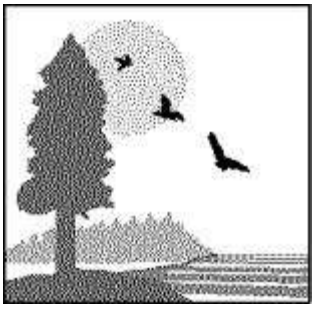
APPENDIX F

Biological Resources Technical Report

Stagecoach Solar Project
BIOLOGICAL RESOURCES TECHNICAL REPORT

Prepared for:



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All figures appear in Attachment A.

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1. Introduction

1.1 Project Overview

This Biological Resources Technical Report (BRTR) was prepared to describe the biological resources at the Stagecoach Solar Project (Project) area. The Project includes a 200-megawatt photovoltaic (PV) and battery storage solar generation project. Aurora Solar LLC (Aurora Solar or Applicant), a wholly-owned subsidiary of Avangrid Renewables, has applied to the California State Lands Commission (Commission) for lease of lands owned by the State of California and administered by the Commission on which to construct and operate the Stagecoach Solar Project, a solar generation project.

The Project area is in the central portion of San Bernardino County, approximately 15 miles south of the City of Barstow and 12 miles northwest of the unincorporated community of Lucerne Valley. It is located east of Interstate 15, south of Interstate 40, and about 1.5 miles west of State Route 247. The Project area is approximately 3,570 acres comprising six undeveloped parcels administered by the Commission,[1] and a gen-tie line located on leased private land (see Figure 1 in Attachment A). Within the 3,570-acre area managed by the Commission, approximately 1,975 acres would be occupied by the solar generation facility, ancillary project facilities, and battery energy storage system (BESS) (collectively referred to as the Solar Generation Facilities). The Stagecoach Gen-tie line would run approximately 9.1 miles, connecting the Solar Generation Facilities to the proposed Calcite Substation. Adjacent to the project area are additional State lands, private lands under the jurisdiction of San Bernardino County, and federal lands managed by the Bureau of Land Management (BLM). The remaining State lands within the Project area would remain undeveloped.

Elevation at the solar facility site ranges from about 3,200 to 3,700 feet. Elevation of the proposed gen-tie route ranges from about 2,900 feet at the Calcite Substation to 3,200 feet at the proposed solar site.

This BRTR addresses the solar generation facility site and gen-tie route, including two alternative gen-tie segments (see Figure 1). None of the proposed Project components would be located on federal Bureau of Land Management lands. Throughout this BRTR, “Project area” refers to the full 3,570-acre property and gen-tie ROW. “Biological survey area” refers to the Project area plus a 100-foot buffer that was surveyed for special-status plants and a 300-foot buffer that was surveyed for desert tortoise in 2017 and 2020 (see Figure 2).

1.2 Purpose of the Biological Resources Technical report

This BRTR was prepared under contract to the Commission to describe biological resources at the Project area and support Project review under the California Environmental Quality Act (CEQA) for which the Commission is the lead agency.

Assessment of potential occurrences of special-status plants and animals is based on habitat, geographic and elevational range, and data from field surveys conducted by Aspen Environmental Group (Aspen) and ECORP Consulting, Inc. (ECORP) in 2017, 2018, and 2020. Figure 2 illustrates the 2017 and 2020 survey boundaries. The 2018 rare plant surveys covered only the proposed battery storage area and a surrounding buffer.

[1] APNs 046-430-101, 046-430-102, 046-430-104, 046-430-105, 041-716-254, 041-716-253.

1.3 Agency Consultation

On August 30, 2017 a meeting and site visit were held to introduce the Project to the resource agencies. Participants included representatives of the following agencies and firms:

- Avangrid (developer, Stagecoach Solar Project)
- CSLC (land manager)
- Aspen Environmental Group (EIR preparer)
- ECORP (Biological surveys)
- CDFW (permitting agency, Lake and Streambed Alteration Agreement and California Endangered Species Act)
- USFWS (permitting agency, federal Endangered Species Act Section 10 consultation and Bald and Golden Eagle Protection Act)

The intent of the meeting was to get feedback from the resource agencies on the approach to field surveys and discuss any agency concerns regarding baseline knowledge of biological resources, for inclusion in the EIR and future regulatory permitting.

On April 3, 2020 a conference call was held to re-introduce the Project to the resource agencies. Participants in the call included representatives of the above agencies and firms, plus:

- Colorado River Basin Regional Water Quality Control Board (permitting agency, Porter-Cologne Water Quality Act)
- Southern California Edison (developer, Calcite Substation)

The intent of both meetings was to get feedback from the resource agencies on the approach to field surveys and discuss any agency concerns regarding baseline knowledge of biological resources, for inclusion in the EIR and future regulatory permitting.

2. Methods

2.1 Vegetation Mapping

Vegetation in the solar generation facilities was mapped by Justin Wood and Shaun Kehrmeyer of Aspen Environmental Group. Wood mapped vegetation on the site on October 26 and 27, 2017. Kehrmeyer verified the 2017 vegetation polygons and vegetation in the proposed gen-tie and Calcite Substation areas on July 9, 2020. Vegetation mapping was done by drawing tentative boundaries onto high-resolution aerial images. These boundaries were then digitized into GIS shapefiles and additional mapping was done using ArcGIS (version 10.4). All mapping was done using one-foot pixel aerial imagery on a 22" diagonal flat-screen monitor. The smallest mapping units were approximately 0.20 acres and most mapped vegetation boundaries are accurate to within approximately 5 feet. Following the completion of the vegetation mapping, maps were taken to the Project area and field verified to ensure their accuracy. Any vegetation map is subject to imprecision for several reasons:

1. Vegetation types tend to intergrade on the landscape so that there are no true boundaries in the vegetation itself. In these cases, a mapped boundary represents best professional judgment.
2. Vegetation types as they are named and described tend to intergrade; that is, a given stand of real-world vegetation may not fit into any named type in the classification scheme used. Thus, a mapped and labeled polygon is given the best name available in the classification, but this name does not imply that the vegetation unambiguously matches its mapped name.

3. Vegetation tends to be patchy. Small patches of one named type are often included within mapped polygons of another type. The size of these patches varies, depending on the minimum mapping units and scale of available aerial imagery.

Vegetation was classified using names and descriptions in *A Manual of California Vegetation* (Sawyer et al., 2009). Two non-vegetated land cover types were mapped including disturbed and sparsely vegetated wash. The sparsely vegetated washes were mapped to a higher level of accuracy because these washes are regulated by the California Department of Fish and Wildlife (CDFW). They were clearly visible on the aerial imagery and represent a somewhat different small-scale wildlife habitat than uplands within the Project area.

2.2 Jurisdictional Delineation

Three jurisdictional delineation field surveys were conducted by ECORP in 2018,2020, and 2021 (ECORP, 2021). The second and third surveys were required in order to include expanded study limits for the Project to incorporate the underground gen-tie alternative, to verify conditions observed in previous survey efforts had not changed, and to collect additional information and photographs. Field surveys from 2018 and 2020 are summarized in this section; the results are summarized in Section 3.2. Surveys for 2021 are summarized in Attachment H (Spring 2021 Biological Resources Surveys Memo, Gen-tie Line). Please see the full Jurisdictional Delineation report (Attachment B) for additional details.

Prior to conducting the field delineations, aerial imagery, 7.5' USGS quadrangles (Stoddard Well, Fairview Valley, West Ord Mountain and White Horse Mountain), the National Wetlands Database, the online web soil survey, and hydric soils lists for the area were reviewed to identify potentially jurisdictional areas. The aerial imagery, combined with these other resources, was used to create a map with features that required further study during the field investigation. The entire Project area was visually surveyed and special attention was given to the features identified during the preliminary review. Where jurisdictional features were present, the extent of potential Waters of the State and CDFW-regulated streambed and top-of-bank limits were determined using the ordinary high water mark (OHWM) in accordance with USACE requirements and guidelines and other agency delineation guidance.

Some properties containing potential regulated features, as identified during the preliminary desktop delineation, were not accessible per private property owners' requests. In these circumstances, the jurisdictional status was determined using aerial images (recent and historic), recent and historic topographic maps, visual inspection from the property boundaries, and/or accessible portions upstream or downstream of the same drainage feature.

2.3 Special-Status Species

For the purposes of this BRTR, special-status species are defined as plants or animals that meet one or more of the following criteria. This section presents the various methods implemented to identify special-status species

- Have been designated as rare, threatened, or endangered by California Department of Fish and Wildlife (CDFW) or the U.S. Fish and Wildlife Service (USFWS), and/or are protected under either the Federal Endangered Species Act (FESA) or California Endangered Species Act (CESA);
- Are candidate species being considered or proposed for listing under FESA or CESA;
- CDFW Species of Special Concern, Special Animals, and Watch List species;
- California Rare Plant Rank (CRPR) 1, 2, 3, or 4 plant species;

- Protected under the California Fish and Game Code; or
- Are of concern to resource or regulatory agencies or local jurisdictions.

2.3.1 Literature Review

A literature search was performed to identify all occurrences of special-status plant and wildlife species known from within the Project area or within its vicinity. The search included the USFWS's Information for Planning and Consultation (IPaC) (USFWS, 2020); CDFW California Natural Diversity Database (CNDDB) (CDFW, 2020); CNDDB QuickView Tool (CDFW, 2017a); the CNPS Electronic Inventory of Rare and Endangered Plants (CNPS, 2018); and Calflora's What Grows Here (Calflora, 2017). For the CNDDB and CNPS Electronic Inventory of Rare and Endangered Plants search, the Apple Valley North, Cougar Buttes, Fairview Valley, Fifteenmile Valley, Grand View Mine, Lucerne Valley, Stoddard Well, Turtle Valley, West Ord Mountain, and White Horse Mountain 7.5-minute U.S. Geological Survey (USGS) topographic quads were included. These quads are all within 5 miles of the Project area.

Additional literature reviewed for Mohave ground squirrel occurrence included range maps, scientific journal articles, CDFW's Biogeographic Information and Observation System (BIOS) (CDFW, 2017b); and available trapping data for the region, including survey data collected between 1997 and 2012 that have been compiled by MGS researcher Dr. Philip Leitner (Leitner, 2008; Leitner, 2015). The CNDDB database only documents positive occurrences of the species and contains records dating back to the late 19th century. The BIOS database contains the positive records from the CNDDB but also includes data from outside databases that report both positive and negative occurrences in specific regional areas. The Leitner data compilations detail the positive and negative results of trapping grids (protocol and non-protocol) and remote camera trapping stations, and visual observations from MGS permit holders between 1998 and 2007 (Leitner, 2008) and between 2008 and 2012 (Leitner, 2015). Using Geographic Information Systems (GIS) software, ECORP plotted the results of the CNDDB, BIOS, and Dr. Leitner's trapping records on an aerial imagery map for use by the biologists during the habitat suitability assessment.

2.3.2 General Habitat Assessment

A general habitat assessment for special-status plants and animals was conducted by Aspen biologists Justin Wood and Erik Waardenburg on October 26–27, 2017. A general habitat assessment for special-status plants and animals along the proposed gen-tie alignment and Calcite Substation was conducted by Aspen biologist Shaun Kehrmeyer on July 9, 2020.

During the assessment, the biologists drove all accessible roads within the Project area and walked into more remote portions of the Project area. In addition, biologists from ECORP assessed habitat for special-status species concurrent with focused surveys that were conducted in 2017 and 2020.

2.3.3 Focused Field Surveys and Assessments

Focused field surveys were conducted for desert tortoise and special-status plants throughout the development area. Surveys for burrowing owl, kit fox, and American badgers were conducted concurrent with the focused surveys. In addition, incidental observation and detections of special-status species were recorded. Locations of all special-status species were recorded using a GPS device, and details on behavior, habitat, or other pertinent notes were recorded on data sheets. In addition to the field surveys, assessments were conducted for Mohave ground squirrel and golden eagle habitat.

2.3.3.1 Rare Plant Surveys

Rainfall. Precipitation affects plant productivity seasonally and annually. Winter rainfall may increase the growth and reproduction of some common and special-status plants and increase the likelihood of detection during surveys. Multiple weather stations were reviewed for the Project area. The Daggett-Barstow station was the closest weather station that had annual precipitation data (www.wunderground.com). The Daggett-Barstow weather station, located about 16 miles northeast of the Plant Survey Area, recorded precipitation at 5.85 in 2019-2020 (through June), 4.01 inches in 2018-2019, 1.42 inches in 2017-2018, 4.22 inches in 2016-17, 2.14 inches in 2015-16, and 1.79 inches in 2014-15 (all measurements occurred between October 1 and September 30). The annual average rainfall for Barstow is 5.27 inches (www.usclimatedata.com).

Reference Site Assessments. Following the literature review, a list of target special-status plant species was developed for the focused surveys. To verify the blooming status of plants in the region and target special-status plant species, five locations were visited in 2017 and four locations were visited in 2020. The field observations during these site visits assisted with refining the optimal period to conduct the spring and fall survey events.

All reference locations (or occurrence records) visited were located within a 10- to 30-mile radius from the Project area. Species checked included Clokey's cryptantha (*Cryptantha clokeyi*), revolute spurge (*Euphorbia revoluta*), Mojave monkeyflower (*Mimulus mohavensis*), creamy blazing star (*Mentzelia tridentata*), Barstow woolly sunflower (*Eriophyllum mohavense*), Mojave spineflower (*Chorizanthe spinosa*), Beaver Dam breadroot (*Pediomelum castoreum*), and desert cymopterus (*Cymopterus deserticola*) (see Table 1).

Of the reference locations records visited, Clokey's cryptantha and revolute spurge were not viable (i.e., none of the plants were observed) in 2017. Clokey's cryptantha, revolute spurge, Beaver Dam breadroot, and desert cymopterus were not viable in 2020. It is likely that drought conditions from previous years have affected the presence of these species since they were first encountered/identified. In 2017, Mojave monkeyflower, creamy blazing star, and desert cymopterus were past their blooming stage but were still identifiable. In 2020, Mojave monkeyflower, creamy blazing star, and Barstow woolly sunflower were all in full bloom, while Mojave spineflower was still in its vegetative stage but identifiable.

Table 1. Reference Plant Locations Visited in 2017 and 2020

Date Visited	Scientific Name	Common Name	Location	Status[1]
5/9/2017	*Cryptantha clokeyi*	Clokey's cryptantha	In north Lucerne Valley along Powerline Road (Rd.) (0.85 mile [mi.] northeast of Huff Rd., 0.68 mi. north of Haynes Rd.).	CRPR: 1B.2
5/10/2017	*Mimulus mohavensis*	Mojave monkeyflower	Southeast of Barstow, California. Five mi. south of Interstate 40, along Camp Rock Rd. (12 mi. northeast of biological survey area).	CRPR: 1B.2
5/10/2017	*Mentzelia tridentata*	Creamy blazing star	Southeast of Barstow, California. Five mi. south of Interstate 40, along Camp Rock Rd. (12 mi. northeast of biological survey area).	CRPR: 1B.3
5/11/2017	*Cymopterus deserticola*	Desert cymopterus	Mojave Desert; northwest of Hinkley; 0.25 mi. east of Harper Lake Rd.; 0.12 mi. south of Santa Fe Avenue (30 mi. from biological survey area)	CRPR: 1B.2

Table 1. Reference Plant Locations Visited in 2017 and 2020

Date Visited	Scientific Name	Common Name	Location	Status[1]
10/16/2017	*Euphorbia revoluta*	Revolute spurge	Southwest of East Ord Mountain; 6.3 mi. north of Northside Rd, 0.5 mi. east of Harrod Rd. (10 mi. east from biological survey area)	CRPR: 4.3
3/16/2020	*Mimulus mohavensis*	Mojave monkeyflower	Southeast of Barstow, California. Five mi. south of Interstate 40, along Camp Rock Rd. (12 mi. northeast of biological survey area).	CRPR: 1B.2
3/16/2020	*Mentzelia tridentata*	Creamy blazing star	Southeast of Barstow, California. Five mi. south of Interstate 40, along Camp Rock Rd. (12 mi. northeast of biological survey area).	CRPR: 1B.3
3/17/2020	*Pediomelum castoreum*	Beaver indian breadroot	In Lucerne Valley, California. East of Interstate 247, along an un-named powerline road (5 mi. south of biological survey area).	CRPR: 1B.2
3/18/2020	*Eriophyllum mohavense*	Barstow woolly sunflower	Northeast of Kramer Junction, California. One mile north of Interstate 58, along Powerline Rd. (30 miles northwest of biological survey area).	CRPR: 1B.2
3/18/2020	*Chorizanthe spinosa*	Mojave spineflower	Northeast of Kramer Junction, California. One mile north of Interstate 58, along Powerline Rd. (30 miles northwest of biological survey area).	CRPR 4.2
5/12/20	*Cymopterus deserticola*	Desert cymopterus	Northeast of Kramer Junction, California. Five miles north of Interstate 58, along Powerline Rd. (30 miles northwest of biological survey area).	CRPR: 1B.2

1 - California Rare Plant Rank (CRPR) designations: See Table 4.

Focused Surveys. Focused special-status plant surveys were conducted from May 10 to May 17, 2017, March 22 to May 8, 2018, and March 16 to May 19, 2020. The timing of the surveys was determined by reference location visits and site conditions. A follow-up to the site visits in 2017 was conducted in July so that the specific epithet of an unknown *Astragalus* sp. could be determined because these plants were not in flower during the May survey. Note that an inventory of Joshua trees (*Yucca brevidifolia*) was conducted separately and is described below.

The 2017 fall focused special-status plant survey was conducted between October 16 and October 20, 2017. The fall survey was performed in areas where target species were most likely to occur and when the later blooming species were most likely to be detected. In late summer 2020, several patchy regional thunderstorms occurred near Lucerne Valley. The Project area was visited to determine if rain had fallen on-site, but there was no evidence of rainfall. Therefore, no follow-up summer-fall botanical surveys were conducted. The 2017 survey team included Dave Silverman of Xeric Specialties (lead surveyor, spring 2017), and Josh Corona-Bennett, Greg Hampton (lead surveyor, fall 2017), Carley Lancaster, and Jon Renard of ECORP. The 2018 survey team included Josh Corona-Bennett (lead surveyor) and Kent Hughes. The 2020 survey team included Greg Hampton (lead surveyor with technical oversight from Josh Corona-Bennett), Caroline Garcia, Carley Lancaster, Lauren Simpson, Max Murray, Taylor Dee, and Alexandra Dorough of ECORP (Table 2). Field data sheets are included in Attachment C, surveyor resumes are provided in Attachment D, representative photographs of the biological survey area are included in Attachment E, and plant species observed during the survey are included in Attachment F.

Table 2. 2017, 2018, 2020 Focused Plant Survey Dates and Personnel

Date	Personnel
5/10/17	Dave Silverman, Greg Hampton, Carley Lancaster, and Josh Corona-Bennett
5/11–5/12/17	Dave Silverman, Greg Hampton, and Carley Lancaster
5/16–5/17/17	Josh Corona-Bennett
7/12/17	Jon Renard
10/16–10/20/17	Greg Hampton, Carley Lancaster, and Lauren Simpson
3/22/2018	Kent Hughes[1]
5/8/2018	Kent Hughes[1]
3/16–3/17/20	Greg Hampton, Caroline Garcia, and Carley Lancaster
3/18–3/19/20	Greg Hampton, Caroline Garcia, and Lauren Simpson
5/12–5/13/20	Greg Hampton, Caroline Garcia, Max Murray, and Carley Lancaster
5/14–5/15/20	Greg Hampton, Caroline Garcia, Max Murray, and Taylor Dee
5/18–5/19/20	Greg Hampton, Caroline Garcia, and Alexandra Dorough

1 - Only included the battery storage site and 100-ft buffer.

The focused special-status plant surveys were conducted by qualified biologists with extensive experience with botanical surveys and knowledge regarding plant taxonomy, plant species in the region, and special-status plant species. Focused surveys for special-status plants were conducted to coincide with target species' blooming periods. The purpose of these surveys was to verify the presence or absence of special-status plant species within the biological survey area at the time of the survey.

Survey methods were devised with consideration of the following resources: (1) Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS, 2000); (2) Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW, 2018); and (3) CNPS Botanical Survey Guidelines (CNPS, 2001).

The 2017, 2018, and 2020 surveys were conducted within the blooming periods for all target species, except for Emory's crucifixion thorn (*Castela emoryi*); however, this shrub is identifiable year-round. Transects spaced 30 feet apart were walked to achieve 100 percent visual coverage within portions of the site with habitat that would most likely support special-status plant species (e.g., washes, drainages, flats, and gentle slopes). During the 2017 and 2018 surveys, Trimble global positioning system (GPS) devices (Juno and GeoXT type) were used, while during the 2020 surveys, tablets running Collector software with Geode™ receivers (to obtain sub-meter accuracy) were used to record the coordinates of sensitive plant species. Each GPS device displayed a position using the Universal Transverse Mercator (UTM) coordinate system, North American Datum 1983 (NAD83).

Common plant species were identified and recorded to maintain a list of plant species that occur within the biological survey area. In some cases, biologists took samples from the site so that a dissecting microscope could be used for plant identification. Identification of plant species was achieved using the Jepson Desert Manual (Baldwin et al., 2002) and the Jepson Manual (Baldwin et al., 2012).

The GPS data collected in the field were transferred from the GPS device to a computer, and differential correction post-processing was performed. The data were then viewed and analyzed for verification, edited, and converted to a Geographic Information System (GIS) format at the time of download.

Access to certain areas of the gen-tie right-of-way was not obtained prior to the 2020 surveys. For areas with no access in the gen-tie right-of-way, future plant surveys are not recommended based on quality of

habitat (i.e., anthropogenic disturbances, tire tracks, grazing, etc.) and the visibility of inaccessible areas during the spring 2020 surveys.

2.3.3.2 Joshua Tree Surveys

ECORP biologists Greg Hampton, Max Murray, Alexandra Dorough, Christina Torres, and Verity Richardson inventoried western Joshua trees on the solar field and gen-tie routes between October 5 and October 10, 2020 (ECORP, 2020). The inventory covered the northern half of the solar field, the gen-tie alignment, and a 50-foot buffer area. The biologists walked east-west transects spaced approximately 65 feet (20 meters) apart during the survey. Inaccessible parcels and buffer areas were surveyed with binoculars. The southern section of the solar field was excluded because habitat (rocky slopes and disturbed creosote bush scrub) appeared unsuitable, and no Joshua trees were visible during a scan with binoculars.

Attribute data were collected, including overall health, height, and quantity at that specific location. Overall health was categorized as healthy, moderate, or poor, based on the presence of insect or animal damage, physical damage to the trunk or branches, and general health and color of the foliage. Joshua trees that were most likely dead were still counted and noted as such in the GPS attributes. Representative photos of each Joshua tree also taken during the survey and were included in the data.

2.3.3.3 Desert Tortoise Surveys

Protocol-level surveys for the Mojave desert tortoise (*Gopherus agassizii*) were conducted in 2017 and 2020 by qualified biologists with extensive experience. The surveys were conducted in accordance with the recommended survey protocol methods in the USFWS document *Preparing for Any Action That May Occur within the Range of the Mojave Desert Tortoise* (2010). The 2017 biological survey area encompassed the entire Project area and a 100-foot buffer. The 2020 biological survey area included all areas that were not surveyed during 2017, including the gen-tie right of way (see Figure 2). A 300-foot buffer around the Project area was surveyed in 2020. Photos 1 through 4 in Attachment E show representative desert tortoise habitat on the Project area.

The biologists walked throughout the biological survey area using pedestrian transects spaced approximately 30 feet (10 meters) apart to provide 100 percent survey coverage. The biologists checked under shrubs and visually inspected any burrows encountered. The surveys were conducted during atmospheric conditions that were most conducive to observing desert tortoise and avoided adverse conditions that may inhibit tortoise activity, including high winds and temperature extremes (less than 50 degrees Fahrenheit [°F] and greater than 104°F). If encountered, any desert tortoises or their sign (burrows, carcasses, scat, pallets, drinking sites, tracks, or mating rings) observed were recorded using a global positioning system (GPS) device. The date of observation, sign type, sign classification, amount of sign, and any pertinent comments were recorded for any sign encountered. When feasible, photographs were taken of desert tortoises and representative desert tortoise sign. All survey data, including daily weather conditions, desert tortoise sign observed or detected, wildlife species observed, and incidental sensitive species observed during the surveys, were recorded on focused survey data sheets.

The 2017 focused desert tortoise survey was conducted from May 8 to May 18, 2017 by ECORP biologists Jon Renard, Adam Schroeder, Lauren (Dorough) Simpson, Wendy Turner, and Kristen Wasz. They were assisted by Granite Data Solutions biologists Rachel Woodard, Kelly Herbinson, and Cory Mitchell. The 2020 focused desert tortoise survey was conducted from April 13 to April 23, 2020 by ECORP biologists Lauren Simpson, Greg Hampton, Caroline Garcia, Michael Tuma, Max Murray, and Taylor Dee. The field data sheets are included in Attachment C, surveyor resumes are provided in Attachment D, representative photographs of the biological survey area are included in Attachment E (see Photos 1 through 5), and

wildlife species observed during the survey are included in Attachment G. Weather conditions were suitable for detecting desert tortoise (see Table 3).

Table 3. Weather Conditions During the Desert Tortoise Surveys

		Time		Temperature (°F)		Cloud Cover (%)		Wind Speed
Date	Surveyors*	Start	End	Start	End	Start	End	(mph)
5/8/17	CM, JR, KH, KW, LS, WT, RW	0747	1436	40	76	0	5	0-5
5/9/17	CM, JR, KH, LS, WT, RW	0640	1715	56	69	7	80	2-7
5/10/17	CM, JR, KH, LS, RW, WT	0650	1435	56	77	5	2	0-6
5/11/17	CM, JR, KH, LS, RW, WT	0650	1450	52	82	1	1	0-7
5/12/17	CM, JR, KH, LS, RW, WT	0655	1615	62	84	0	0	0-10
5/13/17	CM, RW	0700	1602	49	79	0	0	1-5
5/14/17	CM, RW	0800	1230	58	81	5	0	0-4
5/15/17	AS, CM, JR, KH, RW, WT	0740	1440	51	64	5	80	3-6
5/16/17	AS, CM, JR, KH, RW, WT	0717	1433	52	78	0	10	1-5
5/17/17	AS, CM, JR, KH, RW, WT	0707	1442	54	73	15	0	10-20
5/18/17	AS, CM, JR, KH, RW, WT	0720	1145	60	78	0	0	0-1
4/13/20	CG, GH, LS, MT	0853	1523	52	68	80	60	0-5
4/14/20	CG, GH, LS, MT	0722	1445	47	64	30	0	1-10
4/15/20	CG, GH, LS, MM	0730	1515	45	80	0	0	0-3
4/16/20	CG, GH, LS, MM, MT	0715	1530	62	75	0	5	1-5
4/17/20	CG, GH, LS, MM, MT	0700	1300	52	59	40	100	1-10
4/20/20	CG, LS, MM, MT, TD	0830	1615	62	72	0	25	0-5
4/21/20	CG, LS, MM, MT, TD	0700	1500	53	68	50	25	1-10
4/22/20	CG, LS, MM, MT, TD	0700	1500	58	80	0	0	0-11
4/23/20	CG, LS, MM, TD	0715	1400	64	83	0	0	0-2

*AS = Adam Schroeder, CG = Caroline Garcia, CM = Corey Mitchell, GH = Greg Hampton, JR = Jon Renard, KH = Kelly Herbinson, KW = Kristen Wasz, LS = Lauren (Dorough) Simpson, MM = Max Murray, MT = Michael Tuma, RW = Rachel Woodard, TD = Taylor Dee, WT = Wendy Turner

2.3.3.4 Burrowing Owl, Desert Kit Fox, American Badger Surveys

Protocol-level surveys for burrowing owl (*Athene cunicularia*), desert kit fox (*Vulpes macrotis arsipus*), and American badger (*Taxidea taxus*) were not conducted. Individuals and sign of these species were documented during the desert tortoise surveys to provide baseline information on the use of the Project area by these species. The desert tortoise surveys were conducted during a time when burrowing owl, desert kit fox, and American badger would be detectable, if present. If encountered, biologists documented the following sign for each of these species:

- Burrowing owl: burrows (potential and occupied), whitewash, pellets, feathers, bones of prey items
- Desert kit fox: dens (potential and known), scat, tracks, natal den sites
- American badger: dens, scat, tracks, dig/claw marks

Individuals and sign observed during the survey were recorded with a handheld GPS device. Weather conditions (temperature, cloud cover, wind speed) were recorded at the start and end of each survey day (Table 3).

2.3.3.5 Mohave Ground Squirrel Assessment

A Mohave ground squirrel (*Xerospermophilus mohavensis*) habitat assessment was conducted within the Project area (comprising the solar field and the proposed gen-tie line of the Project). Both the Project area and the vicinity (a 10-mile [16-km] radius around the Project area) were assessed for previously documented occurrences of MGS, negative grid and camera trapping data, and visual observation records to determine whether MGS have been identified near the Project area.

A habitat assessment was completed by ECORP biologists Donald Mitchell and Kristen Wasz, who both hold a Memorandum of Understanding (MOU) with CDFW for performing MGS studies. Mitchell and Wasz visited the Project area on July 31, 2017.

To determine habitat suitability, the biologists considered the MGS range boundaries as defined by CDFW (CDFW, 2020) as well as the natural history and habitat requirements of MGS. During the assessment, the biologists stopped at vantage points along existing dirt access roads and walked through portions of the area to characterize and map suitable habitat for MGS.

Representative photos were taken at photo-point location and the coordinates of these points were recorded using a global positioning system (GPS) unit (North American Datum 1983 [NAD 83], Universal Transverse Mercator [UTM] coordinates, Zone 11 S). Following the field assessment, biologists calculated total acreages of suitable and unsuitable MGS habitat within the Project area. Habitat assessment results are described in Section 3.3.2.

2.3.3.6 Golden Eagle Assessment

To evaluate golden eagle (*Aquila chrysaetos*) foraging habitat in the Project area and nesting sites in the surrounding vicinity, a focused golden eagle survey was performed within the Project area solar generation facilities and a 2-mile buffer (WEST, 2020). Surveys were performed in February and April 2020, during the eagles' early nesting period in the southwest and during mid- to late-breeding season. Two major land features support suitable nesting habitat within the survey area, including Stoddard Ridge running east-west along the northern perimeter of the Project boundary and Sidewinder Mountain running east-west along the southern perimeter of the Project boundary. Survey results are described in Section 3.3.2.

Aspen biologists further reviewed surveys conducted in the Project vicinity within the last 10 years, and the CNDDB and DRECP databases. A compilation of these survey methodologies and results is provided in Section 3.3.2. No golden eagles were incidentally observed during wildlife surveys conducted for the Project.

2.3.3.7 Spring 2021 Gen-tie Surveys

Additional surveys of the gen-tie and alternative gen-tie line were performed in Spring 2021. The results of these surveys are summarized in Attachment H. No desert tortoises or rare plants were observed. None of the stream segments surveyed are within federal jurisdiction.

3. Results

3.1 Vegetation Mapping

Vegetation within the Project area is characteristic of desert scrub and desert wash habitats of the Mojave Desert (see Figure 3). Several native desert vegetation types are mapped on the site. Collectively, they all may be categorized as Mojavean desert scrub. These shrublands are the dominant plant communities and

found mostly within the flat, low lying portions of the Project area (see Photo 6, Attachment E). Dominant species that were observed included creosote bush (*Larrea tridentata*), Joshua tree (*Yucca brevidifolia*), white bursage (*Ambrosia dumosa*), winter fat (*Krascheninnikovia lanata*), and spiny hopsage (*Grayia spinosa*). Plant species richness was observed to be low within these flats with a high abundance of non-native plant species, such as common Mediterranean grass (*Schismus barbatus*) and red brome (*Bromus madritensis* ssp. *rubens*); most likely originating from historical disturbances such as livestock grazing.

Species richness appeared to be higher at the higher elevation slopes abutting adjacent mountains to the north, west, and south of the Project area (see Photo 7, Attachment E). Prominent species observed in these areas included species such as Mojave yucca (*Yucca schidigera*), branched pencil cholla (*Cylindropuntia ramosissima*), hedgehog cactus (*Echinocereus* sps.), blackbrush (*Coleogyne ramosissima*), littleleaf rhatany (*Krameria erecta*), and Mojave lomatium (*Lomatium mohavense*). Additionally, desert washes intermittently intersected with the entire Plant Survey Area (see Figure 4 and Photo 8, Attachment E) and included the same larger shrubs but also harbored smaller, annual species such as Nevada cryptantha (*Cryptantha nevadensis*), brittle spineflower (*Chorizanthe brevicornu* var. *brevicornu*), and cheesebush (*Ambrosia salsola*). All plant species observed during the surveys are included as Attachment F.

3.1.1 Vegetation Types

Creosote bush scrub (*Larrea tridentata* Shrubland Alliance). Creosote bush scrub is the most characteristic vegetation of the California desert and is found on alluvial fans, bajadas, upland slopes, and washes. Creosote bush scrub is dominated by a nearly monotypic stand of creosote bush (*Larrea tridentata*) with an open canopy and an herbaceous layer of seasonal annuals and perennials. Additional species such as white bursage (*Ambrosia dumosa*) and Big galleta (*Hilaria rigida*) are also present in low numbers.

Creosote bush shrub is present in several small patches on the sandy valley floor and on several of the higher elevation slopes in the southern portion of the Project area. This vegetation type was also found along several areas of the gen-tie, and in areas within the northwestern substation footprint.

Creosote bush–white bursage scrub (*Larrea tridentata–Ambrosia dumosa* Shrubland Alliance). Creosote bush–white bursage scrub is the most abundant vegetation type in the Project area. It covers most of the valley floor and is co-dominated by creosote bush and white bursage (*Ambrosia dumosa*). Additional species such as Joshua tree (*Yucca brevifolia*), Mojave yucca (*Yucca schidigera*), and Big galleta (*Hilaria rigida*) and silver cholla (*Cylindropuntia echinocarpa*) are also present in low numbers.

Creosote bush–white bursage scrub generally occurs in minor washes and rills, alluvial fans, bajadas, and upland slopes at elevations ranging from –250 to 3,950 feet amsl. Soils within this vegetation community are well-drained, alluvial, colluvial, sandy, and are sometimes underlain by a hardpan that may be calcareous and/or covered with desert pavement. The herbaceous layer is dominated by seasonal annuals and perennials and the shrub cover is relatively open.

Acton's and Virgin River brittle brush scrub (*Encelia actonii* Shrubland Alliance). Acton's and Virgin River brittle brush is dominated by Acton encelia (*Encelia actoni*) and co-dominated by species such as white bursage, burrobush (*Ambrosia salsola*), Nevada jointfir (*Ephedra nevadensis*), Mexican bladdersage (*Scutellaria mexicana*), California buckwheat (*Eriogonum fasciculatum*) California croton (*Croton californicus*), creosote bush, and brownplume wirelettuce (*Stephanomeira pauciflora*).

It is found on plains, alluvial fans, bajadas, pediments, lower slopes, valley bottoms, seasonal and perennial stream channels and dry washes from 1,000 to 9,800 feet amsl. Soils are sandy to loamy, well drained, and deep. This community dominates the higher elevation slopes and ridgelines along the southern and western edges of the Project area.

Nevada joint fir scrub (*Ephedra nevadensis* Shrubland Alliance). Nevada joint fir scrub is dominated by Nevada jointfir and is co-dominated by a diverse assemblage of shrubs including Mexican bladdersage, California buckwheat, Acton encelia, and little leaved rhatany (*Krameria erecta*). It is found on dry open slopes, ridges, breaks with southern exposures, canyons, sides of arroyos, floodplains, and washes between 3,300 to 6,000 feet amsl. It is present on the upper bajadas and rocky washes in the southern portion of the Project area. This vegetation type is similar in structure and composition to Acton's and Virgin River brittle brush scrub, except the dominant species is replaced by Nevada jointfir.

Joshua tree woodland (*Yucca brevifolia* Woodland Alliance). Joshua tree woodland is dominated by Joshua trees which are large emergent trees growing in and among creosote bush scrub. Except for these trees it largely matches the description of Creosote bush–white bursage scrub. It is located on gentle alluvial fans, ridges, and gentle to moderate slopes between 2,500 and 6,000 feet amsl. Soils are coarse sands, very fine silts, gravel, or sandy loams. Membership rules for this vegetation type are 1 percent or greater absolute cover of Joshua tree in the tree canopy, therefore only a small number of trees are required to be accurately mapped as Joshua tree scrub. It is present in the sandy valley floor, primarily in the northern half of the Project area. The density of the Joshua trees present within the Project area is relatively low and areas mapped represent the highest density observed.

Joshua tree woodland is ranked as S3.2 and is therefore recognized by CDFW as a sensitive natural community (CDFW, 2019). Additionally, the western Joshua tree has recently been identified as a candidate for state listing as threatened under the California Endangered Species Act. It is addressed in Section 3.3.1.

Mojave yucca scrub (*Yucca schidigera* Shrubland Alliance). Mojave yucca scrub is dominated by Mojave yucca which is a large shrub that dominates the landscape on the upper bajadas throughout much of the Project area. It is located on alluvial fans, rocky slopes, and upper bajadas between 2,300 and 6,000 feet amsl. Membership rules for this vegetation type are ≥ 2% absolute cover of Mojave yucca, so it only requires a small number of Mojave yucca to be accurately mapped as Mojave yucca scrub. It is a highly diverse plant community that includes numerous species of cactus such as beavertail cactus desert (*Opuntia basilaris* var. *basilaris*), branched pencil cholla, and hedgehog cactus. It also contains a high number of shrubs such as desert straw (*Stephanomeria pauciflora*), desert trumpet (*Eriogonum inflatum*), Joshua tree, California buckwheat, and little leaved rhatany. This plant community is similar in structure and function as Joshua tree woodland.

3.1.2 Other Cover Types

Sparsely vegetated washes. Numerous washes are present within the Project area. These washes originate in Stoddard Ridge to the north and Sidewinder Mountain to the west and south. Vegetation in these washes is sparse and highly variable based on elevation, substrate, and distance from the mountains. On the valley floor, these washes have sandy substrates and are vegetated by sparse shrubs such as burrobush, Anderson thornbush (*Lycium andersonii*) and numerous annuals and perennials. Higher up on the bajadas these washes have coarse rocky substrates and are vegetated by herbaceous perennials and shrubs such as desert straw, Nevada jointfir, Mono groundsel (*Senecio flaccidus* var. *Monoensis*), littleleaf brickellbush (*Brickellia microphylla* var. *microphylla*).

Disturbed. Disturbed is a cover type used to map portions of the Project area that have been impacted by human disturbance. These disturbances primarily include unpaved dirt roads and well-established off-road trails. These areas are largely unvegetated because of the frequent disturbance and soil compaction. Disturbed lands occur throughout the Project area but are limited in abundance.

3.2 State Jurisdictional Stream Channels

The Project area is within the Southern Mojave watershed, Hydrologic Unit Code 18100100, in a landscape that produces ephemeral conditions with surface waters flowing in direct response to large rain events, for short durations. Otherwise, surface water is quickly absorbed into sandy soils. This watershed is a "closed basin." All of the drainage features within the Project area drain to Lucerne Dry Lake and are not regulated as "waters of the U.S." (ECORP, 2021) (Attachment B).

According to the Web Soil Survey (NRCS, 2020), twelve soil units, or types, have been mapped within the Project area. Within the Project area, much of the desert floor is composed of alluvium. These areas contain coarse-textured, well-drained soils developed from alluvium that is derived primarily from granite and other related rock sources. Most soil series consist of deep, coarse material that is rapidly permeable and soils within these series tend to have low runoff characteristics.

Aquatic resources that have been preliminarily determined to be regulated under the Porter-Cologne Act and California Fish and Game Code Section 1602 are summarized and depicted by feature in Figure 4 of Attachment B (Jurisdictional Delineation Report) (ECORP 2021). Eleven features totaling 16,640 linear feet (lf) (2.3 acres), were located within the solar facilities; eight features totaling 2,188 lf (0.24 acre), were located along the gen-tie line. All features in the solar facilities and gen-tie line totaled approximately 18,828 lf (2.5 acres). Five features were mapped along the underground gen-tie alternative, totaling 1,180 linear feet (0.08 acre). These results are subject to agency verification. Features identified as an aquatic resource had physical evidence of flow including OHWM, defined bed and bank, presence of a clear and natural line impressed on the bank, the presence or absence of sediment deposits, litter/debris, and/or exposed roots indicating active hydrology within the channel. Swales and other erosional zones were noted during the study, but they did not have OHWM indicators or terraces. Instead, they more commonly had colluvial deposits and could be features that are active only during rare events. These are likely non-jurisdictional.

The surface expression of a drainage, in the form of bed and bank or OHWM features, tends to be very prominent on the downslope sides of roads. OHWM indicators persist in topographic low points only in locations where sub watershed areas are large, or flow is more rapid from impermeable surfaces. Where surfaces are characterized by high runoff and low permeability, flow downslope is higher energy and the stream segments directly downslope have more pronounced OHWM and defined bed and banks. OHWM features and definition of the bank and channel becomes subtle over long spans across areas mapped with Cajon-Arizo soils, where sand is dominant, and permeability is rapid.

Stream segments with persisting OHWM features are concentrated near areas where impermeable surfaces, such as rock outcrops, old terrace deposits, or compacted soils exist and where the contributing watershed is large.

3.3 Special-Status Species

3.3.1 Plants

Literature Review. Table 4 presents special-status plants known from the project vicinity and with suitable or marginal habitat occurring in the Project area. The remaining special-status plants known from the project vicinity are not expected because they grow in specialized habitats (i.e., carbonate soils) that are absent from the Project area or because the Project area is well outside of the elevation range or the species range (Attachment I).

Table 4. Special-Status Plants of the Lucerne Valley Area

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Occurrence Probability
Androsace elongata ssp. ***acuta*** California androsace	Annual; chaparral, coastal scrub, meadows, pinyon/juniper woodland, and grasslands; about 50–4,000 ft. elev.; scattered locations throughout S Calif.	Feb-Apr	**Fed.:** None **State:** None **CRPR:** 4.2	**Low:** Limited suitable habitat; not observed during surveys; historic record from approx. 5 miles SW of the Project area.
Astragalus lentiginosus var. ***borreganus*** Borrego milk-vetch	Annual herb; fine sandy soils, 210–3,940 ft. elev.; deserts of Calif. and south into NW Mexico.	Mar-May	**Fed.:** None **State:** None **CRPR:** 4.3	**Low (solar site):** Limited suitable fine sandy soil, not observed during surveys; nearest known occurrence is more than 10 miles to the SE of the Project area.
Astragalus bernardinus San Bernardino milk-vetch	Perennial herb; rocky areas in granitic or carbonic soil, often among shrubs and sagebrush in Joshua tree and pinyon juniper woodlands, 2,950–6,550 ft. elev.; San Bernardino, New York, Ivanpah mtns.	Apr-Jun	**Fed.:** None **State:** None **CRPR:** 1B.2	**Low:** Apparently suitable habitat present; not observed during surveys; nearest known occurrence is more than 20 miles S-SE of the Project area.
Boechera dispar Pinyon rockcress	Perennial herb; rocky slopes, gravelly soil, in desert scrub, pinyon/juniper woodland, 3,940–8,200 ft. elev.; San Bernardino Mountains, east of Sierra Nevada, Desert Mountains.	Apr-May	**Fed.:** None **State:** None **CRPR:** 2B.3	**Minimal:** Limited amount of suitable habitat; below elev. range; not observed during surveys; nearest occurrence more than 10 miles S of the Project area.
Boechera shockleyi Shockley's rockcress	Perennial herb; Carbonite or quartzite soils in rock or gravel within pinyon/juniper woodland, 3,900–8,202 ft. elev.; Southern Sierra Nevada foothills and western Mojave desert.	Apr-May	**Fed.:** None **State:** None **CRPR:** 2B.2	**Minimal:** Limited suitable habitat, below elevation range; not observed during surveys; historical records from more than 10 miles S of the Project area.
Calochortus striatus Alkali mariposa-lily	Perennial herb (bulb); alkaline and mesic soils in chaparral, chenopod or Mojavean desert scrub, Meadows or seeps, 2,600–4,600 ft. elev.; Southern Sierra Nevada foothills and west Mojave desert.	Apr-Jun	**Fed.:** None **State:** None **CRPR:** 1B.2	**Minimal (solar site); low (S end of gen-tie):** Limited suitable habitat present; not observed during surveys; more than 10 miles N of nearest known population.

