028	-	-	0.027
House Finch							YR	26	2	0	36	0.145	0.010	-	0.070
House Sparrow							YR	0	0	0	0	-	-	-	-

Table 4. Point Count Survey Data (Unlimited radius)

The following table lists all bird species observed in at least one of the studies reviewed for this report. This list does not include species that were only observed at the Salton Sea or Lower Colorado IBAs based on eBIRD data. The data presented pertain to birds detected at any distance from the survey station during 10-minute point count surveys reported in one of the following three studies: (1) Palen Solar Electric Generating Facility 2013 avian surveys (Palen 2013), (2) McCoy Solar Energy Project 2011 avian surveys (McCoy 2011), and (3) Rio Mesa Solar Electric Generating Facility 2012 avian surveys (Rio Mesa 2012). Measures of abundance include the total numbers of individuals observed (# Individuals) and the standardize measure of the mean number of individuals observed per survey (Individuals/survey). Measures of survey effort used to calculate standardized measures of abundance for each study are described in Section 3.1 of this report. Columns indicating sensitive species status include: Federally Endangered (FE), Federally Threatened (FT), California Endangered (CE), California Threatened (CT), California Fully Protected (CFP) and California Department of Fish and Wildlife Species of Special Concern (SSC). These pertain only to subspecies or forms of the species listed that occur in the region of the PGEGS Project site. Resident Status codes pertain to the species status in suitable habitat within the southern California deserts and include: migrants that are primarily present during the summer (S), migrants that are primarily present during the winter (W), migrants that pass through the region but are typically absent during the summer and winter months (M), and year-round residents (YR).

Table 4.									# Individuals			Individuals/survey		
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Palen 2013**	**McCoy 2011**	**Rio Mesa 2012**	**Palen 2013**	**McCoy 2011**	**Rio Mesa 2012**
Mallard							YR	0	0	0	-	-	-
Bufflehead							W	1	0	0	0.006	-	-
Gambel's Quail							YR	10	9	59	0.056	0.047	0.082
Eared Grebe							W	8	0	0	0.045	-	-
American White Pelican						1	W	0	0	0	-	-	-
Double-crested Cormorant							YR	0	0	60	-	-	0.083
Great Blue Heron							YR	0	0	0	-	-	-
Great Egret							YR	0	0	1	-	-	0.001
Snowy Egret							YR	1	0	0	0.006	-	-
White-faced Ibis							YR	0	0	0	-	-	-
Turkey Vulture							YR	308	23	61	1.721	0.120	0.085
Osprey							W	1	0	0	0.006	-	-
Northern Harrier						1	W	1	1	1	0.006	0.005	0.001
Sharp-shinned Hawk							W	0	0	0	-	-	-
Cooper's Hawk							YR	0	0	2	-	-	0.003
Red-shouldered Hawk							W	0	0	0	-	-	-
Swainson's Hawk				1			M	36	4	0	0.201	0.021	-
Red-tailed Hawk							YR	27	22	88	0.151	0.115	0.122
Ferruginous Hawk							W	0	0	0	-	-	-
Golden Eagle					1		YR	0	0	0	-	-	-
American Kestrel							YR	2	4	0	0.011	0.021	-

Table 4.								**# Individuals**			**Individuals/survey**		
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Palen 2013**	**McCoy 2011**	**Rio Mesa 2012**	**Palen 2013**	**McCoy 2011**	**Rio Mesa 2012**
Merlin							W	0	0	0	-	-	-
Peregrine Falcon			1		1		YR	0	0	1	-	-	0.001
Prairie Falcon							YR	12	1	2	0.067	0.005	0.003
Unidentified Falcon								0	1	0	-	0.005	-
American Coot							YR	0	0	0	-	-	-
Sandhill Crane				1	1	1	W	0	0	0	-	-	-
Semipalmated Plover							W	1	0	0	0.006	-	-
Killdeer							YR	4	0	0	0.022	-	-
Black-necked Stilt							YR	0	0	0	-	-	-
Spotted Sandpiper							W	3	0	0	0.017	-	-
Solitary Sandpiper							M	1	0	0	0.006	-	-
Greater Yellowlegs							W	2	0	0	0.011	-	-
Long-billed Curlew							W	0	0	0	-	-	-
Marbled Godwit							W	2	0	0	0.011	-	-
Western Sandpiper							W	11	0	0	0.061	-	-
Least Sandpiper							W	6	0	0	0.034	-	-
Long-billed Dowitcher							W	1	0	0	0.006	-	-
Rock Pigeon							YR	0	0	0	-	-	-
Eurasian Collared-Dove							YR	5	6	24	0.028	0.031	0.033
White-winged Dove							S	11	1	388	0.061	0.005	0.539
Mourning Dove							YR	47	10	877	0.263	0.052	1.218
Common Ground-Dove							YR	0	0	0	-	-	-
Greater Roadrunner							YR	0	1	1	-	0.005	0.001
Great Horned Owl							YR	0	0	3	-	-	0.004
Burrowing Owl						1	YR	4	0	0	0.022	-	-
Lesser Nighthawk							S	2	3	50	0.011	0.016	0.069
Common Poorwill							M	0	1	0	-	0.005	-
Vaux's Swift						1	M	10	0	3	0.056	-	0.004
White-throated Swift							YR	4	3	1	0.022	0.016	0.001
Black-chinned Hummingbird							M	0	0	0	-	-	-
Anna's Hummingbird							W	0	0	1	-	-	0.001
Costa's Hummingbird							YR	3	1	4	0.017	0.005	0.006
Unidentified Hummingbird								4	2	0	0.022	0.010	-
Lewis's Woodpecker							W	0	0	1	-	-	0.001
Gila Woodpecker			1				YR	0	0	0	-	-	-
Ladder-backed Woodpecker							YR	2	0	30	0.011	-	0.042
Olive-sided Flycatcher						1	M	0	0	1	-	-	0.001
Western Wood-Pewee							M	0	0	3	-	-	0.004
Willow Flycatcher	1		1				M	0	0	2	-	-	0.003
Hammond's Flycatcher							M	1	0	0	0.006	-	-
Gray Flycatcher							M	1	0	1	0.006	-	0.001
Dusky Flycatcher							M	0	1	2	-	0.005	0.003
Pacific-slope Flycatcher							M	0	0	4	-	-	0.006
Black Phoebe							YR	0	0	1	-	-	0.001
Say's Phoebe							W	5	1	4	0.028	0.005	0.006