Table 4. Special-Status Plants of the Lucerne Valley Area

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Occurrence Probability
Canbya candida White pygmy-poppy	Annual herb; sandy places in Joshua tree woodland, Mojavean scrub, and pinyon or juniper woodland; 2,000–3,940 ft. elev.; Mojave Desert and adj. Sierra Nevada.	Apr-Sep	**Fed.:** None **State:** None **CRPR:** 4.2	**Moderate:** Suitable habitat present; not observed during surveys; about 10 miles N of the nearest known occurrence.
Chorizanthe spinosa Mojave spineflower	Annual herb; sand or gravel, 2,000–4,260 ft. elev.; western Mojave Desert.	Apr-Jul	**Fed.:** None **State:** None **CRPR:** 4.2	**Low:** Suitable habitat present; not observed during surveys; more than 10 miles from nearest known occurrence.
Cryptantha clokeyi Clokey's cryptantha	Annual herb; Rocky to gravelly slopes, ridge crests, desert woodland, 3,400–5,400 ft. elev.; northwest Mojave Desert, north desert mountains.	Apr-May	**Fed.:** None **State:** None **CRPR:** 1B.2	**Low:** Suitable habitat is present; not observed during surveys, site is at lower margin of elev. range; known from approximately 7 miles SE of the solar site.
Cymopterus deserticola Desert cymopterus	Perennial herb; sandy desert, 2,300–4,900 ft. elev.; west Mojave Desert.	Apr	**Fed.:** None **State:** None **CRPR:** 1B.2	**Low:** Suitable habitat present; not observed during surveys; nearest known occurrence more than 10 miles to the SW.
Cymopterus multinervatus Purple-nerve cymopterus	Perennial herb; desert shrubland, pinyon-juniper woodland; sandy or gravelly sites; about 2,600–5,900 ft. elev.; San Bernardino Mtns, Desert Mtns, and E to UT and TX.	Mar-Apr	**Fed.:** None **State:** None **CRPR:** 2B.2	**Low:** Suitable habitat present; not observed during surveys; below elev. range; nearest known occurrence more than 10 miles to the S.
Eriophyllum mohavense Barstow woolly sunflower	Annual herb; creosote bush scrub, 1,650–2,600 ft. elev.; Mojave Desert.	Apr-May	**Fed.:** None **State:** None **CRPR:** 1B.2	**Low:** Suitable habitat present; not observed during surveys; known from within about 5 miles to the NW.
Eschscholzia androuxii Joshua Tree poppy	Annual herb; desert washes, flats, and slopes, sandy, gravelly, and/or rocky, 1,900–5,500 ft. elev.; south Desert Mountains.	Feb-May	**Fed.:** None **State:** None **CRPR:** 4.3	**Low:** Suitable habitat present; not observed during surveys; nearest known occurrence more than 10 miles to the SE.
Euphorbia revoluta Revolute spurge	Annual herb; Rocky soils; rocky slopes, less than 10,150 ft. elev.; Peninsular Ranges, Desert, Mexico.	Aug-Sep	**Fed.:** None **State:** None **CRPR:** 4.3	**Low:** Suitable habitat present; not observed during surveys; nearest known occurrence is approximately 9 miles to the E.
Funastrum utahense Utah vine milkweed	Sprawling perennial herb; desert shrublands, often washes or bajadas; California deserts, east to AZ, UT, and NV; below about 4,500 ft elev.	Apr-Jun	**Fed.:** None **State:** None **CRPR:** 4.2	**Present (gen-tie only):** Two individuals observed near proposed substation site.
Lycium torreyi Torrey's box-thorn	Shrub; washes, streambanks, less than 2,200 ft. elev.; south Mojave Desert, Sonoran Desert, and north Mexico.	Mar-May	**Fed.:** None **State:** None **CRPR:** 4.2	**Minimal:** Suitable habitat present; site is above elev. range; not observed during surveys; nearest known occurrence more than 10 miles to the N.

Table 4. Special-Status Plants of the Lucerne Valley Area

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Occurrence Probability
Menodora spinescens var. ***mohavensis*** Mojave menodora	Shrub; rocky desert hillsides, canyons, 2,260–6,500 ft. elev.; north slopes of San Bernardino Mountains, Mojave Desert.	Apr-May	**Fed.:** None **State:** None **CRPR:** 1B.2	**Low:** Suitable habitat present; not observed during surveys; nearest known occurrence roughly 10 miles to the N.
Mentzelia tridentata Creamy blazing star	Annual herb; creosote bush scrub, rocky escarpments, 2,300–4,300 ft. elev.; central Mojave Desert.	Apr-May	**Fed.:** None **State:** None **CRPR:** 1B.3	**Low:** Marginal habitat present; not observed during surveys; known from within 5 of the Project area near West Ord Mountain.
Mimulus mohavensis Mojave monkeyflower	Annual herb; sandy or gravelly soils, often in washes, Joshua tree woodland, and Mojavean desert scrub; 2,000–4,000 ft. elev.; Mojave Desert around Barstow, south to Johnson Valley and Apple Valley.	Apr-Jun	**Fed.:** None **State:** None **CRPR:** 1B.2	**Moderate:** Suitable habitat is present; not observed during surveys, known from approxi-mately 4 miles to the W.
Muhlenbergia appressa Appressed muhly	Annual grass; open canyon bottoms, rock slopes, 60–5,200 ft. elev.; San Clemente Island, Desert Mountains (Providence Mountains), and Baja California.	Apr-May	**Fed.:** None **State:** None **CRPR:** 2B.2	**Low:** Minimally suitable habitat present; not observed during surveys; nearest known occurrence about 9 miles to the E.
Muilla coronata Crowned muilla	Perennial bulb; chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and pinyon/juniper woodland; from about 2,200–6,500 ft. elev.; scattered locations throughout the Mojave Desert and E into Nevada.	Mar-May	**Fed.:** None **State:** None **CRPR:** 4.2	**Low-moderate:** Suitable habitat is present; not observed during surveys, known from within about 3 miles.
Nemacladus gracilis Graceful nemacladus	Annual herb; rocky slopes, sandy washes, less than 6,200 ft. elev.; southern Sierra Nevada Foothills, San Joaquin Valley, and Coast Ranges.	Mar-Apr	**Fed.:** None **State:** None **CRPR:** 4.3	**Low:** Suitable habitat is present; not observed during surveys; nearest known occurrence roughly 10 miles to the N.
Plagiobothrys parishii Parish's popcornflower	Annual herb; Alkaline and mesic soils Great Basin scrub or Joshua tree woodland, 2,400–7,200 ft. elev.; Central Mojave Desert and east of the Sierras.	Mar-Jun	**Fed.:** None **State:** None **CRPR:** 1B.1	**Minimal:** No **s**uitable habitat present; not observed during surveys; more than 10 miles N from nearest known occurrence.
Pediomelum castoreum Beaver Dam breadroot	Perennial herb; open sandy areas and road cuts, less than 5,740 ft. elev.; Mojave Desert (San Bernardino County).	Apr-May	**Fed.:** None **State:** None **CRPR:** 1B.2	**Low:** Suitable habitat present; not observed during surveys; nearest known occurrence roughly 5 miles to the N.
Psorothamnus arborescens var. ***arborescens*** Mojave indigo-bush	Shrub; desert scrub, 1,300–2,600 ft. elev.; southwest Mojave Desert (Kern and San Bernardino Counties).	Apr-May	**Fed.:** None **State:** None **CRPR:** 4.3	**Low:** Suitable habitat present; below elev. range; not observed during surveys; nearest known occurrence more than 10 miles to the W and N.

Table 4. Special-Status Plants of the Lucerne Valley Area

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Occurrence Probability
Saltugilia latimeri Latimer's woodland-gilia	Annual herb; granitic soils in rocky or sandy areas, occ. In washes, in chaparral, Mojavean desert scrub, pinyon juniper woodland, 1,300–6,200 ft. elev.; Transverse range and peninsular ranges, CA deserts.	Mar-Jun	**Fed.:** None **State:** None **CRPR:** 1B.2	**Minimal:** Limited suitable habitat present; not observed during surveys; nearest known occurrence is more than 20 miles S-SE.
Sclerocactus polyancistrus Mojave fish-hook cactus	Perennial stem succulent; lime-stone areas, hills and canyons, alluvial slopes, creosote bush scrub, Joshua tree woodland, 2,500–7,000 ft. elev.; White and Inyo Mountains, Mojave Desert.	Apr-Jun	**Fed.:** None **State:** None **CRPR:** 4.2	**Low:** Minimally suitable habitat, not observed during surveys; nearest known locality is more than 10 miles to the W.
Sidalcea neomexicana Salt spring checkerbloom	Perennial herb; Alkaline, mesic soils in chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playas, at elevations generally less than 4,900 ft.; Transverse and peninsular ranges, CA deserts	Apr-Jun	**Fed.:** None **State:** None **CRPR:** 2B.2	**Minimal:** Suitable habitat not present; not observed during surveys; more than 10 miles N from nearest known occurrence.
Yucca brevifolia subsp. brevifolia Western Joshua tree	Evergreen tree-like shrub; flats and slopes at elevations between 1,300 and 7,200 ft.; Mojave Desert.	Jun-July	**Fed.:** None **State:** Cand. (THR) **CRPR:** n/a	**Present:** See text.

References: CDFW, 2020; CCH, 2020; CNPS, 2020

Conservation Status

Federal designations: (federal ESA, USFWS, BLM).
- END: Federally listed, endangered.
- THR: Federally listed, threatened.
- Cand.: Sufficient data are available to support federal listing, but not yet listed.
- Prop.: Formally proposed for federal status shown.

***State designations*:** (CESA, CDFW)
- END: State listed, endangered
- THR: State listed, threatened.
- RARE: State listed as rare (applied only to certain plants).
- Cand.: Designated by the state Fish and Game Commission as a candidate for listing.

California Rare Plant Rank designations. Note: According to CNPS (http://www.cnps.org/cnps/rareplants/ranking.php), plants ranked as CRPR 1A, 1B, and 2 meet definitions as threatened or endangered and are eligible for state listing. That interpretation of the state Endangered Species Act is not in general use.
- 1A: Plants presumed extinct in California.
- 1B: Plants rare and endangered in California and throughout their range.
- 2: Plants rare, threatened or endangered in California but more common elsewhere in their range.
- 3: Plants about which we need more information; a review list.
- 4: Plants of limited distribution; a watch list.

California Rare Plant Rank Threat designations:
.1 Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Fairly endangered in California (20–80% occurrences threatened)
.3 Not very endangered in California (<20% of occurrences threatened or no current threats known)

Definitions of occurrence probability: Estimated occurrence probabilities based literature sources cited earlier and field surveys and habitat analyses reported here.

Present: Observed on the site by qualified biologists.
High: Habitat is a type often utilized by the species and the site is within the known range of the species.
Moderate: Site is within the known range of the species and habitat on the site is a type occasionally used.
Low: Site is within the species' known range but habitat is rarely used, or the species was not found during focused surveys covering less than 100% of potential habitat or completed in marginal seasons.
Minimal: No suitable habitat on the site; or well outside the species' known elevational or geographic ranges; or a focused study covering 100% of all suitable habitat, completed during the appropriate season and during a year of appropriate rainfall, did not detect the species.
Unknown: No focused surveys have been performed in the region, and the species' distribution and habitat are poorly known.

Joshua tree occurs in large numbers on the proposed solar facility and two individual Utah vine milkweed were observed on the southern gen-tie route. No other special-status plants were observed during the field surveys.

Western Joshua tree (present). Western Joshua is a candidate for listing as threatened under the California Endangered Species Act (CESA). Candidacy was granted to Joshua tree in September of 2020 from the California Fish and Game Commission. Joshua tree is an arborescent shrub that grows on slopes and desert flats within the Mojave, and in the far southern reaches of the Great Basin deserts. It typically flowers from March through June, depending on rainfall and the occurrence of freezing temperatures during winter, but can be readily identified at any time of year. While there is not a full census of the Joshua tree population, scientists have observed population declines in small studies in discrete locations over the last couple of decades. While this itself may not be enough to warrant consideration for listing, the tree's survival rate and low reproductive output may be negatively affected by invasive species, wildfires, and changes in long term temperature and precipitation patterns from climate change now and in coming decades.

Joshua trees are common in the central portions of the Project area in settings dominated by sandy soils. Portions of the Project area occupied by Joshua trees have been mapped as Joshua tree woodland (Figure 3). A full inventory of Joshua trees was completed in October 2020 (ECORP, 2020). A total of 578 Joshua trees were recorded within the Project area and 10 were found within a surrounding the 50-foot buffer area (Figure 5). No Joshua trees were observed within the gen-tie line or within the substation alternatives.

Utah vine milkweed (present). Utah vine milkweed is ranked as CRPR 4 (i.e., "watch list"). It is widespread in the deserts of the southwestern states, generally found in and around sandy or gravelly washes. Off-road vehicles and land use conversions, particularly large-scale renewable energy projects, continue to eliminate suitable habitat, as reflected by the CRPR 4.2 ranking (i.e., "watch list" but "fairly endangered in California"). Conversely, the CDFW Special Plants compendium identifies it as "apparently secure" in California.

Several species that are regulated by the Native Plant Protection Act (California Fish and Game Code 1900-1913) were observed and recorded in the species list (Attachment F): Mojave yucca (*Yucca schidigera*), Wiggins' cholla (*Cylindropuntia echinocarpa*), branched pencil cholla (*Cylindropuntia ramosissima*), cotton-top cactus (*Echinocactus polycephalus*), hedgehog cactus (*Echinocereus engelmannii*), and beavertail cactus (*Opuntia basilaris* var. *basilaris*).

Special-Status Plant Survey Limitations. Overall, rare plant surveys during spring and fall 2017, spring 2018, and spring 2020 provide an adequate sampling of the planned Project area. However, the survey team did not have access to several private parcels on the proposed gen-tie right-of-way (see Figure 2). Nonethe-

less, habitat conditions in these areas are similar to the broader Project area and it is unlikely that special-status plants not observed elsewhere during the field surveys might be present on these parcels.

Drought conditions may have been a limiting factor for the 2017 surveys (see Section 2.3.3). But the above average rainfall for the 2019-2020 wet season was ideal for conducting rare plant surveys. One notable observation in spring 2017 was that the habitat located within a couple miles of the foot of Stoddard Ridge (mountains just north of Project area) appeared to have much higher abundance of annual plant species, which alludes to the fact that the desert can have very localized rainfall and the reports from weather stations nearby and may not accurately reflect rain that has fallen on the entire Project area. It appears the winter 2016-2017 had less rainfall than reported at local weather stations due to the low abundance of native annual species. Another potential reason for low native plant cover is that historic disturbances to the site (e.g., grazing) may have caused the site to become degraded to the point that it does not high native species diversity or abundance.

The special-status plants briefly summarized below were evaluated as having a moderate potential or greater to be present on the Project area, based on geographic and elevational range, habitat, and field survey results.

Mojave monkeyflower (moderate). Mojave monkeyflower has a CRPR of 1B.2. It is a member of the lopseed family (Phrymaceae). It is endemic to the Mojave Desert in California. It is most abundant around Barstow, and there are numerous smaller occurrences as far south as the Victorville area, east of the Mojave River (MacKay, no date). It generally occurs on the margins of desert washes, in sandy or gravelly soils above the active channels. Like many desert annuals, its numbers fluctuate widely from one year to another. It is unlikely to come up in drought years, but even in years of average or higher rainfall, it sometimes cannot be found at known sites. Within the Project vicinity, it has been recorded in numerous locations in the Barstow-Daggett area.

Crowned muilla (low-moderate). Crowned muilla has a CRPR of 4.2. It occurs in the deserts of Inyo, Kern, Los Angeles, San Bernardino, and Tulare Counties east into Nevada. It can be found in chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodlands at elevations of 2,510 to 6,430 feet. It is a bulbiferous herb that blooms from March to April (CNPS, 2020). Suitable habitat is present throughout the Project area.

3.3.2 Wildlife

Literature Review. All wildlife species observed during the surveys are included as Attachment G. Table 5 presents special-status wildlife known within the Project vicinity and containing suitable or marginal habitat. The remaining special-status wildlife are not expected due to lack of suitable habitat or because the Project area is outside of the elevation or geographic range (Attachment I).

Table 5. Special-Status Wildlife of the Lucerne Valley Area

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Occurrence Probability
INVERTEBRATES				
Bombus crotchii Crotch bumble bee	Open grassland and scrub; underground colonies, often in old rodent burrows. Food plants include many native species in the following genera: Chaenactis, Lupinus, Phacelia, Salvia, and Eriogonum. Much of southern and central CA, SW Nevada and Baja.	Year-round	**Fed:** None **State:** Cand. (E), S1S2	**Unknown:** Suitable food plants present, nearest records more than 10 miles to S, may be out of species range.
Psychomastax deserticola Desert monkey grasshopper	Desert slopes of San Bernardino Mtns., about 4,000–6,000 ft. elev.; reportedly on chamise but more likely on antelope bush or blackbush (Heberd, 1933).	late summer	**Fed:** None **State:** S1S2	**Minimal:** No suitable shrubland habitat; below elevational range.
REPTILES				
Gopherus agassizii (Xerobates agassizii) Mojave desert tortoise	Desert shrublands where soil suitable for burrows; Mojave and Sonoran des. (E Calif., S Nevada, W Ariz., and Sonora, Mexico)	Spring–Summer	**Fed:** THR **State:** THR	**Present**: Several adults, burrows, and numerous sign observed; see text.
***Lichanura trivirgata* roseofusca** Rosy boa	Rocky chaparral and desert shrubland; gen below about 4,500 ft. elev.; S Calif. through Baja Calif., SW Arizona, and western Sonora.	Spring - summer	**Fed:** None State: S3S4	**High**: Not observed during surveys but suitable habitat present throughout; records within less than 0.5 miles.
BIRDS				
Aquila chrysaetos Golden eagle	Nests in remote trees and cliffs; forages over shrublands and grasslands; breeds and winters throughout W N America.	Year-round	**Fed:** None **State:** SSC S3, FP (year-around)	**Minimal (nesting):** No suitable habitat but known nest sites within vicinity. **Foraging:** Known as flyover and presumably foraging.
Athene cunicularia Burrowing owl	Found mainly in grassland and open scrub throughout a variety of geographic areas; strongly associated with ground squirrel burrows.	Year-round	**Fed.** None **State:** S3, SSC (burrow sites and some wintering sites)	**Present:** Several active burrows observed within the Project area.
Buteo swainsoni Swainson's hawk	Forages in open grasslands, agricultural areas, sparse shrublands, and small open woodlands. Nests in NW Antelope Valley, Central Valley, and northward, winters in S America.	Spring and Fall	**Fed:** None **State:** THR	**Minimal (nesting):** Outside geographic range. **Present (migration):** Observed as flyover during spring of 2017.
Coccyzus americanus occidentalis western yellow-billed cuckoo	Found in valley foothill and desert riparian habitats. Typically in areas of densely foliaged, deciduous trees and shrubs, especially willows, required for roosting sites.	Spring - summer	**Fed:** THR **State:** END	**Minimal (nesting or foraging):** No suitable riparian habitat. **Low (seasonal flyover):** Migration season only.

Table 5. Special-Status Wildlife of the Lucerne Valley Area

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Occurrence Probability
Falco mexicanus prairie falcon	Nests on high cliffs, forages primarily over open lands; occurs throughout arid western US and Mexico	Year-round	**Fed:** None **State:** SSC S3 ***(nesting only)***	**Minimal (nesting):** No suitable habitat but expected to nest in vicinity. **Foraging:** Expected.
Falco peregrinus Peregrine falcon	Nests on high cliffs, generally near water bodies; feed on birds (esp. shorebirds & waterfowl); widespread but rare worldwide	Year-round	**Fed:** Delisted **State:** Delisted, SSC, FP	**Minimal (nesting):** No suitable habitat. **Foraging:** Known as flyover and possibly foraging.
Lanius ludovicianus loggerhead shrike	Woodlands, shrublands, open areas with scattered perch sites; widespread in N America, declining in some areas.	Year-round	**Fed:** None **State:** S4, SSC (nesting)	**Present:** Several individuals observed within the Project area. Expected to nest and forage throughout site.
Eremophila alpestris actia California horned lark	Grasslands, deserts, alpine dwarf-shrub habitat with low, sparse vegetation; throughout CA except Coast Ranges and Sierra Nevada Mtns.	Year-round	**Fed:** none **State:** WL, S4	**Present:** Several individuals observed within the Project area.
Toxostoma bendirei Bendire's thrasher	Joshua tree woodland, desert scrub; high cactus cover; mainly E Mojave Des in Calif. (scarce in W Mojave); American SW and mainl. Mexico	Year - around	**Fed:** None **State:** S3, SSC	**Moderate:** Suitable habitat present; nearest records within less than 5 miles.
Toxostoma lecontei Le Conte's thrasher	California deserts, SW Central Val. & Owens Val., through southwestern states; open shrubland, Joshua tree woodland; often sandy or alkaline flats	Year - around	**Fed:** None **State:** SSC, S3	**Present:** Several individuals observed within the Project area. Expected to nest and forage on site.
MAMMALS				
Chaetodipus fallax allidus Pallid San Diego pocket mouse	Open shrublands and sandy areas; deserts and desert-facing foothills, LA Co. south to N Baja Calif.	Mainly warm season	**Fed:** None **State:** SSC S3S4	**Moderate:** Suitable vegetation and soils throughout the site.
Corynorhinus townsendii Townsend's big-eared bat	Many habitats throughout Calif and W N Amer, scattered populations in E; day roosts in caves, tunnels, mines; feed primarily on moths	Year-round	**Fed:** None **State:** SSC, S2	**Minimal (roosting):** No suitable habitat. **Moderate (foraging):** Suitable habitat present.
Eumops perotis californicus Western mastiff bat	Lowlands (rare exceptions); cent. and S Calif., S Ariz., NM, SW Tex., N Mexico; roost in deep rock crevices, forage over wide areas.	Mainly warm season	**Fed:** None **State:** SSC, S3S4	**Moderate (roosting):** Possible suitable habitat in rocky slopes at S edge of site. **Moderate (foraging):** Suitable habitat present.
Lasionycteris noctivagans Silver-haired bat	Much of North America, except warm and arid regions; migratory; winter range expands to south; forests, esp. near water; hibernates in trees, buildings, crevices.	Winter; Perhaps also warm season	**Fed:** None **State:** S3S4	**Minimal:** Not typically found in desert habitats; no suitable roosting habitat.

Table 5. Special-Status Wildlife of the Lucerne Valley Area

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Occurrence Probability
Taxidea taxus ***American badger***	Mountains, deserts, interior valleys where burrowing animals are avail. As prey and soil permits digging; throughout cent. and W N Amer.	Year-round	**Fed:** None **State:** SSC, S4	**Present:** Burrow detected within the eastern portion of the solar site in 2017. Suitable habitat present throughout.
Vulpes macrotis arsipus Desert kit fox	Arid areas with grasslands, agricultural lands, or scrub areas with scattered shrubby vegetation. Requires open, level areas with loose-textured, sandy loamy soils for digging dens. Arid portions of the southwestern United States and northern and central Mexico.	Year-round	**Fed:** None **State:** FP	**Present.** Burrow detected within the eastern portion of the solar site in 2017. Suitable habitat present throughout.
Xerospermophilus mohavensis Mohave ground squirrel	Mojave desert scrub, alkali scrub, and Joshua tree woodland between 1,800 and 5,000 feet. Sandy to gravelly soils.	Feb.-Sept.	**Fed:** None **State:** THR	**Low:** Suitable habitat present. However, apparently outside current occupied range. See text.

References: CDFW, 2020; Jennings and Hayes, 1994; Shuford and Gardali, 2008, Stebbins, 2003; Zeiner et al., 1988; Zeiner et al., 1990.

Conservation Status

Federal designations: (federal ESA, USFWS).

END: Federally listed, endangered.
THR: Federally listed, threatened.
Cand: Sufficient data are available to support federal listing, but not yet listed.
Prop: Formally proposed for federal status shown.
Delisted: Previously listed under federal ESA, removed.

State designations**:** (CESA, CDFW)

END: State listed, endangered.
THR: State listed, threatened.
Cand: Candidate for State listing.
RARE: State listed as rare (applied only to certain plants).
SSC: California species of special concern. Considered vulnerable to extinction due to declining numbers, limited geographic ranges, or ongoing threats.
FP: Fully protected. May not be taken or possessed without permit from CDFW.

Definitions of occurrence probability: Estimated occurrence probabilities based literature sources cited earlier and field surveys and habitat analyses reported here.

Occurs: Observed on the site by qualified biologists.
High: Habitat is a type often utilized by the species and the site is within the known range of the species.
Moderate: Site is within the known range of the species and habitat on the site is a type occasionally used.
Low: Site is within the species' known range, but habitat is rarely used, or the species was not found during focused surveys covering less than 100% of potential habitat or completed in marginal seasons.
Minimal: No suitable habitat on the site; or well outside the species' known elevational or geographic ranges; or a focused study covering 100% of all suitable habitat, completed during the appropriate season and during a year of appropriate rainfall, did not detect the species.
Unknown: No focused surveys have been performed in the region, and the species' distribution and habitat are poorly known.

Wildlife Species Present in Project Area or with High Potential to Occur

The special-status species addressed in the following paragraphs have a high occurrence potential or were present in the Project area during surveys: Mojave desert tortoise, rosy boa, burrowing owl, golden eagle, seasonal raptors, several special-status birds, desert kit fox, and American badger.

Mojave Desert Tortoise (Present in Project Area)

The Mojave desert tortoise inhabits the Mojave Desert in California, as well as parts of southern Nevada, northwestern Arizona, and southern Utah. A similar species, Morafka's desert tortoise, occurs east and south of the Colorado River in Arizona and northwest of Mexico. The Mojave desert tortoise is both federally and state-listed (USFWS, 1990). In California, it occurs in the southeastern portion of the state from Inyo County to Imperial County, including eastern Kern, Los Angeles, San Bernardino, Riverside, and San Diego Counties (Berry et al., 2002).

Mojave desert tortoises are found in most desert shrubland communities (Boarman, 2002). They generally prefer loamy substrate and southwest exposures (Anderson et al., 2000). In the southwestern Mojave, desert tortoises select communities with high plant species diversity and ecotones between communities (Meyer, 2008). They typically inhabit flats, gently sloping terrain, valleys and bajadas, washes, rocky hillsides, and open desert areas with sandy to sandy-gravelly soils that offer suitable substrates for burrowing and nesting. They are typically found from approximately 2,000 to 3,300 feet above mean sea level (msl) but they have also been found above 4,000 feet above msl. Desert tortoise burrows may typically be found in wash areas (Woodbury and Hardy, 1940).

In periods of harsh or unusually dry conditions, desert tortoises can retreat to burrows where they lower their metabolism and loss of water and consume very little food.

The Project area is within the known range of desert tortoise and suitable habitat is present throughout. A total of six live desert tortoises were observed during 2017 and 2020 surveys, listed below. Four were observed during focused surveys, and two were incidentally observed during other field work. Figure 6 illustrates the locations of all live desert tortoises and desert tortoise sign observed during the focused desert tortoise surveys.

- On May 8, 2017 a single adult female desert tortoise (mid-carapace length [MCL] of approximately 230 millimeters [mm]) was observed basking at the mouth of a burrow.
- On May 12, 2017, an adult female desert tortoise (approximately 250 mm MCL) was observed within a burrow located underneath a branched pencil cholla.
- On May 12, 2017 a single adult desert tortoise of undetermined sex was incidentally observed walking across Lucerne Valley Cutoff Road approximately 0.5 mile southeast of the biological survey area.
- On April 21, 2020, an adult female desert tortoise (approximately 195 mm MCL) was observed basking outside of a rock shelter.
- On April 22, 2020, a single adult female tortoise (approximately 215 mm MCL) was observed walking in the open.
- On May 13, 2020 a single adult male tortoise (approximately 200 mm MCL) was incidentally observed walking in the open during the special-status plant survey.

A total of 50 potential desert tortoise burrows (three of which were pallets, or shallow excavations generally used as a thermal shelter or resting places, but not deep enough for hibernation) were identified within the biological survey area during the 2017 (45) and 2020 (5) surveys. Of the 50 total burrows

observed, four were classified as Class 1; 12 were classified as Class 2; eight were classified as Class 3; and 26 burrows were classified as Class 4 or 5 (Table 6). During the 2017 surveys, a total of 11 pieces of scat were identified within the biological survey area, nine of which were identified as Class 1 or Class 2, indicating that they had been deposited relatively. No scat was identified during 2020 surveys (Table 6).

Eight desert tortoise carcasses were located. One carcass was identified as Class 3; one carcass was identified as Class 4; and six carcasses were classified as Class 5 (see definitions in Table 6). No recently deceased tortoise carcasses were found.

Table 6. Results of Desert Tortoise Survey

	Within Project Area			Within 100' Buffer		
Class*	**Burrow/Pallet**	**Scat**	**Carcass**	**Burrow/Pallet**	**Scat**	**Carcass**
2017 Desert Tortoise Survey Results						
1	1	2	0	1	0	0
2	7	4	0	4	3	0
3	6	0	0	2	2	1
4	12	0	0	1	0	0
5	9	0	2	2	0	1
Total	**35**	**6**	**2**	**10**	**5**	**2**
2020 Desert Tortoise Survey Results						
1	1	0	0	1	0	0
2	1	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	1	2	0	0
5	0	0	2	0	0	1
Total	**2**	**0**	**3**	**3**	**0**	**1**
Grand Total	**37**	**6**	**5**	**13**	**5**	**3**

*Desert Tortoise Sign Classification

Burrow: 1 - Currently active, w/ tortoise or active sign, 2 - Good condition, tortoise, no evidence of recent use, 3 - Deteriorated condition, tortoise, 4 - Good condition, possibly tortoise, 5 - Deteriorated condition, possibly tortoise

Scat: 1 - Wet or freshly dried, obvious odor, 2 - Dry w/ glaze and some odor, no bleaching, dark brown, 3 - Dry w/o glaze or odor, light brown, tightly packed, signs of bleaching, 4 - Dry, very light brown to yellow, loose material; scaly, 5 - Bleached or consisting only of plant fiber

Carcass: 1 - Fresh or putrid, 2 - Normal color, scutes adhered to bone, 3 - Scutes peeled off bone, 4 - Shell bones falling apart; growth rings on scutes are peeling, 5 - Disarticulated and scattered

Although desert tortoise sign was encountered throughout the entire Project area and buffer, the overwhelming majority was documented in the northern half of the Project area. Two of the five live desert tortoises observed during 2017 surveys were observed in the northern half of the CSLC area. With the exception of a small area of steep rocky terrain in the survey buffer in the southewestern section of the CSLC lands area, there are no dramatic changes in habitat types between the northern and southern portions of the biological survey area and buffer; however, subtle changes in soil, topography, and vegetation composition may account for the difference in findings between the northern and southern areas. Further, the soil composition in the northern portion of the CSLC lands had higher suitability for burrowing (friable soils) compared to the rocky soil composition in the southern portion of the CSLC lands.

Desert Tortoise Survey Limitations. Desert tortoise surveys in spring 2017 and spring 2020 provide an adequate survey of the proposed Project area. However, the survey team did not have access to several private parcels on the proposed gen-tie right-of-way (see Figure 2). Nonetheless, habitat conditions in these areas are similar to the broader Project area and it likely that results in that area would be similar to nearby gen-tie parcels. Further, two portions of the spring 2020 survey area were not surveyed due to concerns for surveyor safety. A portion of the desert tortoise survey buffer at the southernmost extent of the CSLC lands was inaccessible to surveyors due to very steep, rocky terrain. This portion of the survey area was determined to be low-quality habitat for desert tortoise due to steep slopes. A portion of the desert tortoise survey area along the gen-tie right-of-way, north of SR-247, was not surveyed for desert tortoise due to the presence of an aggressive off-leash dog that was encountered by surveyors when approaching the property.

Rosy Boa (High Potential to Occur)

The rosy boa is tracked by the CDFW as a special animal in the CNDDB. It occurs in rocky shrublands and desert shrubland from sea level to approximately 6,700 feet in elevation. In coastal regions, it is found south and west of the major mountain chains, in the interior valleys and mountains of Los Angeles, Riverside, San Bernardino, and Orange counties, southward to the coast in San Diego County and Baja California. In the deserts, rosy boas range throughout most of the Mojave Desert and much of the Colorado Desert, eastward into Arizona. This species is active during warm seasons and is primarily nocturnal. Suitable habitat is present throughout the Project area with the highest potential for occurrence in the south where rocky substrates are much more common.

Burrowing Owl (Present in Project Area)

Burrowing owl is a California Species of Special Concern. It inhabits arid lands throughout much of the western U.S. and southern interior of western Canada (Poulin et al., 2011). In this portion of its range, some owls are migratory, while some are year-round residents. Burrowing owls prefer flat, open annual or perennial grassland or gentle slopes and spare shrub or tree cover. However, they are routinely found in desert shrub communities that are present in the Project area.

Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by ground squirrels, kit fox, desert tortoise, and other wildlife. Burrowing owls have high site fidelity for previously occupied nesting and wintering habitats. Burrowing owls often return to burrows used in previous years, especially if they had reproductive success in previous years (Gervais et al., 2008). The breeding season in southern California generally occurs from February to August with peak breeding activity from April through July (Poulin et al., 2011).

In the Mojave Desert, burrowing owl numbers have declined due to loss and fragmentation of habitat, diminished food supply, and predation of eggs and young. Suitable burrowing owl nesting habitat and wintering habitat is present throughout the Project area.

Figure 7 shows the locations of the live burrowing owl observation and locations of the potential and occupied burrows documented during the 2017 and 2020 surveys. Two adult burrowing owls were observed within the Project area during the focused surveys. In 2017 one owl was observed using a burrow in the northeastern portion of the Project area. The burrow had three entrances and was in an area dominated by creosote bush (see Photo 15, Attachment E). Fresh whitewash, pellets, and bones of prey items were present at the burrow entrances. In 2020, one owl was observed using a burrow in the western portion of the Project area. The owl was in a rocky wash using two separate burrows. Fresh whitewash, pellets, and bones of prey items were present at the burrow entrances.

A total of 16 occupied or active burrows were documented within the biological survey area and an additional 11 burrows were documented within the survey buffer; however, live owls were not detected at these burrow locations. Burrowing owl sign, including whitewash, feathers, pellets, and/or bones of prey items, were observed at these burrow locations.

A total of 80 potential burrows were documented within the biological survey area and 31 were documented within the buffer. These burrows had no evidence of burrowing owl sign; however, they were large enough and deep enough to support burrowing owl use. Table 7 summarizes the results of all burrowing owl sign observed during the survey.

Table 7. Results of Incidental Burrowing Owl Sign Observations

2017 Survey Results		
Burrowing Owl Sign	**Within Project Area**	**Within Buffer**
Occupied and Active Burrow (with owl)	1	0
Occupied Burrow (with sign)	15	4
Potential Burrow (no sign)	78	26
TOTAL	94	30
2020 Survey Results		
Burrowing Owl Sign	**Within Biological Survey Area**	**Within Buffer**
Occupied and Active Burrow (with owl)	0	2
Occupied Burrow (with sign)	1	7
Potential Burrow (no sign)[1]	2	5
TOTAL	3	14
GRAND TOTAL	**97**	**44**

1 - Canid dens with no BUOW sign included as Potential Burrows (no sign).

Golden Eagle (Present in Project Area)

The golden eagle is federally protected under the Bald and Golden Eagle Protection Act (BGEPA) and is a fully protected species in California. They may be year-round residents or seasonal migrants throughout most of their range in the western U.S., including the Project vicinity. In the southwest, they are more common during winter when eagles that nest in Canada migrate south into the region. They breed from late January through August, mainly during late winter and early spring in the California deserts. In the desert, they generally appear in early winter and begin breeding behavior in January. They nest in steep, rugged terrain, often on sites with overhanging ledges, cliffs, or large trees that are used as cover. Golden eagles have also been documented nesting on transmission line towers in the region, although no such nest sites are known within the Project vicinity. Golden eagles are wide-ranging predators, especially outside of the nesting season, when they have no need to return daily to tend eggs or young. Foraging habitat consists of open terrain including grasslands, deserts, savanna, and early successional forest and shrubland habitats. They prey primarily on rabbits and rodents, but will take other mammals, birds, reptiles, and some carrion.

Golden eagle nesting territories generally comprise several nests within an area that can vary in size from about 8 to 13 square miles. In any given year, eagles may initiate nesting behavior at one nest, without any activity at the other nests. Eagles may complete breeding by laying eggs and raising chicks or may

abandon the nest without successfully raising young. In any given year, all or most nests in a territory may be inactive, but eagles may return in future years to nest at previously inactive sites.

Suitable foraging habitat for golden eagles is present throughout the Project area. Suitable nesting habitat is not present in the Project area but occurs in surrounding mountain ranges. The paragraphs below describe the results of the golden eagle assessment (methods described in Section 2.3.3).

Background. Recent data analysis and population modeling by USFWS suggest the status of the golden eagle population in the western United States is gradually declining towards an equilibrium of about 26,000 individuals, down from an estimated 34,000 in 2009 and 2014 (USFWS, 2016). The future population estimate relies on the continuation of current ecological and biological conditions. USFWS estimated that 3,400 golden eagles die annually from anthropogenic causes in the United States and that a level of sustainable take is approximately 2,000 individuals annually (USFWS, 2016). Additional unmitigated mortality will steepen the rate of decline that the golden eagle population is presently undergoing (USFWS, 2016).

Regional Surveys. The 2020 focused golden eagle surveys identified ten raptor nests in the survey area, within 2 miles of the project boundary (Figure 9) (WEST, 2020). One nest along Stoddard Ridge (279) was occupied by golden eagles and active, located within one mile north of the Project boundary. During the second survey, two nestlings were observed. The status of the nests is provided in Table 8.

Table 8. 2020 Raptor Nests and Status

Nest ID	Species	Status	Historic Eagle Nest	Notes
310		Unknown	Yes	Not surveyed, within bighorn sheep exclusion area
Stoddard Ridge		Unknown	Yes	Not surveyed, within bighorn sheep exclusion area
171		Unknown	Yes	Not surveyed, within bighorn sheep exclusion area
ST10		Unoccupied[4] – Good	Yes	
279	Golden eagle	Occupied[1] Active[2]	Yes	1st survey eagle in incubating position, 2nd survey **2 nestlings** aged approx. 28 days. **Within one mile north of Project area.**
154		Inactive[3] – Good	Yes	Large, good condition
158	Common raven	Occupied[1] Active[2]	Yes	Large, good condition
9	Common raven	Occupied[1] Active[2]	No	
10		Inactive[3] – Poor	No	Large, broken up
11	Common raven	Occupied[1] Active[2]	No	

1 - Nests were classified as occupied if any of the following were observed: 11) an adult in an incubating position, 2) eggs, 3) nestlings or fledglings, 4) presence of an adult (sometimes sub-adults), 5) a newly constructed or refurbished stick nest in the area where territorial behavior of a raptor had been observed earlier in the breeding season, or 6) a recently repaired nest with fresh sticks (clean breaks) or fresh boughs on top, and/or droppings and/or molted feathers on its rim or underneath.

2 - Occupied nests were further classified as active if an egg (or eggs), or a chick (or chicks) were observed.

3 - Nests were classified as inactive if no eggs or chicks were present.

4 - Nests not meeting the above criteria for 'occupied' during at least two consecutive surveys were classified as 'unoccupied'; if only one visit was made, such nests were classified as 'inactive'.

Additionally, several golden eagle surveys have been conducted within 10 miles of the Project area in the last ten years. The studies partially overlapped one another and some of the observations and nests summarized below are duplicated among these reports.

- **Katzner et al. (2012):** BLM funded a golden eagle study focused primarily on breeding adults inhabiting the Mojave and Sonoran Deserts. One adult eagle from each of six nests in the Stagecoach Solar Project vicinity were monitored via radio telemetry. For five of the six documented eagles, breeding home ranges (KDE[2]) were encompassed within an approximate 10-mile boundary around the Stagecoach Solar Project area. A small portion of the sixth eagle's home range (Fry Mountain female 90% KDE) was encompassed within the 10-mile boundary. Two eagles (Stoddard Ridge female, Whitehorse male) had 90% KDE directly over the Solar Generation Facilities along the northern, western, and southern edge. One eagle (Whitehorse male) had 90% KDE directly over the Gen-tie and SCE Calcite Substation. One nest (Stoddard Ridge female) was located within one mile of the Solar Generation Facilities; one nest (New Deal Mine female) was located within 5 miles of the Solar Generation Facilities. One nest (Whitehorse male) was located within 2 miles of the Gen-tie line and SCE Calcite Substation. One nest (Margaritaville male) was located within six approximately miles of the Gen-tie line and SCE Calcite Substation.
- **Latta & Thelander (2013):** BLM's California Desert District was surveyed from December 2011 through August 2012. Field data was collected on the breeding status of golden eagle from 397 nesting sites in Southern California. Within an approximate 10-mile boundary around the Stagecoach Solar Project area, nest sites and golden eagle observations were identified from Stoddard Ridge, N. Ord Mountains, E. Ord Mountains, Daggett Ridge, Newberry Mountains, Granite Mountains, Fairview Mountain, Whitehorse Mountain, a few of which overlap with birds from Katzner et. al. (2012). Additional occurrences were documented just outside the 10-mile boundary, south in the San Bernardino Mountains and east in the Fry Mountains.
- **SCE (2013):** Focused avian surveys were performed in 2012 and 2013 to inform the Coolwater-Lugo Transmission Project (CLTP). The CLTP crosses the Stagecoach solar facility and gen-tie line. During these surveys, golden eagles were observed in the Project vicinity near the Granite and Ord Mountains. Nests were identified from the Granite Mountains, Stoddard Ridge, Sidewinder Mountain, Daggett Ridge, Goat Mountains, Ord Mountains, and Elephant Mountains. There were historic and active nests within 10 miles of the Project area.
- **BLM (2013):** Golden eagle occurrence data are also available through the Desert Renewable Energy Conservation Plan (BLM, 2013). Data represent nest locations recorded by various California State agencies and their contractors during 2008, 2010, 2012, and potentially other unknown time periods. These data do not indicate the status of documented nests and may be historic or current and active or inactive. Documented occurrences in the vicinity of the Project area were located in the Granite Mountains, Sidewinder Mountains, Stoddard Ridge, Ord Mountains, Newberry Mountains, Daggett Ridge, Fry Mountains, Cougar Buttes. Additional occurrences were documented just outside the 10-mile boundary, south in the San Bernardino Mountains.
- **Trow (2014):** A golden eagle study was performed for the SCE Coolwater-Lugo Transmission Project (CLTP). Data was compiled from various sources including existing records, surveys, personal communications, and environmental monitoring. The survey area extends for 4 miles on either side of the CLTP proposed centerline. Within the CLTP study area, records were compiled for 68 known stick nests that were believed to have been used at least once by golden eagles.
- **CPUC (2016):** Additional planning documents for CLTP identified that golden eagles were detected in flight above the CLTP Project and in adjacent areas during surveys (CPUC, 2016). CPUC 2016 described that BLM has identified "Key Raptor Areas" occupied by golden eagles, including the Granite Mountains

[2] Home range analysis is typically accomplished with kernel density estimators (KDEs). KDEs built using data collected at 15-minute interval are a useful preliminary descriptor of animal movement (Katzner 2012).

and Stoddard Ridge which surround the Stagecoach Solar Project area, and the Newberry Mountains and Daggett Ridge, which are within 10 to 20 miles of the Stagecoach Solar Project area. CPUC 2016 also documented a nest on a transmission tower near Daggett Ridge and an active golden eagle nest at White Horse Mountain in 2014.

- **CDFW (2020):** For the CNDDB inventory, the Fifteenmile Valley, Lucerne Valley, Cougar Buttes, Apple Valley North, Fairview Valley, White Horse Mountain, Grand View Mine, Turtle Valley, Stoddard Well, West Ord Mountain, Ord Mountain, Hodge, Barstow SE, Daggett, Minneola 7.5-minute U.S. Geological Survey (USGS) topographic quads were reviewed. These quads are all within 10 miles of the Project area. Within these quads, 38 occurrences of golden eagle (historic and current) were documented. All occurrences are presumed extant. Eleven occurrences have been observed within the past ten years (CDFW, 2020).

Based on these survey results and existing data, golden eagle nesting does not occur within the Project area and suitable nesting habitat is not present. Due to the many eagle and nest occurrences in the Project vicinity, the entire Project area provides suitable foraging habitat.

Other Special-Status Raptors (Present or High Potential to Occur)

Several other special-status birds of prey are found seasonally, especially during winter, in the region (see Table 5). These include ferruginous hawk, Swainson's hawk, Cooper's hawk, sharp-shinned hawk, northern harrier, peregrine falcon, prairie falcon, merlin, short-eared owl, and long-eared owl. Swainson's hawk were observed migrating over the Project area during the surveys. Peregrine falcons have been documented flying over the Project area and prairie falcons are likely to forage over the Project area and nest in the adjacent mountains. Ferruginous hawk, sharp-shinned hawk, northern harrier, short-eared owl, and merlin were not observed but are likely to winter in the region and may be present in the Project area during this time. Suitable foraging habitat for these raptors is present in the Project area and throughout the region, but the site is outside the nesting range, and/or offers no suitable nesting habitat for these raptors.

Other Special-Status Birds (Present or High Potential to Occur)

Several other special-status birds are present or have the potential to occur in the study area. These include loggerhead shrike (California Species of Special Concern); California horned lark (CDFW Watch List); Le Conte's thrasher (California Species of Special Concern); and Bendire's thrasher (CDFW Watch List). California horned lark, loggerhead shrikes, and Le Conte's thrasher were observed in the Project area.

Additionally, seven active bird nests belonging to black-throated sparrow (see Photo 18, Attachment E), cactus wren, common raven, Le Conte's thrasher, and loggerhead shrike were identified within the biological survey area. The entire Project area provides suitable nesting habitat for raptor and songbird species protected under the Migratory Bird Treaty Act (MBTA). Most native bird species in California, both migrant and resident species, are protected under the MBTA. The MBTA (16 USC sections 703-712) is a federal law that implements international treaties and conventions held to protect migratory birds (USFWS, 1918). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10. In addition to the MBTA, CDFW also enforces the protection of non-game native birds. Fish and Game Code sections Section 3503, and 3503.5 mandate the protection of nests belonging to California-native, non-game bird species, and Fish and Game Code Section 3800 makes it unlawful to take California-native, non-game birds.

Desert Kit Fox (Present in Project Area)

The desert kit fox is protected under Title 14, Section 460, California Code of Regulations, as well as the California Fish and Game Code (§§ 4000-4012), which defines kit fox as a protected furbearing mammal. Both regulations prohibit take of the species. Desert kit fox is an uncommon to rare permanent resident of arid regions of southern California. Kit foxes occur in annual grasslands, or grassy open, arid stages of vegetation dominated by scattered herbaceous species. Kit foxes' prey on rabbits, ground squirrels, kangaroo rats, and various species of insects, lizards, and birds (Zeiner et al., 1990). Desert kit fox is primarily nocturnal, and inhabits open, flat areas with patchy shrubs. Friable soils are necessary for the construction of dens, which are used throughout the year for cover, thermoregulation, water conservation, and pup rearing.

The Project area provides suitable habitat for desert kit fox and it is assumed to be present throughout much of the Project area. One juvenile kit fox was observed during the surveys standing near the entrance to an active den complete on May 13, 2017. The den complex had nine entrances with fresh scat and tracks of varying sizes present (indicating both adults and juveniles using the complex) (see Photo 16, Attachment E).

Kit fox dens and sign were observed as outlined in Table 9. Figure 8 shows the location of the active kit fox den, and all potential and known desert kit fox dens observed during the focused survey.

Most of the dens observed during the survey were concentrated in the northern portion of the biological survey area. A live desert kit fox was observed at one location during the surveys, but it is possible additional individuals use the Project area at any time throughout the year. Desert kit foxes frequently change den locations (even when raising young) and the abundance of known dens identified during the surveys indicates that the Project area is frequently used by this species.

Table 9. Incidental Desert Kit Fox Sign Observations

Desert Kit Fox Sign	Within Project Area	Within Buffer
2017 Survey Results		
Known and Active Den (with desert kit fox)	1	0
Known Den (with sign)	41	11
Potential Den (no sign)	25	5
TOTAL	67	16
2020 Survey Results		
Known and Active Den (with desert kit fox)	0	0
Known Den (with sign)	0	2
Potential Den (no sign)	3	7
TOTAL	3	9
GRAND TOTAL	**70**	**25**

American Badger (Present in Project Area)

The American badger is a California Species of Special Concern and is not listed under the federal or state Endangered Species Acts. Badgers were once widespread throughout open grassland habitats of California. They are now uncommon throughout most of the state, including the Mojave Desert. They are found in

open shrubland, forest, and herbaceous habitats with friable soils. In the southwest, badgers are typically associated with creosote bush and sagebrush shrublands. Badgers are fossorial, digging large burrows in dry, friable soils and use multiple dens and cover burrows within their home range. Badgers move among burrows daily, although they can use a den for a few days at a time (Zeiner et al., 1990).

Badger home range sizes are dependent upon prey availability and other habitat characteristics. In general, home ranges are several hundred acres in size, though they would likely be larger in the Mojave Desert due to low prey densities. They feed mainly on small mammals, especially ground squirrels, pocket gophers, rats, mice, and chipmunks. Badgers also prey on birds, eggs, reptiles, invertebrates, and carrion. The diet shifts seasonally and yearly depending upon prey availability. Badger numbers have declined drastically in California in the 20th century largely due to agricultural and urban development, direct and secondary poisoning, and shooting and trapping for control (Bolster, 1998).

Suitable badger habitat is present throughout the Project area and it is assumed to be occupied. No live badgers or active badger dens were observed during the surveys. A single rodent burrow with sign of recent badger digging was observed within the southeastern portion of the biological survey area on May 18, 2017. The location of this badger dig is shown in Figure 8. The rodent burrow had characteristic American badger claw marks on the sides of the entrance, possibly from an individual digging for prey items. Although this was the only location where American badger sign was observed, it is possible that this species regularly uses the Project area for foraging/hunting activities due to the site's relatively undisturbed nature and its proximity to areas of undeveloped land.

Wildlife Species with Low to Moderate Potential to Occur in Project Area

The following special-status wildlife were not observed during field surveys but have a low to moderate potential to occur in the Project area.

Mohave Ground Squirrel (Low Potential to Occur)

Mohave ground squirrel is a rodent endemic to California. It is listed as threatened under CESA (CDFW, 2017c). It is limited to a geographic range in the western Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Figure 10). MGS has the smallest geographic range of the seven *Xerospermophilus* ground squirrels in California and contains an estimated 7,691 square miles (2 million hectares [ha]) in the western Mojave Desert on federal, state, and private lands (Gustafson, 1993). MGS mostly inhabits flat to moderate terrain and avoids areas with steep contours (Laabs, 1998). In general, the range of MGS is bound by the Sierra Nevada escarpment to the west, San Gabriel and San Bernardino mountains to the south, Mojave River to the east, and Owens Lake and Panamint Valley to the north and northeast (Gustafson, 1993; Laabs, 1998). Studies have shown that optimal habitat types for MGS typically include plant communities that harbor spiny hopsage (*Grayia spinosa*) and winterfat (*Krascheninnikovia lanata*), including creosote bush scrub, saltbush scrub, and Joshua tree woodland communities (Scarry et al., 1996; Leitner and Leitner, 1998). MGS have been found at elevations ranging from 1,800 to 5,000 feet (549 to 1,524 meters) above mean sea level (Brooks and Matchett, 2002; Johnson, 2008).

The natural history and habitat requirements for MGS are very dependent on elevation, climate, topography, and weather. This diurnal squirrel is only active in the early spring through mid-summer (approximately mid-February through mid-August) when it feeds on native shrubs and annual plants. Adults begin to emerge from their burrows in February to begin reproduction, males emerging approximately two weeks before females. By the end of March, litters of 4 to 10 young (average of 6) are born to each female. By late May, the young begin to disperse (Johnson, 2008). As summer approaches and vegetation begins to dry out, MGS prepare for a long period of winter dormancy (hibernation) by consuming as many

nutrients and fats as they can in their diet. By mid-summer (July to mid-August), the squirrels return to their underground nests and by this time, body temperature, heart rate, and metabolism have fallen drastically to prepare for estivation. On their stored body fat, this species can survive in this physiological state until the winter rains come and restore the vegetation. If sufficient rains (more than 3 inches [7 centimeters]) do not occur during the winter, MGS will not reproduce due to lack of adequate vegetation to support the young (Harris and Leitner, 2004). When a drought year occurs, the squirrels will convert all available forage to body fat and enter estivation as early as April. These biological and physiological adaptations allow them to survive the harsh conditions of the Mojave Desert.

Threats to MGS populations include land use conversion for agricultural and other development, as well as habitat degradation from grazing, off-road vehicle use, and other human disturbances. Overall, about 10 percent of the habitat for MGS has been converted for development (agricultural, residential, industrial, and commercial), with more of that habitat being lost as development spreads rapidly in the southern part of their range (Laabs, 1998). The paragraphs below describe the results of the Mohave ground squirrel habitat assessment (methods described in Section 2.3.3).

Literature Review. Review of the available Mohave ground squirrel range maps found that the generally recognized MGS range boundaries have remained relatively unchanged since a range map was first published by Gustafson in a 1993 report to CDFW (formerly California Department of Fish and Game), despite varying iterations of the MGS range map currently available (Gustafson 1993; Leitner 2015; CDFW, 2017b). None of the published MGS range maps include the Project area. The CDFW MGS guidelines state that "since the limits of the geographic range are not known precisely, surveys may be required in areas up to 5 miles (8 km) from currently-documented boundaries" (CDFW, 2003). The boundaries of the range map published by CDFW, which was used for the field assessment portion of this study, are located between 7 miles (11 km) and 17 miles (27 km) north and west of the Project area. Leitner (2008; 2015) suggests that the MGS range boundaries may include areas where MGS are now considered extirpated, such as the areas covering Victorville to Lucerne Valley and the western portion of the range within Los Angeles County.

The CNDDB and BIOS do not contain any historical or recent records of MGS in the Project area or within 5 miles (8 km) (Figure 11), despite multiple regional and protocol survey and trapping efforts. No recent records (documented within the past 20 years) of MGS are located within the Vicinity (10 miles [16 km]) of the Project area; however, three historical records of MGS presence were documented between 5 and 10 miles (8 and 16 km) south of the Project area:[3] in 1886 (occurrence 51; one adult female collected), 1954 (occurrence 48; one adult female collected), and 1955 (occurrence 33; one adult male and one adult female collected) (CDFW, 2020). Trapping was also conducted at the proposed SCE Calcite Substation Project site, which is adjacent to the Project area, in 2017. Four grids were trapped over three terms from March 15 to April 30, May 1 to May 31, and June 15 to July 15, 2017. Each grid was trapped for five consecutive days over three trapping periods for a total of 15 trapping events at each grid. No Mohave ground squirrels were captured during the 2017 survey season (EI, 2017).

MGS have not been documented east of the Mojave River since 1977 (Leitner, 2015); despite protocol trapping and remote camera surveys being conducted at 27 locations between Barstow and Lucerne Valley from 2008 to 2012 (Leitner, 2015). In 1977, a single squirrel was captured during a trapping effort located approximately 15 miles (24 km) west of the Project area (CDFW, 2020).

[3] These records were museum specimens and their locations are included on Figure 3, but it is important to note that location data associated with older records found in the CNDDB based on museum specimens are often imprecise.

Dr. Leitner's data compilations (2008, 2015) do not contain any positive records of MGS within the Project area or vicinity, and there are multiple negative survey reports from the vicinity (Figure 10). A total of 16 protocol trapping grids and 10 remote camera stations have been trapped in the Vicinity of the MGS Study Area but the results of these grids have been negative (Leitner, 2008; Leitner, 2015). That dataset includes an intensive MGS trapping effort along approximately 25 miles (40 km) of SR-247 between its intersection with Rim Rock Road in Barstow and the northern boundary of Lucerne Lake (ECORP, 2009). During this trapping effort, the closely related round-tailed ground squirrel (RTGS; *Xerospermophilus tereticaudus*) was captured at one grid and MGS were neither detected nor captured.

The closest protocol or regional trapping grid with positive results for MGS was located at the Southern California Logistics Airport where one adult MGS was captured during a protocol trapping effort in 2007 (occurrence 329) (CDFW, 2020). This location is approximately 18 miles (29 km) west of the Project area and west of the Mojave River.

One visual observation of MGS was reported in 2005 at the Barstow Landfill, approximately 11 miles (18 km) north of the Project area (occurrence 343) (CDFW, 2020). This observation has been the only report of MGS east of the Mojave River in almost 20 years; however, the animal was not identified in hand (i.e., captured during a trapping effort) and the identification of this animal was not made using the diagnostic physical characteristics that differentiate MGS from RTGS (Leitner, personal communication, August 2017). Additionally, with the documented RTGS captured during a protocol trapping survey 3 miles (5 km) south of the visual observation (ECORP, 2009); this visual observation is considered an unreliable record (Leitner, personal communication, August 2017). For the purposes of this assessment, only positive identification of MGS made during regional and protocol trapping efforts or remote camera studies are considered reliable records because identification of the animal requires an assessment of the diagnostic physical characteristics using these detection methods.

Leitner (2008) identified four core areas within the MGS range that support relatively abundant and widespread populations. Core areas were defined according to three characteristics:

- Persistence of MGS populations for multiple decades in an area
- MGS have been currently documented in at least six locations in the area
- The total number of MGS detected in the area since 1998 must be greater than 30 individuals

The closest core area to the Project area is the Coolgardie Mesa-Superior Valley Core Area, which is located north of the Mojave River approximately 30 miles (48 km) northwest of the Project area, within and adjacent to the southwestern portion of Fort Irwin National Training Center. This core area is also located where the ranges of MGS and RTGS overlap. Since Leitner's 2008 publication, the use of the term "core areas" has been discouraged because of conservation implications and land ownership within the core areas; however, the areas identified in the 2008 publication continue to be considered substantially populated areas within the MGS range.

Field Assessment. Except for the dirt roads, the Project area provides suitable habitat for MGS. The vegetation, soils, and topography are all appropriate to support MGS. The site supports relatively undisturbed desert scrub vegetation that contains patchy distribution of the two plant species typically associated with MGS presence, spiny hopsage and winterfat. While these two species are associated with MGS, the presence of these species does not indicate presence of MGS. Other species observed include creosote bush, saltbush, boxthorn, Joshua tree, and various species of cactus (e.g., *Opuntia* spp., *Cylindropuntia* spp.), none of which preclude MGS from occurring. Soils are friable and range from sandy to rocky, and small mammal burrows are prevalent throughout the Project area. Topography on site consists of gentle northerly and southerly slopes, with the central portion of the site being slightly lower elevation than the

northern and southern portions of the site. There are no steep or excessively rocky outcrops within the Project area.

MGS were neither aurally detected nor visually observed; however, the timing of the field assessment was outside of the normal MGS activity period.

Conclusion Regarding Potential for MGS Occurrence. Although suitable habitat is present within the Project area, MGS are not expected to occur on the site or in the vicinity for several reasons, summarized below. Therefore, additional trapping studies or investigations are not warranted.

- The Project area's distance from known occurrences (the closest documented occurrence from regional or protocol trapping is approximately 20 miles [32 km] distant [CDFW 2020])
- The Project area's distance from reported MGS geographic range (i.e., 8 to 15 miles)
- The lack of MGS occurrences from regional or protocol trapping efforts in the Project area or vicinity since 1955 despite multiple regional and protocol surveys

Bendire's thrasher (Moderate Potential to Occur)

Bendire's thrasher is a BLM sensitive species, a USFWS bird of conservation concern, and a California Species of Special Concern. In California, Bendire's thrasher is known from scattered locations in Kern, Inyo, San Bernardino, and Riverside Counties, and with one occurrence in San Diego County. Bendire's thrasher inhabits open grassland, desert scrub, shrubland, or woodland with scattered trees. It is closely associated with plants of the Yucca and Opuntia genera, and it selectively occupies areas with higher densities of these plants. Bendire's thrasher typically avoids rocky outcrops or areas with steep slopes, favoring flat areas with densely packed dirt. It forages mainly on the ground, feeding on arthropods, seeds, and berries. This species is known to inhabit elevations from 1,900 to 5,800 feet, but mostly occurs between 3,100 and 5,000 feet. Limited suitable habitat within the Bendire's thrasher species' range is present in Lucerne Valley.

Pallid San Diego pocket mouse (Moderate Potential to Occur)

The Pallid San Diego pocket mouse is a California Species of Special Concern. Pallid San Diego pocket mouse occurs in areas of moderate canopy in arid shrubland or pinyon-juniper, or near rocky slopes and sandy areas. Within the southern Mojave Desert portion of its range, there is extensive acreage of suitable habitat in Los Angeles and San Bernardino Counties, including the project area (e.g., a broad area between Victorville and Barstow, extending 20-30 miles east and west).

Special-status bats (Moderate Potential to Occur)

Based on geographic range, roosting habitat, and foraging habitat, three special-status bat species have at least a moderate potential to forage over the Project area: Townsend's big-eared bat, silver-haired bat, and western mastiff bat (Table 5). Any of these three could forage over the Project area, but only western mastiff bat has potential (moderate) to roost there. Western mastiff bat may roost in the mountainous areas of the Project area. The other species roost in rocky cliff faces, caves, tunnels, mineshafts, hollow trees, and derelict buildings, which do not occur in the Project area.

Crotch Bumble Bee (Unknown Likelihood of Occurrence)

Crotch bumble bee is a candidate species for State listing (CDFW, 2019b). It is a widespread secretive species that is known from more than two hundred locations over a broad geographic range (CDFW, 2020). More than 300 recent observations have been made throughout much of California (iNaturalist.org

2020). It is typically found in openings in grassland and scrub habitats where it burrows into the ground and lives in colonies. It feeds on native plants including milkweed, pincushion, lupine, phacelia, sage, snapdragon, clarkia, bush poppy, and buckwheat (Hatfield et al., 2015). Many of these food plants are present on or in the vicinity of the project site and suitable burrowing and foraging is also present. However, there are no records within 10 miles of the site. Due to the seeming widespread distribution but relatively uncertain understanding of its overall abundance, the likelihood that Crotch bumblebee may occur in the Project area is unknown.

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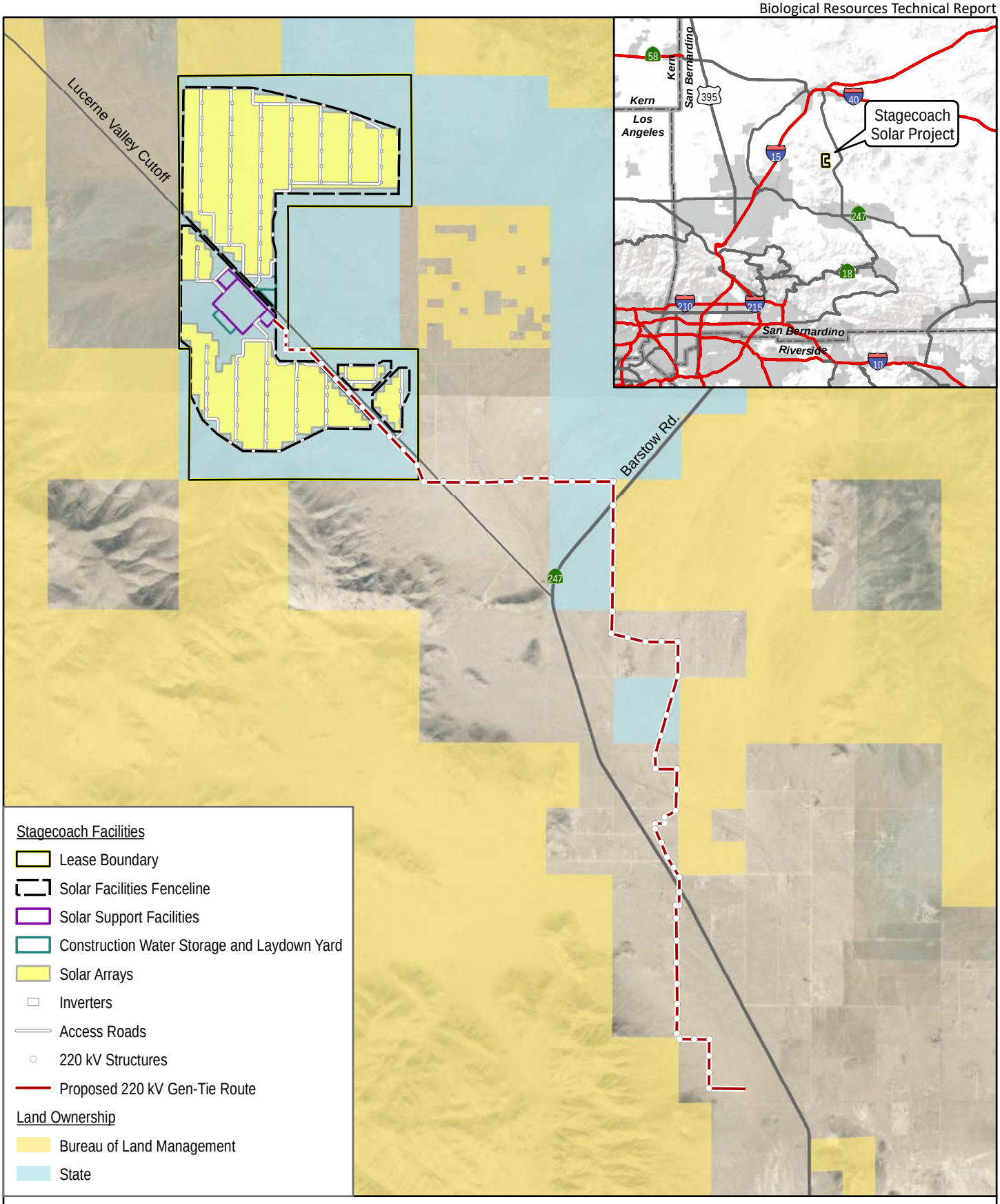
Attachment A

Figures



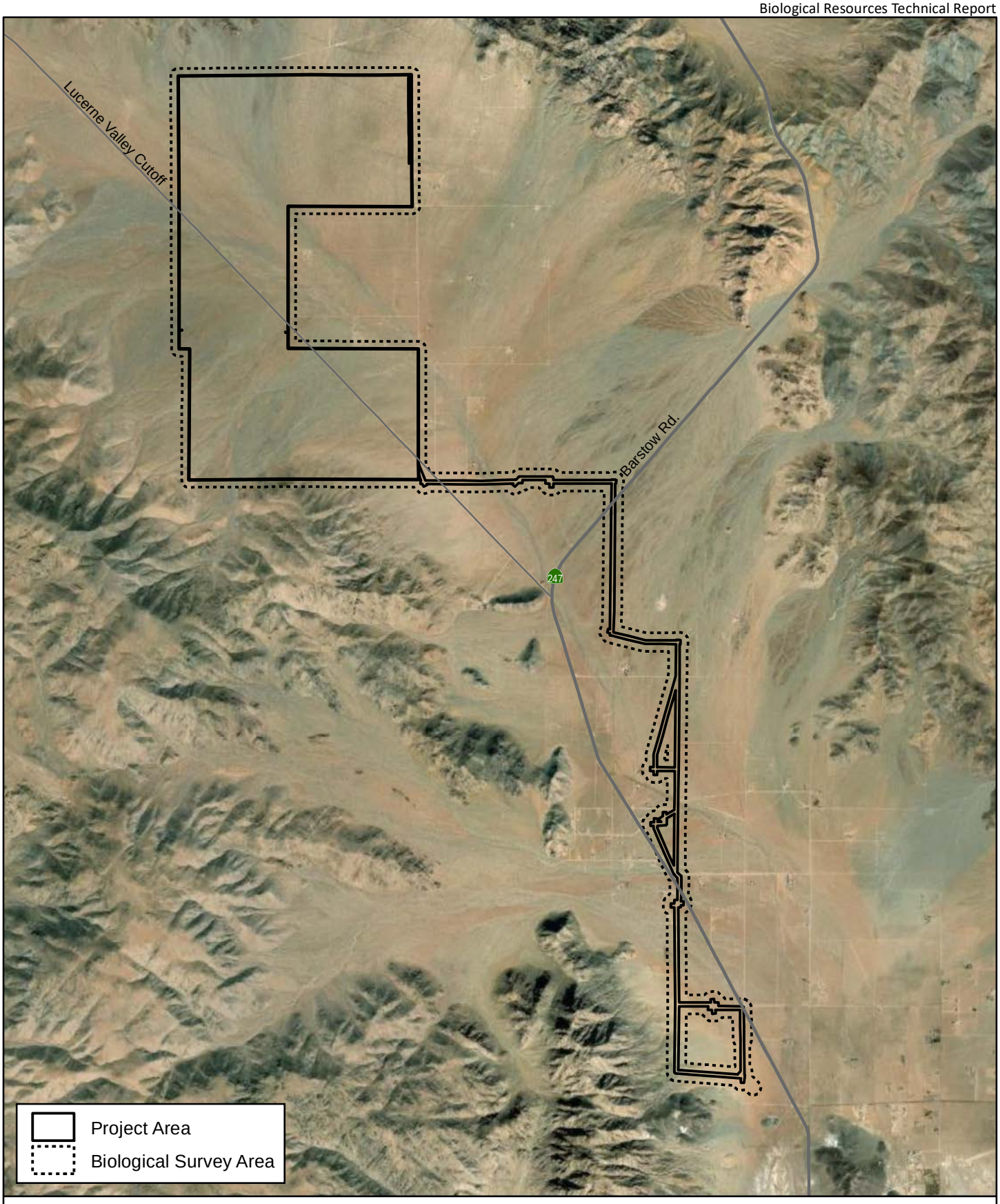
Projection: UTM Zone 11, NAD83

1 0.5 0 1 Miles

N

Figure 1

Proposed Project and Location



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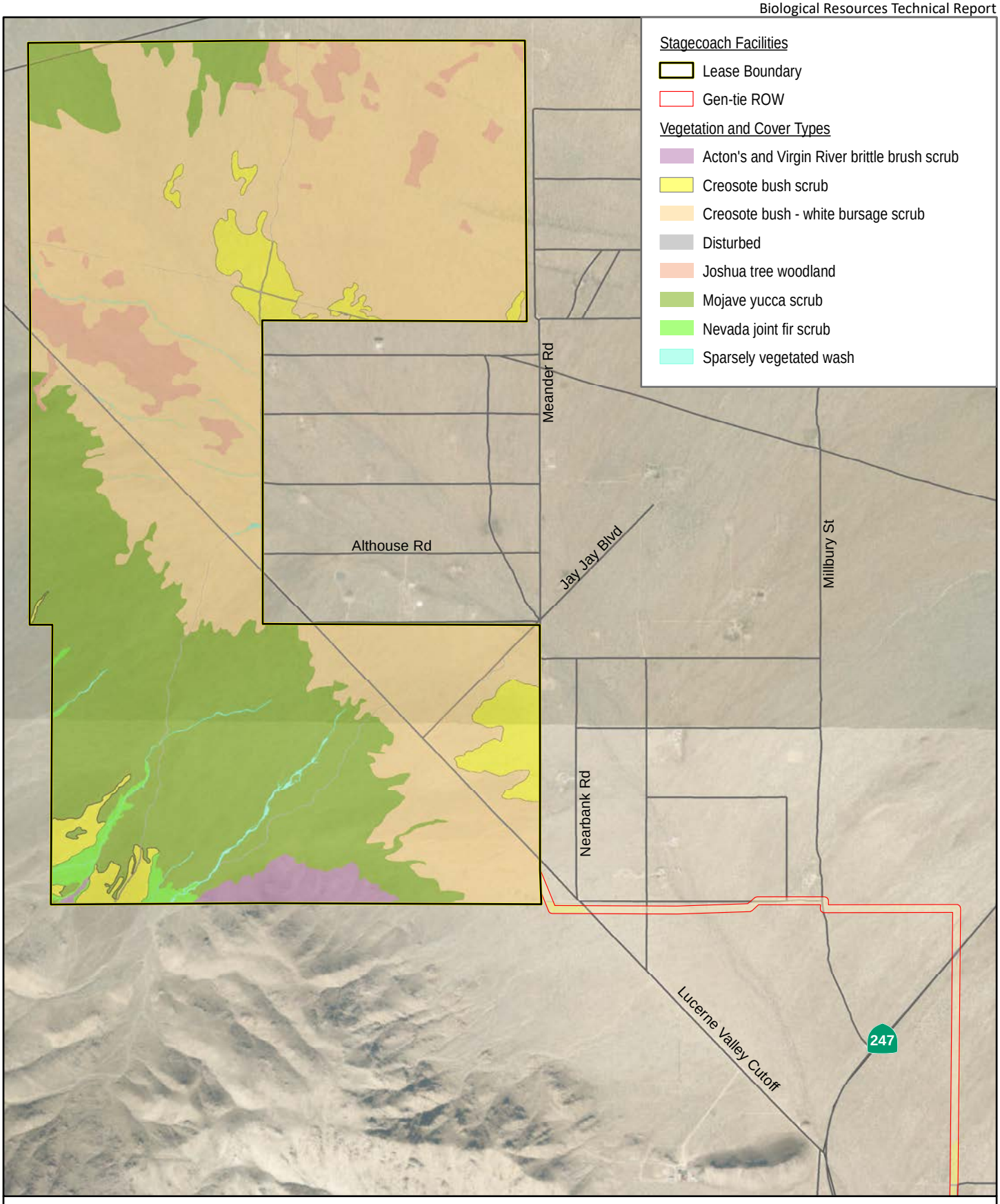
Projection: UTM Zone 11, NAD83

2,000 0 2,000
Feet

Figure 2

Biological Survey Area



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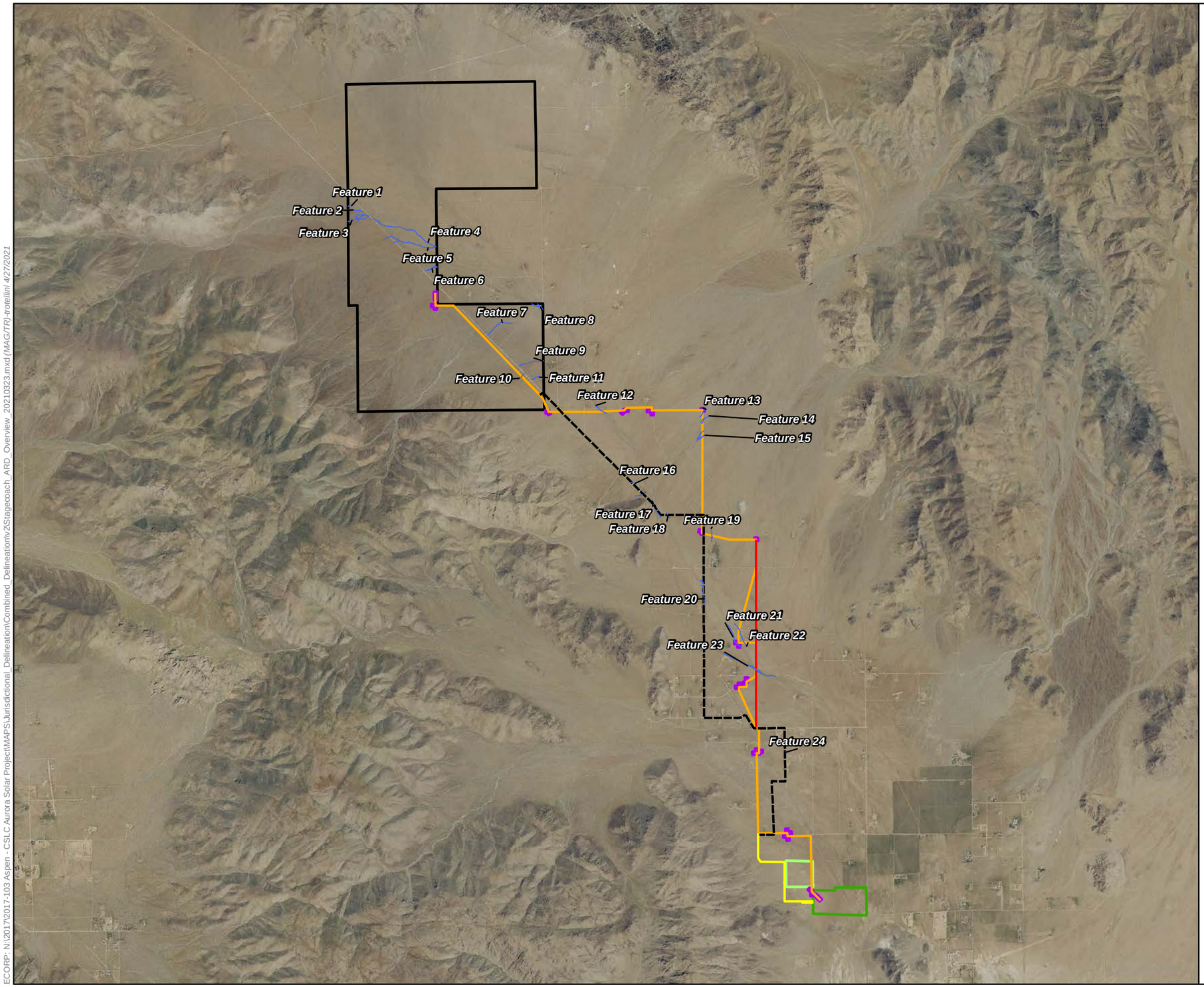
2,000 0 2,000 Feet

N

Figure 3a

Vegetation and Land Cover



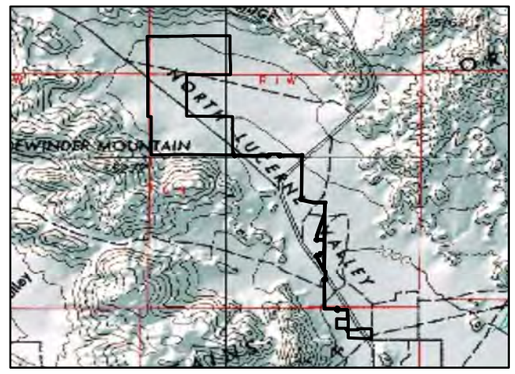
Map Features

- Solar Field
- Preferred Calcite Substation
- Alternative Calcite Substation
- Pulling Area - Main
- Pulling Area - Alt
- Jurisdictional Aquatic Resource

Gen-Tie Routes

- Main Route
- Alternative Route
- Southern Gen-Tie Route
- Ungerground Gen-Tie Alternative

Sources: Avangrid, ECORP, NAIP, Esri



ECORP: N:\2017\2017-103 Aspen - CSLC Aurora Solar Project\MAPS\Jurisdictional_Delineation\Combined_Delineation\v2\Stagecoach_ARD_Overview_20210323.mxd (MAG/TR) trotellini 4/27/2021

Map Date: 4/27/2021

ECORP Consulting, Inc.
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Scale in Feet
0 5,000

Figure 4. Jurisdictional Waters

2017-103 Aspen - CSLC Stagecoach Solar Project

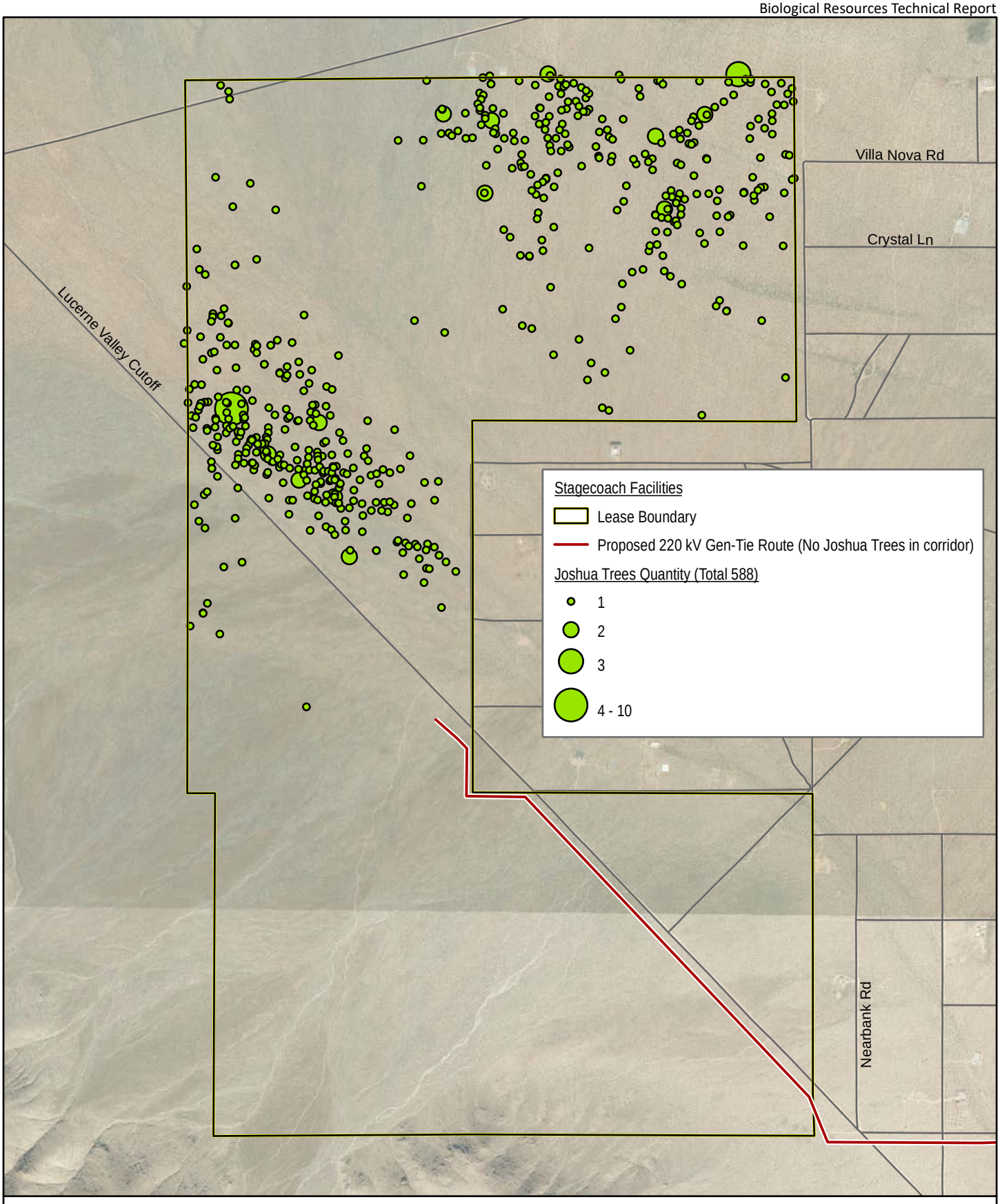

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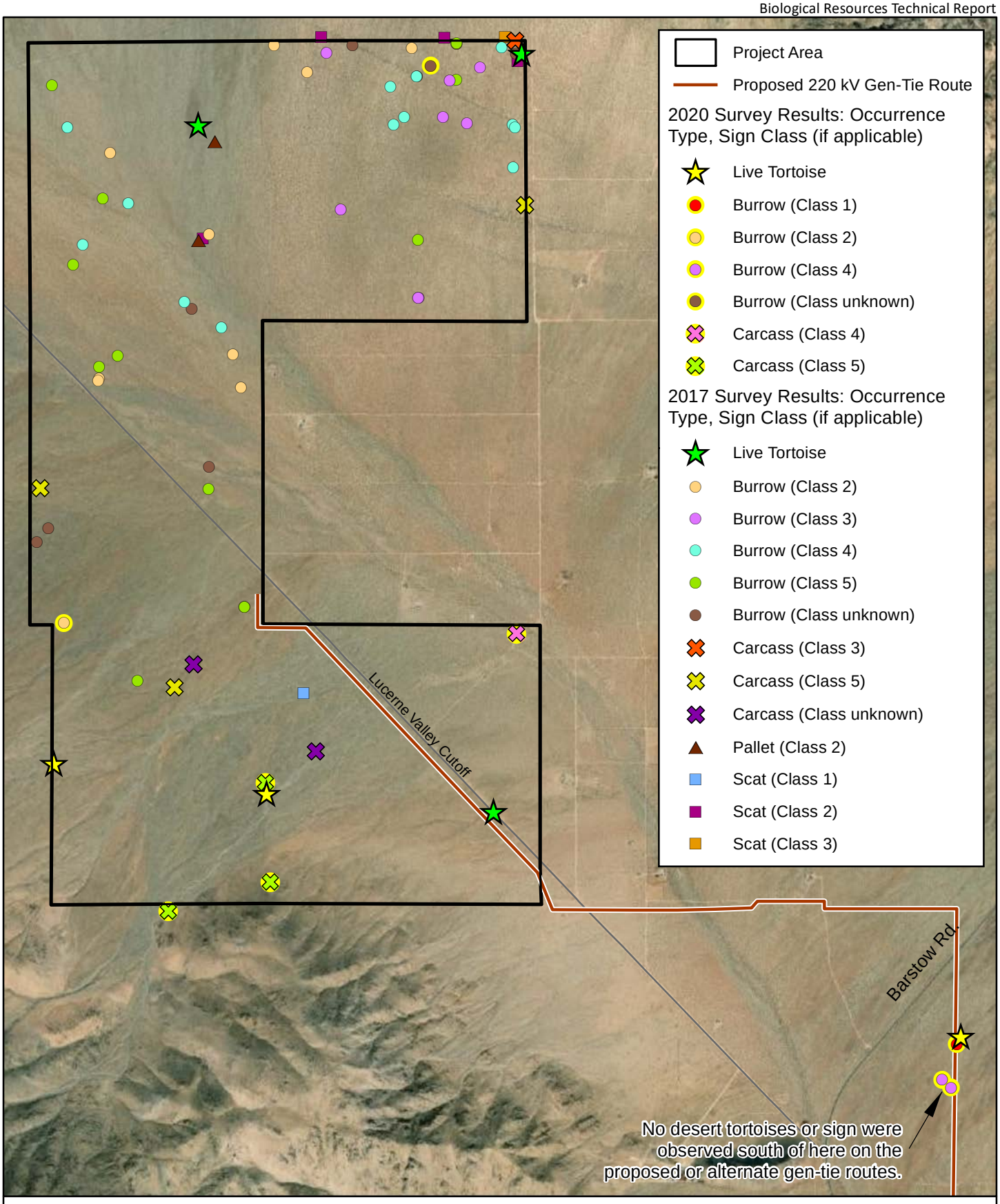
Figure 5