Table 4.								# Individuals			Individuals/survey		
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Palen 2013**	**McCoy 2011**	**Rio Mesa 2012**	**Palen 2013**	**McCoy 2011**	**Rio Mesa 2012**
Ash-throated Flycatcher							S	31	20	474	0.173	0.104	0.658
Cassin's Kingbird							M	0	0	17	-	-	0.024
Western Kingbird							S	8	7	54	0.045	0.036	0.075
Loggerhead Shrike						1	YR	106	37	103	0.592	0.193	0.143
Warbling Vireo							M	6	0	17	0.034	-	0.024
American Crow							W	0	0	0	-	-	-
Common Raven							YR	91	30	1	0.508	0.156	0.001
Horned Lark							YR	240	65	119	1.341	0.339	0.165
Purple Martin						1	M	0	0	0	-	-	-
Tree Swallow							W	49	75	20	0.274	0.391	0.028
Violet-green Swallow							M	0	1	0	-	0.005	-
Northern Rough-winged Swallow							M	8	60	22	0.045	0.313	0.031
Bank Swallow				1			M	0	0	0	-	-	-
Cliff Swallow							S	205	51	32	1.145	0.266	0.044
Barn Swallow							M	57	28	68	0.318	0.146	0.094
Verdin							YR	137	7	414	0.765	0.036	0.575
Cactus Wren							YR	14	13	131	0.078	0.068	0.182
Rock Wren							YR	0	0	0	-	-	-
Canyon Wren							YR	0	0	1	-	-	0.001
Bewick's Wren							W	0	0	2	-	-	0.003
Marsh Wren							YR	0	0	0	-	-	-
Blue-gray Gnatcatcher							W	6	4	0	0.034	0.021	-
Black-tailed Gnatcatcher							YR	42	12	144	0.235	0.063	0.200
Ruby-crowned Kinglet							W	0	0	0	-	-	-
Western Bluebird							W	0	0	0	-	-	-
Mountain Bluebird							W	0	0	0	-	-	-
Northern Mockingbird							YR	1	1	5	0.006	0.005	0.007
Sage Thrasher							W	0	0	0	-	-	-
Crissal Thrasher						1	YR	0	0	4	-	-	0.006
Le Conte's Thrasher						1	YR	23	0	6	0.128	-	0.008
European Starling							YR	22	0	4	0.123	-	0.006
American Pipit							W	0	0	0	-	-	-
Phainopepla							YR	4	1	31	0.022	0.005	0.043
Orange-crowned Warbler							M	10	2	13	0.056	0.010	0.018
Nashville Warbler							M	4	0	4	0.022	-	0.006
Lucy's Warbler							S	0	0	13	-	-	0.018
Yellow Warbler						1	M	1	1	8	0.006	0.005	0.011
Yellow-rumped Warbler							W	32	8	6	0.179	0.042	0.008
Black-throated Gray Warbler							M	0	0	0	-	-	-
Townsend's Warbler							M	6	0	8	0.034	-	0.011
Hermit Warbler							M	0	0	0	-	-	-
MacGillivray's Warbler							M	0	0	5	-	-	0.007
Common Yellowthroat							YR	2	0	0	0.011	-	-
Wilson's Warbler							M	38	5	32	0.212	0.026	0.044

Table 4.								# Individuals			Individuals/survey		
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Palen 2013**	**McCoy 2011**	**Rio Mesa 2012**	**Palen 2013**	**McCoy 2011**	**Rio Mesa 2012**
Yellow-breasted Chat						1	M	0	0	0	-	-	-
Rufous-crowned Sparrow							YR	0	0	0	-	-	-
Chipping Sparrow							W	3	0	0	0.017	-	-
Brewer's Sparrow							W	43	14	19	0.240	0.073	0.026
Lark Sparrow							W	0	0	0	-	-	-
Black-throated Sparrow							YR	1	13	12	0.006	0.068	0.017
Sage Sparrow							W	0	0	0	-	-	-
Savannah Sparrow							W	5	0	0	0.028	-	-
Song Sparrow							YR	0	0	0	-	-	-
White-crowned Sparrow							W	5	1	1	0.028	0.005	0.001
Dark-eyed Junco							W	0	0	0	-	-	-
Western Tanager							M	1	0	14	0.006	-	0.019
Black-headed Grosbeak							M	2	1	8	0.011	0.005	0.011
Blue Grosbeak							S	0	0	0	-	-	-
Lazuli Bunting							M	0	0	0	-	-	-
Indigo Bunting							M	0	0	1	-	-	0.001
Red-winged Blackbird							YR	4	1	390	0.022	0.005	0.542
Western Meadowlark							YR	0	0	7	-	-	0.010
Yellow-headed Blackbird						1	YR	1	0	183	0.006	-	0.254
Brewer's Blackbird							W	1	1	41	0.006	0.005	0.057
Great-tailed Grackle							YR	60	1	1	0.335	0.005	0.001
Brown-headed Cowbird							S	2	0	106	0.011	-	0.147
Hooded Oriole							S	1	0	0	0.006	-	-
Bullock's Oriole							S	6	0	7	0.034	-	0.010
Scott's Oriole							S	0	0	0	-	-	-
Red Crossbill							W	0	0	0	-	-	-
Lesser Goldfinch							YR	9	0	5	0.050	-	0.007
House Finch							YR	40	15	76	0.223	0.078	0.106
House Sparrow							YR	0	0	0	-	-	-

3.4 Fixed-point Survey Data Comparisons

Fixed-point surveys with an unlimited radius survey area were conducted in the spring, 2012 season at the Rio Mesa site and at the PGEGS Project site in spring 2013. Results from the Rio Mesa 2012 surveys are displayed in Table 5, with results for all detections from the PGEGS Project site that occurred at any distance from the station during spring 2013 fixed-point (BUC) surveys. These data provide the strongest basis for a comparison of raptor and other large bird abundances between the PGEGS Project site and another site within the region because similar methods were followed for surveys at both sites. Turkey Vulture (*Cathartes aura*) and raptor abundances were fairly similar between the two sites. One exception to this was that Swainson's Hawks (*Buteo Swainsoni*) were observed more often at the PGEGS Project site compared to the Rio Mesa site (0.14 versus 0.03 individuals observed per hour of observation).

Many non-raptor species that were detected at the Rio Mesa site were not detected at all (indicated by a dash in the row) at the PGEGS Project site during unlimited radius fixed-point surveys. This result differs from species-by-species comparisons in unlimited-radius point count surveys (Table 4), in which many such species were also detected at the PGEGS Project site. Shorebird and waterfowl detections during fixed-point surveys tended to be

higher at the Rio Mesa site in 2012 compared to the PGEGS Project site in spring 2013, which may be due to the proximity of the Rio Mesa site to the Colorado River. However, the opposite pattern was true when results from unlimited-radius point count surveys for the same years were compared between the two sites (Table 4), with shorebirds and waterfowl being more often detected at the PGEGS Project site. This discrepancy is likely related to the placement of surveying stations for each survey type, relative to water sources. At the PGEGS Project site in 2013, fixed-point survey locations were primarily placed in areas of Sonoran Creosote Scrub habitat across the project footprint that afforded the biologist a broad view of the surrounding area without obstructions. While the broad survey areas for these stations included diverse habitats, such as Desert Dry Woodland Wash, sand dunes, and agricultural palm plantations, most locations were not situated in close proximity to the few water bodies present on private lands adjacent to the site. In contrast, a number of point count stations at the PGEGS Project site were situated close to agricultural ponds adjacent to the site, with the 100-meter survey radius of one such station encompassing a small agricultural pond where the vast majority of shorebird and waterfowl observations occurred during spring 2013 surveys. Since shorebirds and waterfowl were both clearly present at each of the two sites, but were primarily detected during point count surveys at the PGEGS site, and during fixed-point surveys at the Rio Mesa site, it seems likely that the placement of stations was a strong predictor of whether these species were detected at all during a given survey type. Because fixed-point surveys differ dramatically from point count surveys in methodology and survey area, it is difficult to draw a firm conclusion as to which site has a greater abundance of shorebirds and waterfowl during the spring season by comparing abundances between the two survey types. Nonetheless, regardless of survey type, shorebirds and waterfowl species were observed only in low numbers at the PGEGS site in spring 2013, despite weekly point count surveys near the sources of water, whereas two water-dependent species, the Double-crested Cormorant (*Phalacrocorax auritus*) and White-faced Ibis (*Plegadis chihi*) did not differ (Table 4, unlimited-radius point count surveys) or were observed in much greater numbers (Table 5, unlimited-radius fixed-point surveys) at the Rio Mesa site in 2012.