Joshua Tree Survey Results



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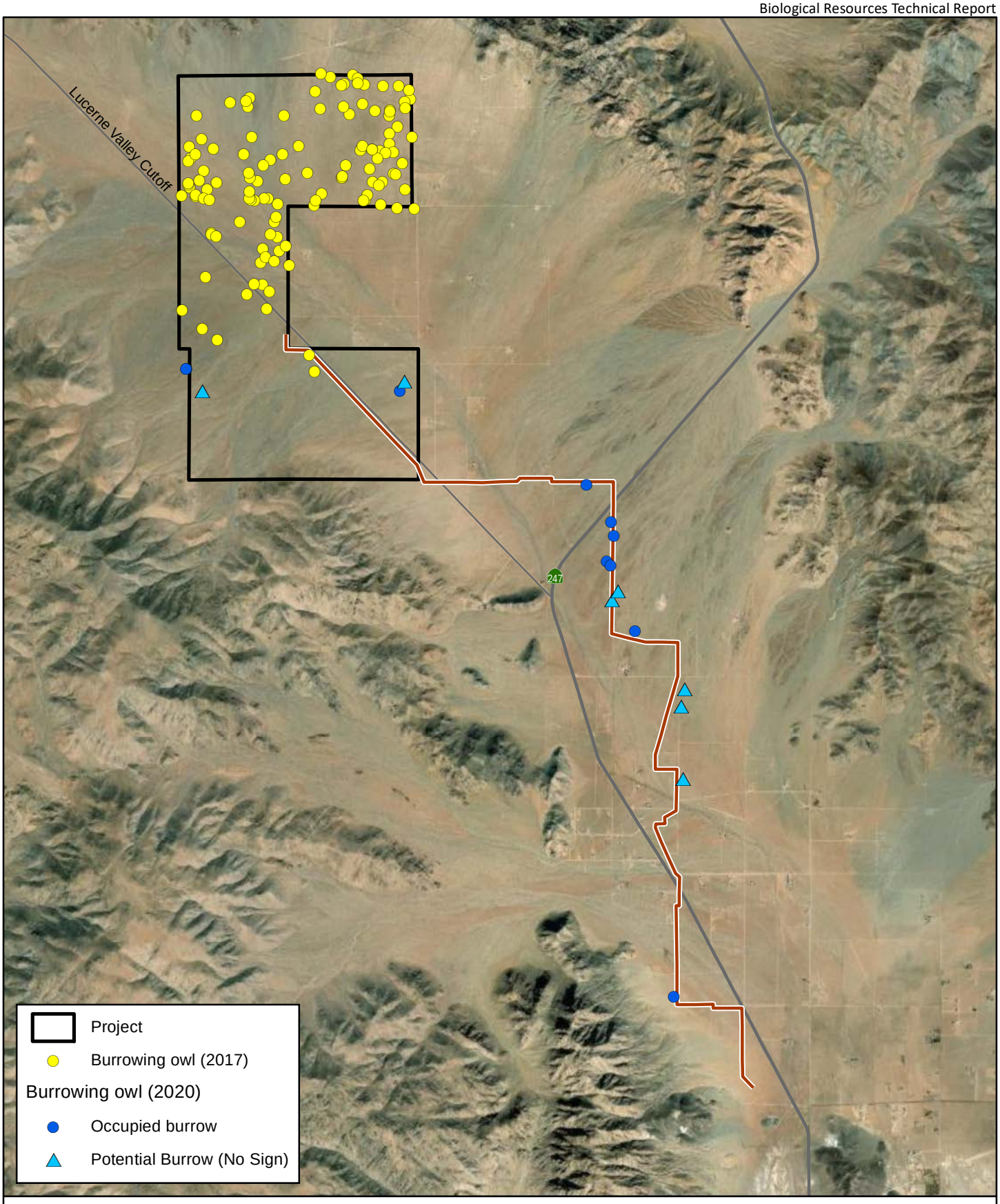
Projection: UTM Zone 11, NAD83

2,000 0 2,000 Feet

Figure 6

Desert Tortoise Survey Results



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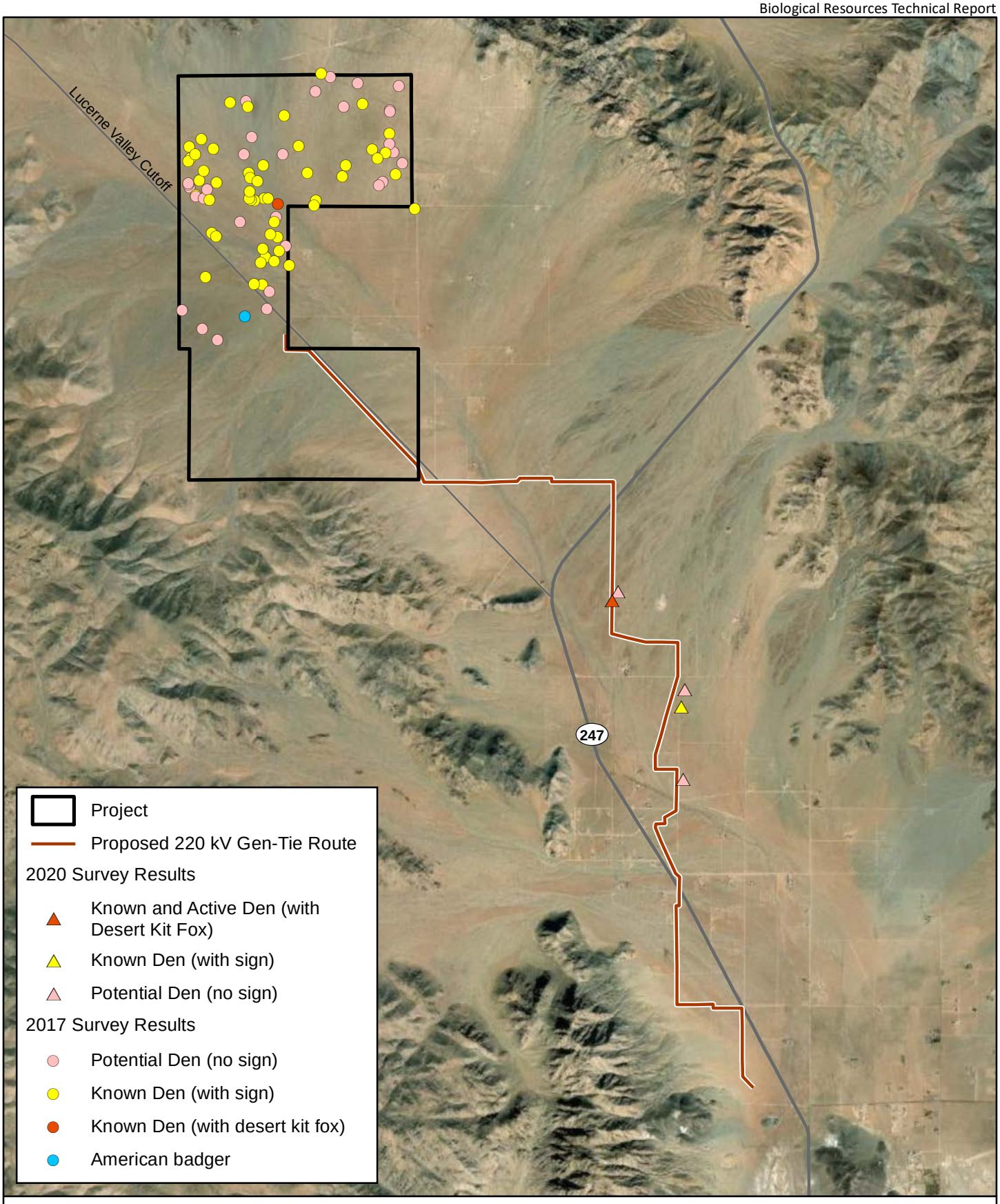
Projection: UTM Zone 11, NAD83

2,000 0 2,000
Feet

Figure 7

Burrowing Owl Survey Results



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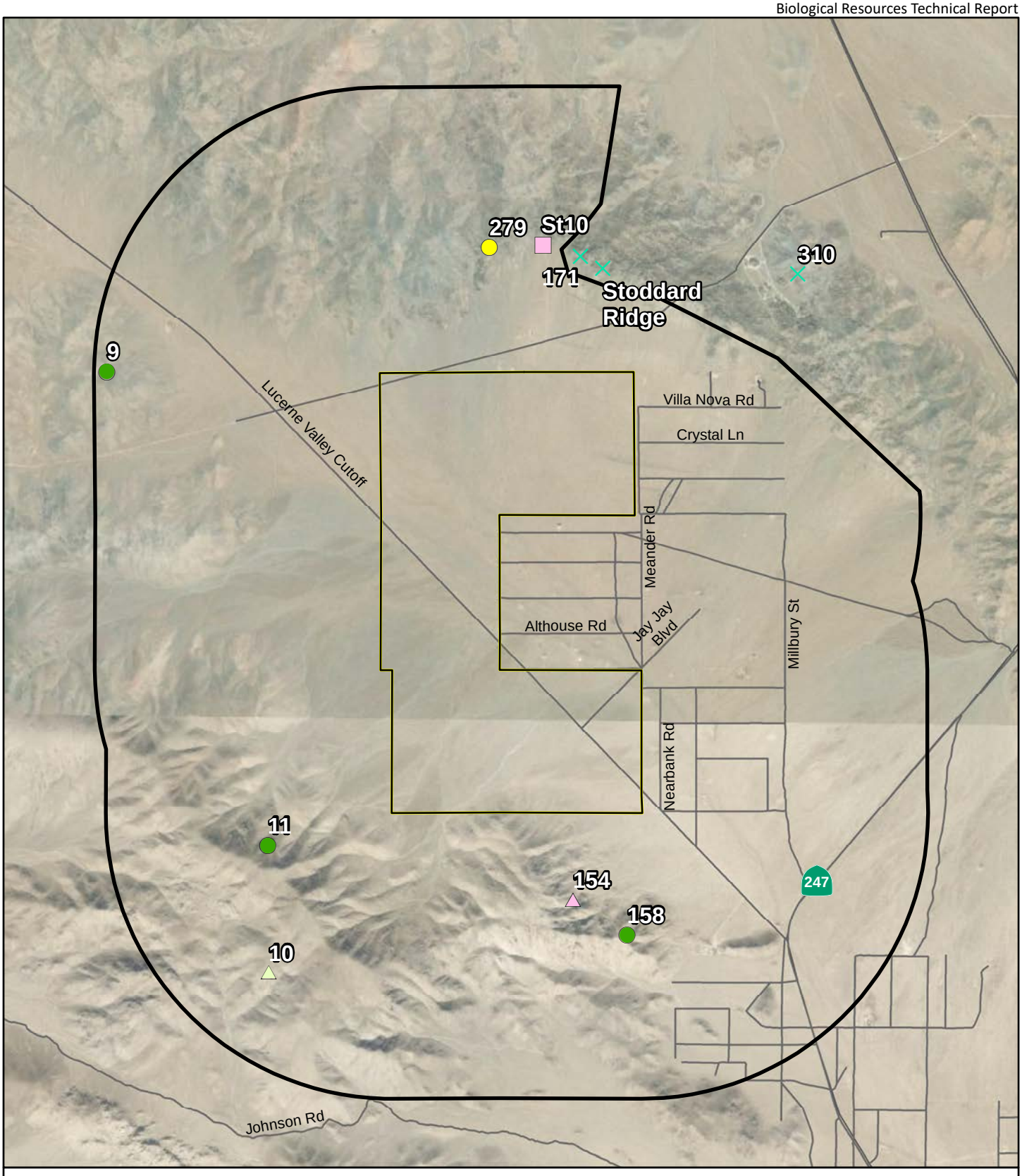
Projection: UTM Zone 11, NAD83

2,000 0 2,000
Feet

Figure 8

Desert Kit Fox and American Badger Survey Results



Source: ECORP, 2020

Projection: UTM Zone 11, NAD83

Stagecoach Facilities
- Lease Boundary
- Nest Survey Area

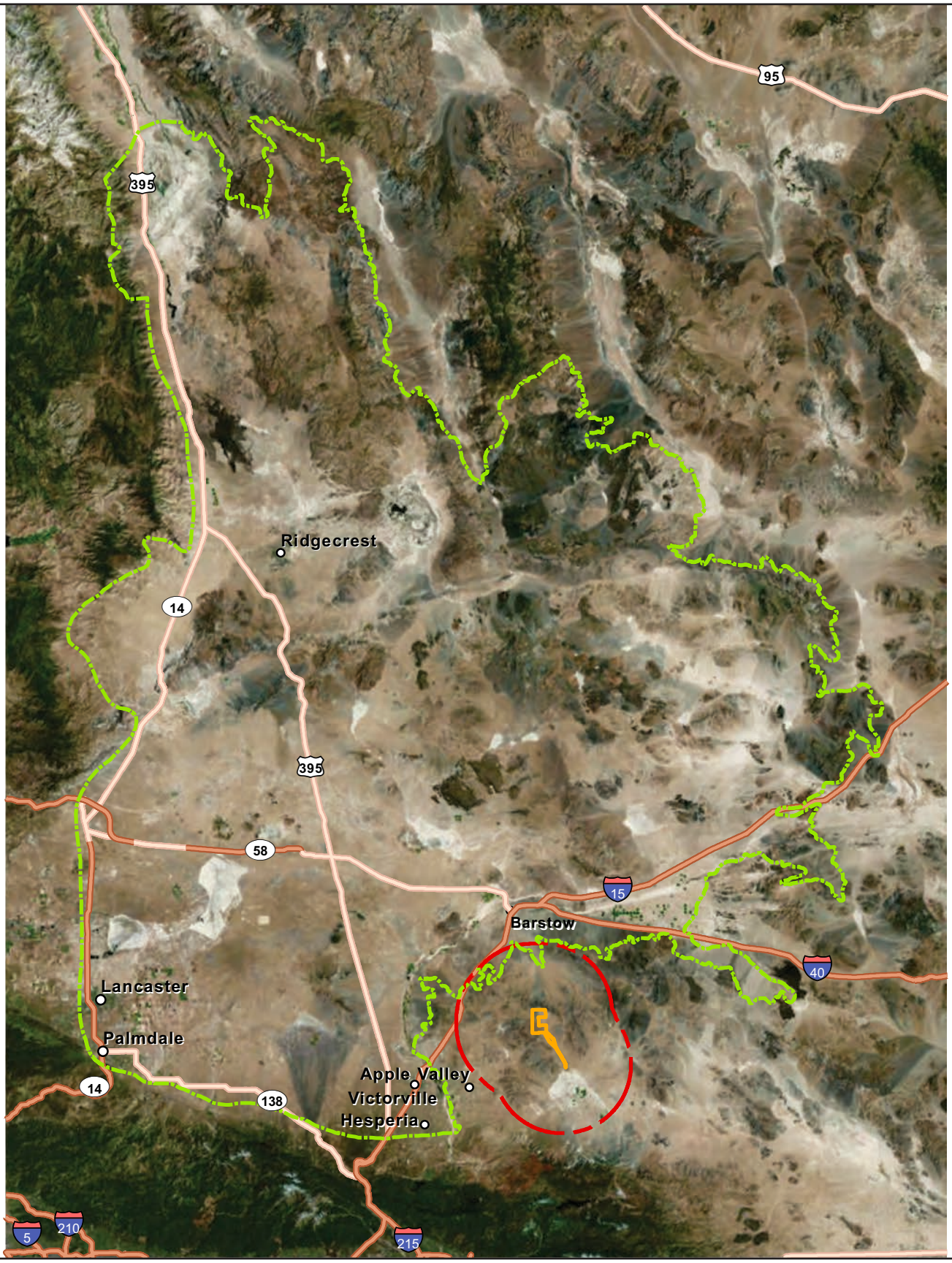
2020 Nest Survey Results
- Common Raven - Occupied Active
- Golden Eagle - Occupied Active
- Inactive - Historic Golden Eagle
- Inactive Raptor Nest
- Nest Not Surveyed ** Nest within bighorn exclusion zone
- Unoccupied - Historic Golden Eagle

0.5 0 0.5 Miles

N

Figure 9

Golden Eagle Survey Results



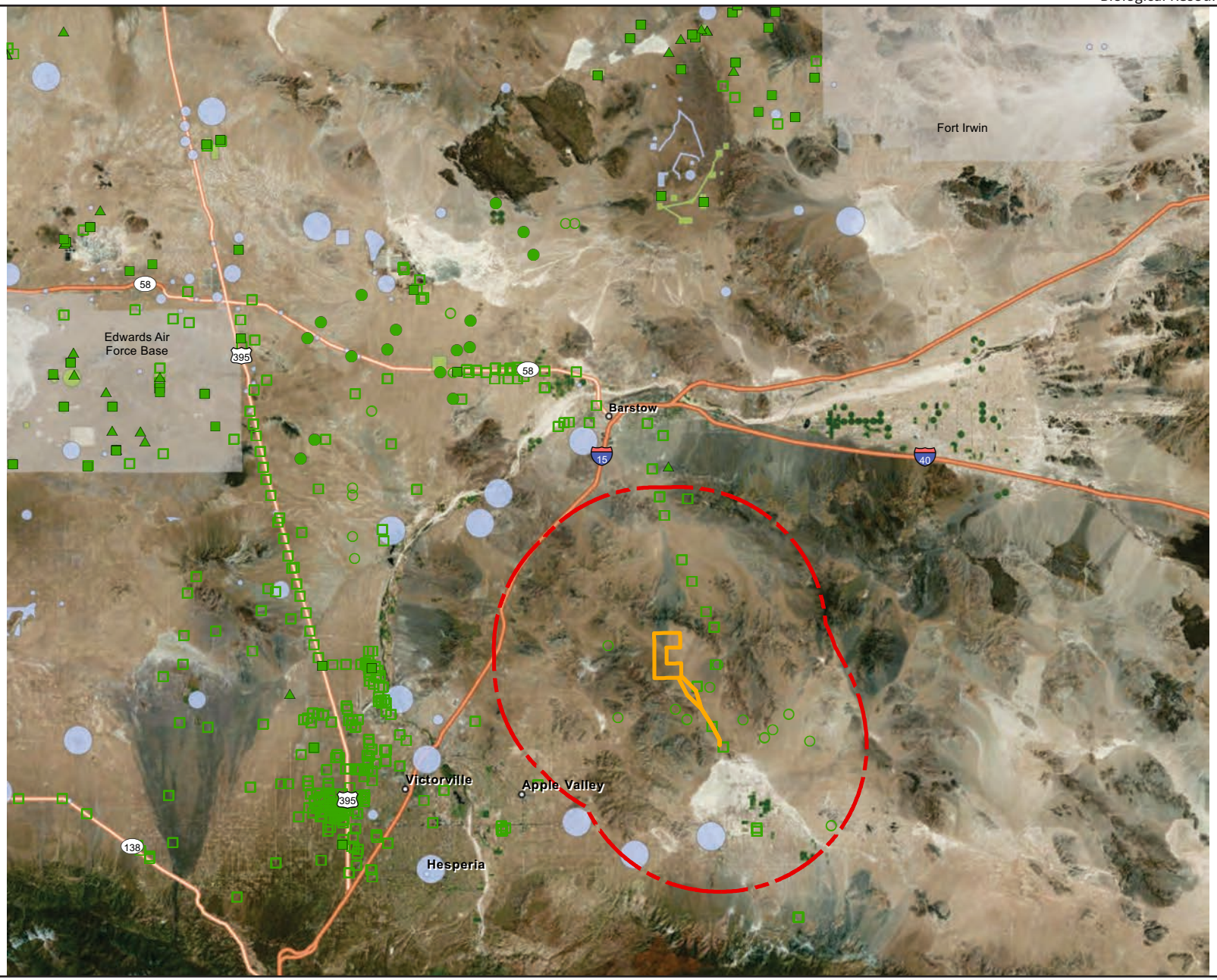
Source: ECORP, 2017

0 10 20
Miles

10 Mile Radius
Proposed Project Area
MGS Range (CDFW)

Figure 10

CDFW Mohave Ground Squirrel Range



Source: ECORP, 2017

0 7
Miles

Proposed Project Area
10 Mile Radius

CNDDB MGS Occurrences
Current
Historic

MGS Locations (Leitner 2008, 2015)

Live Trapping	Camera	Visual
Detected	Detected	Detected
Not Detected	Not Detected	

Figure 11

Mohave Ground Squirrel Occurrences Results

Attachment B

Jurisdictional Delineation Report

Jurisdictional Delineation

Stagecoach Solar Project

San Bernardino County, California

Prepared For:

California State Lands Commission

Avangrid Renewables

and Aspen Environmental Group

May 2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

CONTENTS

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LIST OF ACRONYMS AND ABBREVIATIONS

BESS	Battery energy storage system
CARI	California Aquatic Resource Inventory
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
Commission	California State Lands Commission
CWA	Clean Water Act
GIS	Geographic Information System
GPS	Global Positioning System
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
OHWM	Ordinary high-water mark
Project	Stagecoach Solar Project
PV	Photovoltaic
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SFEI	San Francisco Estuary Institute
Study Area	Solar Field, Gen-tie lines, and Substations
TOB	Top-of-bank
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey

1.0 INTRODUCTION

This jurisdictional delineation report was prepared to describe the aquatic resources within the Stagecoach Solar Project (Project). The Project includes a 200-megawatt photovoltaic (PV) and battery storage solar generation project.

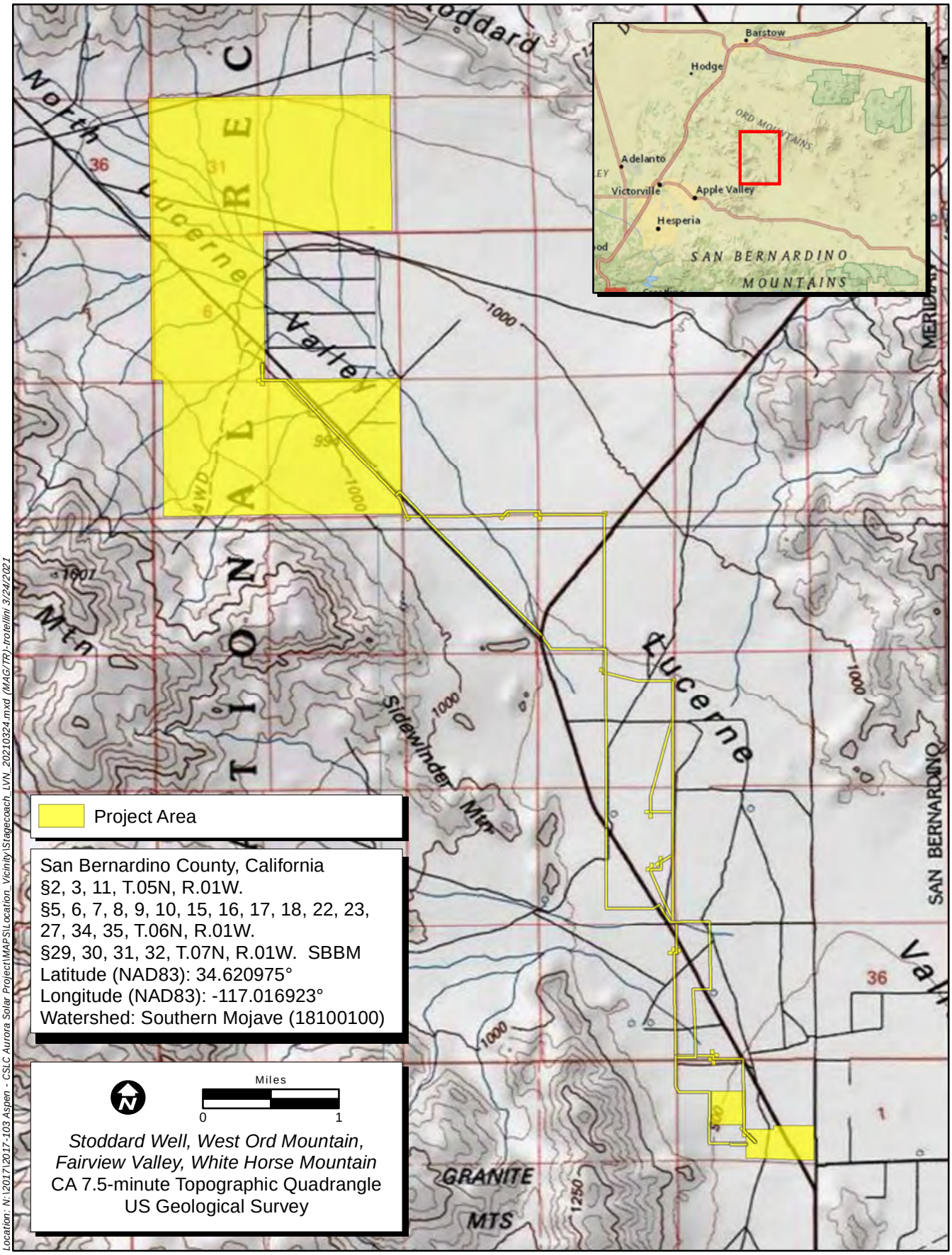
The Project Area is in the central portion of San Bernardino County, approximately 15 miles south of the city of Barstow and 12 miles northwest of the unincorporated community of Lucerne Valley. It is located east of Interstate 15, south of Interstate 40, and about 1.5 miles west of State Route 247 (Figure 1. *Project Location and Vicinity*). Within areas owned by the California State Lands Commission (Commission), the solar generation facility, ancillary project facilities, and battery energy storage system (BESS) (collectively referred to as the "Solar Generation Facilities") would occupy approximately 1,975 acres. The remaining acres of land within the Project Area would remain undeveloped. The Stagecoach overhead gen-tie line would run approximately 9.1 miles traversing Commission (1.5 miles) and privately (7.6 miles) leased land and would connect the Solar Generation Facilities to the Calcite Substation. A 150-foot right-of-way is proposed for the gen-tie, which would occupy an additional 138 acres of private lands. Alternative southern and underground gen-tie segments, totaling approximately seven miles, traverse Commission (1.06 miles) and privately (5.92 miles) leased land. These segments run along County rights-of-way and would connect the Solar Generation Facilities to the Calcite Substation (see Figure 1). This jurisdictional delineation report addresses the solar generation facilities, gen-tie line, and gen-tie alternatives.

The Study Area is within the Southern Mojave watershed (Hydrologic Unit #18100100; Natural Resources Conservation Service [NRCS], et al. 2020). Further geographic information is provided in Table 1.

Table 1. Geographic Information

Portion of Study Area	Section	Township	Range	7.5-minute Quadrangle	Approximate Center of Study Area
Solar Field	31, 32	7 North	1 West	Stoddard Well, CA[1] Fairview Valley, CA[2] West Ord Mountain, CA[3] White Horse Mountain, CA[4]	34.633815, -117.023419
	5, 6, 7, 8	6 North	1 West		
Preferred Calcite Substation	2	5 North	1 West	White Horse Mountain, CA[4]	34.548058, -116.951383
Alternative Calcite Substation	2	5 North	1 West	White Horse Mountain, CA[4]	34.551224, -116.955488
Gen-Tie Line	8, 9, 15, 16, 22, 27, 26, 35	6 North	1 West	White Horse Mountain, CA[4]	34.574441, -116.971581
Southern Gen-Tie Route	35, 2, 3	6 North 5 North	1 West	White Horse Mountain, CA[4]	34.553889, -116.962634
Underground Gen-Tie Alternative	2	5 North	1 West	White Horse Mountain, CA[4]	34.547288, -116.954897

[1] USGS 1970
[2] USGS 1991a
[3] USGS 1991b
[4] USGS 1991c



Location: N:\2017\2017-103 Aspen - CSLC Aurora Solar Project\MAPS\Location_Vicinity\Stagecoach_LVN_20210324.mxd (MAG/TR)-trotellini 3/24/2021

Map Date: 3/24/2021

Sources:

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 1. Project Location and Vicinity

2017-103 Aspen - CSLC Stagecoach Solar Project

2.0 REGULATORY SETTING

2.1 Clean Water Act

The USACE regulates discharge of dredged or fill material into Waters of the U.S. under Section 404 of the Clean Water Act (CWA). "Discharges of fill material" is defined as the addition of fill material into Waters of the U.S., including, but not limited to the following: placement of fill necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes, and subaqueous utility lines [33 Code of Federal Regulations [CFR] § 328.2(f)]. In addition, Section 401 of the CWA (33 U.S. Code 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into Waters of the U.S. to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Substantial impacts to wetland and non-wetland Waters of the U.S., over 0.5 acre of impact, may require an individual permit. Projects that only minimally affect Waters of the U.S., less than 0.5 acre of impact, may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions. In California, this certification or waiver is typically issued by the Regional Water Quality Control Board (RWQCB). However, in the case of tribal lands that are held in trust, this certification or waiver is issued by the U.S. Environmental Protection Agency (USEPA).

The resources under this Project do not appear to fall under federal jurisdiction due to (1) the site being within a closed intrastate basin, and (2) all aquatic features on the site are ephemeral dry washes, specifically excluded from federal jurisdiction in the new rule. The Study Area is within the Southern Mojave watershed, Hydrologic Unit Code 18100100. This watershed is an intrastate "closed basin." All of the drainage features within the Project Area drain to Lucerne Dry Lake and are not regulated as Waters of the U.S.

2.2 Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Control Act requires "any person discharging waste, or proposing to discharge waste, within any region that could affect the waters of the State to file a report of discharge" with the RWQCB through State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures) (California Code of Regulations [CCR], title 23, § 3855) (RWQCB 2019). "Waters of the State" is defined as any surface water or groundwater, including saline waters, within the boundaries of the State (California Water Code § 13050[e]). Pollution is defined as an alteration of the quality of the waters of the state by waste to a degree that unreasonably affects its beneficial uses (California Water Code § 13050) and includes filling in waters of the State. Note that CCR, title 23, § 3855 applies only to individual water quality certifications, but the new Procedures extend the application of § 3855 to individual waste discharge requirements for discharges of dredged or fill material to Waters of the State and waivers thereof.

Regardless if a CWA Section 404 permit is not required for the project, a permit for impacts to Waters of the State may still be required under the Porter-Cologne Act. To determine whether a project should be regulated pursuant to the Porter-Cologne Water Quality Control Act, the RWQCB considers whether project activities could impact the quality of Waters of the State.

2.3 California Fish and Game Code Section 1602

Pursuant to Section 1602 of the California Fish and Game Code, a Streambed Alteration Agreement (SAA) application must be submitted for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake" (California Department of Fish and Wildlife [CDFW] 2020). In Title 14 of the CCR, Section 1.72, the CDFW defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation."

The CDFW's jurisdiction includes drainages with a definable bed, bank, or channel with the jurisdictional limit being the top-of-bank (TOB). It also includes areas that support intermittent, perennial, or subsurface flows; supports fish or other aquatic life; or supports riparian or hydrophytic vegetation. It also includes areas that have a hydrologic source.

The CDFW will determine if the proposed actions will result in diversion, obstruction, or change of the natural flow, bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. The CDFW will submit a SAA that includes measures to protect affected fish and wildlife resources; this SAA is the final proposal agreed upon by the CDFW and the applicant.

Table 2. Summary of Federal, State, and Local Regulations

Federal Regulations		
Regulation	Resource	Regulating Agency
Federal Clean Water Act	Aquatic features meeting the definition of Waters of the US	USACE
State Regulations		
Regulation	Resource	Regulating Agency
California Fish and Game Code Section 1602	River, stream, or lake and associated riparian habitat	CDFW
Local Regulations		
Regulation	Resource	Regulating Agency
Porter-Cologne Water Quality Act	Aquatic features meeting the definition of Waters of the State	RWQCB

3.0 METHODS

3.1 Pre-Survey Investigations

Prior to conducting the field delineations, the following resources were reviewed to identify potentially jurisdictional areas: aerial imagery (USGS 2018 and ESRI), 7.5' USGS quadrangles (Stoddard Well, Fairview Valley, West Ord Mountain and White Horse Mountain), the National Wetlands Database, the online web soil survey (NRCS 2021a), and a hydric soils list for the area. The aerial imagery was used to digitize potential aquatic features using ArcGIS™. The imagery was analyzed during a preliminary desktop delineation effort to identify differences in vegetative cover, the presence of breaks in a slope, and other areas of potential water disturbance (USACE 2008a). The aerial imagery, combined with these other resources, was used to create a map with features that required further study during the field investigation. Field maps were produced at a scale of 1:1000. A data dictionary was developed using the criteria in the datasheet for the identification of the ordinary high-water mark (OHWM) in arid west regions and identification of State-regulated habitat using the ArcGIS™ suite software.

Prior to the field surveys, and as part of an agency coordination meeting on August 30, 2017, a sample of features were visited by the project team and a representative from CDFW. Surface features were observed and discussed, and verbal guidance from CDFW was provided to the field team lead to aid in making determinations of jurisdictional status as they relate to Section 1602 of the California Fish and Game Code.

3.2 Field Survey Investigation

Three separate field surveys were conducted by ECORP delineation specialists in 2018, 2020, and 2021; the second and third surveys were required in order to include expanded study limits for the Project, to verify conditions observed in previous survey efforts had not changed, and to collect additional information and photographs. The entire Study Area was visually surveyed and special attention was given to the features identified during the preliminary desktop exercise described above. Where jurisdictional features were present, the extent of potential Waters of the State and CDFW-regulated streambed and TOB limits were determined using the OHWM in accordance with USACE requirements and guidelines and other agency delineation guidance. Evaluations included protocols established in the *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008a), *Arid West Delineation Manual* (USACE 2008b), and the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2010).

The perimeter and/or stream center of the majority of features was mapped using a post-processing capable Global Positioning System (GPS) unit with sub-meter accuracy (e.g., EOS Arrow™). Streambed widths were based on evidence of OHWM as observed during the field survey. In addition, each of the drainages was evaluated for the presence or absence of sediment deposits, litter/debris, water stains, soil shelving, and/or exposed roots indicating active hydrology within the channel. Streambed widths and other lateral limits of jurisdiction were measured with a tape measure and recorded with the GPS units or occasionally on a map for later digitization. The extent of associated riparian habitat was based on the

extent of the canopy of the riparian community within or directly adjacent to the feature. Bank-to-bank width measures were also taken and used as a measure of CDFW jurisdictional boundary where features lacked riparian vegetation. Feature characteristics and measurements were recorded directly into the data dictionary in the GPS unit. Characteristics of the majority of mapped features were also documented in photographs. A summary of survey dates, personnel, and activities are summarized in Table 3 below.

Table 3. Project Survey Summary

Dates	Area Surveyed	Survey Personnel	Activity
March 7-9, 2018	Solar Field	Margaret Bornyasz, Jessie Beckman, Taylor Dee, Lauren Simpson, and Wendy Turner	Formal delineation
June 29-July 1, 2020	Solar Field; Gen-Tie Line; Preferred Calcite Substation; Alternative Calcite Substation	Margaret Bornyasz, Caroline Garcia, Christina Torres, and Wendy Turner	Ground truthing and formal delineation
March 11-12, 2021	Southern Gen-Tie Route; Underground Gen-Tie Alternative	Margaret Bornyasz, Jessie Beckman, Caroline Garcia, Greg Hampton, and Christina Torres	Ground truthing and formal delineation

3.3 Post-Processing

The data collected in the field were transferred from the GPS to ECORP's computer network and differential correction post-processing was performed. The data were then viewed and analyzed for verification, edited, and converted to a Geographic Information System (GIS) format at the time of download. ArcGIS™ software was used to develop the geodatabase and the shapefiles depicted on the figures included in this report.

3.4 Survey Limitations

Some properties containing potential regulated features, as identified during ECORP's preliminary desktop delineation, were not accessible per private property owners' requests. In these circumstances, the jurisdictional status was determined using recent and historic aerial images, recent and historic topographic maps, visual inspection from the property boundaries, and/or accessible portions upstream or downstream of the same drainage feature (e.g. along roads). These features are identified in the GIS data and figures included in this report and the associated deliverables.

4.0 RESULTS

4.1 Existing Site Conditions

The Study Area is located within undeveloped areas at approximately 2,896 to 3,804 feet above mean sea level in the Lucerne Valley region of California. The average winter low temperature in the vicinity of the Study Area is 47.8 Fahrenheit (˚F) and the average summer high temperature is 83.1˚F. Average annual precipitation is approximately 5.30 inches, which falls as rain (National Oceanic and Atmospheric

Administration [NOAA] 2021a). A summary of the rainfall patterns during the rain prior to each survey is provided in Table 4.

Table 4. Rainfall Data Summary

Season	Station	Total Precipitation (In.)	Average Precipitation (In.)
2017-2018[1]	Lucerne Valley, 2.7 SSE	1.78	0.01
2018-2019[1]	Lucerne Valley, 2.7 SSE	8.02	0.04
2019-2020[2]	Lucerne Valley, 2.7 SSE	6.09	0.03
2020-2021[3]	Lucerne Valley, 2.7 SSE	2.29	0.02

[1] Rainfall Data from October 1- April 30 (NOAA 2021b)
[2] Rainfall Data from October 1- June 30 (NOAA 2021b)
[3] Rainfall Data from October 1- March 1 (NOAA 2021b)

The annual average rainfall for Barstow is 5.27 inches (www.usclimatedata.com). Based on the rainfall data for the Lucerne Valley 2.7 SSE weather station, the 2019-2020 and 2018-2019 wet seasons were above to well above average, while the 2017-2018 and 2020-2021 wet season were well below average.

A typical year analysis of the Study Area via a single point method was conducted using the USACE Antecedent Precipitation Tool (APT, USACE 2021). The APT is an automation tool that utilizes standardized methodology to calculate precipitation normalcy at a given location using publicly available data sources. The APT analysis determines whether precipitation, drought, and other climatic conditions from the previous three months are *wet*, *normal*, or *dry* for the geographic area based on a rolling 30-year period (USEPA 2021). The APT was run for the dates the wetland delineation data were collected between March 7-9, 2018. The APT demonstrated the site conditions on these dates represent a time of year referenced as the dry season, that the general region and site were in a moderate drought, and that site conditions were drier than normal in climatic conditions. The APT was run for the dates the wetland delineation data were collected between June 29-July 1, 2020. The APT demonstrated the site conditions on these dates represent a time of year referenced as the dry season, that the general region and site were in a mild drought, and that site conditions were normal in climatic conditions. The APT was run for the dates the wetland delineation data were collected between March 11-12, 2021. The APT demonstrated the site conditions on these dates represent a time of year referenced as the dry season, that the general region and site were in an extreme drought, and that site conditions were normal in climatic conditions.

As stated above, the Study Area is within the Southern Mojave watershed, Hydrologic Unit Code 18100100. This watershed is an intrastate "closed basin" and all drainage features within the Project Area drain to Lucerne Dry Lake and are not regulated as Waters of the US.

4.1.1 Vegetation

Vegetation within the Project Area is characteristic of desert scrub and desert wash habitats of the Mojave Desert. Mojavean desert scrub was the dominant plant community and found mostly within the flat, low-lying portions of the Project Area. Dominant species that were observed included creosote bush (*Larrea tridentata*), Joshua tree (*Yucca brevidifolia*), white bursage (*Ambrosia dumosa*), winter fat

(*Krascheninnikovia lanata*), and spiny hopsage (*Grayia spinosa*). Plant species richness was observed to be low within these flats with a high abundance of non-native plant species, such as common Mediterranean grass (*Schismus barbatus*) and red brome (*Bromus madritensis* ssp. *rubens*); most likely originating from historical disturbances such as cattle grazing.

Species richness appeared to be higher at the higher elevation slopes abutting adjacent mountains to the north, west, and south of the Project Area. Dominant species observed in these areas included species such as Mojave yucca (*Yucca schidigera*), branched pencil cholla (*Cylindropuntia ramosissima*), hedgehog cactus (*Echinocereus engelmannii*), blackbrush (*Coleogyne ramosissima*), littleleaf rhatany (*Krameria erecta*), and Mojave lomatium (*Lomatium mohavense*).

4.1.2 Soils

According to the Web Soil Survey (NRCS 2021a), 12 soil units, or types, have been mapped within the Study Area (Figure 2. *Natural Resources Conservation Service Soil Types*). These include:

- 105- Bryman Loamy Fine Sand, 0 to 2 percent slopes
- 112- Cajon Sand, 0 to 2 percent slopes
- 115- Cajon Gravelly Sand, 2 to 15 percent slopes
- 118- Cajon-Arizo Complex, 2 to 15 percent slopes
- 131- Helendale Loamy Sand, 0 to 2 percent slopes
- 133- Helendale-Bryman Loamy Sands, 2 to 5 percent slopes
- 137- Kimberlina Loamy Fine Sand, Cool, 0 to 2 percent slopes
- 140- Lavic Loamy Fine Sand
- 148- Mirage Sandy Loam, 2 to 5 percent slopes
- 158- Rock Outcrop-Lithic Torriorthents Complex, 15 to 50 percent slopes
- 162- Sparkhule-Rock Outcrop Complex, 15 to 50 percent slopes
- 173- Wasco Sandy Loam, Cool, 0 to 2 percent slopes

The Cajon Sand, 0 to 2 percent slopes (112) map unit contains a proportion of 5% hydric soil components, and the Lavic Loamy Fine Sand (140) map unit contains a proportion of 1% hydric soil components (NRCS 2021b). Within the Study Area, much of the desert floor is composed of alluvium. These areas contain coarse-textured, well-drained soils developed from alluvium that is derived primarily from granite and other related rock sources. Most soil series consist of deep, coarse material that is rapidly permeable, and soils within these series tend to have low runoff characteristics. Summary characteristics based on official series descriptions for each of the soil series mapped within the alignments are provided below (NRCS 2021c).

Figure 2. Natural Resources Conservation Service Soil Types

Map Features

Project Study Area

Series Designation - Series Description

- 105- Bryman Loamy Fine Sand, 0 to 2 percent slopes
- 112- Cajon Sand, 0 to 2 percent slopes
- 115- Cajon Gravelly Sand, 2 to 15 percent slopes
- 118- Cajon-Arizo Complex, 2 to 15 percent slopes
- 131- Helendale Loamy Sand, 0 to 2 percent slopes
- 133- Helendale-Bryman Loamy Sands, 2 to 5 percent slopes
- 137- Kimberlina Loamy Fine Sand, Cool, 0 to 2 percent slopes
- 140- Lavic Loamy Fine Sand
- 148- Mirage Sandy Loam, 2 to 5 percent slopes
- 158- Rock Outcrop-Lithic Torriorthents Complex, 15 to 50 percent slopes
- 162- Sparkhule-Rock Outcrop Complex, 15 to 50 percent slopes
- 173- Wasco Sandy Loam, Cool, 0 to 2 percent slopes

Natural Resources Conservation Service (NRCS) Soil Survey Geographic (SSURGO) Database for San Bernadino County, CA

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Location: N:\2017\2017-103 Aspen - CSLC Aurora Solar Project\MAPS\Soils_and_Geology\Soils\Aurora_Soils_V3.mxd (MAG)-trotellini 4/27/2021

2017-103 Aspen - CSLC Stagecoach Solar Project

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Base Source: NAIP 2018

Map Date: 4/27/2021

Bryman Series

The Bryman series consists of deep, well-drained soils that formed in alluvium from dominantly granitic sources. Bryman soils are on terraces and older alluvial fans and have slopes of 0 to 15 percent. These soils have moderately slow permeability and slow runoff.

Cajon Series

The Cajon series consists of very deep, somewhat excessively drained soils that formed in sandy alluvium from dominantly granitic rocks. Cajon soils are on alluvial fans, fan aprons, fan skirts, inset fans, and river terraces. These soils have rapid permeability and tend to yield negligible runoff. There is weak stratification of sandy material in some or all parts of the pedon. The pedon is composed of sands and gravelly sands from the surface to over 60 inches deep. Rock fragments are mostly gravel size and they make up as much as 35 percent, though many pedons have less than 15 percent gravel. Flooding on these soils is rare. The majority of the Project Area occurs in a map unit that is typically 55 percent Cajon series soils and 45 percent Arizo series soils. Arizo series soils have similar drainage characteristics. They are also considered excessively drained and have rapid permeability and low runoff.