Shorebirds and waterfowl were not the only species for which discrepancies existed in the comparison of unlimited-radius fixed-point survey data among these two sites. A number of migrant and resident passerines were detected during fixed-point surveys at Rio Mesa in 2012 that were not detected during fixed-point surveys at the PGEGS site in 2013. In many cases, these species were detected during point count surveys at the PGEGS site (Table 4), suggesting that some species were present on the PGEGS project site, but went undetected during fixed-point surveys. This again may be due to the placement of fixed-point survey stations in more open habitats that afford an unobstructed view of the broader survey area for the purpose of detecting migratory raptors and other large birds. Point count stations were more numerous and were placed in a greater variety of habitats in which more species of birds may have been detected. For this reason, as noted above (Section 3.3), the most reliable information for the occurrence of smaller bird species on the PGEGS Project site come from the 100-meter radius, or unlimited-radius point count surveys (Tables 3 and 4), rather than the unlimited-radius fixed-point survey data.

Table 5. Fixed-point Survey Data (Unlimited radius)

The following table lists all bird species observed in at least one of the studies reviewed for this report. This list does not include species that were only observed at the Salton Sea or Lower Colorado IBAs based on eBIRD data. The data presented pertain to birds detected at any distance from the survey station during 8-hour, fixed-point surveys reported in one of the following two studies: (1) Palen Solar Electric Generating Facility 2013 avian surveys (Palen 2013), (2) Rio Mesa Solar Electric Generating Facility 2012 avian surveys (Rio Mesa 2012). Measures of abundance include the total numbers of individuals observed (# Individuals) and the standardize measure of the mean number of individuals observed per hour of surveying time (Individuals/hour). Measures of survey effort used to calculate standardized measures of abundance for each study are described in Section 3.1 of this report. Columns indicating sensitive species status include: Federally Endangered (FE), Federally Threatened (FT), California Endangered (CE), California Threatened (CT), California Fully Protected (CFP) and California Department of Fish and Wildlife Species of Special Concern (SSC). These pertain only to subspecies or forms of the species listed that occur in the region of the PGEGS Project site. Resident Status codes pertain to the species status in suitable habitat within the southern California deserts and include: migrants that are primarily present during the summer (S), migrants that are primarily present during the winter (W), migrants that pass through the region but are typically absent during the summer and winter months (M), and year-round residents (YR).

Table 5.								# Individuals		Individuals/hour	
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Palen 2013**	**Rio Mesa 2012**	**Palen 2013**	**Rio Mesa 2012**
Mallard							YR	0	2	-	0.001
Bufflehead							W	0	0	-	-
Gambel's Quail							YR	12	184	0.016	0.087
Eared Grebe							W	0	0	-	-
American White Pelican						1	W	0	1	-	0.000
Double-crested Cormorant							YR	0	116	-	0.055
Great Blue Heron							YR	0	5	-	0.002
Great Egret							YR	1	26	0.001	0.012
Snowy Egret							YR	0	0	-	-
White-faced Ibis							YR	26	1163	0.034	0.549
Turkey Vulture							YR	1701	6283	2.232	2.964
Osprey							W	0	30	-	0.014
Northern Harrier						1	W	20	48	0.026	0.023
Sharp-shinned Hawk							W	4	10	0.005	0.005
Cooper's Hawk							YR	10	25	0.013	0.012
Red-shouldered Hawk							W	2	0	0.003	-
Swainson's Hawk				1			M	107	64	0.140	0.030
Red-tailed Hawk							YR	125	419	0.164	0.198
Ferruginous Hawk							W	1	2	0.001	0.001
Golden Eagle					1		YR	0	1	-	0.000
American Kestrel							YR	8	79	0.010	0.037
Merlin							W	0	2	-	0.001
Peregrine Falcon			1		1		YR	0	8	-	0.004
Prairie Falcon							YR	39	46	0.051	0.022
Unidentified Falcon								2	0	0.003	-
American Coot							YR	0	3	-	0.001
Sandhill Crane				1	1	1	W	0	34	-	0.016
Semipalmated Plover							W	0	0	-	-
Killdeer							YR	0	18	-	0.008
Black-necked Stilt							YR	0	3	-	0.001
Spotted Sandpiper							W	0	0	-	-
Solitary Sandpiper							M	0	0	-	-
Greater Yellowlegs							W	2	1	0.003	0.000
Long-billed Curlew							W	1	1	0.001	0.000
Marbled Godwit							W	0	0	-	-
Western Sandpiper							W	0	0	-	-
Least Sandpiper							W	0	1	-	0.000
Long-billed Dowitcher							W	0	0	-	-
Rock Pigeon							YR	0	23	-	0.011
Eurasian Collared-Dove							YR	0	42	-	0.020
White-winged Dove							S	19	233	0.025	0.110
Mourning Dove							YR	104	993	0.136	0.468
Common Ground-Dove							YR	0	1	-	0.000
Greater Roadrunner							YR	0	46	-	0.022
Great Horned Owl							YR	0	13	-	0.006
Burrowing Owl						1	YR	13	0	0.017	-