Helendale Series

The Helendale series consists of very deep, well-drained soils that formed in alluvium from granitoid rocks. Helendale soils are on fan piedmonts, fan remnants, alluvial fans, and terraces. Pedons in this map unit have negligible runoff and consist of sandy loam textures soils through depths of 100 inches.

Kimberlina Series

The Kimberlina series consists of very deep, well-drained soils on flood plains and recent alluvial fans. These soils formed in mixed alluvium derived dominantly from igneous and/or sedimentary rock sources. The soils drainage is moderately rapid and has moderate permeability; however, saline-sodic phases and soils with sandy clay loam substratums have moderately slow permeability. Soil units could also have high rock fragment contents, and stratification of fine-textured soils occurs below 45 inches.

Lavic Series

The Lavic series consists of very deep, moderately well drained soils that formed in mixed alluvium, dominantly from granitic sources. Lavic soils are on fan piedmonts, alluvial fans, and basin rim positions and have slopes of 0 to 5 percent. Soils have very low to medium runoff and moderate permeability.

Mirage Series

The Mirage series consist of deep, well-drained soils that formed in mixed alluvium, dominantly from granitic sources. Mirage soils are on old stream terraces with well-developed erosion pavement that covers 70 to 90 percent of the surface. Soils have medium to rapid runoff and moderately slow permeability. With rapid runoff, surface flows from these terraces have higher energy and surface flows from these terraces could result in OHWM indicators near transitions to other soil map units, but these indicators tend to not persist where concentrations of sands are high in downslope soils. The energy from the surface water dissipates and is absorbed as it flows over sandy soils.

Sparkhule Series

The Sparkhule series consists of shallow to rock soils that formed in residuum from volcanic or granitic rocks. Sparkhule soils are on rock pediments and hills and have slopes of 5 to 50 percent. Soils in this series have clay loam horizons from two inches to 18 inches deep, over hard rock below 18 inches. These soils have high to very high runoff with moderately slow permeability.

Wasco Series

The Wasco series consists of very deep, well-drained soils on recent alluvial fans and flood plains. These soils formed in mixed alluvium derived mainly from igneous and/or sedimentary rock sources. The pedons are dominated by sandy loam soils. Soils in this map series tend to have negligible or very low runoff with moderately rapid permeability.

4.1.3 California Aquatic Resource Inventory

The California Aquatic Resource Inventory (CARI; San Francisco Estuary Institute [SFEI] 2017) is a statewide map of surface waters and related habitats combining multiple national and regional datasets, including the National Wetlands Inventory and the National Hydrography Dataset. CARI includes aquatic resource features mapped using a variety of remote sensing and modeling techniques. As such, these aquatic features may or may not exist as represented. In addition, CARI data varies in detail, accuracy, and age, and is meant to be used as a tool to assist with aquatic resources delineations and regional planning. It is not intended to be used as the only source of aquatic resource information for detailed site planning or regulatory permitting (SFEI 2017).

According to CARI, there are several drainage features mapped within the Study Area, all being fluvial natural features (Figure 3: *California Aquatic Resource Inventory Features*).

4.1.4 Hydrology

The Study Area is within the Southern Mojave watershed, Hydrologic Unit Code 18100100, and in a landscape that produces ephemeral conditions with surface waters flowing in direct response to large rain events, for short durations. Otherwise, surface water is quickly absorbed into sandy soils.

A compacted dirt road, Lucerne Valley Cutoff, runs northwest through the entirety of the area planned for the solar field. Various dirt roads run alongside other portions of the Project, including the gen-tie lines and some of the substations, and result in roadside runoff. For areas adjacent to these roads, surface flow that is concentrated by the roads and the other more occasional developed areas is directed into more natural soil settings. The surface expression of drainage, in the form of bed and bank or OHWM features, tends to be very prominent on the downslope sides of roads. OHWM indicators persist in topographic low points only in locations where sub watershed areas are large, or flow is more rapid from impermeable surfaces.

Mountain ranges surround the Study Area and include Sidewinder Mountain to the west and Goat Mountain and West Ord Mountain to the east. The adjacent mountains are composed of rock outcrop

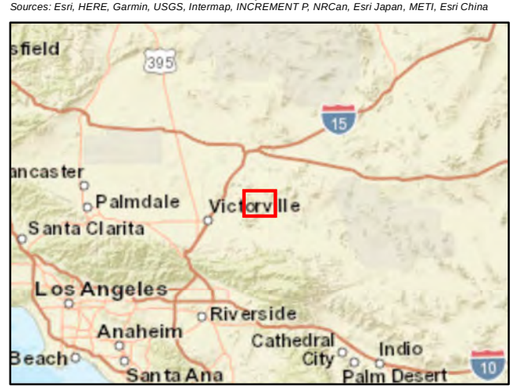
Figure 3. California Aquatic Resource Inventory Features

Map Features

- Project Area

CARI Features

- Fluvial Natural
- Fluvial Unnatural
- Playa



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2017-103 Aspen - CSLC Stagecoach Solar Project

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Base Source: NAIP 2106

Map Date: 3/24/2021

Location: N:\2017\2017-103 Aspen - CSLC Aurora Solar Project\MAPS\Hydro\HUC1v1\Aurora_CARI_V2.mxd *(MAG)-trotellini 3/24/2021*

complexes and slopes greater than 15 percent and up to 50 percent. Downslope of these rock outcrop areas are old terrace deposits with well-developed erosion pavement or areas that consist of deep, sandy alluvium. The old terrace deposits have moderately slow permeability and rapid runoff. The deep sandy soil units are rapidly permeable and have low runoff. Where surfaces are characterized by high runoff and low permeability, flow downslope is higher energy and the stream segments directly downslope have more pronounced OHWM and defined bed and banks. OHWM features and definition of the bank and channel becomes subtle over long spans across areas mapped with Cajon-Arizo soils, where sand is dominant, and permeability is rapid.

4.2 Aquatic Resources

Aquatic resources that have been preliminarily determined to be regulated under the Porter-Cologne Act and California Fish and Game Code Section 1602 are summarized by feature in Table 5 and depicted on Figure 4: *Aquatic Resources Delineation*. These results are subject to agency verification. As previously mentioned, portions of the Study Area were not accessible per private property owners' requests. Where possible, the jurisdictional status of inaccessible features was determined by visual inspection from accessible upstream and downstream portions of the features along roads. Features determined to be non-jurisdictional lacked signs of water concentrations along roadsides, indicating that features with bed and bank and other OHWM indicators observed in aerial imagery had dissipated once the feature entered areas with sandy soils within the Study Area. Aquatic features that were inaccessible during field surveys and areas of survey limitations are depicted on Figure 5: *Survey Limitations*.

Features identified as aquatic resources had physical evidence of flow including OHWM, defined bed and bank, presence of a clear and natural line impressed on the bank, the presence or absence of sediment deposits, litter/debris, and/or exposed roots indicating active hydrology within the channel (Table 5). All of these features are ephemeral dry washes. Swales and other erosional zones were noted during the study. Swales are defined as generally shallow features that may convey water across upland areas both during and following storm events. They typically occur along nearly flat slopes and contain low-lying vegetation throughout the feature. Swales are generally not Waters of the U.S. because they are not tributaries (USACE 2007). Features determined as swales throughout the site did not have OHWM indicators or terraces; rather, they more commonly had colluvial deposits and could be features that are only active during rare events. These features are likely non-jurisdictional because they are not traceable to waters with OHWM.

Site photographs that characterize most features are included as digital media along with this report. Figures 6 through 11 depict examples of swales, colluvial features, erosional features, and streambeds and channels that were characteristic of features observed during the surveys.

5.0 CONCLUSION

Stream segments throughout the Study Area with persisting OHWM features are concentrated near areas where impermeable surfaces, such as rock outcrops, old terrace deposits, or compacted soils exist and also where the contributing watershed is large (see Figure 4, Table 5, and accompanying electronic files). The OHWM indicators were used to mark channels and streambeds where banks were present, and TOB was also measured. The OHWM widths would provide the best estimate for acreage covered under the

Porter-Cologne Act. The TOB is the best estimate for acreage covered under California Fish and Game Code Section 1602. None of the stream segments appears to meet federal CWA jurisdiction criteria due to the Project site location within an intrastate closed basin watershed.

Segments with features such as those depicted in Figures 6 and 7 were considered non-jurisdictional because OHWM did not persist throughout the site and were not traceable to other segments with OHWM, or because they met the definition of a swale. There is no federal jurisdiction for features within the Study Area.

Table 5. Features Regulated Under Porter-Cologne Act and California Fish and Game Code Sect. 1602 within Project Area

Resource Name	Location (lat/long)	Summary of Observations	Dominant Vegetation	Soil Landscape	Average Channel Width (feet)*	Resource Size (acre)	Resource Size (linear feet)	Feature Location **
1	34.64299868, -117.02904675	Roadside runoff and precipitation; OHWM indicators: defined bed and bank and natural line.	Unvegetated	Within Cajon-Arizo Complex and directly adjacent to Mirage Sandy Loam	3.0	0.022	319.990	SF
2	34.64234180, -117.02832399	Roadside runoff and precipitation; OHWM indicators: defined bed and bank and sediment deposition.	Unvegetated	Within both Cajon-Arizo Complex and Mirage Sandy Loam	4.5	0.085	756.292	SF
3	34.64134244, -117.02756412	Roadside runoff and precipitation; OHWM indicators: defined bed and bank, natural line, and sediment deposition.	Unvegetated	Within both Cajon-Arizo Complex and Mirage Sandy Loam	6.3	0.329	2393.838	SF
4	34.63967774, -117.02084329	Roadside runoff and precipitation; OHWM indicators: defined bed and bank.	Unvegetated	Within Cajon-Arizo Complex and directly adjacent to Mirage Sandy Loam	4.8	0.412	3761.955	SF
5	34.63820960, -117.02136058	Roadside runoff and precipitation; OHWM indicators: defined bed and bank, natural line, and sediment deposition.	Unvegetated	Within both Cajon-Arizo Complex and Mirage Sandy Loam	4.6	0.425	3189.715	SF
6	34.63426001, -117.01586649	Roadside runoff and precipitation; OHWM indicators: defined bed and bank.	Unvegetated	Within Cajon-Arizo Complex	5.5	0.157	1247.031	SF
7	34.62628919, -117.00480280	Roadside runoff and precipitation; OHWM indicators: defined bed and	Unvegetated	Within Cajon-Arizo Complex	10.0	0.359	1556.947	SF

Table 5. Features Regulated Under Porter-Cologne Act and California Fish and Game Code Sect. 1602 within Project Area

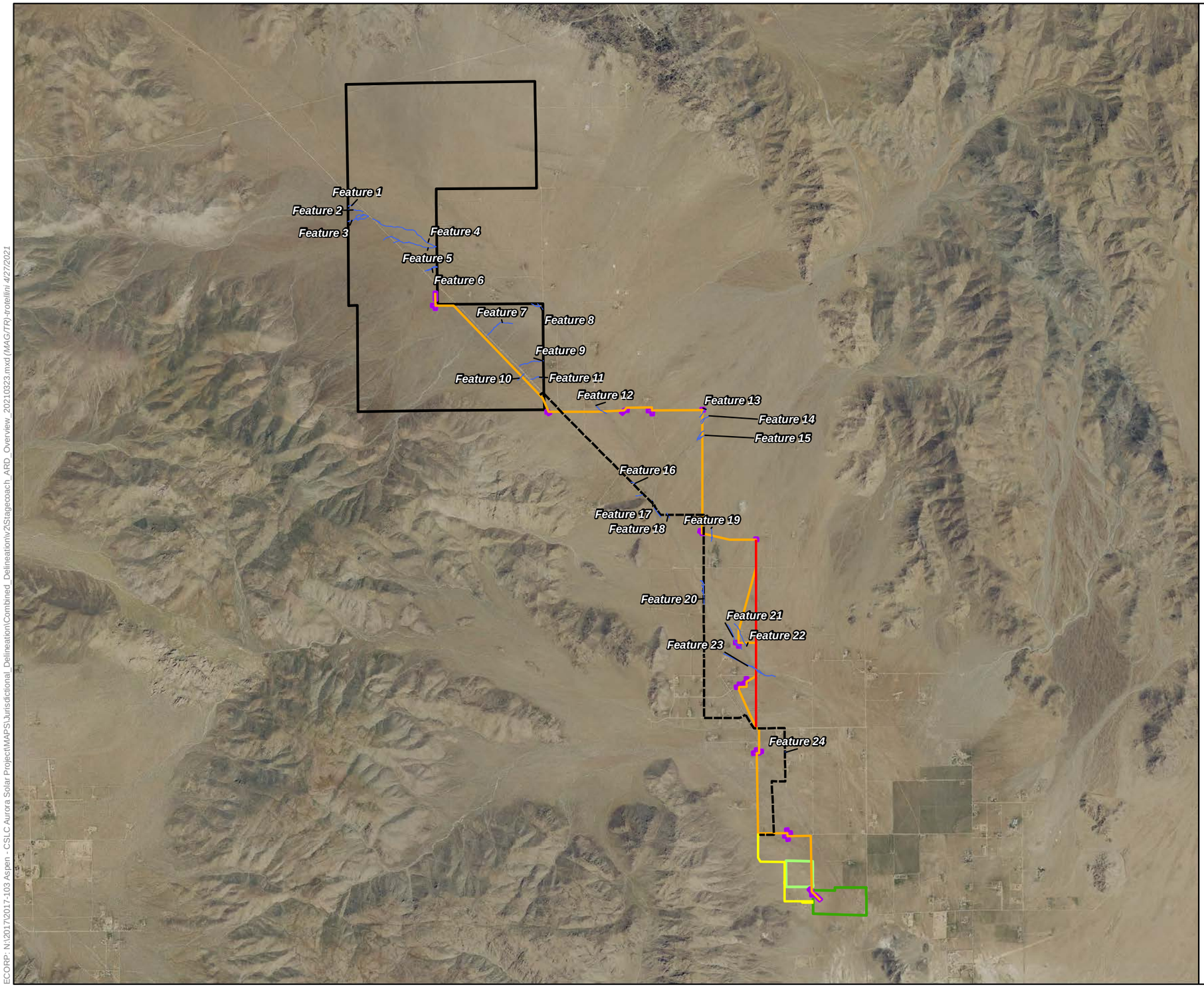
Resource Name	Location (lat/long)	Summary of Observations	Dominant Vegetation	Soil Landscape	Average Channel Width (feet)*	Resource Size (acre)	Resource Size (linear feet)	Feature Location **
		bank, natural line, and sediment deposition.						
8	34.62899646, -116.99825719	Roadside runoff and precipitation; OHWM indicators: defined bed and bank.	Unvegetated	Within Cajon-Arizo Complex	11.0	0.222	861.848	SF
9	34.62131454, -116.99958186	Roadside runoff and precipitation; OHWM indicators: defined bed and bank, natural line, and sediment deposition.	Unvegetated	Within both Cajon-Arizo Complex and Mirage Sandy Loam	5.0	0.155	1352.106	SF
10	34.61936015, -117.00124935	Roadside runoff and precipitation; OHWM indicators: defined bed and bank, natural line, and sediment deposition.	Unvegetated	Within Mirage Sandy Loam	5.0	0.056	485.843	SF
11	34.61922969, -116.99857959	Roadside runoff and precipitation; OHWM indicators: defined bed and bank, natural line, and sediment deposition.	Unvegetated	Within both Cajon-Arizo Complex and Mirage Sandy Loam	4.0	0.066	714.500	SF
12	34.61457757, -116.98781218	Roadside runoff and precipitation; OHWM indicators: defined bed and bank, natural line, and sediment deposition.	Unvegetated	Within Cajon-Arizo Complex	6.5	0.035	214.379	GL
13	34.61428296, -116.97125670	OHWM indicators: defined bed and bank.	Unvegetated	Within Cajon-Arizo Complex	4.0	0.031	336.319	GL, BSA
14	34.61309092, -116.97136299	OHWM indicators: defined bed and bank.	Unvegetated	Within Cajon-Arizo Complex	3.5	0.028	341.842	GL
15	34.61129555, -116.97139945	OHWM indicators: defined bed and bank, natural line, and sediment deposition.	Unvegetated	Within Mirage Sandy Loam and adjacent to Cajon-Arizo Complex	3.2	0.022	283.003	GL
16	34.60477905, -116.98279766	OHWM indicators: defined bed and bank and sediment deposit.	Unvegetated	Within Cajon-Arizo Complex	5.0	0.001	7.845	UGA

Table 5. Features Regulated Under Porter-Cologne Act and California Fish and Game Code Sect. 1602 within Project Area

Resource Name	Location (lat/long)	Summary of Observations	Dominant Vegetation	Soil Landscape	Average Channel Width (feet)*	Resource Size (acre)	Resource Size (linear feet)	Feature Location **
17	34.60217637, -116.97969690	OHWM indicators: defined bed and bank and drift/ sediment deposit.	Unvegetated	Within Cajon-Arizo Complex	10.0	0.00007	0.805	UGA
18	34.60027685, -116.97715729	OHWM indicators: defined bed and bank, scour, and sediment deposit.	Unvegetated	Within Cajon-Arizo Complex	8.0	0.009	47.372	UGA
19	34.59746446, -116.96996611	OHWM indicators: defined bed and bank, natural line, and sediment deposition.	Unvegetated	Within Cajon-Arizo Complex	5.8	0.020	144.918	GL
20	34.59006459, -116.97152709	OHWM indicators: defined bed and bank and wracking.	Unvegetated	Within Cajon-Arizo Complex	3.2	0.071	1123.271	UGA
21	34.58265432, -116.96599520	OHWM indicators: presence of natural line and sediment deposition.	Unvegetated	Within Cajon-Arizo Complex	5.0	0.043	375.848	GL, BSA
22	34.58380594, -116.96528050	OHWM indicators: presence of natural line.	Unvegetated	Within Cajon-Arizo Complex	3.0	0.020	284.853	GL
23	34.57916917, -116.96292818	OHWM indicators: defined bed and bank, natural line, and sediment deposition.	Unvegetated	Within Cajon-Arizo Complex	7.5	0.037	207.084	GL
24	34.56781818, -116.95811765	OHWM indicators: defined bed and bank, scour, and sediment deposit.	Unvegetated	Within Cajon Sand	2.0	0.00005	0.229	UGA

*Includes the area between both TOBs in a drainage. This area overlaps with the OHWM for drainages potentially under the jurisdiction of the RWQCB, but is expanded to include TOBs.

** BSA= Battery Storage Area, GL= Gen-tie Line, SF= Solar Field, SGR= Southern Gen-Tie Route, UGA= Underground Gen-Tie Alternative



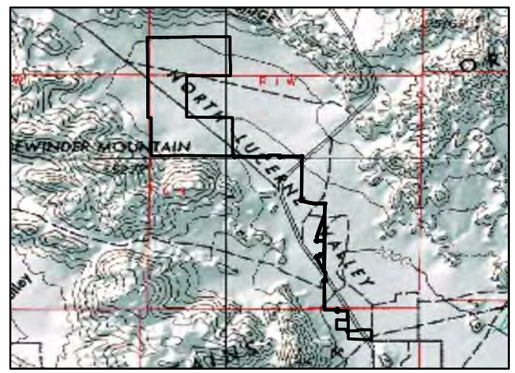
Map Features

- Solar Field
- Preferred Calcite Substation
- Alternative Calcite Substation
- Pulling Area - Main
- Pulling Area - Alt
- Jurisdictional Aquatic Resource

Gen-Tie Routes

- Main Route
- Alternative Route
- Southern Gen-Tie Route
- Ungerground Gen-Tie Alternative

Sources: Avagrid, ECORP, NAIP, Esri



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Map Date: 4/27/2021

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Scale in Feet
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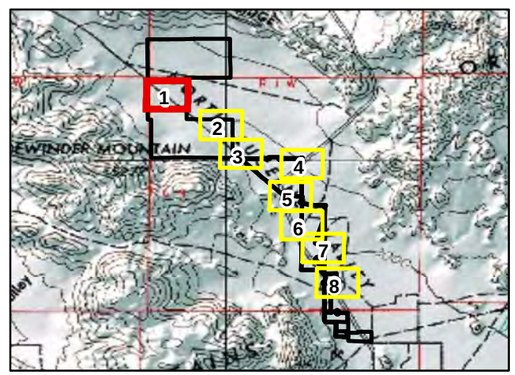
Figure 4. Aquatic Resources Delineation Overview

2017-103 Aspen - CSLC Stagecoach Solar Project

Map Features

- Solar Field
- Study Area
- Jurisdictional Aquatic Resource

Sources: Avagrid, ECORP, NAIP, Esri



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Map Date: 4/27/2021

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Scale in Feet
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Figure 4. Aquatic Resources Delineation - Detail Sheet 1 of 8

2017-103 Aspen - CSLC Stagecoach Solar Project

Feature 8

Feature 7

Feature 9

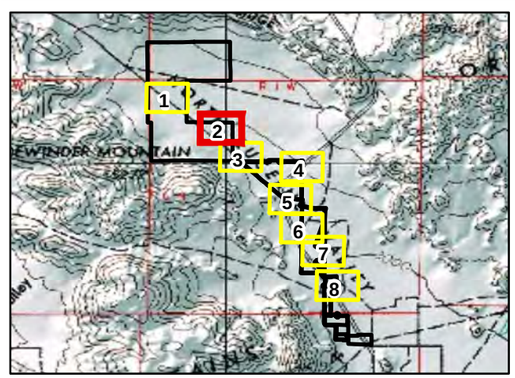
Map Features

- Solar Field
- Study Area
- Jurisdictional Aquatic Resource

Gen-Tie Routes

- Main Route

Sources: Avagrid, ECORP, NAIP, Esri



Map Date: 4/27/2021

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Scale in Feet
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Figure 4. Aquatic Resources Delineation - Detail Sheet 2 of 8

2017-103 Aspen - CSLC Stagecoach Solar Project

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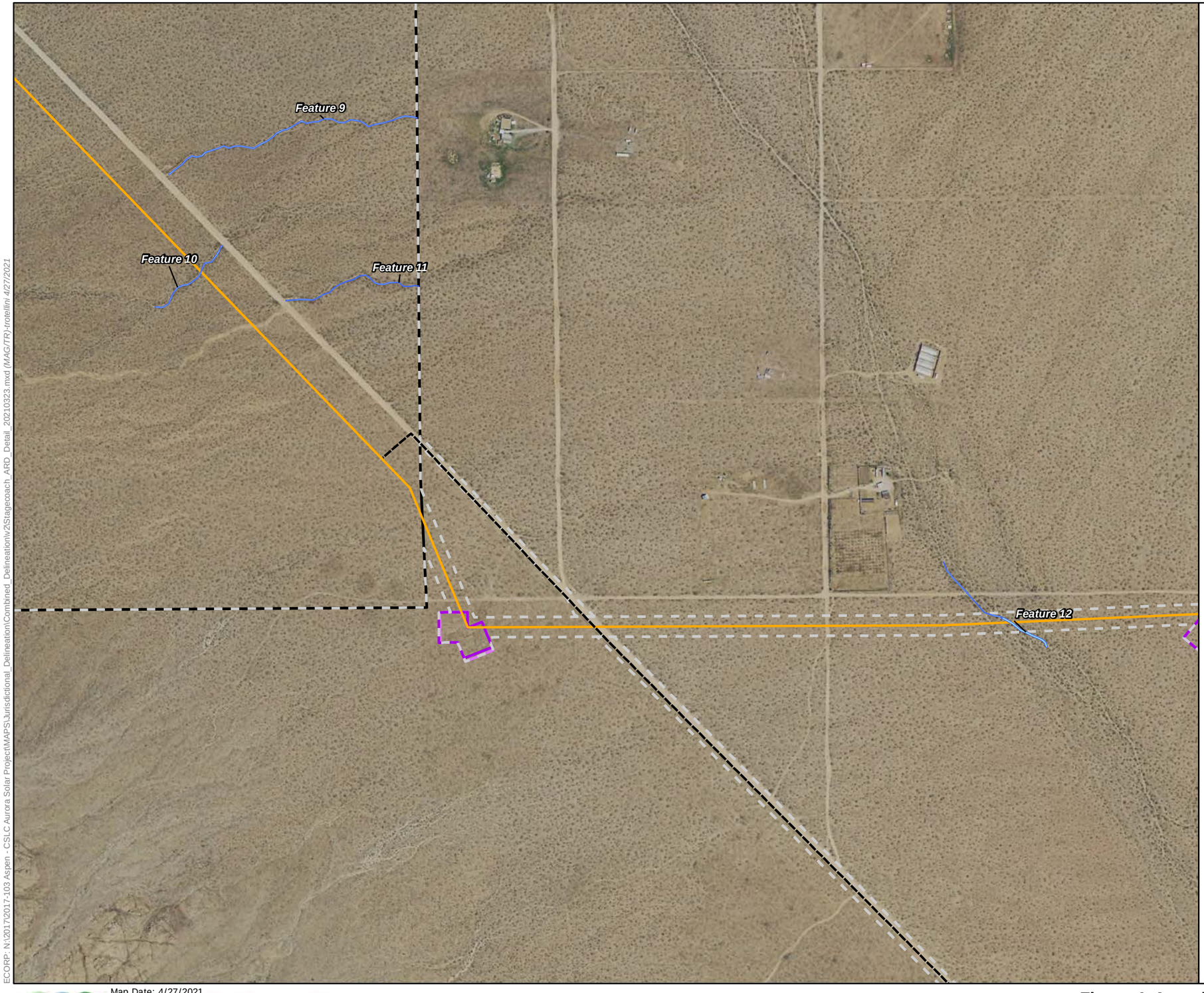


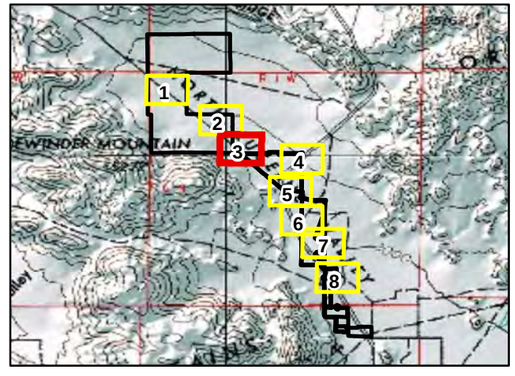
Map Features

- Solar Field
- Pulling Area - Main
- Pulling Area - Alt
- Study Area
- Jurisdictional Aquatic Resource

Gen-Tie Routes

- Main Route
- Ungerground Gen-Tie Alternative

Sources: Avagrid, ECORP, NAIP, Esri



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Map Date: 4/27/2021

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Scale in Feet
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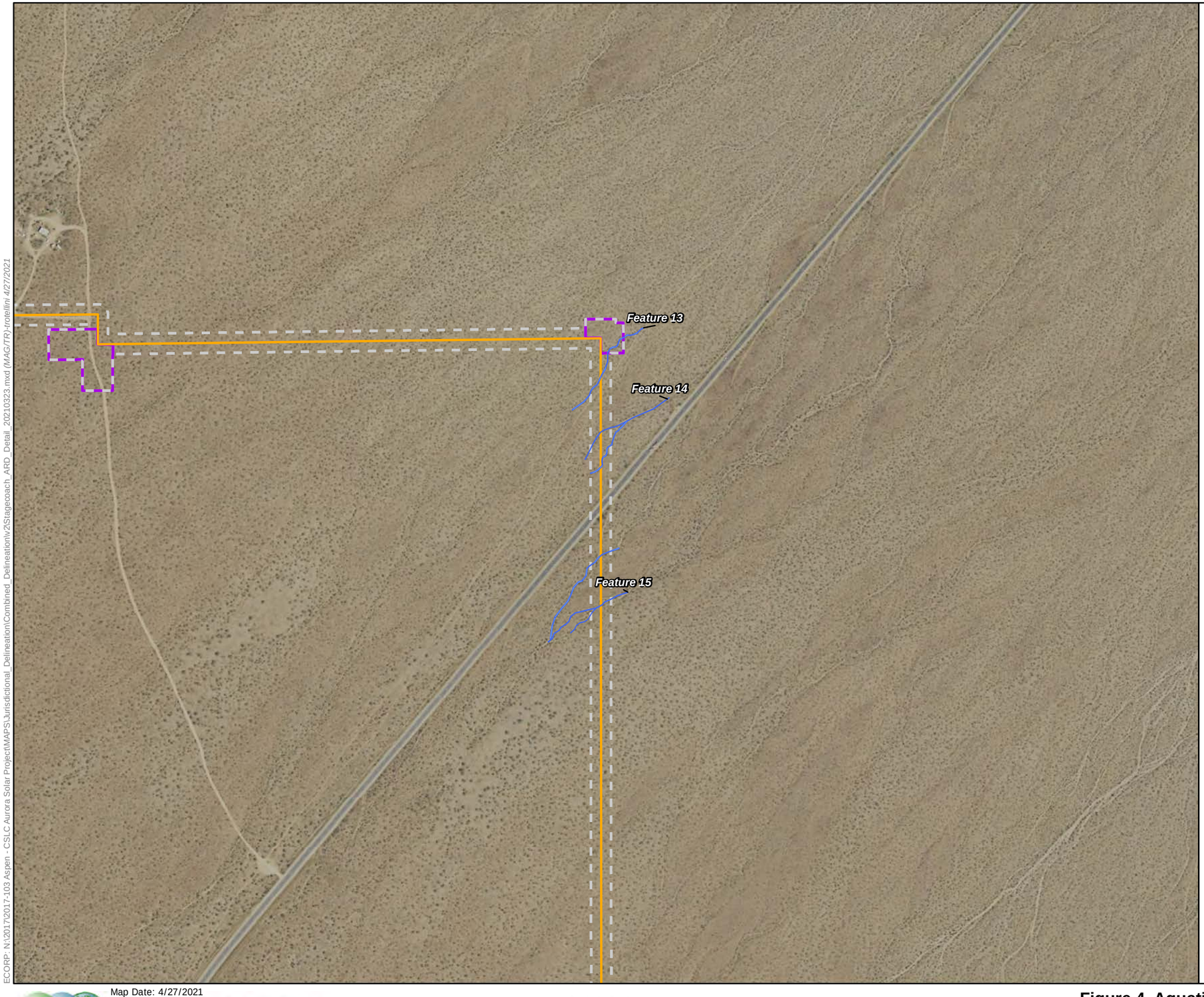
Figure 4. Aquatic Resources Delineation - Detail Sheet 3 of 8

2017-103 Aspen - CSLC Stagecoach Solar Project



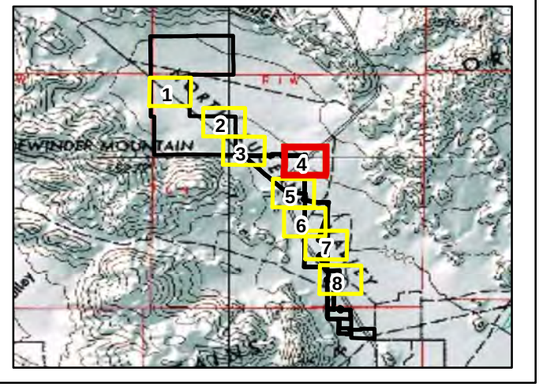
Map Features

- Pulling Area - Main
- Pulling Area - Alt
- Study Area
- Jurisdictional Aquatic Resource

Gen-Tie Routes

- Main Route

Sources: Avagrid, ECORP, NAIP, Esri



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Scale in Feet
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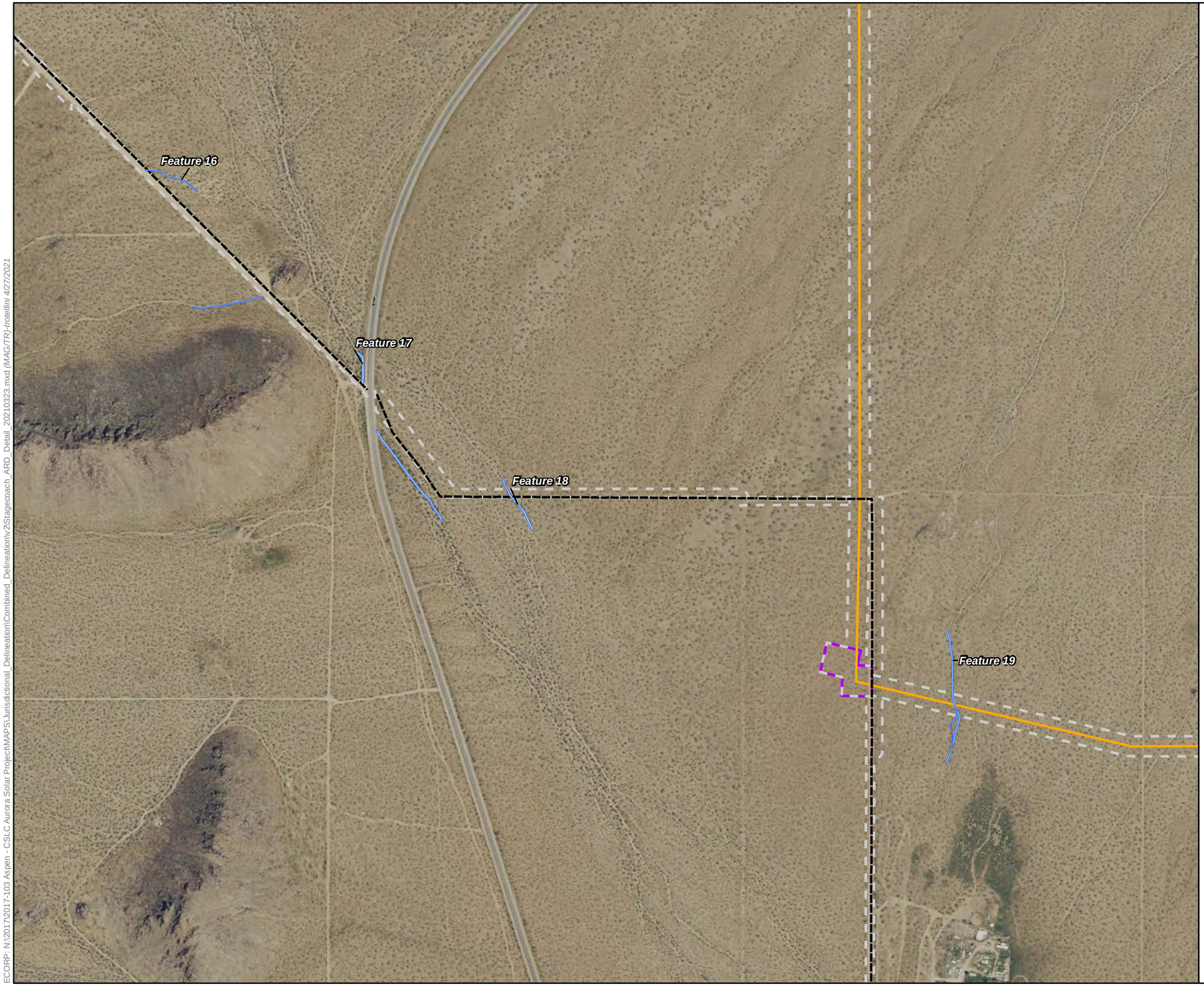
Figure 4. Aquatic Resources Delineation - Detail Sheet 4 of 8

2017-103 Aspen - CSLC Stagecoach Solar Project

ECORP: N:\2017\2017-103 Aspen - CSLC Aurora Solar Project\MAPS\Jurisdictional_Delineation\Combined_Delineation\v2\Stagecoach_ARD_Detail_20210323.mxd (MAG/TR)-trotellini 4/27/2021



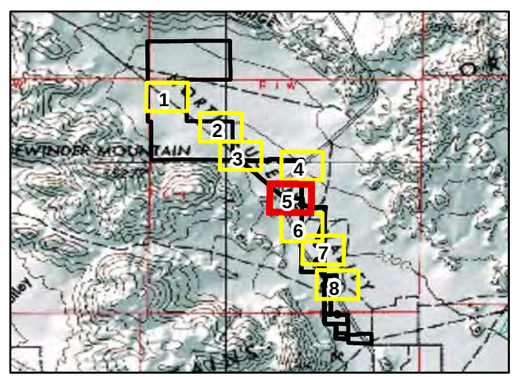
Map Features

- Pulling Area - Main
- Pulling Area - Alt
- Study Area
- Jurisdictional Aquatic Resource

Gen-Tie Routes

- Main Route
- Ungerground Gen-Tie Alternative

Sources: Avagrid, ECORP, NAIP, Esri



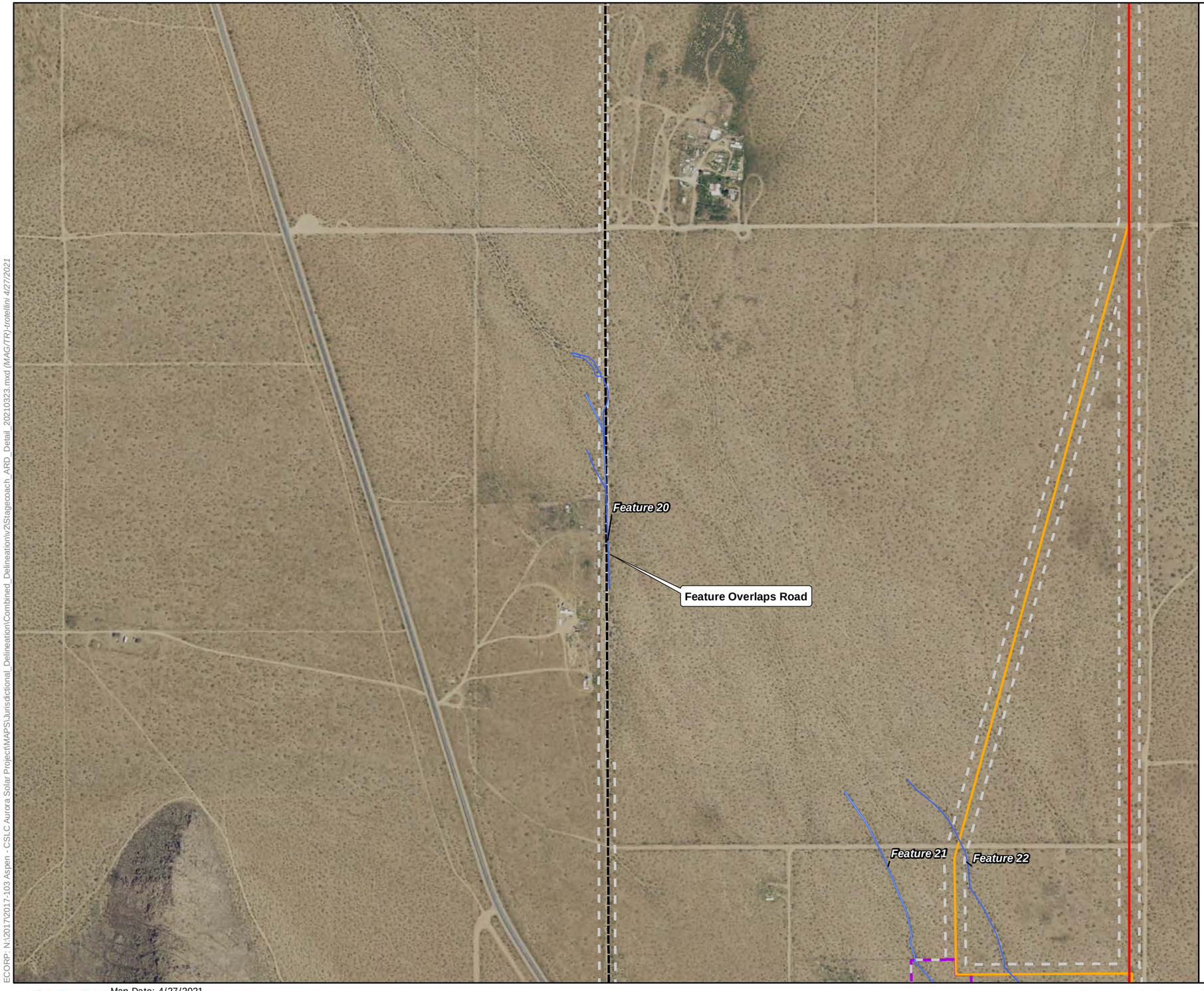
Map Date: 4/27/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 200 400

Figure 4. Aquatic Resources Delineation - Detail Sheet 5 of 8

2017-103 Aspen - CSLC Stagecoach Solar Project



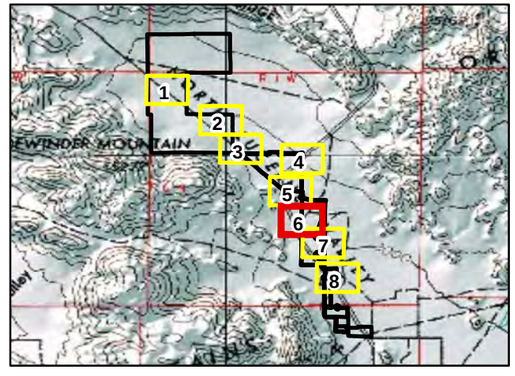
Map Features

- Pulling Area - Main
- Study Area
- Jurisdictional Aquatic Resource

Gen-Tie Routes

- Main Route
- Alternative Route
- Ungerground Gen-Tie Alternative

Sources: Avagrid, ECORP, NAIP, Esri



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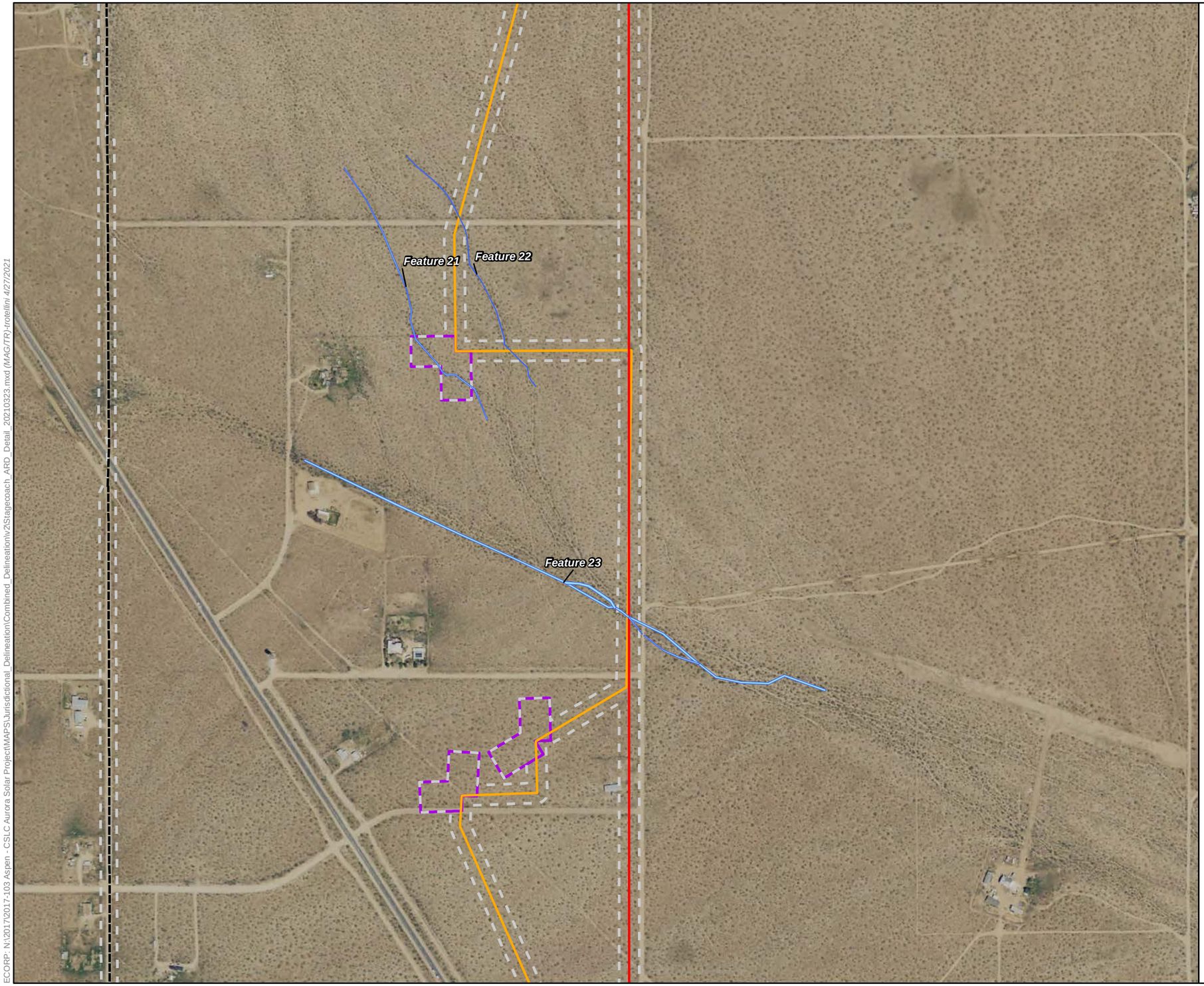
Map Date: 4/27/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 200 400

Figure 4. Aquatic Resources Delineation - Detail Sheet 6 of 8

2017-103 Aspen - CSLC Stagecoach Solar Project



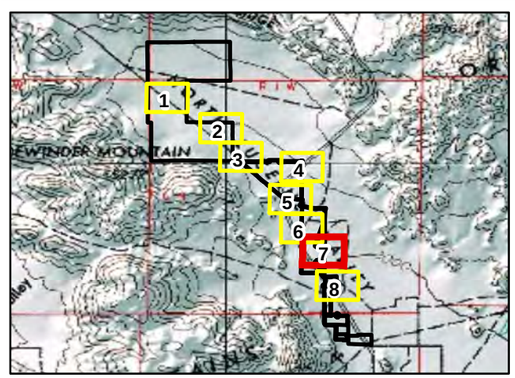
Map Features

- Pulling Area - Main
- Study Area
- Jurisdictional Aquatic Resource

Gen-Tie Routes

- Main Route
- Alternative Route
- Ungerground Gen-Tie Alternative

Sources: Avagrid, ECORP, NAIP, Esri



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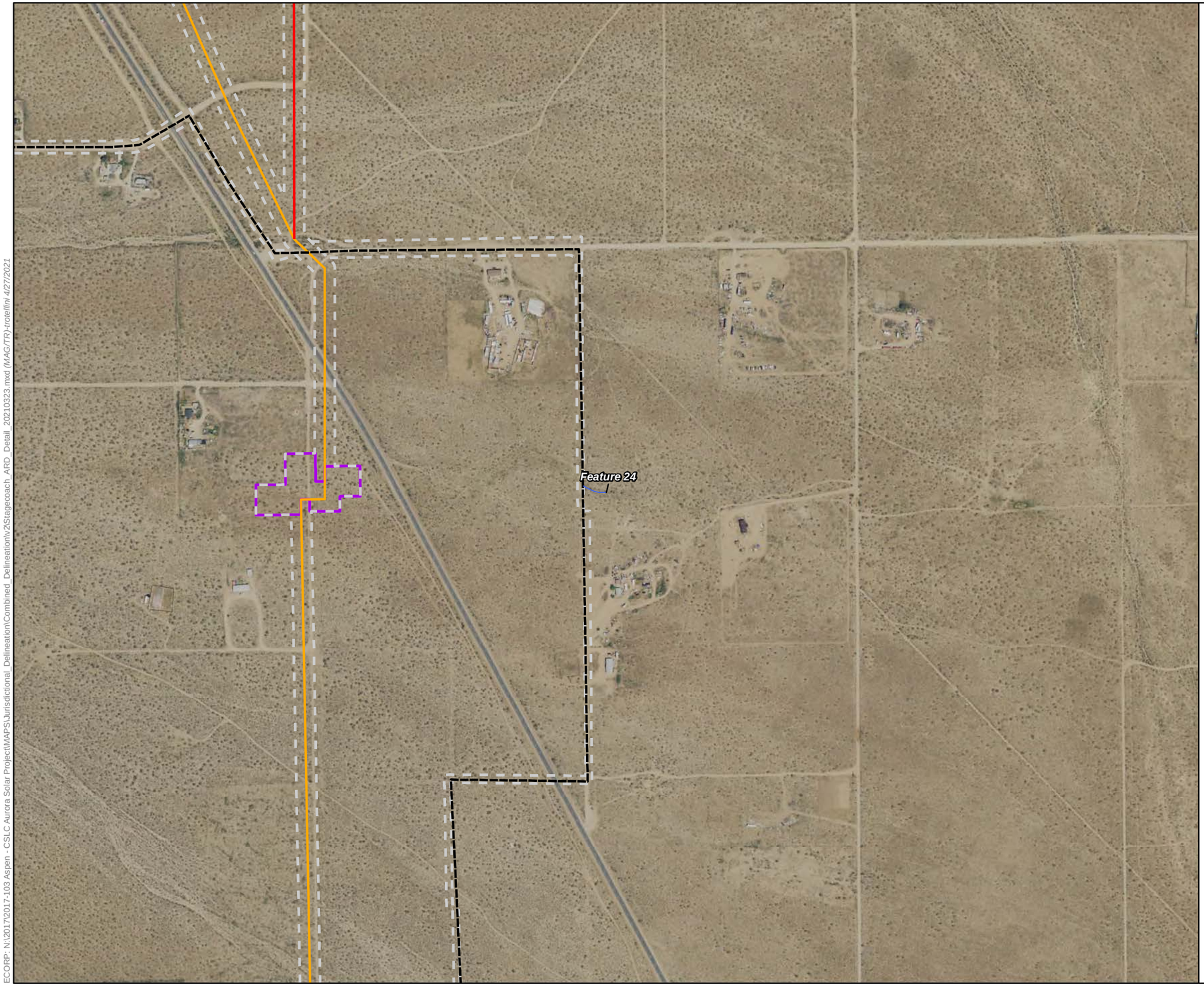
Map Date: 4/27/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 200 400

Figure 4. Aquatic Resources Delineation - Detail Sheet 7 of 8

2017-103 Aspen - CSLC Stagecoach Solar Project



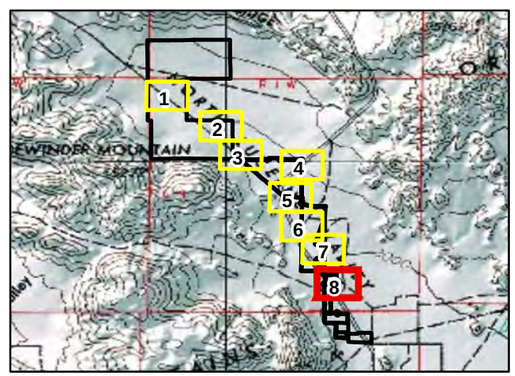
Map Features

- Pulling Area - Main
- Pulling Area - Alt
- Study Area
- Jurisdictional Aquatic Resource

Gen-Tie Routes

- Main Route
- Alternative Route
- Ungerground Gen-Tie Alternative

Sources: Avagrid, ECORP, NAIP, Esri



ECORP- N:\2017\2017-103 Aspen - CSLC Aurora Solar Project\MAPS\Jurisdictional_Delineation\Combined_Delineation\v2\Stagecoach_ARD_Detail_20210323.mxd (MAG/TR)-trotellini 4/27/2021

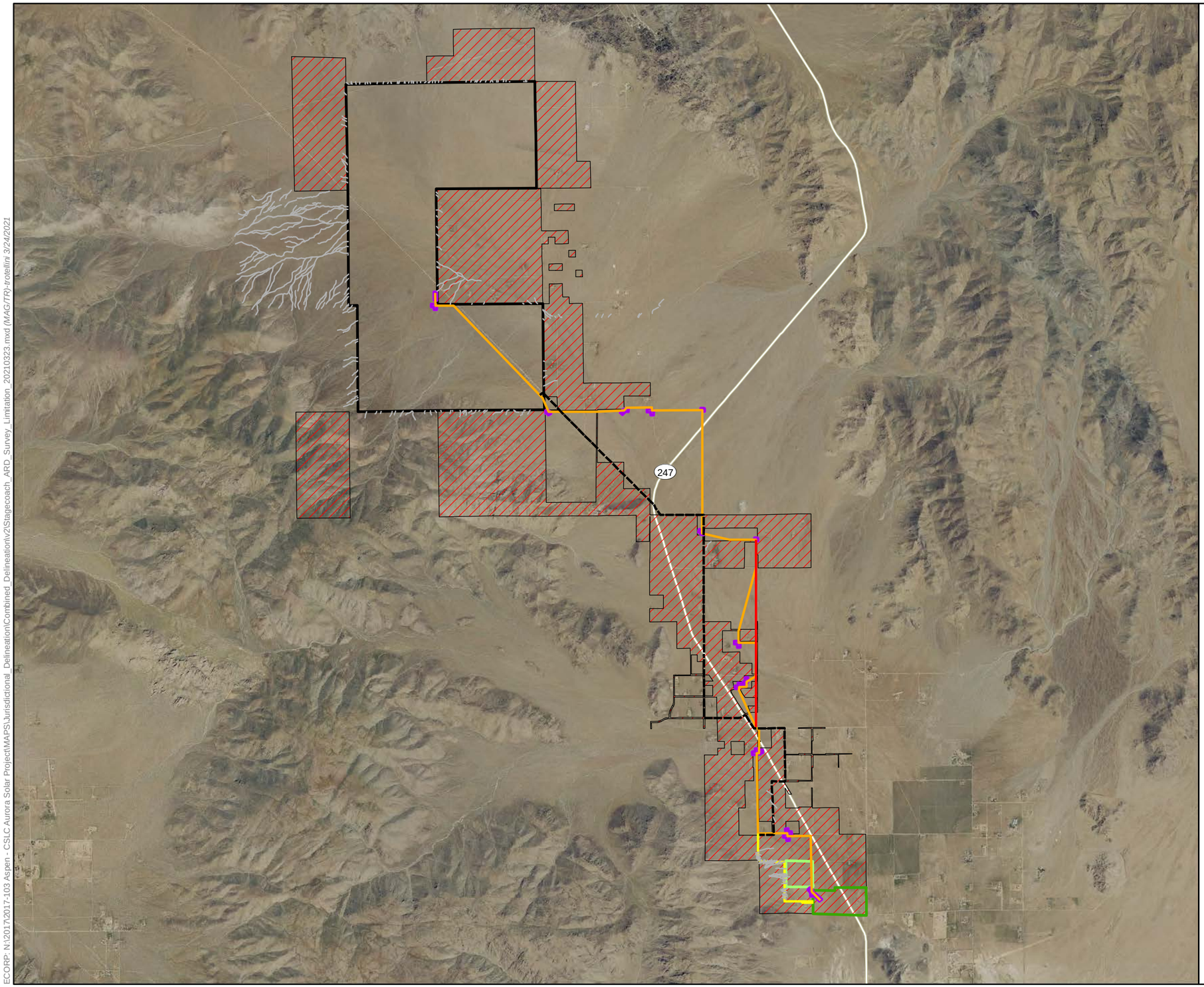
Map Date: 4/27/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 200 400

Figure 4. Aquatic Resources Delineation - Detail Sheet 8 of 8

2017-103 Aspen - CSLC Stagecoach Solar Project



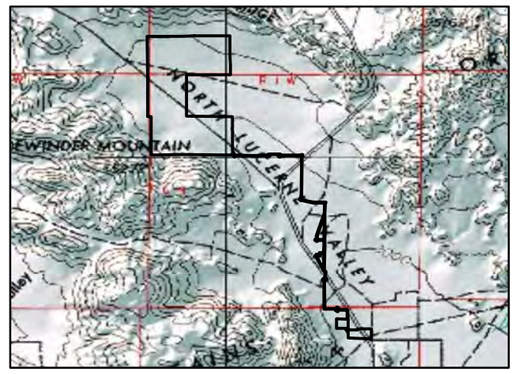
Map Features

- Solar Field
- Preferred Calcite Substation
- Alternative Calcite Substation
- Pulling Area - Main
- Pulling Area - Alt
- No Property Access
- Unverified Aquatic Resources

Gen-Tie Routes

- Main Route
- Alternative Route
- Southern Gen-Tie Route
- Ungerground Gen-Tie Alternative

Sources: Avagrid, ECORP, NAIP, Esri



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Map Date: 3/24/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 5,000

Figure 5: Survey Limitations

2017-103 Aspen - CSLC Stagecoach Solar Project

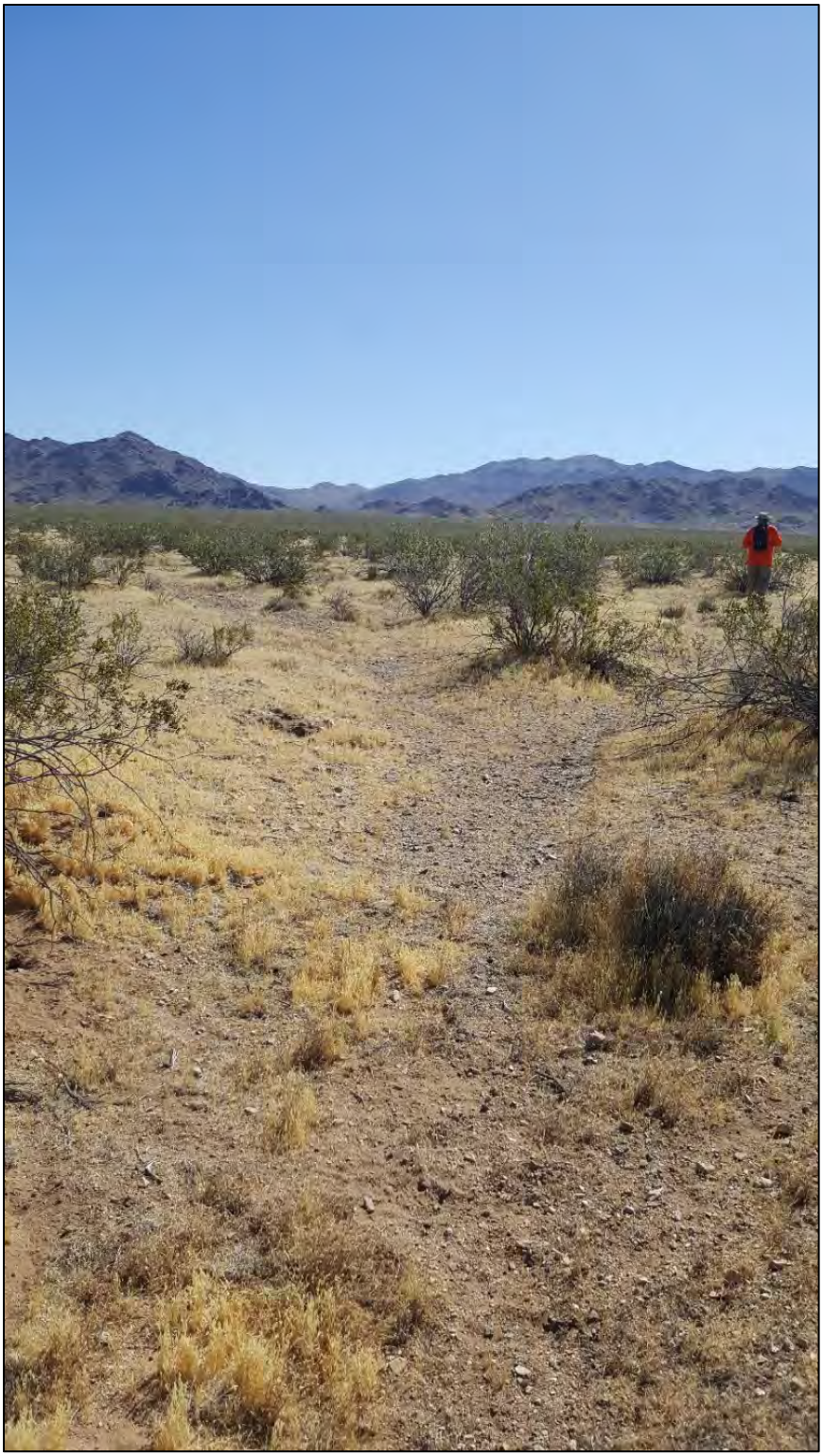

Figure 6. Example of typical erosional features identified during the desktop mapping task for further study. Features similar to this are considered non-jurisdictional.

Figure 7. Example of typical erosional features identified during the desktop mapping task for further study. Features similar to this are considered non-jurisdictional.

Figure 8. Example of typical colluvial feature identified during the desktop mapping task for further study. Features similar to this are considered non-jurisdictional because characteristics did not persist through the landscape.

Figure 9. Example of an aquatic feature with defined bed and bank. Features similar to this are considered jurisdictional.

Figure 10. Example of an aquatic feature with defined bed and bank. Features similar to this are considered jurisdictional.

Figure 11. Example of an aquatic feature with OHWM indicators. Features similar to this are considered jurisdictional.

6.0 REFERENCES

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ATTACHMENT A

Digital Data
(Provided as accompanying electronic files)

Attachment C

Field Data Sheets

Date: 5/8/17
GPS File: AURORADT20170508JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: _____

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0747	End: 1436
J. Renard	Temp* (°F) 6" above ground in shade	Start: 40	End: 76
L. Dorough	Wind (mph)	Start: 0-1	End: 6-10
K. Herbinson	% Cloud Cover	Start: 0	End: 5

Area(s) surveyed

Project Area + 100-ft buffer

Site Information

Project Name: Aurora Solar
Location: Lucerne Valley
County: San Bernardino
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10-meter

Field Observations

Vegetation Communities:

Plants

Creosote bush scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Leopard Lizard	SAPH	CACW
Whiptail	CORA	
Des. Iguana	BTSP	
Black-tailed Jackrabbit	HOLA	

Date: 5/8/17
Recorder: L. Dorough
GPS file: AURORA DT 20170508 JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: _____

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0805	—	—	499342	3834187	KF Burrow - 3 entrances. various aspects average 5x7 old KF scat
2	"	"	"	"	"	Pot. BUOW Owl Burrow
3	0830	Burrow	4	499366	3835038	Under pencil cholla. Poss tortoise ~~2 ft~~ deep ~8" wide 5" tall
4	0857	Burrow	4	499386	3834818	11x7 Poss tortoise. >3ft depth No sign. Possible CPT tracks in burrow
5	"	"	"	"	"	Pot. BUOW Burrow
6	1008	Burrow	BUOW	499431	3835304	7x5 Poss BUOW no sign. E facing
7	1020	Burrow	4	499446	3834861	under creosote, probably KF but no sign. 8x8 - S facing
8	1122	Burrow	KF	499488	3835202	Pot KF burrow. 8x10 1-2ft deep - no sign. under pencil cholla, east facing.
9	1144	Burrow	3	499528	3833820	13x5 >2ft deep. Plants + webs at entrances - Def. TORT
10	1155	Burrow	5	499526	3834158	Poss TORT. OLD KF SCAT at entrance. 14x10 * ~~ft~~ depth
11	1305	Burrow	BUOW	499521	3834379	Pot. Owl Burrow. SW facing. no sign. 9"x6"
12	1325	Burrow	4	499520	3835095	Good condition 11x7, SW facing no DT sign. Coyote scat on top
13	1340	Burrow	BUOW	499568	3835185	Pot. BUOW. no sign. S facing 8x6
14	1352	Burrow	KIT	499545	3834939	Old sign in front. ~~Pot.~~ KF burrow S. facing 12x6
15	"	"	BUOW	"	"	Pot owl Burrow, no owl sign " " "
16	1358	NEST	UNK	499559	3834863	Active tunnel nest in cholla w/ hatchlings. unk. specie
17	1408	Burrow	BUOW	499546	3834426	Pot. owl Burrow. No sign. 7x5 under creosote S. facing
18	1422	Burrow	3	499528	3833820	NW Facing. Debris, webs, plants @ entrance. old TORT. no sign burrow 12x5
19	1426	Burrow	BUOW	499559	3833761	Pot. BUOW Burrow. SW facing. no sign 6x10
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 08MAY17

Desert Tortoise Survey

GPS File: Aurora DT 20170508W

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2017-103

Client: Aspen

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0745	End:
Wendy Turner Corey Mitchell Rachel Woodard Kristen Wasz	Temp* (°F) 6" above ground in shade	Start: 50 F	End:
	Wind (mph)	Start: calm	End:
	% Cloud Cover	Start: 30%	End:

Area(s) surveyed

Site Information

Project Name: Aurora

Location:

County:

Quad:

T_____ R_____ S_____

Parcel #:

UTM Coordinates (NAD 83)

N: [PHOTOS? ___]

E: [PHOTOS? ___]

S: [PHOTOS? ___]

W: [PHOTOS? ___]

Physical Characteristics

Elevation: 3320 Aspect: Soils:

Land Form*: valley floor %Slope: Other:

* e.g. mesa, bajada, wash

Land Uses:

NW: SE:

NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Common Raven

Whitetail

Coachwhips

HOLA

Uta

BT Jackrabbit

ATFL

Date: 08MAY17
Recorder: Wendy Turner
GPS file: Aw

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0755	B		500184	3833654	Complex 4 burrows, no sign LATR
2						Burrowing Owl
3	0755	B		500184	3833654	Kit fox complex old scat 4 burrows
4						
5	0904	B	3	500129	3835002	Possible BUOW, no sign
6	0918	B	5	500154	3834535	Possible BUOW, no sign
7	0925	C	5B	500139	3834357	Old disarticulated bleached ~10 pc.
8	1020	B	4	500118	3835115	Kit fox, BUOW & no sign
9	1025	S	2	500100	3835184	3 pieces
10	1030	T	B	500120	3835228	♀ 230mm at mound
11	1045	C	3	500083	3835301	1-2 years time since death 80mm
12		B		500063	3834976	3 openings White wash, pellets, bones, likely nest
13						Flushed live owl 30m South
14	1105	Live Owl		500074	3834894	Live Owl flushed to burrow (BUOW)
15	1111	B	4	500072	3834821	
16	1118	B	4	500083	3834806	
17	1125	B	4	500073	3834572	
18	1145	B	4	500067	3833896	
19						
20	1301	B		500033	3834220	Kit fox single entry
21	1325	S	3	500025	3835323	2 Adult
22	1333	B	4	500009	3835261	Indeterminate species, no sign
23	1414	B	4	499967	3833663	BUOW, no sign
24	1424	B		499955	3834083	Kit fox complex old sign, not in use
25	1438	B	3	499973	3834664	Mammal, no sign
26	1451	B		499991	3835164	Kit fox single entry
27		B		499925	3834092	BUOW - old kit fox or coyote complex has white wash.
28	1523					
29						
30	1535			500104	3833671	Ordinance?

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/9/17
GPS File: AURORADT 20170509JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004
Client: Aspen

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0640	End: 1500
J. Renard	Temp* (°F) 6" above ground in shade	Start: 56	End: 73
L. Dorough	Wind (mph)	Start: 4-7	End: 2-6
K. Herbinson	% Cloud Cover	Start: 7	End: 45

Area(s) surveyed

Project Area + 100-ft buffer

Site Information

Project Name: Aurora Solar
Location: Lucerne Valley
County: San Bernardino
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10-meter

Field Observations

Vegetation Communities:

Plants

Creosote bush scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Mojave rattlesnake, CORA, SAPH, HOOR, HOLA, Calif. whiptail,

Date: 5/9/17
Recorder: J. Renard
GPS file: AMLORA DT 20170509JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004
Client: ASPEN

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0726	Burrow	BUOW	499581	3833764	W=10" x H=7" x Depth=>2'; possible BUOW burrow
2						under creosote, facing North; deteriorated
3	0849	B	BUOW	499604	3833833	4-entrance, complex, various aspects; W8" x H10" x D >2'
4	0849	B	DKF	"	"	whitewash + owl pellet + kit fox scat
5	0928	B	BUOW	499633	3834152	2-entrance; W6" x H5" x D>1'; various aspects; deteriorated complex; no sign
6	1000	S	2	499679	3835317	Two pieces; Subadult size; CBS, small washes
7	1014	B	3	499670	3834862	W14" x H7" x >2'D, South aspect, under creosote
8	1027	B	BUOW	499666	3834389	no sign; same info as below
9	1027	B	DKF	499666	3834389	2 entrance; various aspect; CBS; DKF scat
10	1041	B	BUOW	499675	3833989	NE aspect; W7" x H6" x >2'D; CBS, in open
11	1116	B	BUOW	499698	3834861	W7" x H5" x >2'D; W aspect; CBS; no sign
12	1124	B	DT/3	499709	3835072	under Ephedra W6" x H5" x >1'D; SW facing
13	1137	B	5	499749	3835286	SW facing, CBS; W9" x H6" x >1'D; under creosote
14	1145	B	5	499746	3835076	W-facing, under creosote; 10" x 5" x 1'D
15	1202	B	DKF	499731	3834275	DKF scat; H10" x W10" x >2'D; under creosote, SW facing
16	1331	B	BUOW	499293	3834040	W9" x H5" x D>1'; under creosote; N-facing; no sign, detiorated
17	1335	B	DKF	499298	3834056	Known active den; one entrance; E-facing; W11" x H9" x >2'D; under creosote
18	1352	B	DKF	499314	3834907	detiorated; 10" x 12" x >1' Deep; NW facing; under cholla
19	1402	B	BUOW	499317	3835190	W8" x H5" x >1'D; no sign; under creosote, SW facing
20	1419	B	BUOW	499288	3835180	W8" x H8" x >2'D; whitewash; ~~under~~ near creosote; NE facing
21	1444	B	BUOW	499293	3834040	W8" x H5" x >1'D; near creosote; N facing; deteriorated; no sign
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Form Updated: 5/5/2017

Date: 09MAY17
GPS File: Ø

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: Aurora
Client: Aspen

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 1530	End: 1715
K. Herbinson R. Woodard C. Mitchell	Temp* (°F) 6" above ground in shade	Start: 73	End: 69F
	Wind (mph)	Start: 2-6	End: 3-5
	% Cloud Cover	Start: 45	End: 80%

Area(s) surveyed

START 499193 3833665
END 499143 3833665

Site Information

Project Name:
Location:
County:
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

HOLA
CORA

Whiptail
Uta stans.

NOT IN GTRIMBLE

Date: 09MAY17
Recorder: K. Hardinson
GPS file: _____

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: Aurora
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	1604	B	BVOW	499191	3835287	waypoint: BVOWB1 2entrances; 2freshpellets; N facing
2					H	8"x8"x>3ft; wh, tewash; fresh digging
3	1605	B	2	499191	3835257	waypt: BVOWB1; W11"xH6"x>3ftD; S facing; CBS
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 09MAY17
GPS File: AuroraDT20170509WT

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: Aurora
Client: Aspen

General Information

Observers:

Wendy Turner
Rachel Woodard
Corey Mitchell

Weather Data

Time (24 hr)	Start: ____	End: ____
Temp* (°F) 6" above ground in shade	Start: ____	End: ____
Wind (mph)	Start: ____	End: ____
% Cloud Cover	Start: ____	End: ____

Area(s) surveyed

Site Information

Project Name:
Location:
County:
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Gambelia wislizzii — Common Raven
Crotalus mitchelli — Ash-throated flycatcher
Aspidoscelus tigris — Prairie Falcon (in hills offsite)
Uta stansburiana — Horned Lark

Date: 09 MAY 17
Recorder: Wendy Turner
GPS file: _____

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: Aurora
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0734			499922	3833700	Ordiance?
2	0745			499906	3834056	Ordinance? Rusty metal
3	0756	B		499924	3834331	Kit fox single entry
4	0827	B	3	499881	3835149	
5	0836	B		499882	3834864	Kit fox single entry
6	0839	B		499884	3834847	~~Kit~~ mammal
7	0843	B		499869	3834798	Old Kit fox complex, one hole good condition
8	0850	B		499879	3834581	Disused Kit fox complex
9	0857	B		499877	3834456	Kit fox single entry
10	0930	B		499829	3834346	~~Kit fox Complex~~ ~~Carcass~~ kit fox
11	1020	B	3	499807	3834825	no sign
12	1048	B		499773	3833711	Old white wash + kit fox scat at
13	1105	B		499793	3833988	No sign Kit fox complex(3) Complex
14	1156	B		499757	3834372	Burrow pellet white wash
15	1207	B		499744	3833945	2 burrows, old kit fox complex, no sign
16	1342	Raven Nest	Active	499254	3833915	
17	1423	GOEA	NEST	499083	3836846	No activity seen, off site nest.
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/10/17
GPS File: AURORA DT 20170510 JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004
Client: Aspen

General Information	Weather Data		
Observers: J. Renard, R. Woodard, L. Dorough	Time (24 hr)	Start: 0650	End: 1435
	Temp* (°F) 6" above ground in shade	Start: 56	End: 77
	Wind (mph)	Start: 0-2	End: 2-6
	% Cloud Cover	Start: 5	End: 2

Area(s) surveyed

Project Area + Buffer (100-ft)

Site Information

Project Name: Aurora Solar
Location: Lucerne Valley
County: San Bernardino
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10-meter

Field Observations

Vegetation Communities:

Plants

Creosote Bush Scrub - Krameria erecta, Yucca shidigera
Eriogonum gracilimum pencil cholla, cholla barrel cactus,
LARTRI, ~~ENCFAR~~, Thamnausma montana Encelia sp., ERICUN
~~ENC~~

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

California whiptail, CACW, HOLA, SWHA (see back), red racer,
UTA STANS, CORA, desert horned lizard

Date: 5/10/17
Recorder: J. Renard
GPS file: AURORA DT 20170510 JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0938	B	5	497421	3835043	SE aspect, 11x6x>1', no sign / recent use, CBS
2	0955	B	DKF	497419	3834422	Various aspects, burrow complex (x4), no sign, CBS, old scat
3	"	"	BUOW	"	"	No BUOW sign
4	1010	B	DKF	497434	3834274	various aspects, burrow complex (x4), 8x10x>2', Recent scat, CBS
5	"	"	BUOW	"	"	No BUOW sign
6	1016	B	DKF	497405	3834241	various aspects, 8x10x>18", burrow complex (x2), CBS, old scat
7	"	"	BUOW	"	"	old whitewash present
8	1023	O	SWHA	497416	3834190	Flying overhead (x1)
9	1105	—	—	497481	3834685	"Ordinance?" —
10	1129	B	DKF	497493	3834324	various aspects, burrow complex (x4), 9x7x>2', old scat, CBS
11	"	"	BUOW	497493	3834324	No BUOW sign
12	1145	B	4	497508	3834803	NE facing, no sign, 10x6x>2', CBS
13	"	"	BUOW	"	"	" , old pellet, "
14	1337	B	DKF	497570	3834513	Various aspects, old scat, burrow complex (x2), avg 6x6x>2' CBS
15	"	"	BUOW	"	"	No BUOW sign
16	1424	B	4	497595	3834125	Suitable for DT, likely dug by coyote, 12x7x>3', E facing, CBS
17	"	"	DKF	"	"	old DKF scat present " "
18	"	"	BUOW	"	"	No BUOW sign
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/10/17
GPS File: AuroraDT20170510.wpt

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

General Information

Observers:

K. Herbinson
W. Turner
C. Mitchell

Weather Data

Time (24 hr)	Start: 0700	End: 1445
Temp* (°F) *6" above ground in shade	Start: 58°	End: 78°
Wind (mph)	Start: 0-3	End: 1-2
% Cloud Cover	Start: 5%	End: 0

Area(s) surveyed

Site Information

Project Name:
Location:
County:
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Raven
Mockingbird
whiptail
Uta lizard
Black-throated sparrow
Ash throated flycatcher
Jackrabbit
Horned lizard

Date: 5/10/17
Recorder: K. Herbinson
GPS file: AuroraDT 20170510 WT

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: ____________
Client: ____________

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0816	B	DKF	499149	3835272	one entrance; W-facing; W7"xH7"x>1'D; CBS
2	0850	B	3	499082	3834530	old tort burrow; W9"xH4"xD12"; under creosote, W-facing
3	0949	B	DKF	499 039	3835321	H10"xW5"xD>30"; CBS; S-facing; coyote scat; DKF scat
4	1020	B	[illegible]	499044	3833845	# entrance; old DKF complex; whitewash, various aspects; owl pellet, DKF scat
5	1084	B	BUOW	499029	3834889	inactive den; no sign; H7"xW4"xD15"
6	1129	B	3	498999	3835231	deteriorated; no sign; W11"xH4"x>2'D; one old scat → 4
7	1148			498973	3834599	Possible ordnance
8	1205	B	DKF	498970	3833762	4 entrance; inactive; very old scat nearby
9	1321			498954	3833674	Possible ordnance
10	1325	B	DKF	498982	3833702	old scat, some fresh digging; 2 entrances; complex under creosote
11	1352	B	DKF	498964	3835101	old den; no sign; V6"xH7"xD20"
12	1402	S	2	498967	3835323	
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/11/17
GPS File: AURORADT20170511JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004
Client: Aspen

General Information

Observers:

J. Renard
R. Woodard
L. Dorough

Weather Data

Time (24 hr)	Start: 0650	End: 1450
Temp* (°F) 6" above ground in shade	Start: 52	End: 82
Wind (mph)	Start: 0	End: 2-7
% Cloud Cover	Start: 1	End: 1

Area(s) surveyed

Project Area + 100-ft buffer

Site Information

Project Name: Aurora Solar
Location: Lucerne Valley
County: San Bernardino
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:

NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Salisaria mexicana, winterfat

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CORA, LOSH (see back), desert horned lizard, white-tailed Antelope squirrel, VERD, Calif. Whiptail, ~~Salisaria mexicana~~

Date: 5/11/17
Recorder: J. Renard
GPS file: AURORA DT20170511JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0904	O	–	497642	3835326	3 LOSH perched on YUCSHI, & calling, CBS
2	0910	–	–	497727	3834880	Ordinance?
3	0911	O	–	497726	3834877	1 LOSH perched on YUCSHI, then flew, CBS
4	0924	~~B~~ B	5	497713	3834397	16x10x>2', W facing, CBS, no sign
5	0924	B	DKF	"	"	Pot. burrow complex (x5), CBS, various aspects, old scat
6	"	"	BUOW	"	"	No BUOW sign.
7	0952	B	2	497757	3834655	8x4x>3', SE facing, CBS, under creosote.
8	1257	B	4	497860	3834365	7x6x>2', N facing, under dense creosote, CBS
9	1402	B	DKF	497924	383~~4~~4966	8x6x3', W facing, near creosote, CBS, old scat.
10	"	"	BUOW	"	"	No BUOW sign.
11	1410	O	BTSP	497936	3835240	BTSP nest (active) w/ 2 eggs. Adult flushed.
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/11/17
GPS File: Aurora DT 20170511wpt

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0700	End: 1500
Wendy Turner Corey Mitchell Kelly Herbinson	Temp* (°F) 6" above ground in shade	Start: 52	End: 82
	Wind (mph)	Start: 0	End: 0-3
	% Cloud Cover	Start: 1	End: 1

Area(s) surveyed

Project Area + 100-ft buffer

Site Information

Project Name: Aurora Solar
Location: Lucerne Valley
County: San Bernardino
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CORA
ATFL
HOOR
HOLA
Western whiptail
Black tailed jack rabbit

Date: 5/11/17
Recorder: Corey
GPS file: Aurora DT 20170511 WT

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0814	B	2	498888	3835121	NW facing, 14w × 5h, >2ft depth No sign observed
2	0845	B		498870	3834101	Kit fox complex, 2 entrances, No sign
3	1037	B		498764	3834425	Known kit fox den, 3 entrances, old scat
4	1048			498780	3834896	Possible ordinance
5	1314	B	2	498696	3835275	Class 3 scat, has been dug out by canid 14w×6h×>3ft
6						NE facing, DKF and coyote scat present
7	1452			498631	3834934	Possible ordinance
8						
9						
10						
11						
12						
13						
14						
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16						
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23						
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25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/12/17
GPS File: AURORADT20170512JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004
Client: Aspen

General Information

Observers:

J. Renard
W. Turner
L. Dorough

Weather Data

Time (24 hr)	Start: 0655	End: 1125
Temp* (°F) 6" above ground in shade	Start: 62	End: 0
Wind (mph)	Start: 3-7	End: 2-6
% Cloud Cover	Start: 0	End: 14

Area(s) surveyed

Project area + 100-ft buffer

Site Information

Project Name: Aurora Solar
Location: Lucerne Valley
County: San Bernardino
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10-meter

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CORA, HOCA, PRFA, whiptail, BTSP,

Date: 5/12/17
Recorder: W. Turner
GPS file: AURORA DT 20170512JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0800	Nest	–	498044	3835088	BTSP Nest w/ 4-5 chicks/eggs, in cholla CBS habitat
2						
3	0832	DKF	B	498089	3834332	Old DKF burrow, 7×7in, 2+ft deep, N facing CBS
4	0835	PRFA	–	498089	3834333	Prairie falcon observed ~½ mile to N, hunting
5	0910	DKF	B	498117	3834982	DKF burrow, old, under creosote, No sign, E facing
6						7×8 in, 1+ft deep
7	0932	DKF	B	498137	3834914	DKF burrow w/ old scat, fresher scat in burrow,
8						8×8in 2+ft deep, E facing
9	0950	DKF	B	498152	3834097	DKF complex, 3 entrances, Recent scat present,
10						good condition, CBS, Approx 10×10in 2+ft deep
11	1000	DKF	B	498168	3834039	Old complex, 1 entrance NE facing, ~~No sign~~
12						16×12in, 2+ft deep, old scat present
13	1020	BUOW	B	498164	3835023	Occupied burrow, white wash, Pellets present, scat
14						condition, SE facing, 9×7in, 4+ft deep, CBS
15	1053	–	–	498184	3834791	Ordinance?
16	1100	DKF	B	498188	3834541	old burrow, S facing, No sign, Under Creosote
17						8×9in, 1.5ft+ deep, semi-deteriorated
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)
1 - Currently active, w/tortoise or recent sign
2 - Good condition, definitely tortoise, no evidence of recent use
3 - Deteriorated condition (describe), definitely tortoise
4 - Good condition, possibly tortoise (describe)
5 - Deteriorated condition, possibly tortoise (describe)

*SCAT
1 - Wet or freshly dried, obvious odor
2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)

1 - Healthy
2 - URTD
3 - Shell Cracked
4 - Peeling scutes
5 - Ticks

A - Foraging
B - Basking
C - In burrow
D - Digging
E - Traveling

*CARCASS

1 - Fresh or putrid
2 - Normal color, scutes adhered to bone
3 - Scutes peeled off bone
4 - Shell bone is falling apart; growth rings on scutes are peeling
5 - Disarticulated and scattered

A - signs of predation
B - No signs of predation

Date: 12MAY2017
GPS File: _____

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: Aurora
Client: Aspen

General Information

Observers:

K. Herbinson
R. Woodard
C. Mitchell

Weather Data

Time (24 hr)	Start: 0700	End: 1615
Temp* (°F) 6" above ground in shade	Start: 65	End: 84
Wind (mph)	Start: 5	End: 6-10
% Cloud Cover	Start: 0	End: 0

Area(s) surveyed

End at 498384, 3833913

Site Information

Project Name:
Location:
County:
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Creosote scrub
Ambrosia
Yucca

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Patchnose snake
BGGN
CORA
CAWR
ATFL
Western whiptail
Coachwhip
VERD
Black-tailed jack rabbit
Antelope ground squirrel

Date: 12 MAY 17
Recorder: K. Herbinson
GPS file: GPX

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: Aurora
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0721	B	BWOW	498600	3834025	BWOWB2=waypoint/old burrow W6"xH8"x24"D; whitewash present
2	0727			498591	3834162	possible ordinance wxpt=ORDN1
3	0740	B	DKF	498584	3834803	wypt: DKF3; deteriorated burrow, old scat; W8"xH8"xD33"; SE Aspect
4	0828	B	DKF	498565	3834324	wypt: DKF4; deteriorated burrow; no sign; W7"xH6"xD60"; SE Aspect
5	1107			498440	3834373	wpt: ORDN5 possible ordinance
6	1146	B	BWOW	498415	3834262	wypt: BWOWB6; deteriorated burrow; DKF scat; whitewash, S facing, W7"xH9"xD>20"
7						
8	1426	T	NA C	498259	3834817	Female adult tortoise in burrow; can't determine health under CYLRAM; approx 50m; waypt=TORT7
9	~~WAYP~~	~~TRACKS~~				
10	1447	P	2	498263	3834151	Freshly dug pallet w/no scat; W10"xH4"x8"D
11						wypt=TORT8; W-facing
12	1455	B	DKF	498254	3833991	~~wypt~~ wypt=DKF9; 4 entrances; DKF old scat; various aspect deteriorated complex
13						
14	1511	S	2	498288	3834163	1 piece wppt=TORT10
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 13 MAY 2017
GPS File: GPX

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: Aurora
Client: Aspen

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0700	End: 1602
R. Woodard	Temp* (°F) 6" above ground in shade	Start: 49	End: 79
C. Mitchell	Wind (mph)	Start: 5	End: 1-3
	% Cloud Cover	Start: 0	End: 0

Area(s) surveyed

Althouse, Lucerne Valley Cutoff.