Table 5.								# Individuals		Individuals/hour	
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Palen 2013**	**Rio Mesa 2012**	**Palen 2013**	**Rio Mesa 2012**
Lesser Nighthawk							S	5	164	0.007	0.077
Common Poorwill							M	0	2	-	0.001
Vaux's Swift						1	M	7	9	0.009	0.004
White-throated Swift							YR	3	10	0.004	0.005
Black-chinned Hummingbird							M	0	8	-	0.004
Anna's Hummingbird							W	1	8	0.001	0.004
Costa's Hummingbird							YR	0	13	-	0.006
Unidentified Hummingbird								22	0	0.029	-
Lewis's Woodpecker							W	0	0	-	-
Gila Woodpecker			1				YR	0	0	-	-
Ladder-backed Woodpecker							YR	2	51	0.003	0.024
Olive-sided Flycatcher						1	M	0	0	-	-
Western Wood-Pewee							M	0	7	-	0.003
Willow Flycatcher	1		1				M	0	2	-	0.001
Hammond's Flycatcher							M	0	0	-	-
Gray Flycatcher							M	0	11	-	0.005
Dusky Flycatcher							M	0	0	-	-
Pacific-slope Flycatcher							M	0	11	-	0.005
Black Phoebe							YR	0	8	-	0.004
Say's Phoebe							W	1	53	0.001	0.025
Ash-throated Flycatcher							S	6	767	0.008	0.362
Cassin's Kingbird							M	0	0	-	-
Western Kingbird							S	8	169	0.010	0.080
Loggerhead Shrike						1	YR	38	352	0.050	0.166
Warbling Vireo							M	1	19	0.001	0.009
American Crow							W	0	1	-	0.000
Common Raven							YR	646	88	0.848	0.042
Horned Lark							YR	424	417	0.556	0.197
Purple Martin						1	M	0	1	-	0.000
Tree Swallow							W	269	1212	0.353	0.572
Violet-green Swallow							M	12	239	0.016	0.113
Northern Rough-winged Swallow							M	11	188	0.014	0.089
Bank Swallow				1			M	0	19	-	0.009
Cliff Swallow							S	127	929	0.167	0.438
Barn Swallow							M	106	303	0.139	0.143
Verdin							YR	59	489	0.077	0.231
Cactus Wren							YR	0	219	-	0.103
Rock Wren							YR	0	11	-	0.005
Canyon Wren							YR	0	1	-	0.000
Bewick's Wren							W	0	6	-	0.003
Marsh Wren							YR	0	3	-	0.001
Blue-gray Gnatcatcher							W	3	4	0.004	0.002
Black-tailed Gnatcatcher							YR	0	272	-	0.128
Ruby-crowned Kinglet							W	3	1	0.004	0.000

Table 5.								# Individuals		Individuals/hour	
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Palen 2013**	**Rio Mesa 2012**	**Palen 2013**	**Rio Mesa 2012**
Western Bluebird							W	0	2	-	0.001
Mountain Bluebird							W	0	51	-	0.024
Northern Mockingbird							YR	1	71	0.001	0.033
Sage Thrasher							W	0	64	-	0.030
Crissal Thrasher						1	YR	0	18	-	0.008
Le Conte's Thrasher						1	YR	11	12	0.014	0.006
European Starling							YR	34	107	0.045	0.050
American Pipit							W	1	2	0.001	0.001
Phainopepla							YR	0	151	-	0.071
Orange-crowned Warbler							M	3	37	0.004	0.017
Nashville Warbler							M	0	17	-	0.008
Lucy's Warbler							S	0	7	-	0.003
Yellow Warbler						1	M	1	6	0.001	0.003
Yellow-rumped Warbler							W	52	88	0.068	0.042
Black-throated Gray Warbler							M	1	3	0.001	0.001
Townsend's Warbler							M	0	9	-	0.004
Hermit Warbler							M	0	0	-	-
MacGillivray's Warbler							M	0	3	-	0.001
Common Yellowthroat							YR	0	3	-	0.001
Wilson's Warbler							M	4	36	0.005	0.017
Yellow-breasted Chat						1	M	3	0	0.004	-
Rufous-crowned Sparrow							YR	0	0	-	-
Chipping Sparrow							W	0	16	-	0.008
Brewer's Sparrow							W	31	243	0.041	0.115
Lark Sparrow							W	2	0	0.003	-
Black-throated Sparrow							YR	0	38	-	0.018
Sage Sparrow							W	0	158	-	0.075
Savannah Sparrow							W	6	1	0.008	0.000
Song Sparrow							YR	0	4	-	0.002
White-crowned Sparrow							W	0	117	-	0.055
Dark-eyed Junco							W	0	1	-	0.000
Western Tanager							M	0	12	-	0.006
Black-headed Grosbeak							M	0	8	-	0.004
Blue Grosbeak							S	0	1	-	0.000
Lazuli Bunting							M	0	4	-	0.002
Indigo Bunting							M	0	0	-	-
Red-winged Blackbird							YR	2	1749	0.003	0.825
Western Meadowlark							YR	0	20	-	0.009
Yellow-headed Blackbird						1	YR	0	2620	-	1.236
Brewer's Blackbird							W	0	379	-	0.179
Great-tailed Grackle							YR	77	55	0.101	0.026
Brown-headed Cowbird							S	4	196	0.005	0.092
Hooded Oriole							S	0	2	-	0.001
Bullock's Oriole							S	2	14	0.003	0.007
Scott's Oriole							S	0	1	-	0.000