Site Information

Project Name:
Location:
County:
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:

NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Brassica tornifortii observed

Creosote scrub
AMBROSIA

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

LCTH	Western whiptail
SCOR	Leopard lizard
CORA	Black tailed jack rabbit
VERD	Gopher snake
HOLA	Uta stans.
ATFL	Vulpes macrotis
WIWA	White throated swift
BARS	

Date: 13 MAY 2017
Recorder: Carey Mitchell
GPS file: _____

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: Aurrr
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	705	LCTH		498827	3835250	2 LeConte's thrashers vocalizing Wypt: LCTH11
2	6746	P	2	498356	3834720	10w x 4h x 4d, W facing, Wypt: Tort12
3	0830	B		498326	3834190	Wypt: DKF13 5 entrances, active, recent tracks
4	0836	B	2	498323	3834187	Wypt: TORT14 S facing, 12w x 8h x >2ft
5						burrow is active DKF complex, 2 tortoise modified entrances
6	0843			498336	3834097	Possible ordinance Wypt: ORDN15
7	0953	B		498645	3832961	Wypt: DKF15 5w x 4h x 2ft NE facing
8						old kit fox scat present whitewash present,
9	1123	B		498605	3833204	Wypt: DKF16 8w x 7h x 2f E facing
10	1450	B		498522	3833114	Wypt: DKF17 4 active entrances, recent scat & tracks
11						BUOW pellets present
12	1537	B	2	498506	3833305	Wypt: TORT18 2 modified kit fox complex entries
13						10w x 5h x >7ft 6w x 3h x >4ft.
14	1538	B		498503	3833312	Wypt: DKF19 5 entrances tracks & scat, Coyote scat
15	1556	B		498507	3833715	Wypt: DKF20 Active natal den, 1 live individual
16						observed, lots of recent tracks & scat 9 entrances
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 14MAY2017
GPS File: _____

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: Aurora
Client: Aspen

General Information

Observers:

Rachel Woodard
Corey Mitchell

Weather Data

Time (24 hr)	Start: 0800	End: 1230
Temp* (°F) 6" above ground in shade	Start: 58	End: 81
Wind (mph)	Start: 0-2	End: 1-4
% Cloud Cover	Start: 5	End: 0

Area(s) surveyed

498384, 3837786

Site Information

Project Name:
Location:
County:
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Creosote scrub
AMBDUM
SALMEX

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Vaux's Swift
LOSH
CORA
ATFL
LCTH (same location as yesterday - no waypoint)
VERD
Black-tailed jack rabbit
Horned lizard
Western whiptail

Date: 14MAY2017
Recorder: Corey Mitchell
GPS file: GPX

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: Aurora
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0818	B		498485	3833557	Wypt: DKF21 2 entrances 6"x6"x>3ft & 5"x4"x>2ft
2	0848			498458	3832598	Wypt: VAUX22 Vaux's swift
3	0901	B		498466	3833014	Wypt: DKF23 4w x 5h x >24d 3 entrances old scat
4						
5	0918	B		498465	3833501	Wypt: DKF24 5 entrances old scat No recent activity
6	0918	B	2	498462	3833499	Wypt: TORT25 11w x 5h x 760d 1 modified tortoise entry
7	0951	LOSH		498442	3833055	Wypt: LOSH26 Adult feeding young
8	1113	B		498412	3833343	Wypt: DKF27 8w x 7h x >20d old scat
9	1133	B		498402	3832637	Wypt: DKF28 6w x 7h x x >18d No sign observed
10	1205	B	4	498396	3833654	Wypt: TORT29 Possible tortoise modified entry canid burrow. Old kitfox scat, BUOW pellets & whitewash present
11						
12	1216	B		498384	3833786	Wypt: DKF30 11 entrances, old scat, BUOW whitewash
13						
14						
15						
16						
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23						
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26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/15/2017
GPS File: AuroraDT 20170515JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004
Client: Aspen

General Information

Observers:
Corey Mitchell
John Renard
Adam Schroeder

Weather Data

Time (24 hr)	Start: 0740	End: 1440
Temp* (°F) 6" above ground in shade	Start: 51°F	End: 64°F
Wind (mph)	Start: ~~51°F~~ 3-6 mph	End: 3-6 mph
% Cloud Cover	Start: 5	End: 80

Area(s) surveyed

Project Area + 100-ft buffer

Site Information

Project Name: Aurora Solar
Location: Lucerne Valley
County: San Bernardino
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10-meter

Field Observations

Vegetation Communities:

Plants

Creosote bush scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

COHA, Western Whiptail, HOLA, Antelope ground squirrel, MODO, LOSH (see back page) Coachwhip, Patchnose (need to ID), SAPH, VERD, WTSW, Black tailed Jackrabbit BUGN
↳ Western Patchnosed snake

Date: 05/15/2017
Recorder: A. Schroeder
GPS file: AURORADT20170515JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign[a]	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0749	B	-	497325	3833820	BUOW Burrow, No sign, 7"×6"× >2ft deep, S aspect CBS, near creosote
2	~~0756~~	~~B~~				
3	0833	B	-	497426	3833922	8"×7"×>20", Kit fox burrow, ~~S~~ Wash aspect, under creosote CBS
4	0838	B	-	497406	3833954	Kit fox burrow, No sign, 10"×11"×>24", W aspect, under creosote, CBS, no sign
5	0842	B	-	497407	3833968	Kit fox burrow, 9"×7"×>24", CBS, S ~~B~~ aspect, in open, no sign
6	0921	B	-	497499	3833831	Kit fox burrows (3), old scat, various aspects, 8"×8"×>24", CBS, open in the ~~S~~
7	0925	B	-	497498	3833807	Kit fox burrow, no sign, CBS, 8"×10"×>12", under cheesebush, N aspect
8	0942	Nest	1	497547	3833637	Loggerhead shrike nest in joshua tree, 4 eggs
9	0955	B	5	497542	3834011	Deteriorated burrow, pieces of tortoise egg shell @ mouth, 10"×8"×12" S aspect, under creosote, CBS, no recent sign, old Kit fox scat
10	0958	B	-	497542	3834012	Kit fox burrow, scat present, 10"×8"×12", Same as #9 ~~DT~~ Burrow
11	1030	B	-	497596	3833781	DKF burrow, no sign, CBS, ~~S~~ 7"×9"×24", N Aspect, under ephedra
12	1103	B	-	497640	3833897	DKF Burrow, no sign, CBS, in open, 6"×6"×>30", S aspect
13	1128	B	-	497668	3833763	~~BUOW~~ DKF Burrow, scat present, CBS, various aspects 12"×9"×>12", in open
14	~~1136~~	~~B~~				~~BUOW Burrow, Pellets present, CBS, Various aspects, 12"×9"×12", in open~~
15	1314	B	5	497690	3833429	Possible DT burrow, 8"×4"×24", Deteriorated, No sign, CBS, under creosote NE Aspect
16	1321	B	-	497690	3833360	BUOW Burrow, white wash, pellets, ~~S~~ "×3"×>36", in open, CBS, SE Aspect
17	1323	B	-	497690	3833360	DKF, Scat present, one pellet contained glass " " " " " 4
18	1325	B	2	497690	3833360	DT burrow, no sign ↑ modified DKF " " " " " 4
19	1329	B	-	497686	3833346	BUOW Burrow, 7"×3"×>36", SE aspect, Pellets, white wash, CBS, in open
20	1331	B	2	497686	3833346	DT Burrow, no sign, " " " " " "
21	1359	B	-	497753	3833979	DKF Burrows (4), various aspects, 6"×9"×~~B~~ >24", in open, CBS, Scat present
22	1417	B	-	497749	3833326	~~S~~ DKF ~~Burrow~~, 9"×6"×>24", Scat present, CBS, SW Aspect, Under dead chollo
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[a] T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 15 MAY 2017
GPS File: AURORA DT20170515WT

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103 AURORA
Client: ASPEN

General Information

Observers:

K. Herbinsun
R. Woodard
W. Turner

Weather Data

Time (24 hr)	Start: 0745	End: 1455
Temp* (°F) 6" above ground in shade	Start: 50	End: 65
Wind (mph)	Start: 10-12	End: 10-12
% Cloud Cover	Start: 0	End: 50

Area(s) surveyed

Site Information

Project Name: Aurora Solar
Location:
County:
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10-m

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Coachwhip
Mojave green rattlesnake
Loggerhead shrike LOSH
whiptail
CORA
Jackrabbit
Uta
ATFL
VERDIN
BARS Barn swallow
BTSP

Date: 15 MAY 17
Recorder: K. Herbinson
GPS file: AURORADT20170515WT

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0756	B	DKF	498357	3833068	5 entrance, known DKF den w/scat + tracks; various aspects
2	0815	B	DT5	498320	3832722	W14"×H7"×D>40", part of deteriorated canid complex; no sign
3	0815	B	DKF	498316	3832724	4 entrance; deteriorated DKF complex, ~~no sign~~ DKF U; w/trash
4						W6"×H5"×D>48" avg, id size, old scat + burrow
5	0832	B	DKF	498325	3833171	6-entrance complex w/DKF scat; appears active
6						CBS; avg size W7"×H7"
7	0849	B	DKF	498339	3833781	one entrance, DKF complex (all other entrances collapsed)
8						W6"×H6"×D>36"; old DKF scat; CBS
9	0927	B	DKF	498297	3833004	7 entrance DKF complex w/old scat; CBS
10						avg size W8"×H7"×D>60"
11	1000	O	LOSH	498281	3832903	Loggerhead shrike
12	1047	B	DKF	498213	3832734	W7"×H5"×D>48"; deteriorated burrow; CBS; N-facing
13	1116	B	DKF	498221	3833759	3-entrance; deteriorated complex w/scat; W10"×H5"×D>5 ft.
14	1247	B	4	498182	3833799	W9"×H5"×D18"; deteriorated possible tort burrow; nice W-facing shape
15	1253	B	DKF	498174	3833775	6-entrance known DEN; fresh tracks + scat; H9"×W7'×>2'D
16	1345	B	DKF	498156	3833790	3 entrance deteriorated complex; old DKF scat; W9"×H5"×D>2'
17	1356	B	DKF	498156	3833873	5 entrance deteriorated complex w/old DKF scat;
18						avg W7"×H5"×D>36"; somehare tortoise shape but
19						hard to say if a tort has shaped it.
20	1441			498099	3833554	Possible ordinance
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

All creosote bush scrub!

Form Updated: 5/5/2017

Date: 5/16/2017
GPS File: AURORADT20170516JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004.2
Client: Aspen

General Information

Observers:

J. Renard
A. Schroeder
C. Mitchell

Weather Data

Time (24 hr)	Start: 0717	End: 14:33
Temp* (°F) 6" above ground in shade	Start: 52	End: 78°F
Wind (mph)	Start: 2-5	End: 1-4
% Cloud Cover	Start: 0	End: 10

Area(s) surveyed

Gen-tie + Project Area + 100-ft buffer.

Site Information

Project Name: Aurora Solar
Location: Lucerne Valley
County: San Bernardino
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10-m

Field Observations

Vegetation Communities:

Plants

Creosote bush scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CORA, Speckled rattlesnake, black tailed jackrabbit, SCOR, LOSH (outside work limits), Western whiptail, common side blotched lizard, HOLA, MODO, TOWA, LCTH (see reverse side) Antelope ground squirrel, CAWR

Date: 5/16/17
Recorder: A. Schroeder
GPS file: AURORADT20170516JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004.2
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	1022	B	–	497333	3832418	NO sign, OKF burrow, 10"x 7"x24", CBS, under encelia, E aspect
2	1039	C	5	497351	3832729	Adult, plastron pieces, unable to determine size or sex
3	1041	O	–	497350	3832734	Obsidian point, point facing SE
4	1414	O	–	497470	3832761	6 Adult and Juv LOTH calling ? foraging
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 16MAY17
GPS File: AuroraDT20170516WT

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

General Information

Observers:

R. WOODARD
W. TURNER
K. HERBINSON

Weather Data

Time (24 hr)	Start: 0740	End:
Temp* (°F) 6" above ground in shade	Start: 58	End:
Wind (mph)	Start: 5-8	End:
% Cloud Cover	Start: 0	End:

Area(s) surveyed

Site Information

Project Name:
Location:
County:
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

BT Jackrabbit
Antelope Ground Sq.
Cactus Wren
BTSP LCTH
CORA Verdin
HOLA
LOSH

~~Cho~~ Coachwhip
Vta.
Whiptail

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Date: 16 MAY 17
Recorder: R. WOODARD W. Tumes
GPS file: AURORADT20170516WT

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0800	LOSH		498070	3832918	2 calling
2	0820	DKF	6x8x>2"	498038	3833496	Complex, mostly deteriorated 1 opening
3	0933	LOSH		497953	3833724	1 Adult
4	1131	B	5	497796	3833488	S face, 9x5x>14
5	1348	B	BUOW	498954	3831663	White wash, 3 entry, old DKF scat.
6	1415	B	BUOW	498889	3831864	White wash + pellets (lots) 4 entry
7	1425	S	1	498867	3831547	2 very fresh scat
8	1450	LCTH	Live	498781	3831527	1 Adult
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/17/17
GPS File: AURORA DT 20170517 JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004.2
Client: Aspen

General Information

Observers:

J. Renard
A. Schroeder
R. Woodard

Weather Data

Time (24 hr)	Start: 0707	End: 1442
Temp* (°F) 6" above ground in shade	Start: 54	End: 73
Wind (mph)	Start: 10-15	End: 10-20
% Cloud Cover	Start: 15	End: 0

Area(s) surveyed

Project Area + 100-ft buffer

Site Information

Project Name: Aurora Solar
Location: Lucerne Valley
County: San Bernardino
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N:
E:
S:
W:

[PHOTOS? ___]
[PHOTOS? ___]
[PHOTOS? ___]
[PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:

NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [(N)]
Transect Width: 10-m

Field Observations

Vegetation Communities:

Plants

Creosote bush scrub,

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CACW
WEKI, HOLA, CORA, ~~ERGR~~, Coachwhip, LCTH (see reverse side), Western whiptail, black tailed jackrabbit, Antelope squirrel, BARS (barn swallow), BTSP, common side-blotched lizard

Date: 5/17/17
Recorder: A. Schroder
GPS file: AURORADT 20170517JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004.2
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign[3]	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0849	O	–	497560	3833113	Fire ring, old cans
2	0945	B	–	497581	3832188	DKF Burrow, no sign, 7"x9"x>18", CBS, in open, SW Aspect, in open
3	1012	O	–	497604	3832824	LCTH observation, Adult foraging
4	1039	B	–	497616	3832819	DKF Burrow, 8"x8"x24", old scat, CBS, under creosote, NE Aspect
5	1041	B	–	497616	3832819	BWOW Burrow " " , old whitewash, " " " "
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[3] T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 17 MAY 17
GPS File: AURORA DT 20170517WT

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017103
Client: ASPEN

General Information

Observers:

K Herbonson
W Turner
C Mitchell

Weather Data

Time (24 hr)	Start: 0745	End: 1452
Temp* (°F) 6" above ground in shade	Start: 55	End: 73
Wind (mph)	Start: 10-15	End: 10-20
% Cloud Cover	Start: 30	End: 0

Area(s) surveyed

Site Information

Project Name:
Location:
County:
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation:
Aspect:
Soils:
Land Form*:
%Slope:
Other:
* e.g. mesa, bajada, wash

Land Uses:
NW:
NE:
SE:
SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

La Contes Thrasher [redacted] LCTH
CORA
HOLA
[redacted] BTSP
Jackrabbit
Whiptail
Woodrat
Barn swallow BRSW
UTA
Antelope ground squirrel

Date: 17 MAY 17
Recorder: K HERBINSON
GPS file: AURORADT20170517 WT

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017103
Client: ASPEN

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	1002	B	5	498528	3832043	old, deteriorated possible tort burrow; S facing; W8"xH4"xD12"
2	1328	B	DKF	498371	3832427	H10"xW10"xD>24"; W facing; one entrance; no sign
3	1351	—	—	498339	3832462	Possible ordinance
4	1410	O	BIRD	498314	3832359	LaConte's Thrasher
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)
1 - Currently active, w/tortoise or recent sign
2 - Good condition, definitely tortoise, no evidence of recent use
3 - Deteriorated condition (describe), definitely tortoise
4 - Good condition, possibly tortoise (describe)
5 - Deteriorated condition, possibly tortoise (describe)

*SCAT
1 - Wet or freshly dried, obvious odor
2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)

1 - Healthy	A - Foraging
2 - URTD	B - Basking
3 - Shell Cracked	C - In burrow
4 - Peeling scutes	D - Digging
5 - Ticks	E - Traveling

*CARCASS

1 - Fresh or putrid	A - signs of predation
2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Scutes peeled off bone	
4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Disarticulated and scattered	

Date: 5/18/17
GPS File: AURORADT 20170518JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004.2
Client: Aspen

General Information

Observers:

J. Renard
A. Schroeder
K. Herbinson

Weather Data

Time (24 hr)	Start: 0720	End: 1145
Temp* (°F) 6" above ground in shade	Start: 60	End: 78
Wind (mph)	Start: 0-1	End: 0-1
% Cloud Cover	Start: 0	End: 0

Area(s) surveyed

Project Area + 100-ft buffer

Site Information

Project Name: Aurora Solar
Location: Lucerne Valley
County: San Bernardino
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:

NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10-m

Field Observations

Vegetation Communities:

Plants

Creosote bush scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CORA, HOLA, BARS, common side-blotched lizard, desert woodrat, California whiptail, CACW

Date: 5/18/17
Recorder: J. Renard
GPS file: AURORA DT 20170518JR

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103/004.2
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign[3]	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0804	B	DKF	497765	3832051	Pot DKF burrow, no sign, CBS, 9x6x>24", Facing E, very little old whitewash
2	1055	B	5	497911	3831618	Pot DT burrow, 8x5x>1.5', CBS, Facing W, no sign
3						
4						
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[3] T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 18MAY2017
GPS File: Aurora DT 2017 05 18 WT

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

General Information

Observers:

W. Turner
R. Woodard
C. Mitchell

Weather Data

Time (24 hr)	Start: 0730	End: 1150
Temp* (°F) *8" above ground in shade	Start: 60	End: 78
Wind (mph)	Start: 0-1	End: 0-2
% Cloud Cover	Start: 0	End: 0

Area(s) surveyed

Site Information

Project Name:
Location:
County:
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

HoLA — Western wood-pewee
CAWR — BTSP
~~BBSW~~ Barn swallow — CORA
Uta stans.
Western whiptail
Speckled rattlesnake
Black-tailed jackrabbit
Antelope ground squirrel

Date: 18MAY2017
Recorder: C. Mitchell
GPS file: Aurora DT 20170518WT

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0915	C	5	498122	3831583	≈25 pieces scattered under YUCSCH
2						Est MCL 170 TSD >4 yrs
3	0942	B		498129	3832611	11 w x 6h x >4ft d NE facing BUOW pellets + whitewash
4	0957	American Badger		498103	3832336	Isolated badger dig at rodent burrow
5						
6						
7						
8						
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11						
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28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 4/13/2020
GPS File: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

General Information		Weather Data	
Observers: Lauren Simpson	Time (24 hr)	Start: 0853	End: 1523
Caroline Garcia	Temp* (°F) 6" above ground in shade	Start: 62	End: 68
Greg Hampton	Wind (mph)	Start: 0-4	End: 1-5
Michael Turna	% Cloud Cover	Start: 80	End: 60

Area(s) surveyed

Southern Gen-Tie Line

Site Information

Project Name: Stagecoach		
Location: Lucerne Valley		UTM Coordinates (NAD 83)
County: San Bernardino		N: [PHOTOS? ___]
Quad:		E: [PHOTOS? ___]
T_____ R_____ S_____		S: [PHOTOS? ___]
Parcel #:		W: [PHOTOS? ___]

Physical Characteristics

Elevation: Various	Aspect: "		Soils: "
Land Form*: "	%Slope: "		Other: "
* e.g. mesa, bajada, wash			
Land Uses:			
NW: Scattered Residential + open space			SE: "
NE: "			SW: "

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

OHV use, Dumping, Ravens

Is site staked or marked? [Y] [N]
Transect Width: 10-m

Field Observations

Vegetation Communities:

Plants Creosote bush scrub, disturbed

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Common Raven
White-crowned sparrow
Barn swallow
Black-throated sparrow
Loggerhead shrike (3) 34.5599908 -116.9633257333
Whiptail lizard
White-tailed antelope squirrel

Burrowing owl (B) - whitewash + pellets
34.55576403 -116.963285

Date: 4/13/2020
Recorder: Lauren Simpson
GPS file: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2			NO DT Data Recorded			
3						
4						
5						
6						
7						
8						
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26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 4/14/2020
GPS File: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

General Information		Weather Data	
Observers: Lauren Simpson	Time (24 hr)	Start: 0722	End: 1445
Greg Hampton	Temp* (°F) 6" above ground in shade	Start: 47	End: 64
Caroline Garcia	Wind (mph)	Start: 1-3	End: 8-10
Michael Tuma	% Cloud Cover	Start: 20%	End: 0%

Area(s) surveyed

Northern Gen-Tie Line

Site Information

Project Name: Stagecoach		
Location: Lucerne Valley	**UTM Coordinates** (NAD 83)	
County: San Bernardino	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T_____ R_____ S_____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation: various	Aspect: "	Soils: "
Land Form*: "	%Slope: "	Other: "
* e.g. mesa, bajada, wash		
Land Uses:		
NW: scattered residential - open space		SE: "
NE: "		SW: "

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

OHV use, dumping, Ravens

Is site staked or marked? [Y] [N]
Transect Width: 10-m

Field Observations

Vegetation Communities:

Plants

Creosote bush scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

horned lark
common raven
black-throated sparrow
white-crowned sparrow
blue-gray gnatcatcher
whiptail
leopard lizard
coyote (B, S)
kangaroo rat (C)
Thrasher sp.
Black-tailed Jackrabbit
Desert kit fox (B)
Coyote Den w/ Burrow sign: 34.614273 -116.975029 66667
DKF Den w/ owl sign: 34.610199 -116.971642 033333

Date: 4/14/2020
Recorder: Caroline Garcia
GPS file: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2						
3				NO DT	Data Recorded	
4						
5						
6						
7						
8						
9						
10						
11						
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30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 4/15/20
GPS File: Colleeder

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

General Information

Observers: Lauren Simpson
Corey Hampton
Caroline Garcia
Max Murray

Weather Data

Time (24 hr)	Start: 0730	End: 1515
Temp* (°F) 6" above ground in shade	Start: 45°F	End: 80
Wind (mph)	Start: 0	End: 1-3
% Cloud Cover	Start: 0	End: 0

Area(s) surveyed

Southern Solar field

Site Information

Project Name: Stagecoach Solar
Location: Lucerne Valley
County: San Bernardino
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: varies
Aspect:
Land Form*:
%Slope:
* e.g. mesa, bajada, wash

Soils:
Other:

Land Uses:

NW: scattered residential - open space
NE: "
SE: "
SW: "

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

OHV, trash, ravens

Is site staked or marked? [Y] (N)
Transect Width: 10-m

Field Observations

Vegetation Communities:

Plants Creosote Bush Scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

MODO - mourning dove
CAWR - cactus wren
CORA - common raven
ATFL - ash-throated flycatcher
BTSP - black-throated sparrow
WCSP - white-crowned sparrow
BARS - barn swallow
whiptail lizard
side-blotch lizard
woodrat
jackrabbit
Mojave green
COTA - costa's hummingbird

Date: 4/15/2020
Recorder: Greg Hampton
GPS file: collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2			NO	DT Data	Observed	
3						
4						
5						
6						
7						
8						
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29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 4/16/2020
GPS File: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

General Information		Weather Data	
Observers: Lauren Simpson	Time (24 hr)	Start: 0715	End: 1530
Greg Hampton, Max Murray	Temp* (°F) 6" above ground in shade	Start: 62	End: 75
Michael Fluma	Wind (mph)	Start: 1-5	End: 1-5
Caroline Garcia	% Cloud Cover	Start: 0	End: 5

Area(s) surveyed

Central Solar Field

Site Information

Project Name: Stagecoach		
Location: Lucerne Valley	UTM Coordinates (NAD 83)	
County: San Bernardino	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T_____ R_____ S_____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation: Various	Aspect:		Soils:
Land Form*:	%Slope:		Other:
* e.g. mesa, bajada, wash			
Land Uses:			
NW: scattered residential - open space			SE: "
NE: "			SW: "

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

OHV, trash, Ravens

Is site staked or marked? [Y] [N]
Transect Width: 10-m

Field Observations

Vegetation Communities:

Plants

Creosote bush scrub, succulent scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

white-crowned sparrow	painted lady	burrowing owl (B) 34.624695 -117.000002
black-throated sparrow	side-blotched lizard	
verdin	antelope squirrel	
Jackrabbit	common raven	
Coachwhip	horned lark	
Barn Swallow	Cactus wren	
cliff swallow	orange-crowned warbler	
ash-throated flycatcher	blue-gray gnatcatcher	

Date: 4/16/20
Recorder: Max Murray
GPS file: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2						
3						NO DT Data Recorded
4						
5						
6						
7						
8						
9						
10						
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30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 4/17/20
GPS File: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

General Information

Observers: Lauren Simpson, Greg Hampton, Caroline Garcia, Max Murray, Michael Tuma

Weather Data

	Start	End
Time (24 hr)	0700	1300
Temp* (°F) 6" above ground in shade	52	59
Wind (mph)	1-3	8-10
% Cloud Cover	40	100

Area(s) surveyed

Solar field - Southern

Site Information

Project Name: Stackpack
Location: Lucerne Valley
County: San Bernardino
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: varies
Aspect:
Soils:
Land Form*:
%Slope:
Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: scattered residential - open space
NE: "
SE: " "
SW: "

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]
OHV, trash, raven)

Is site staked or marked? [Y] [N]
Transect Width: 10-m

Field Observations

Vegetation Communities:
Plants creosote bush scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Horned lark
black-throated sparrow
red-tailed hawk
kingsnake
Costa's hummingbird
bumble bee
collared lizard
Le Conte's thrasher
jackrabbit
side-blotched lizard
ash-throated flycatcher
mourning dove
cactus wren

Date: 4/17/2020
Recorder: Caroline Garcia
GPS file: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0926	C	5	34.61450013	-117.02082367	Piece of shell fragment, likely from female ~210 mcl. Potentially dropped by golden eagle
2						
3						
4						
5						
6						
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29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 4/20/2020
GPS File: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

General Information		Weather Data	
Observers: Lauren Simpson	Time (24 hr)	Start: 0830	End: 1615
Max Murray	Temp* (°F) 6" above ground in shade	Start: 62	End: 72
Taylor Dee	Wind (mph)	Start: 0-3	End: 1-5
Caroline Garcia	% Cloud Cover	Start: 0	End: 25
Michael Tuma			

Area(s) surveyed

Solar Field

Site Information

Project Name: Stagecoach			
Location: Lucerne Valley		UTM Coordinates (NAD 83)	
County: San Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T_____ R_____ S_____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation: Varies	Aspect:		Soils:
Land Form*: "	%Slope:		Other:
* e.g. mesa, bajada, wash			
Land Uses:			
NW: open space -	scattered	residential	SE: "
NE: "			SW: "

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

OHV, trash, ravens

Is site staked or marked? [Y] [N]
Transect Width: 10-m

Field Observations

Vegetation Communities:

Plants creosote bush scrub, Chenopod scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

horned lark
black-throated sparrow
common raven
mourning dove
ash-throated flycatcher
cactus wren
verdin
yellow-rumped warbler
white-crowned sparrow
blue-gray gnatcatcher
Brewer's sparrow
Northern mockingbird
gopher snake
antelope squirrel
jackrabbit
woodrat

Loggerhead Shrike: 34.6209213 -117.02494086667

canid den - no sign: 34.6237432 -116.99933163333

Date: 4/20/2020
Recorder: Max Murray
GPS file: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2						NO DT Data Recorded
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 4/21/2020
GPS File: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

General Information		Weather Data	
Observers: Lauren Simpson	Time (24 hr)	Start: 0700	End: 1500
Michael Tuma	Temp* (°F) 6" above ground in shade	Start: 53	End: 68
Max Murray	Wind (mph)	Start: 1-7	End: 5-10
Taylor Dee	% Cloud Cover	Start: 50	End: 25
Caroline Garcia			

Area(s) surveyed

Solar Field

Site Information

Project Name: Stagecoach	
Location: Lucerne Valley	UTM Coordinates (NAD 83)
County: San Bernardino	N: [PHOTOS? ___]
Quad:	E: [PHOTOS? ___]
T____ R____ S____	S: [PHOTOS? ___]
Parcel #:	W: [PHOTOS? ___]

Physical Characteristics

Elevation: various	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW: scattered residential - open space	SE: "
NE: "	SW: "

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

OHV, trash, ravens

Is site staked or marked? [Y] [N] (circled)

Transect Width: 10-m

Field Observations

Vegetation Communities:

Plants Creosote succulent scrub + Disturbed

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Burrowing owl (B,S,O) - 2 burrows 1 owl flushed: 34.6271248666667 / -117.0285290333333 | 34.627138266667 / -117.028599833333

blue-gray gnatcatcher

common raven	red-tailed hawk	black-headed grosbeak	canid den - no sign
horned lark	rock wren	Le Conte's thrasher	34.6246394
black-throated sparrow	mourning dove	side-blotched lizard	-117.0264163
cactus wren	desert tortoise (O,B)	whiptail	
white-crowned sparrow	woodrat		
ash-throated flycatcher	black-tailed jackrabbit	leopard lizard	
rufous-crowned sparrow	Antelope squirrel	barn swallow	

Date: 4/21/2020
Recorder: Max Murray
GPS file: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0930	T/B	1	34.63164 43	-117.02805500	DT-1 195mcl, been chewed on, basking outside of shelter, NE facing, female
2						
3						
4	1015	B	2	34.62943693	-117.02742053	E facing burrow ~2.5ft deep 5" tall 8" wide
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
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28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 4-22-20
GPS File: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

General Information

Observers: Lauren Simpson
Taylor Dee
Nick Murray
Caroline Garcia
Michael Tuma

Weather Data

Time (24 hr)	Start: 0700	End: 1500
Temp* (°F) 6" above ground in shade	Start: 58°	End: 80°
Wind (mph)	Start: 0-1	End: 11
% Cloud Cover	Start: 0	End: 0

Area(s) surveyed

Solar field
Gen-tie line

Site Information

Project Name: Stagecoach
Location: Lucerne Valley
County: San Bernardino
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation:
Aspect:
Land Form*:
%Slope:
* e.g. mesa, bajada, wash
Soils:
Other:

Land Uses:
NW: scattered residential - open space
NE: "
SE: "
SW: "

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

OHV, trash, ravens

Is site staked or marked? [Y] [N]
Transect Width: 10-m

Field Observations

Vegetation Communities: Creosote bush scrub
Plants: Creosote bush scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

WCSP CORA snow pot. burrow in canid den: 34.6085985 -116.9713304 6667
HOLA zebra-tailed lizard
BTSP antelope gr. sq. canid den: 34.6024540333 -116.9707079 66667 & 34.6014694333 -116.9715679333
BT *DETO
Jackrabbit & 34.5911621533 -116.9618295333 & 34.5897717 6667 -116.9622601 6667
Whitetail (HB)
Sideblotch lizard

Date: 4-22-20
Recorder: Caroline Garcia
GPS file: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0803	C	4, A	34.62889110	-116.99897480	Female, signs of domestic dog predation
2		~~C~~	~~4~~			165mcl
3	0915	B	4	34.60576960	-116.97225957	BUOW sign (pellets, feathers, white wash)
4						Fresh entrails. 10"wide x 6"high x 2'deep
5						NW facing
6	0940	P	1	34.60606173	-116.9714972	Pallet, small tortoise, fresh tracks, evidence of use
7						last night, N facing, 6" x 5" x 6" deep
8	0948	B	4	34.60534183	-116.97173030	East facing 12"x6"x 2' + deep; white wash present
9						in old kit fox den.
10	1024	T		34.60800233	-116.97111186	Female, 215mcl, Previous laminae damage
11						that has healed over. Unusual. Healthy.
12	~~0000~~					
13						
14						
15						
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22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 4/23/2020
GPS File: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

General Information		Weather Data	
Observers: Lauren Simpson	Time (24 hr)	Start: 0715	End: 1400
Taylor Dee	Temp* (°F) 6" above ground in shade	Start: 64	End: 83
Caroline Garcia	Wind (mph)	Start: 0-1	End: 1-2
Max Murray	% Cloud Cover	Start: 0	End: 0

Area(s) surveyed

Gen-tie line

Site Information

Project Name: Stagecoach	
Location: Lucerne Valley	UTM Coordinates (NAD 83)
County: San Bernardino	N: [PHOTOS? ___]
Quad:	E: [PHOTOS? ___]
T_____ R_____ S_____	S: [PHOTOS? ___]
Parcel #:	W: [PHOTOS? ___]

Physical Characteristics

Elevation: various	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW: scattered residential - open space	SE: "
NE: "	SW: "

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

dumping, dogs, OHV

Is site staked or marked? [Y] [N] (N circled)

Transect Width: 10-m

Field Observations

Vegetation Communities:

Plants Creosote bush scrub, Disturbed

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

lesser goldfinch	ash-throated flycatcher	BUOW pot. burrow w/ sign
ladder backed woodpecker	whiptail	: 34.59809741
verdin	blue-gray gnatcatcher	-116.9684980333
horned lark	say's phoebe	Canid den: 34.5817428
common raven	cliff swallow	-116.9620723333
barn swallow	black-throated sparrow	
California ground squirrel		
black-tailed jackrabbit		

Form Updated: 11/5/2018

Date: 4/23/2020
Recorder: Taylor Dee
GPS file: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-107
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2						
3				No DT	Sign detected	
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Rare Plant Survey Form

Date: 5/10/17 Project # 2017-103

Project Name Aurora

Surveyor Names: Greg H., Carley L., Josh C.

Location(s): Northern

SURVEY CONDITIONS				
	Time	**Temp (F)**	**Wind (mph)**	**% Cloud Cover**
START	0830	64.5	1-2	25
END	1530	83	3-5	5

RARE PLANT DATA		
SPECIES	GPS COORDINATES	NOTES (veg community, population size, etc.)
DETO	3835300 N 500053E	Sent coords to DETO survey team → Juvenile DETO shell
Potential Burrow	3835166 N 499798E	Looks old

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Rare Plant Survey Form

Date: 5/12/17

Project # 2017-103

Project Name Aurora Rare plant

Surveyor Names: Greg H., Carley L.

Location(s): _____

SURVEY CONDITIONS				
	Time	**Temp (F)**	**Wind (mph)**	**% Cloud Cover**
START	0720	61	5-10	0
END	1120	75	5-15	0

RARE PLANT DATA		
SPECIES	GPS COORDINATES	NOTES (veg community, population size, etc.)
LETH	3834115N 499448E	Nest w/ one egg in Cholla cactus

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Rare Plant Survey Form

Date: 5/11/17

Project # 2017-103

Project Name Aurora Rare Plant

Surveyor Names: Greg H., Carley L.

Location(s): _____

SURVEY CONDITIONS				
	Time	**Temp (F)**	**Wind (mph)**	**% Cloud Cover**
START	0700	56	0-3	5
END	1520	85	0-3	2

RARE PLANT DATA		
SPECIES	GPS COORDINATES	NOTES (veg community, population size, etc.)
UNK	3835095N 499519E	Potenial burrow—Good cond. Coyote scat present
LETH	3834537N 498710E	Seen on ground in creosote bush scrub

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Rare Plant Survey Form

Date: 3/16/20

Project # 2017-103

Project Name Stagecoach Solar

Surveyor Names: Greg H., Caroline G., Carley L.

Location(s): Gen-tie line

SURVEY CONDITIONS				
	Time	Temp (F)	Wind (mph)	% Cloud Cover
START	0835	45	1-2	15
END	1430	48	1-2	30

RARE PLANT DATA		
SPECIES	GPS COORDINATES	NOTES (veg community, population size, etc.)

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Rare Plant Survey Form

Date: 3/17/20 Project # 2017-103

Project Name Stagecoach Solar

Surveyor Names: Grey H., Caroline Gr., Carley L.

Location(s): Gen-Tie

SURVEY CONDITIONS				
	Time	Temp (F)	Wind (mph)	% Cloud Cover
START	0730	39	5-15	15
END	1410	50	5-10	15

RARE PLANT DATA		
SPECIES	GPS COORDINATES	NOTES (veg community, population size, etc.)

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Rare Plant Survey Form

Date: 3/18/20

Project # 2017-103

Project Name Stagecoach Solar

Surveyor Names: Corey H., Caroline G., Lauren S.

Location(s): Solar Field / Gen-tie

SURVEY CONDITIONS				
	Time	Temp (F)	Wind (mph)	% Cloud Cover
START	0750	34	1-3	80
END	1630	58	1-5	15

RARE PLANT DATA		
SPECIES	GPS COORDINATES	NOTES (veg community, population size, etc.)

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Rare Plant Survey Form

Date: 3/19/20 Project # 2017-103

Project Name Stagecoach Solar

Surveyor Names: Greg H., Cordine Cr., Lauren S.

Location(s): Solar Field

SURVEY CONDITIONS				
	Time	Temp (F)	Wind (mph)	% Cloud Cover
START	0745	37	5-15	0
END	1200	45.	5-10	10

RARE PLANT DATA		
SPECIES	GPS COORDINATES	NOTES (veg community, population size, etc.)

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Rare Plant Survey Form

Date: 5/12/20 Project # 2017-103

Project Name Stagecoach Solar

Surveyor Names: Greg H., Max M., Caroline G., Carley L.

Location(s): Solar Field

SURVEY CONDITIONS				
	Time	Temp (F)	Wind (mph)	% Cloud Cover
START	0723	55	1-8	5
END	1600	74	20-25	15

RARE PLANT DATA		
SPECIES	GPS COORDINATES	NOTES (veg community, population size, etc.)

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Rare Plant Survey Form

Date: 5/13/20

Project # 2017-103

Project Name Stagecoach Solar

Surveyor Names: Greg H., Max M., Caroline G., Carley L.

Location(s): Solar Field

SURVEY CONDITIONS				
	Time	Temp (F)	Wind (mph)	% Cloud Cover
START	0710	50	20	2
END	1500	70	25	0

RARE PLANT DATA		
SPECIES	GPS COORDINATES	NOTES (veg community, population size, etc.)
Incidental Desert Tortoise	-117.01469070, 34.62059665	Adult male, healthy, 200 mcl 1120
Incidental DT Carcass	-117.01474717 34.62114984	Category 5
Incidental DT Carcass	-117.01443042, 34.61601237	Category 5, Disarticulated
Incidental 3 Shrikes observed	-117.01109080S 34.619541307	Pair of Loggerhead Shrikes
Incidental LeConte's Thrasher	-117.01761695967 34.63232709	1 Le Conte's Thrasher and 1 nest w/ 4 eggs observed.

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Rare Plant Survey Form

Date: 5/14/20

Project # 2017-103

Project Name Stagecoach Solar

Surveyor Names: Greg H., Max M., Caroline G., Taylor D.

Location(s): Additional Solar Field

SURVEY CONDITIONS				
	Time	Temp (F)	Wind (mph)	% Cloud Cover
START	0725	54	8-10	0
END	1525	79	13-17	20

RARE PLANT DATA		
SPECIES	GPS COORDINATES	NOTES (veg community, population size, etc.)

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Rare Plant Survey Form

Date: 5/15/20

Project # 2017-103

Project Name Stagecoach Solar

Surveyor Names: Greg H., Max M., Caroline G., Taylor D.

Location(s): Solar Field Spot checks / Gen-tie line

SURVEY CONDITIONS				
	Time	Temp (F)	Wind (mph)	% Cloud Cover
START	0730	59	8-10	0
END	1200	77	3-5	0

RARE PLANT DATA		
SPECIES	GPS COORDINATES	NOTES (veg community, population size, etc.)

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Rare Plant Survey Form

Date: 5/18/20

Project # 2017-103

Project Name Stagecoach Solar

Surveyor Names: Greg H., Cardine G., Lexi D.

Location(s): Gen-tie line

SURVEY CONDITIONS				
	Time	Temp (F)	Wind (mph)	% Cloud Cover
START	0730	64	6-8	5
END	1330	80	8-10	15

RARE PLANT DATA		
SPECIES	GPS COORDINATES	NOTES (veg community, population size, etc.)

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Rare Plant Survey Form

Date: 5/19/20

Project # 2017-103

Project Name Stagecoach Solar

Surveyor Names: Grey H., Caroline G., Lexi D.

Location(s): Gen-tie Line

SURVEY CONDITIONS				
	Time	Temp (F)	Wind (mph)	% Cloud Cover
START	0810	53	3-5	60
END	1100	60	6-8	5

RARE PLANT DATA		
SPECIES	GPS COORDINATES	NOTES (veg community, population size, etc.)
Funastrum utahense	-116.96327243 34.86493633	2 specimens w/in gen-tie buffer in southern portion of project. CBS, Sandy-gravelly soil.

Greg H.
Caroline G.
Lexi D.

Stagecoach Substation & Preferred

5/19/20 START 1117, 61°F, 5% CC, 6-8 mph winds END 1315 66°F, 5% CC, 7-9 mph winds

Soil type: gravelly sand, relatively flat

Veg type: saltbush scrub disturbed

↓ transition into creosote scrub at western end

(Preferred Substation)

NATIVE

ATR POL	HIL RIG	AMB DUM	LUP ODO	LYC AND
CHA SP.	MAL GLA	LAR TRI	CHA FRE	AMB ACU
ERE BOO	CRY MIC	AMS TES	LYC COO	TIQ PLI
AMB SAL	ACA SPH	MEN SP.	LEP LAS	ALB MAR
RAF NEO	LOE MAT	EPH NEV	CRY SP.	ERI SP.
CHO BRE	CRY ANG	STE PAU	KRA LAN	
		LUP CON	GRA SPI	
			CYL ECH	

NON NATIVE

ERO CIC
SCH BAR
BRO MAD
BRA TOU
SYS ORI

Notes: Disturbed saltbush scrub.
multiple dirt roads through site.
Powerline towers present.
Western end in transition into creosote scrub

WILDLIFE

CORA BTSP
Whiptail
Zebratail
Antelope gr. sq.

Alternative Substation

Not accessible
most likely creosote bush scrub based on scanning w/ binoculars

- Preferred viewed from Barstow and Fern Road
- No sensitive species of plants or wildlife observed.

Attachment D

Surveyor Resumes

Josh Corona-Bennett

Senior Restoration Ecologist

Mr. Corona-Bennett has over 24 years of experience in project management, native habitat restoration, biological resource studies and surveys, environmental permitting, and construction monitoring. He has been managing projects since 2003 for a variety of clients including federal/state/local governments, utility companies, and private developers. As Restoration Ecologist he has designed, implemented, and managed habitat restoration projects in the southern California region including the coastal ranges to the Mojave Desert and south to the Mexican border. He has written habitat mitigation and monitoring plans, supervised habitat restoration implementation, conducted horticultural and botanical monitoring, prepared as-built and annual monitoring reports, and coordinated with resource agencies, including the acceptance phase (sign-off). Mr. Corona-Bennett has also conducted several biological resource surveys for listed plant and animal species, as well as vegetation community mapping. He has led numerous rare plant survey efforts for projects including alternative energy, transportation, public works, and utility in counties including San Diego, Imperial, Los Angeles, Riverside, Kern, and San Bernardino. He has experience conducting protocol surveys for Mojave Desert tortoise, arroyo toad, western burrowing owl, coastal California gnatcatcher, cactus wren, least Bell's vireo, southwestern willow flycatcher, San Diego fairy shrimp, and Riverside fairy shrimp. He has experience preparing applications for permits issued by the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board, and California Department of Fish and Wildlife. Mr. Corona-Bennett has also worked as a construction monitor for various projects in San Diego, Riverside, and Los Angeles Counties, monitoring construction crews during geotechnical drilling investigations, pipeline replacements, energy infrastructure upgrades (including pole replacement and wire stringing), and bridge widening projects. He has also conducted wetland delineations using the USACE Regional Supplement, Arid West.

Education

B.S., Biology, Emphasis in Ecology, San Diego State University, California

Registrations, Certifications, Permits and Affiliations

- Responsible Managing Employee (RME) for ECORP C-27 (License # 985426)
- CDFW Scientific Collecting Permit (SC-009176) – Valid Through 09/06/2020
- Authorized Independent Surveyor under USFWS Recovery Permit for Listed Vernal Pool Branchiopods (TE-012973-12 exp. 8/7/2022)
- California Department of Fish and Wildlife Authorization to Collect Voucher Specimens of State-Listed Endangered, Threatened, and Rare Plants; No. 2081(a)-18-088-V – Valid Through 12/31/20
- CDFW-Authorized Flat-tailed Horned Lizard Biological Monitor
- Association of State Wetland Managers (ASWM)
- California Native Plant Society (CNPS)

- CNPS Rare Plant Status Reviewer
- California Society for Ecological Restoration (SERCAL)
- California Invasive Plant Council (Cal-IPC)

Professional Experience

Stagecoach Solar Project, San Bernardino County – Sub to Aspen Environmental (2017-Ongoing). Lead botanist responsible for technical oversight of the rare plant task, focused field surveys for rare plants, and contributing author to technical documents for a proposed 4,500-acre solar site in Lucerne Valley.

State Route 395 Olancha-Cartago Four-Lane Freeway Project (P.M. 29.9 to 41.8), Inyo County – California Department of Transportation, District 9 (2019). Botanist responsible for coordinating all aspects of botanical surveys for the Olancha-Cartago Four-Lane Freeway Project, which will result in a realignment of State Route 395 for approximately 11.9-miles. Tasks completed included five separate surveys, mapping of non-native/invasive plant species, mapping all succulents and Joshua trees, and vegetation community mapping. Provided technical review of Botanical Survey Report.

High Desert Solar Project, San Bernardino County – Middle River Power, LLC. (2017–2018). Lead botanist responsible for rare plant surveys that occurred for a 330-acre area near Victorville, California. Also provided technical review of rare plant sections of the Biological Technical Report.

Fort Irwin Flora Planning Level Surveys, San Bernardino County – as a Sub to RJ Rudy, LLC for the U.S. Army Corps of Engineers – Jacksonville District (2017–2018). Project Manager and Botanist responsible for leading a base-wide plant survey for the purpose of compiling a species compendium for all plants encountered (including non-native species), a plant voucher specimen for every plant encountered, and preparation of a GIS geodatabase of the data gathered. The survey area comprised over 300 1-hectare plots distributed throughout the Base.