Table 5.								# Individuals		Individuals/hour	
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**Palen 2013**	**Rio Mesa 2012**	**Palen 2013**	**Rio Mesa 2012**
Red Crossbill							W	0	0	-	-
Lesser Goldfinch							YR	2	20	0.003	0.009
House Finch							YR	45	243	0.059	0.115
House Sparrow							YR	0	2	-	0.001

3.5 Flight Height Data

Data regarding avian flight heights from all detections for which such data were available during spring 2013 avian surveys at the PGEGS Project site and spring 2012 avian surveys at the Rio Mesa site are presented in Table 6. During spring 2013 surveys at the PGEGS Project site, the vast majority of birds detected were observed flying at heights lower than the height of the proposed towers (approximately 225 meters). These results are similar to those observed at the Rio Mesa site in 2012, as revealed by a comparison of data in Table 6 from the two studies. In general, data from the PGEGS Project site reflect lower average flight heights compared to those at the Rio Mesa site, in species-by-species comparisons. Most of the birds detected on the PGEGS Project site were either resident birds (e.g., Common Ravens or Turkey Vultures), or migrant passerines that were flying at low altitudes, likely because they were merely passing through or stopping over at the PGEGS Project site to forage during the daytime while migrating. Many passerines migrate predominantly at night, and as such, the data for these species are not likely representative of the heights at which these birds fly when passing over the site in large numbers. Data regarding flight heights of raptors, which migrant predominantly during the daylight hours, are likely more reflective of the heights at which these species pass over the site in migration. Of all of the species for which at least 3 height estimates were obtained on the PGEGS Project site, only one species, the Sharp-shinned Hawk (*Accipiter striatus*) had an average flight height greater than 200 meters. It should be noted however, that a number of raptors and other large birds, including Red-tailed Hawks (*Buteo jamaicensis*), Swainson's Hawks, Turkey Vultures and Common Ravens, were regularly observed flying very low to the ground (less than 5 meters above ground level) during extremely windy conditions on the PGEGS Project site, as this appeared to afford them with a path of least resistance while traversing across the open landscape.

Table 6. Avian Flight Heights Recorded at the Palen and Rio Mesa Project Sites

The following table lists all bird species for which height data were available from one or both of the following two studies: (1) Palen Solar Electric Generating Facility 2013 avian surveys (Palen 2013), (2) Rio Mesa Solar Electric Generating Facility 2012 avian surveys (Rio Mesa 2012). Measures of flight height for each species include the numbers of individuals for which height data were available (# Ind.), and the mean (Mean), minimum (Min.) and maximum (Max.) flight heights (in meters) for all individuals observed at each site. Columns indicating sensitive species status include: Federally Endangered (FE), Federally Threatened (FT), California Endangered (CE), California Threatened (CT), California Fully Protected (CFP) and California Department of Fish and Wildlife Species of Special Concern (SSC). These pertain only to subspecies or forms of the species listed that occur in the region of the PGEGS Project site. Resident Status codes pertain to the species status in suitable habitat within the southern California deserts and include: migrants that are primarily present during the summer (S), migrants that are primarily present during the winter (W), migrants that pass through the region but are typically absent during the summer and winter months (M), and year-round residents (YR).

Table 6.								Palen 2013 Heights (m)				Rio Mesa 2012 Heights (m)			
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**# Ind.**	**Mean**	**Min.**	**Max.**	**# Ind.**	**Mean**	**Min.**	**Max.**
Gambel's Quail							YR					63	3.2	0.0	10.0
American White Pelican						1	W					1	60.0	60.0	60.0
Double-crested Cormorant							YR					174	85.6	10.0	300.0

Table 6.								Palen 2013 Heights (m)				Rio Mesa 2012 Heights (m)			
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**# Ind.**	**Mean**	**Min.**	**Max.**	**# Ind.**	**Mean**	**Min.**	**Max.**
Great Blue Heron							YR					5	113.8	5.0	250.0
Great Egret							YR	1	8.0	8.0	8.0	23	50.2	3.0	300.0
Snowy Egret							YR	1	2.0	2.0	2.0				
White-faced Ibis							YR	2	42.5	40.0	45.0	1,162	90.0	20.0	300.0
Turkey Vulture							YR	828	46.0	1.0	500.0	6,119	138.0	1.0	2000.0
Osprey							W	1	180.0	180.0	180.0	21	45.9	2.0	200.0
Northern Harrier						1	W	21	17.1	1.0	110.0	47	45.9	2.0	200.0
Sharp-shinned Hawk							W	4	201.5	2.0	800.0	10	48.0	5.0	250.0
Cooper's Hawk							YR	9	32.6	4.0	75.0	25	71.9	1.0	400.0
Unidentified Accipiter Hawk								2	3.5	2.0	5.0				
Red-shouldered Hawk							W	2	71.5	65.0	78.0				
Swainson's Hawk				1			M	99	74.1	3.0	750.0	48	153.6	20.0	1000.0
Red-tailed Hawk							YR	125	69.0	1.0	500.0	336	137.8	2.0	1000.0
Ferruginous Hawk							W	1	6.0	6.0	6.0	2	85.0	50.0	120.0
Golden Eagle					1		YR					1	100.0	100.0	100.0
Unidentified Hawk								19	66.8	2.0	275.0				
American Kestrel							YR	8	43.6	1.0	220.0	71	69.3	2.0	600.0
Merlin							W					2	16.5	3.0	30.0
Peregrine Falcon			1		1		YR					8	100.0	10.0	205.0
Prairie Falcon							YR	45	28.7	1.0	250.0	41	56.9	2.0	200.0
Unidentified Falcon								2	50.0	44.0	56.0				
American Coot							YR					3	50.0	30.0	70.0
Sandhill Crane				1	1	1	W					34	350.0	250.0	500.0
Killdeer							YR					5	45.5	1.0	90.0
Greater Yellowlegs							W	1	80.0	80.0	80.0	1	30.0	30.0	30.0
Long-billed Curlew							W					1	10.0	10.0	10.0
Western Sandpiper							W	1	20.0	20.0	20.0				
Least Sandpiper							W	1	15.0	15.0	15.0	1	100.0	100.0	100.0
Rock Pigeon							YR					23	62.6	15.0	100.0
Eurasian Collared-Dove							YR					36	12.9	1.5	60.0
White-winged Dove							S	6	9.8	1.0	23.0	446	24.9	1.0	210.0
Mourning Dove							YR	25	14.1	1.0	60.0	1,213	13.2	0.5	300.0
Common Ground-Dove							YR					1	2.0	2.0	2.0
Greater Roadrunner							YR					5	0.3	0.0	0.5
Great Horned Owl							YR					9	8.2	2.0	15.0
Burrowing Owl						1	YR	2	1.0	1.0	1.0				
Lesser Nighthawk							S	2	2.0	2.0	2.0	107	11.6	1.0	100.0

Table 6.								Palen 2013 Heights (m)				Rio Mesa 2012 Heights (m)			
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**# Ind.**	**Mean**	**Min.**	**Max.**	**# Ind.**	**Mean**	**Min.**	**Max.**
Vaux's Swift						1	M	4	15.3	2.0	35.0	12	27.4	5.0	79.0
White-throated Swift							YR	4	21.5	7.0	39.0	11	62.0	10.0	100.0
Black-chinned Hummingbird							M					7	4.0	1.0	10.0
Anna's Hummingbird							W					8	9.5	2.0	20.0
Costa's Hummingbird							YR	3	3.5	1.5	7.0	12	6.6	1.5	50.0
Unidentified Hummingbird								4	7.0	2.0	20.0				
Lewis's Woodpecker							W					1	3.0	3.0	3.0
Ladder-backed Woodpecker							YR	2	5.0	2.0	8.0	23	10.4	2.0	30.0
Western Wood-Pewee							M					3	11.3	4.0	20.0
Willow Flycatcher	1		1				M					1	3.0	3.0	3.0
Hammond's Flycatcher							M	1	1.0	1.0	1.0				
Gray Flycatcher							M	1	1.0	1.0	1.0	7	11.4	5.0	25.0
Pacific-slope Flycatcher							M					8	11.2	2.0	15.0
Black Phoebe							YR					9	2.6	1.5	5.0
Say's Phoebe							W	4	4.0	1.0	7.0	31	11.1	1.0	70.0
Ash-throated Flycatcher							S	21	2.4	0.5	6.0	338	9.0	0.5	150.0
Cassin's Kingbird							M					17	10.6	5.0	20.0
Western Kingbird							S	5	9.0	2.0	30.0	150	12.4	1.0	100.0
Loggerhead Shrike						1	YR	50	2.6	0.5	6.0	156	8.6	0.0	100.0
Warbling Vireo							M	5	1.6	1.0	2.0	16	9.2	2.0	20.0
American Crow							W					1	50.0	30.0	70.0
Common Raven							YR	445	32.1	1.0	588.0	72	89.1	2.0	415.0
Horned Lark							YR	98	12.2	1.0	80.0	325	36.5	0.0	115.0
Purple Martin						1	M					1	2.0	2.0	2.0
Tree Swallow							W	13	20.0	2.0	150.0	1,222	32.2	2.0	244.0
Violet-green Swallow							M					239	19.2	2.0	100.0
Northern Rough-winged Swallow							M	5	23.0	9.0	60.0	206	21.6	1.0	120.0
Bank Swallow				1			M					19	11.0	3.0	15.0
Cliff Swallow							S	44	14.0	1.0	80.0	874	37.3	1.0	266.0
Barn Swallow							M	27	9.3	1.0	60.0	353	27.9	1.0	200.0
Unidentified Swallow								16	19.0	3.0	60.0				
Verdin							YR	79	2.3	0.5	5.0				
Cactus Wren							YR	8	2.9	0.5	5.0	27	4.4	1.0	20.0
Rock Wren							YR					4	2.8	0.0	5.0
Bewick's Wren							W					2	5.0	5.0	5.0

Table 6.								Palen 2013 Heights (m)				Rio Mesa 2012 Heights (m)			
Common Name	FE	FT	CE	CT	CFP	SSC	Resident Status	# Ind.	Mean	Min.	Max.	# Ind.	Mean	Min.	Max.
Marsh Wren							YR					2	0.8	0.5	1.0
Blue-gray Gnatcatcher							W	5	1.4	0.5	4.0	2	1.5	1.0	2.0
Black-tailed Gnatcatcher							YR	19	2.1	0.5	4.0	130	5.5	0.5	50.0
Western Bluebird							W					2	40.0	40.0	40.0
Mountain Bluebird							W					45	6.1	1.0	22.0
Northern Mockingbird							YR	1	1.0	1.0	1.0	27	9.0	1.0	24.0
Sage Thrasher							W					24	3.9	0.0	30.0
Crissal Thrasher						1	YR					4	2.7	2.0	3.0
Le Conte's Thrasher						1	YR	7	1.4	1.0	2.0	1	3.0	3.0	3.0
European Starling							YR	2	11.5	3.0	20.0	106	22.3	4.0	35.0
American Pipit							W					2	40.0	30.0	50.0
Phainopepla							YR	1	2.0	2.0	2.0	92	19.2	1.0	100.0
Orange-crowned Warbler							M	6	1.4	1.0	2.0	25	7.8	1.0	20.0
Nashville Warbler							M	4	2.6	0.5	8.0	10	6.7	3.0	15.0
Lucy's Warbler							S					2	5.8	1.5	10.0
Yellow Warbler						1	M	1	2.0	2.0	2.0	1	1.2	1.2	1.2
Yellow-rumped Warbler							W	15	5.4	0.5	20.0	50	14.0	2.0	50.0
Black-throated Gray Warbler							M					1	15.0	15.0	15.0
Townsend's Warbler							M	3	3.7	1.0	8.0	9	12.8	2.0	20.0
MacGillivray's Warbler							M					3	7.3	1.0	20.0
Common Yellowthroat							M	2	0.8	0.5	1.0	2	0.8	0.5	1.0
Wilson's Warbler							M	23	2.5	1.0	6.0	34	6.4	0.3	20.0
Unidentified Warbler								2	9.0	6.0	12.0				
Chipping Sparrow							W	3	1.8	0.5	3.0	2	5.5	5.0	6.0
Brewer's Sparrow							W	20	1.6	0.5	5.0	187	4.6	0.5	25.0
Black-throated Sparrow							YR	1	3.0	3.0	3.0	25	3.8	0.0	10.0
Sage Sparrow							W					46	19.7	1.0	200.0
Savannah Sparrow							W	2	2.5	1.0	4.0	1	2.0	2.0	2.0
Song Sparrow							YR					4	5.5	1.0	10.0
White-crowned Sparrow							W	1	2.0	2.0	2.0	62	7.4	0.5	40.0
Western Tanager							M					17	8.7	0.5	30.0
Black-headed Grosbeak							M	1	3.0	3.0	3.0				
Lazuli Bunting							M					2	16.5	3.0	30.0
Red-winged Blackbird							YR	3	31.0	3.0	70.0	2,024	29.6	1.0	200.0

Table 6.								Palen 2013 Heights (m)				Rio Mesa 2012 Heights (m)			
Common Name	**FE**	**FT**	**CE**	**CT**	**CFP**	**SSC**	**Resident Status**	**# Ind.**	**Mean**	**Min.**	**Max.**	**# Ind.**	**Mean**	**Min.**	**Max.**
Western Meadowlark							YR					3	12.5	10.0	15.0
Yellow-headed Blackbird						1	YR	1	3.0	3.0	3.0	2,062	29.0	0.5	200.0
Brewer's Blackbird							W					195	23.3	2.0	100.0
Great-tailed Grackle							YR	4	5.8	1.0	13.0	48	33.0	10.0	70.0
Brown-headed Cowbird							S	2	6.5	6.0	7.0	252	18.6	2.0	70.0
Hooded Oriole							S					1	4.0	4.0	4.0
Bullock's Oriole							S	4	2.5	2.0	4.0	19	10.6	2.0	30.0
Lesser Goldfinch							YR	4	23.3	8.0	60.0	11	48.1	1.0	200.0
House Finch							YR	25	19.2	1.0	180.0	162	36.5	2.0	150.0
House Sparrow							YR					1	16.0	16.0	16.0
Unidentified Bird								18	80.7	1.0	250.0				

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PALEN SOLAR ELECTRIC GENERATING SYSTEM AMENDMENT

Docket No. 09-AFC-07C
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DECLARATION OF SERVICE

I, Marie Fleming, declare that on July 31, 2013, I served and filed copies of PALEN SOLAR HOLDINGS, LLC'S SUPPLEMENTAL RESPONSE TO DATA REQUESTS 40D & 44 dated July, 2013. The most recent Proof of Service List, which I copied from the web page for this project at: http://www.energy.ca.gov, is attached to this Declaration.

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

Dated: July 31, 2013

Marie Fleming