Fort Irwin Fiber Optic Project, San Bernardino County - Verizon (2015). Botanist responsible for leading focused rare plant surveys and assisting with preparation of Biological Technical Report.

High Desert Corridor (HDC) Project Task Order Contract, Los Angeles County – as a sub to Parsons for Caltrans, District 7 (2014-Ongoing). Responsible for providing environmental services in support of planning the High Desert Corridor Project, a proposed new 65-mile freeway between Palmdale and the Lucerne Valley that includes portions of both Los Angeles County (under jurisdiction of Caltrans District 7) and San Bernardino County (under jurisdiction of Caltrans District 8).

- Botanist responsible for writing sections of the NES and EIR/EIS that involve vegetation communities, rare plants and plants listed under state and federal Endangered Species Acts.
- Botanist responsible for leading rare plant surveys in 2015 and reviewing all survey data for rare plant surveys and vegetation mapping.

Environmental Generalist Services Task Order Contract, Los Angeles County – Caltrans, District 7. (2014–2016). Biologist responsible for providing various services that included:

- State Route (SR) 138 Northwest Corridor Improvement Project - Botanist responsible for leading 2014 and 2015 spring rare plant surveys for a 36-mile survey area. Lead author of Rare Plant Survey Report in 2015 and 2016.
- Director's Order for Emergency Repair of SR-2 Sinkhole – Botanist responsible for leading preconstruction rare plant surveys for the sinkhole repair work site.

Environmental Documents and Documentation Services Contract, Kern, Kings, Fresno, Inyo, Madera Mono, and Tulare Counties – as a Sub to Parsons for Caltrans, Districts 6 and 9 (2014). Botanist responsible for leading rare plant surveys that occurred in spring of 2014 for the widening of State Route (SR) 14. Surveys were specifically for Segment 1 of the Freeman 4-Lane Project, Post-miles 58.2 – 62.3. Lead author of Rare Plant Survey Report.

Rare Plant Surveys and Vegetation Mapping for the Pacoima Dam Sediment Removal Project, Los Angeles County – Los Angeles County Department of Public Works (2010). Project Manager and Botanist responsible for conducting rare plant surveys and vegetation mapping for a 210-acre survey area. Several rare plant species were encountered during surveys, including Plummer's mariposa lily (*Calochortus plummerae*), ocellated lily (*Lilium humboldtii* ssp. *ocellatum*), Davidson's bush mallow (*Malacothamnus davidsonii*), and Greata's aster (*Symphyotrichum greatae*).

Abengoa Mojave Solar Project, San Bernardino County – Abengoa Solar, Inc. (2008). Lead botanist on a team surveying for several target rare plant species within the proposed project area of the Abengoa Mojave Solar Project. Focused surveys for rare plants, preparation of a native and nonnative plant species compendium, and vegetation community mapping were conducted over an approximately 10,000-acre study area. Primary author of botanical survey report.

Rare Plant Surveys for the Sloan Canyon National Conservation Area Trails Master Plan, Clark County, Nevada – U.S. Bureau of Land Management (2008). Lead botanist for rare plant surveys over more than 35 miles of proposed trail route alternatives. Focused surveys for several target rare plant species and a native and nonnative plant compendium were completed for proposed trails within the Sloan Canyon Conservation Area. Rare plant survey team surveyed parallel to desert tortoise survey team for safety reasons. Incidental observations of one adult tortoise near burrow, several scute fragments, and several scat fragments.

Professional Development Courses/Training

- Advances in Desert Weeds Symposium – University of California Cooperative Extension, 2011
- Preparation of High-Quality Herbarium Specimens – RSABG, 2018

Taylor Dee

Associate Biologist

Ms. Dee has over four years of experience as a wildlife biologist in Southern California. She has worked on a wide range of projects in both the public and private sector and has experience with a variety of terrestrial, aquatic, and marine biological resources. Ms. Dee has conducted focused protocol surveys for least Bell's vireo and led protocol burrowing owl surveys. Ms. Dee also has experience in a variety of additional surveys (i.e. preconstruction, nesting birds, sensitive plant) for sensitive biological resources including protocol surveys for desert tortoise, coastal California gnatcatcher, western yellow-billed cuckoo, and southwestern willow flycatcher. Ms. Dee has been approved as an USFWS approved desert tortoise monitor on multiple projects. Ms. Dee has spent over 850 hours surveying and monitoring for desert tortoises. Additionally, she has over 100 hours of experience using radio telemetry to track desert tortoises over a variety of terrain. Ms. Dee has handled wild desert tortoises on 46 different occasions including during health assessments involving blood draws, oral swabs, and nasal lavage collection. She has attached 6 radio transmitters and/or GPS data loggers, removed 1 radio transmitter, and hydrated 24 wild desert tortoises via a soak. Additionally, Ms. Dee has assisted with and observed 10 additional health assessments, 6 radio transmitter and/or GPS data logger attachment, 1 temporary transmitter attachment with electrical tape, and 25 radio transmitter and/or GPS data logger removals. Ms. Dee handled captive desert tortoises both > 100 mm MCL and < 100 mm MCL over 40 occasions. She has spent over 800 hours monitoring construction and vegetation removal activities in Orange, Los Angeles, San Bernardino, San Diego, and Inyo Counties. She is experienced conducting worker environmental awareness and education presentations/ trainings (WEAP/WEEP) and working cooperatively with construction crews to maintain environmental compliance and protect sensitive biological resources.

Education

B.S., Biology, University of Redlands, Redlands, California (Phi Beta Kappa)

Registrations, Certifications, Permits and Affiliations

- California Department of Fish and Wildlife (CDFW) Scientific Collecting Permit, General Use (GW-190110004-19136-001), EXP: 9/29/2022
- U.S. Fish and Wildlife 10(a)(1)(A) Recovery Permit (TE28366D-0) for Western Yellow-billed Cuckoo, EXP: 11/17/2024
- Bureau of Land Management (BLM) Flat-Tailed Horned Lizard Authorized Individual for biological monitoring
- National Marine Fisheries Service (NMFS) Certified *Caulerpa taxifolia* surveyor, expires 3/15/2021
- Desert Tortoise Council - member
- OSHA 10-hour Outreach Construction Safety Training – 10/24/2016

Professional Experience

High Desert Solar Project, Desert Tortoise Translocation, San Bernardino County – As a Sub to AECOM for Middle River Power, LLC (HDSI, LLC) (December 2019-Ongoing). Biologist responsible for a variety of biological studies and biological monitoring under multiple tasks for a 100-megawatt (MW) solar photovoltaic (PV) energy facility in Victorville. The project would be constructed on approximately 700 acres of land with an approximately 1.5-mile long interconnection line installed to the south, terminating at the existing High Desert Power Plant. Involved in the following tasks:

- **Desert Tortoise Pre-Translocation/Activity Monitoring.** Primary biologist that monitored activity of and tracked the location of desert tortoises tagged and affixed with radio transmitters in preparation for their eventual translocation. Conducted activities under the supervision of the Project's CDFW and USFWS Authorized Biologist (AB). Desert tortoises were monitored on a monthly basis during the inactive season and weekly during the active season until translocation. GPS data loggers were attached to tortoises prior to their translocation to demonstrate that they were active and above ground long enough for blood draws prior to May 15 as required per CDFW. During the activity monitoring and under the supervision of the Authorized Biologist, handled desert tortoises on 30 separate occasions, attached 5 GPS data loggers and radio transmitters, switched out 19 GPS data loggers, and hydrated tortoises on 3 separate occasions. Also observed the Authorized Biologist attach 4 radio transmitters and remove 8 radio transmitters and GPS data loggers. Spent approximately 90 hours tracking and monitoring tortoises.
- **Desert Tortoise Translocation and Monitoring**. Biologist handled and assisted with health assessments (including blood draws) and prepared the translocation package and disposition plans for each tortoise proposed for translocation in coordination with the Authorized Biologist. Upon approval from CDFW and USFWS, three tortoises were translocated; worked closely with the Authorized Biologist to co-lead the translocation effort. Health assessments were conducted on each individual prior to translocation to the recipient site to ensure they were still suitable for translocation. All tortoises were given a soak prior to release. Participated in health assessments, handled and transported tortoises during the translocation effort and spent over 4 hours conducting monitoring one tortoise post release to ensure individual's wellbeing. Conducted post-translocation monitoring for the translocated desert tortoises under the supervision of the Authorized Biologist.
- **Biological Monitoring and Pre-Construction Surveys.** During project preparation activities, conducted biological monitoring and pre-construction surveys during Joshua tree removal and geological technical studies. Also was responsible for assisting the Lead Biologist with environmental compliance including management and coordination of the biological aspects, and ensuring target species, desert tortoise and Mohave ground squirrel, and other special-status species (desert kit fox, nesting birds, American badger, burrowing owl) are protected and avoided during project activities. Gave biological WEAP trainings and coordinated with the Project's Authorized Biologists.

High Desert Solar Project, Biological Studies, San Bernardino County – as a Sub to AECOM for Middle River Power, LLC (HDSI, LLC) (2017-Ongoing). HDSI, LLC is planning to develop a 100 megawatt (MW) solar photovoltaic (PV) energy facility. Worked on the following tasks:

- **Biological surveys** for burrowing owl, desert kit fox, desert tortoise, and rare plants. Observed and helped identify occupied (with sign) BUOW burrows, known desert kit fox dens, and desert tortoises and their burrows.
- **Pre-Clearance Transmitter Survey**. Biologist co-lead a pre-clearance desert tortoise survey with the Project's CDFW and USFWS Authorized Biologist (AB) on the project site in an effort to locate, tag, and transmitter all tortoises within the project boundaries in preparation for their eventual translocation. During the surveys four adult desert tortoises were tagged and transmitted; handled two tortoises during a physical examination, transmitter attachment, and tagging and one tortoise when a burrow was scoped. Scoped over 10 desert tortoises burrows under the supervision of the Authorized biologist and observed multiple desert tortoise carcasses, scat, and burrows. Also prepared the report summarizing the results of the transmitter survey. Additionally, she helped scoped burrows. Incidentally observed four wintering burrowing owls and occupied burrows during the transmitter survey.
- **Habitat Assessment and Recipient Site Survey**. During the recipient site habitat assessment and survey, worked closely with and under the supervision of the Authorized Biologist to characterize the habitat of the recipient site and map resident desert tortoises and their sign in order to select release sites to be used during translocation. During the habitat assessment and survey observed 10 live desert tortoises, over 250 desert tortoise burrows, as well as scat, carcasses, and an old nest. Prepared a report summarizing the results of the habitat assessment, survey, and proposing suitable release sites for translocation.

Biological Surveys and Reports for the Aurora Solar Project, San Bernardino County – As a Sub to Aspen Environmental Group for California State Lands Commission (March 2020–Ongoing). Surveyor for desert tortoise and rare plant surveys. As a subcontractor to Aspen Environmental Group, ECORP Consulting, Inc. (ECORP) provided biological services for the proposed Aurora Solar Project, located in Lucerne Valley, San Bernardino County. The project site encompasses approximately 4,150 acres, and focused surveys for rare plants and desert tortoise were performed on approximately 3,000 acres. A habitat assessment for Mohave ground squirrel was conducted, and sign and individuals of burrowing owl, American badger, and desert kit fox were documented as incidental findings during all surveys and visits conducted at the site.

Victorville Solar Project - Focused Surveys for Burrowing Owl, San Bernardino County – Confidential Client (June 2017). Biologist responsible for conducting protocol surveys for focused breeding season surveys for burrowing owl. Twenty (20)-m transects were walked to survey for burrowing owl. Potential burrowing owl burrows with sign were identified but no burrowing owls were observed during the four burrowing owl surveys.

Professional Development Courses/Training

- 2016 Intro to Desert Tortoises and Field Techniques Workshop, Desert Tortoise Council

Alexandra Dorough

Assistant Biologist

Ms. Dorough has participated in a variety of surveys for sensitive biological resources including protocol-level surveys for nesting birds, burrowing owl, Mohave ground squirrel, San Bernardino kangaroo rat, and rare plants. She has worked on an array of projects in Riverside, Los Angeles, and San Bernardino counties and is familiar with federal (NEPA) and state (CEQA) environmental law. Ms. Dorough has experience in the identification of native flora and fauna using various field guides, including the Jepson Manual for vascular plants of California, and in using Geographic Information Systems (GIS) such as ArcGIS Online and the Collector application as an analysis tool for environmental studies. In her time as an undergraduate, Ms. Dorough designed and conducted experiments in the field of marine ecology with a group of her peers, and individually wrote reports on those findings. She is familiar with various terrestrial and marine field techniques and equipment and is proficient in writing scientific papers and reports describing the results of experiments and other types of environmental studies.

Education

B.S., Environmental Biology, California State Polytechnic University, Pomona, Pomona, CA

A.A., Natural Sciences, Mount San Antonio College, Walnut, CA

Registrations, Certifications, Permits and Affiliations

- OSHA 10-hour Construction Industry Outreach Certification (#26-007285515), 360training.com
- First Aid CPR/AED Certification (#000017065295), 360training.com
- The Wildlife Society, Member
- The Agricultural Biology Club at California State Polytechnic University, Pomona (acted as Secretary, Vice President, and President)
- Tri Beta National Biological Honors Society, Cal Poly Pomona Chapter, Member
- National Society for Leadership and Success, Cal Poly Pomona Chapter, Member

Professional Experience

Stagecoach Solar Project, San Bernardino County – California States Land Commission, Sub to Aspen (05/2020). Ms. Dorough assisted the lead botanist in conducting a rare plant survey following the California Native Plant Society (CNPS) Botanical Survey Guidelines. The Project area was surveyed by walking 10-meter transects in search of target species. Target species included: Borrego milkvetch (*Astragalus lentiginosus var. borreganus*), creamy blazing star (*Mentzelia tridentata*), Mojave monkeyflower (*Diplacus mohavensis*), and Clokey's cryptantha (*Cryptantha clokeyi*).

Mountain View I & II Wind Project, San Bernardino County – AES North America Development, LLC., Sub to Tetra Tech, Inc. (03/2020 – 06/2020). AES North America Development, LLC is planning to repower its existing Mountain View I & II wind energy projects, which are located in unincorporated Riverside County and City of Palm Springs jurisdictions. The entire repower project site is 1,228 acres with a portion of the project site located in the Whitewater Floodplain Conservation area, as defined in the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) (Coachella Valley Association of Governments 2007). This area comprises approximately 441 acres of the overall project site. The project site also includes a 1.5-mile underground electrical line from the eastern-most turbine string to along the railroad right-of-way to the southeastern corner of the substation parcel. Ms. Dorough's roles and responsibilities included:

- Served as associate Project manager, in which Ms. Dorough assisted the Project manager, Kristen Wasz, with scheduling biological surveys, coordinating with the client and surveyors, and ensuring compliance with site-specific safety protocols.
- Assisted the lead botanist in conducting three rare plant surveys following the California Native Plant Society (CNPS) Botanical Survey Guidelines. The Project area was surveyed by walking 10-meter transects in search of target species. Target species included: Coachella Valley milkvetch (*Astragalus lentiginosus* var. *coachellae*), triple-ribbed milkvetch (*Astragalus tricarinatus*), Harwood's eriastrum (*Eriastrum harwoodii*), and Little San Bernardino Mountains linanthus (*Linanthus maculatus* ssp. *maculatus*).
- Performed two burrowing owl (*Athene cunicularia*) checks of previously identified burrow locations in order to gain additional information on burrowing owl use of the Project site. Burrow locations were surveyed from a distance using binoculars and data on burrow occupancy, burrowing owl behavior, and nest status were documented during each check.

Burrowing Owl Surveys for Lebata Big Rock Creek Mine, Los Angeles County – Lebata, Inc. (04/2020 – 07/2020). Ms. Dorough assisted the lead biologist with three breeding season burrowing owl (*Athene cunicularia*) surveys in accordance with the California Department of Fish and Wildlife's most recent Staff Report on Burrowing Owl Mitigation. The extent of suitable habitat within the Project area was surveyed by walking transects in search of burrowing owls, owl sign, and potential burrows.

Mohave Ground Squirrel Camera Study for High Desert Solar Project - San Bernardino County – HDSI, LLC., Sub to AECOM (06/2020-present). Biologist assisted with camera study for Mohave ground squirrel (*Xerospermophilus mohavensis*) for a 100-megawatt (MW) solar photovoltaic (PV) energy facility in Victorville. The project is to be constructed on approximately 700 acres of land with an approximately 1.5-mile long interconnection line installed to the south, terminating at the existing High Desert Power Plant. Ms. Dorough was responsible for the set-up and daily checks of remote camera stations with baited traps. Daily checks included re-baiting traps, replacing memory cards and any dead batteries, and adjusting camera settings and angles if necessary. Ms. Dorough was also involved in the downloading and sorting of thousands of wildlife photos. One Mohave ground squirrel was positively identified as a result of the

camera trapping effort. Incidental species observed included common raven, white-tailed antelope ground squirrel, desert kangaroo rat, bobcat, black-tailed jackrabbit, and desert kit fox.

Cathedral Canyon Drive Bridge at Whitewater River, Riverside County – City of Cathedral City, Sub to TYLIN (06/2020). Biologist responsible for conducting a preconstruction nesting bird survey prior to the start of construction activities. Ms. Dorough also acted as the biological monitor during vegetation removal of multiple trees and various shrubs, ensuring compliance with project permits.

Avenue 66 Grade Separation Project, Riverside County – Riverside County Transportation Department Community of Mecca (03/2020). Assisted the lead biologist in conducting a preconstruction nesting bird survey of the proposed construction area of a new grade separation and roadway to cross the Union Pacific Railroad (UPRR), State Route (SR)-111, and Hammond Road from a realigned Avenue 66 in the Community of Mecca, California. Ms. Dorough surveyed the Project site for active nests and for birds exhibiting nesting behavior. Inaccessible areas were surveyed using binoculars and all species encountered were identified and recorded. When indication of a nest was present, the area was flagged to establish appropriate species-specific buffers.

San Bernardino Kangaroo Rat Trapping for Webster Avenue Highland, San Bernardino County – Excel Business Park, LLC. (03/2020-04/2020). Assisted the permitted biologist, Mr. Phil Wasz, with trapping efforts as part of a protocol-level presence/absence survey for San Bernardino kangaroo rat (*Dipodomys merriami parvus*). Ms. Dorough aided in morning trap checks for one trapping grid consisting of standard 12-inch Sherman live-traps. All captured animals were released, and traps were shut.

Mohave Ground Squirrel Trapping for Lebata Big Rock Creek, Los Angeles County – Lebata, Inc. (04/2020). Assisted Mr. Phil Wasz, the permitted field investigator and lead biologist, in conducting protocol-level trapping for one Mohave ground squirrel (*Xerospermophilus mohavensis*) trapping grid. As assistant, handled incidental non-target species such as white-tailed antelope squirrel (*Ammospermophilus leucurus*) that were caught as part of this study. Ms. Dorough handled 5 white-tailed antelope squirrels under the supervision of Mr. Phil Wasz.

Mohave Ground Squirrel Trapping for Shadow Mountain, San Bernardino County – AECOM, Inc. (03/2020). Assisted Mr. Phil Wasz, the permitted field investigator and lead biologist, in conducting protocol-level trapping for two Mohave ground squirrel (*Xerospermophilus mohavensis*) trapping grids. As assistant, handled incidental non-target species such as white-tailed antelope squirrel (*Ammospermophilus leucurus*) that were caught as part of this study. Ms. Dorough handled 8 white-tailed antelope squirrels under the supervision of Mr. Phil Wasz.

Desert View Conservation Area Improvement Project, San Bernardino County- County of San Bernardino Special Districts Department (03/2020). Assisted lead biologist in conducting weekly nesting bird surveys for the trail improvement project near Joshua Tree National Park. Surveyed the Project site for active nests and for birds exhibiting nesting behavior. Inaccessible areas were surveyed using binoculars and all species encountered were identified and recorded.

Caroline Garcia

Associate Biologist

Ms. Garcia's experience includes field surveys, biological monitoring, and report preparation for terrestrial biological resources in southern California. She has participated in a variety of surveys (i.e. pre-construction, nesting bird, rare plant) for sensitive biological resources including protocol surveys for coastal California gnatcatcher, burrowing owl, light-footed Ridgway's rail, least Bell's vireo, Crissal thrasher, LeConte's thrasher, Arroyo toad. Ms. Garcia possesses small mammal trapping experience and has assisted a permitted biologist to conduct trapping for the state and federally-listed (endangered) giant kangaroo rat and Palm Springs pocket mouse (SSC). Ms. Garcia has monitored construction and vegetation removal activities in Los Angeles, Orange, Riverside, Imperial, Kern, and San Diego Counties. She has also worked on multiple restoration projects in southern California for a variety of vegetation communities such as Diegan Coastal Sage Scrub, Coastal Bluff Scrub, Maritime Succulent Scrub, and Freshwater Marsh. She is well versed in the identification of native bird, mammal, reptile, and amphibian species. Ms. Garcia has experience in the use of Geographic Information Systems (GIS) as an analysis tool for environmental studies. She has familiarity in the use of ESRI's ArcGIS software suite including ArcGIS Pro, ArcGIS Online, Survey 123, and Collector. Ms. Garcia also has experience in the collection of field data with survey-grade global positioning system (GPS) units including Trimble, Garmin, Geode, and Arrow handheld units.

Education

B.S., Integrative Biology, minor in Animal Sciences, University of Illinois Urbana Champaign

Registrations, Certifications, Permits and Affiliations

- Geographic Information Systems Certification (Expected completion date: Spring 2020)
- Project Wildlife – Wildlife Rehabilitation Non-profit Volunteer
- The Wildlife Society; Southern California Chapter; Media Communications Committee Chair

Professional Experience

On-call Generalist Services Task Order Contract - California Department of Parks and Recreation (2016-Ongoing). Biologist responsible for biological resource Work Orders for on-call biological services contract for the California Department of Parks and Recreation (State Parks). Under this program, the consultant/contractor essentially serves as an extension of State Parks biological services staff, performing habitat assessments, focused surveys for sensitive species, jurisdictional waters delineations, biological monitoring and preparing Natural Environment Studies, Biological Assessments, delineation reports, and other environmental documents for a wide range of State Parks projects. Work Orders that Ms. Garcia worked on include:

- **Utility Modernization Project at Torrey Pines State Natural Reserve, San Diego County – California State Parks, Southern Service Center (2019).** Assisted with conducting protocol-level

coastal California gnatcatcher surveys during the spring of 2019 under the supervision of a permitted biologist. The Project Area and 500-foot buffer cover an area of approximately 95-acres.

- **Torrey Pines State Beach Accessibility Improvements Project, San Diego County – California State Parks, Southern Service Center (2020-Ongoing).** Serves as a biological monitor during construction of improvements for the North Beach Parking Lot. Conducted general biological monitoring and noise monitoring of active nests within the project area and 500-foot buffer. Monitored a coastal California gnatcatcher nest from incubation to fledging stages. Conducted noise monitoring of construction in proximity to the nest to ensure that construction activities did not impact coastal California gnatcatcher and average noise levels (Leq) remained below 60 dBa. Listed and special-status species wildlife species in the area includes coastal California gnatcatcher, Belding's savannah sparrow, California least tern, California brown pelican, and double-crested cormorant.

Flora Planning Level Surveys at Fort Irwin, San Bernardino County – Department of The Army (2018). Assisted with preparation of herbarium-quality voucher specimens for comprehensive flora species compendium. Goals of the project were to identify general flora including nonnative species, determine presence/absence of threatened, endangered, and sensitive plant species on the Installation including at seeps and springs, and assist the Army with surveying and inventorying botanical species and their habitats. The Installation consists of approximately 753,537 acres and includes NASA's Goldstone Deep Space Communications Complex.

Valencia Solar Projects I, II, and III, Imperial County – Imperial County Planning and Development Services (2019). Biologist responsible for updating and implementing worker education plan, leading pre-construction burrowing owl take/avoidance surveys, and reporting to ensure compliance with environmental permits for two 30-acre photovoltaic solar projects in Imperial County, California (Valencia II and III). Prior to and throughout construction, ECORP provided a Third-Party Environmental Inspector, biological monitors, cultural resource monitors, paleontological monitors (as a subcontractor), and completed a Worker Environmental Awareness Program, pre-construction burrowing owl surveys, and required monitoring compliance reports. Overall, ECORP inspectors and monitors coordinated with Imperial County agencies and the Valencia Solar Project Owner regarding environmental construction compliance and monitoring activities.

Olancha/Cartago Four Lane Species Survey, Inyo County – Caltrans District 9 (2019-Ongoing). As part of a team, conducted protocol burrowing owl and kit fox surveys for the Olancha/Cartago Four Lane Project. Caltrans and the Federal Highway Administration are proposing to convert approximately 12.6 miles of the existing U.S. Highway 395 from a two-lane conventional highway into a four-lane expressway or partial conventional four-lane highway form post mile 29.9 to post mile 41.8 in Inyo County. The new facility will have four 12-foot lanes with a median of variable width. There will be paved shoulders throughout the project. The project will also construct new concrete bridges to cross the Los Angeles Aqueduct and install concrete box culverts and smaller pipe culverts throughout the project limits to promote drainage. ECORP provided environmental services in the form of surveys for bats, Swanson's

Hawk, rare plants, burrowing owl, and kit fox. Desert tortoise were identified during the burrowing owl surveys.

Panoche CAPM Project, Taft, Kern County – Caltrans District 6 (2019). Assisted with giant kangaroo rat focused presence/absence trapping surveys. For 5 trap-days/nights about 150 12-inch Sherman live-traps were checked in the morning, releasing all captured animals and closing the traps during the day. The traps were then opened and baited every evening. Larger kangaroo rats or unknown species were weighed, measured, and released. Caltrans District 6, under an on-call generalist services contract through Parsons Transportation Group, enlisted ECORP to provide focused biological surveys for the Panoche CAPM Project. Caltrans proposes to preserve and resurface the existing lanes of Route 58 in Kern County between post mile (PM) 6.0/15.4. The proposed action will involve cold paning or grinding the existing pavement by 0.2' then place 0.2' of Hot Mix Asphalt (HMA), seal all cracks, repair all localized areas then overlay the entire pavement with 0.1' of Rubberized Hot Mix Asphalt (RHMA). The project also proposes to update all the signs within the project limits. The project will also look to replacing several culverts. ECORP conducted small mammal trapping, focused on Giant Kangaroo Rat, blunt-nosed leopard lizard surveys, and an Aquatic Resources Delineation for the project. Reports were provided in compliance with Caltrans, California Department of Fish and Wildlife, and US Army Corps of Engineer requirements.

Construction Management Services for Avenue 66 Grade Separation Project, Riverside County – as a Sub to DHS Consulting, Inc. for Riverside County Transportation Commission (RCTC) (2020). Conducted protocol presence/absence surveys for Crissal thrasher and LeConte's thrasher, preconstruction nesting bird surveys, and full-time monitoring of vegetation removal. Established species-specific no-work buffers around active nests and monitored vegetation clearing and grubbing near nest buffers. Biologist responsible for creation of worker education program. The proposed project will construct a new grade separation and roadway to cross the Union Pacific Railroad and State Route 111 from a realigned Avenue 66 in the Community of Mecca, CA.

Mountain View I & II Wind Project, San Bernardino County – Tetra Tech, Inc. (2020). Surveyor for special-status plant species. The project includes re-powering of an existing wind energy facility located within private land and the Whitewater Floodplain Conservation Area. The Project area was surveyed following agency guidelines. Target species included: chaparral sand-verbena (*Abronia villosa* var. *aurita*), triple-ribbed milkvetch (*Astragalus tricarinatus*), slender-horned spineflower (*Dodecahema leptoceras*), and Harwood's eriastrum (*Eriastrum harwoodii*).

Professional Development Courses/Trainings

- Intro to Desert Tortoise Monitoring and Field Survey Workshop, Desert Tortoise Council (November 2019)

Greg Hampton

Staff Biologist/Botanist

Mr. Hampton has worked as a biologist and botanist in the environmental science field for over six years. In this time, Mr. Hampton has worked on a variety of infrastructure projects involving highways, bridges, transmission lines, railroads, and airports as well as commercial and residential developments. He has participated in nearly every aspect of these projects, beginning with initial sensitive plant, bird, small mammal surveys and jurisdictional delineations prior to construction, to biological and botanical monitoring during construction, to native habitat restoration after construction (including seed collection, plant propagation, irrigation, invasive plant removal, and general horticultural monitoring and reporting). His project experience ranges from central California to southern San Diego and many habitats in between, including, coastal, mountain, inland, riparian, and desert environments. He has particular experience with the restoration of the coastal sage scrub community, which is known to support the federally-listed (threatened) California gnatcatcher and many sensitive plants. Mr. Hampton has assisted in the preparation of Biological Technical Reports, Due Diligence Biological Reports, Initial Studies/Mitigated Negative Declarations (IS/MNDs), and many annual restoration monitoring reports.

Education

B.A., Environmental Studies and Sustainability. San Diego State University, California

Professional Experience

Mountain View I & II Wind Project, San Bernardino County – Tetra Tech, Inc. (2020). Surveyor for special-status plant species. The project includes re-powering of an existing wind energy facility located within private land and the Whitewater Floodplain Conservation Area. The Project area was surveyed following agency guidelines. Target species included: chaparral sand-verbena (*Abronia villosa* var. *aurita*), triple-ribbed milkvetch (*Astragalus tricarinatus*), slender-horned spineflower (*Dodecahema leptoceras*), and Harwood's eriastrum (*Eriastrum harwoodii*).

High Desert Solar Project – Biological Studies, San Bernardino County – sub to AECOM for HDSI, LLC (2017-present). HDSI, LLC is planning to develop a 100 megawatt (MW) solar photovoltaic (PV) energy facility. The project would be constructed on approximately 700 acres of land with an approximately 1.5-mile long interconnection line installed to the south, terminating at the existing High Desert Power Plant. Worked on the following tasks:

- Biological surveys for burrowing owl, desert kit fox, desert tortoise, and rare plants. Observed BUOW burrows, known desert kit fox dens, and desert tortoises and their burrows. Also observed 2 adult desert tortoises and tortoise sign (scat and burrows), and multiple desert kit foxes including adults and pups.
- Desert tortoise recipient site survey. Biologist participated in a desert tortoise survey with an USFWS and CDFW Authorized desert tortoise biologist, Chase Barnes. The purpose of the survey was to locate

desert tortoises, desert tortoise sign, and to measure desert tortoise burrows to evaluate whether the site was appropriate for recipient tortoises, and if observed burrows were adequate for them during relocation. Nine desert tortoises were observed during the survey, including various sign, and multiple burrows.

Rare Plant Surveys, Los Angeles County – Los Angeles Valley College (LAVC) (2019). Biologist conducted rare plant surveys for LAVC's Gold Creek property. LVCV is preparing to implement a restoration project of approximately 54.8 acres of the property. ECORP provided biological, cultural, and regulatory permitting support services for the project. ECORP conducted reconnaissance level cultural and biological surveys to document post-fire conditions and assess habitat conditions for special-status species. A jurisdictional delineation survey and focused protocol-level wildlife surveys were conducted for special-status plant and wildlife species that were determined to have a moderate or high potential to occur.

Botanical Surveys for State Route 395 Olancha-Cartago Four-Lane Freeway Project (P.M. 29.9 to 41.8), Inyo County – Caltrans (2019). Lead surveyor and botanist responsible for coordinating botanical surveys of the realignment of State Route 395 for the 11.9-mile Olancha-Cartago Four-Lane Project. Tasks completed included five separate rare plant focused surveys, mapping of non-native/invasive plant species, mapping all succulents and Joshua trees, and vegetation community mapping. Mr. Hampton authored the botanical survey report.

Flora Planning Level Surveys at Fort Irwin, San Bernardino County – Department of the Army (2018). Lead botanist of botanical surveys focusing on approximately 315-hectare plots within Fort Irwin's boundaries. Goals of the project were to identify general flora including nonnative species, determine presence/absence of threatened, endangered, and sensitive plant species on the Installation including at seeps and springs, and assist the Army with surveying and inventorying botanical species and their habitats. The Installation consists of approximately 753,537 acres and includes NASA's Goldstone Deep Space Communications Complex. Mr. Hampton lead multiple services for the project including management and leadership for the field survey effort, GIS services, and herbarium-quality voucher specimens. Three incidental observations of one live tortoise and two carcasses, along with burrows and scat, were observed.

Desert Tortoise Survey for the High Desert Solar Energy Project, San Bernardino County – Middle River Power (2017-2018). 1099 Energy Consultants plans to construct a 50-megawatt solar facility on a 330-acre property in Victorville, CA. Biologist conducted a protocol desert tortoise survey for the project in 2017. Protocol desert tortoise surveys were conducted on the expanded section of the project footprint in 2018. A total of three desert tortoises were documented at the site in 2017 and included a mating pair and a juvenile. A total of two additional desert tortoises were documented in 2018. Burrows and scat were also documented at the site both years.

Aurora Solar Rare Plant Survey, San Bernardino County – Sub to Aspen Environmental (2017). Botanist responsible for leading and conducting a focused rare plant survey on a proposed 4,500-acre solar

site in Lucerne Valley. Target species included Mojave monkey flower (CRPR 1B.2), desert *cymopterus* (CNPS 1B.2), and *Clokey's cryptantha* (CRPR 1B.2). Surveys were negative.

State Route 2 Focused Plant Surveys, Angeles National Forest, Los Angeles County – Caltrans District 7 (2016). Surveying biologist for three days of Forest Service (FS) sensitive and invasive plants within the Angeles National Forest (ANF) along State Route 2 (SR-2). This was an emergency contract to survey and map any sensitive or invasive plant population immediately adjacent to SR-2 between Post Miles 64.0 and 82.3 in preparation for road remediation work. One FS sensitive plant species, Peirson's lupine (*Lupinus peirsonii*), was identified during the surveys. Several other California Native Plant Society ranked plants were identified as well, but these were not protected within the ANF. Nine species of California Invasive Plant Council invasive plants were identified and mapped throughout the project area.

High Desert Corridor Focused Biological Surveys, Victorville to Palmdale, San Bernardino and Los Angeles County – Caltrans (2015). The Los Angeles Metro plans to build a new 63-mile highway from Victorville to Lancaster, linking State Route (SR) 14 in Los Angeles County with SR-15 in San Bernardino County. Assisted in conducting four weeks of focused special-status plant surveys over a majority of the 65-mile corridor.

SR-138 Northwest Corridor Jurisdictional Determination and Rare Plant Surveys (Task Order), Los Angeles County – Caltrans District 7 (2014-2017). In cooperation with the Los Angeles County Metropolitan Transportation Authority (Metro), the California Department of Transportation (Caltrans) is proposing a project to improve State Route 138 between Interstate 5 and State Route 14, in northern portion of Los Angeles County, near the town of Gorman. Assisted in delineating jurisdictional features and leading multiple year rare plant surveys within the 36 linear mile SR 138 Northwest Improvement Project Corridor, pursuant to the criteria provided by the U.S. Army Corps of Engineers and California Department of Fish and Wildlife. Various rare plant species and populations were observed and documented, including a newly described species: *Eriastrum rosamondense* CNPS Rank 1B.1.

Professional Development Courses/Trainings

- Desert Tortoise Monitoring and Field Survey Workshop, Desert Tortoise Council (2015)
- California Rapid Assessment Method (CRAM) Practitioner (Depressional/Riverine Wetlands and Vernal Pool Systems)
- CDFW Plant Voucher Collecting Permit No. 2081(a)-20-002-V Expires 12/31/22
- Plant Identification for Coastal Southern California, Wetland Training Institute, Inc.
- Authorized as a Field Assistant under CDFW MOU for the Mohave Ground Squirrel, Palm Springs Round Tailed Ground Squirrel, Arizona Cotton Rat, Hispid Cotton Rat, Palm Springs Pocket Mouse, Jacumba Pocket Mouse, White-eared Pocket Mouse, and Tehachapi Pocket Mice.

KELLY HERBINSON

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QUALIFICATIONS SUMMARY

- Over fifteen years (seasonal) experience conducting complex biological and ecological surveys and investigations associated with the intersection of resource development and endangered species, specifically monitoring and mitigating impacts to state and federally protected species in California (mostly for desert tortoise). Seven of those years were in leadership positions working to design and oversee field efforts, mostly for renewable energy installations.
- Earned Bachelor of Science and Master of Science degrees in ecology, as well as a Master of Fine Arts degree in nonfiction creative writing where I studied science communication.
- Experience surveying for marine and freshwater fish, plankton, macroinvertebrates, insects, birds, plants, reptiles and mammals throughout California and parts of Montana.
- Exceptional technical writing skills and several years of experience drafting required management plans including desert tortoise translocation plans, raven management plans, bird and bat management plans and other documents required by Biological Opinions and other regulatory documents.
- Designed and taught a semester-long course on the Endangered Species Act for undergraduates at the University of Wyoming.
- Exceptional collaborative and interpersonal skills demonstrated by repeated promotion to management positions necessitating the ability to create and maintain partnerships with regulatory agencies, research partners, landowners and private corporations.

EDUCATION

Master of Fine Arts (MFA) (2011) in Creative Writing: Non-Fiction
University of Wyoming, Laramie, Wyoming

Master of Science (MS) (2009) in Biology: Ecology and Systematics
San Francisco State University, San Francisco, California
Graduate Fellow of the California Academy of Sciences 2006-2008
Recipient of the Distinguished Master's Thesis Award 2009

Bachelor of Science (BS) (2001) in Biology: Ecology, Behavior and Evolution, minor in Critical Gender Studies
University of California, San Diego, La Jolla, California

PROFESSIONAL EXPERIENCE

Oct. 2002 – Mar. 2013 Field Biologist, Independent Contractor
Mar. 2013 – Present Field Biologist and Owner, Pioneer Ecological Consulting

Successfully design, manage and implement measures adhering to federal environmental laws, regulations, and policies involving natural resource issues across multiple projects and in multiple capacities to protect and conserve sensitive species; mostly for the federally threatened desert tortoise (*Gopherus agassizii*).

Specific tasks include: 1) designing and conducting complex biological and ecological surveys required prior to resource development (desert tortoise abundance surveys, nesting bird surveys and surveys for other sensitive species), 2) carrying out protocols in adherence to project documentation, including Biological Opinions, Best Management Practices (BMPs), Common Raven Management Plans, and Translocation Plans, 3) working to assess potential environmental impacts ahead of development, 4) designing and implementing wildlife surveys, translocation plans and post-translocation management and monitoring plans.

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I have served as a lead biologist on four large-scale solar developments, requiring a thorough understanding of the Endangered Species Act and regulatory procedures and documents, and the management of up to 60 field biologists at a time.

Other work completed includes line distance sampling for desert tortoise (2002-2005, as field manager in 2009), nesting bird, raven, botanical, macroinvertebrate and insect surveys, desert tortoise behavior and health research and biological monitoring on railroad expansions, pipelines and other projects involving resource development and sensitive species management.

Key Achievements:

- In partnership with other researchers and USFWS and BLM personnel, designed, streamlined and managed a multi-million dollar research program created to learn more about the effects of translocation on desert tortoise survival (2012-2013 at the Ivanpah Solar Energy Generating Station).
- As part of a team of consultants and in coordination with federal and state agencies, successfully designed and implemented three, large-scale desert tortoise translocations, and post-translocation management and monitoring programs (Ivanpah Solar (2012-2013, CA), Silver State Solar (2014, NV) and Playa Solar Energy Zone (2014-2015, NV).
- Demonstrated oral and written communication skills through regular communications with clients and regulatory agencies, written monthly and annual compliance reports, written husbandry, translocation, raven and avian and bat mitigation plans, and oral research presentations at ecological symposia.
- Processed well over 1,000 wild desert tortoises; proficient at desert tortoise health examinations and blood draw and removal and attachment of radio transmitters on desert tortoise.
- Proficient at searching for and surveying for sensitive and endangered species in California, including desert tortoise, other reptiles, mammals, amphibians, insects and birds using industry standard methods.

Jan. 2017 – Present Field Programs and Development Coordinator, Turtle Conservancy, Ojai, CA

Organize and facilitate field conservation programs designed to protect turtle and tortoise habitat around the world for the nonprofit Turtle Conservancy, an organization based in Ojai dedicated to the protection of the world's turtles, tortoises and their habitats. Draft and submit grant applications, coordinate reporting and submission deadlines between principal investigators and granting entities, keep track of complex timelines and liaise between scientists, principals, granting agencies and regulatory agencies in the submission and implementation of grants and conservation programs.

Key Achievements:

- Assisted in the coordination and management of a 43,000-acre wildlife preserve in Central Mexico protecting the Critically Endangered Bolson Tortoise and a 1,000-acre preserve in South Africa protecting the Critically Endangered Geometric Tortoise.
- Initiated the Turtle Conservancy's conservation program for the Southern Pacific Pond Turtle. Participated in USGS field surveys and designed an education program for the Thacher School (a private high school in Ojai, CA) that focuses on Southern Pacific Pond Turtle biology, conservation and citizen science.
- Designed and implemented a grant management system fulfilling the needs of a global non-profit with far-flung programs and principals.
- Secured over $200,000 of funding for the organization through successful grant proposals.

Dec. 2013 – May 2014 Natural Resources Specialist, TriEco, LLC, Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, California (40 hrs/wk)

Worked as part of the Natural Resources and Environmental Affairs (NREA) division of MCAGCC. Wrote and reviewed documents related to natural resources issues, resource development and mitigation on the military base. Supported NREA projects including the base expansion and its potential impacts to the desert tortoise, desert tortoise heath and the desert tortoise headstarting facility. Collaborated with contractors working to carry out

programs on base related to natural resource monitoring and management, ensuring quality data was collected efficiently and appropriately.

Sept. 2009- May 2011 Instructor and Department Assistant, University of Wyoming, Department of the Environment and Natural Resources (ENR), Laramie, WY (20 hrs/wk)

As a graduate student I worked as an interdisciplinary environmental curriculum consultant, upper-division instructor and communications coordinator for National Science Foundation funded K-12 science outreach team, the "Science Posse."

Key Achievements:

- Developed and taught an upper division undergraduate seminar exploring the Endangered Species Act from an interdisciplinary perspective, based on my own practical experiences with desert tortoise management.
- Taught an undergraduate course examining the environmental movement in the United States over the last 200 years.

Jan. 2010 – May 2011 Reporter, Wyoming Public Radio (WPR), Laramie, WY (15 hrs/wk)

Worked as a reporter for Wyoming Public Radio (WPR) covering statewide news stories, conducting recorded interviews, and writing, recording and editing science-based feature stories for radio. (This position was a term-position during my residency as a graduate student).

Key Achievements:

- Wrote a series of short radio features illuminating the natural history of local Wyoming species and local environmental issues.
- Reported on the local state legislature covering law-making activities in the state capitol.

Sep. 2006 – Feb. 2009 Graduate Fellowship in Entomology and Education, California Academy of Sciences (CAS), San Francisco, CA (20 hrs/wk)

Collaborated with international partners from Madagascar in documenting and describing the Malagasy ant fauna for use in conservation applications. Used extensive taxonomic ant collections and newly collected specimens along with innovative DNA sequencing techniques to help describe and revise Malagasy ant genera. Designed hands-on science curriculum and managed the museum's citizen science project, The Bay Area Ant Survey.

Key Achievements:

- Completed a taxonomic revision of the ant genus *Aphaenogaster* for Madagascar.
- Directed citizen science project "The Bay Area Ant Survey" (BAAS), designed to involve the public in ongoing taxonomic research at CAS. Taught classes (grades K-12) and teacher workshops about the ecological importance of ants and how to collect and identify ants of the Bay Area, and led field trips to collect local ants. Identified, geocoded, databased and mapped (using a GIS) all incoming specimens, as well as curated a collection of local ant specimens. Maintained the BAAS website.

May 2004 – Aug. 2004 Fisheries Technician, Bureau of Reclamation, Simms, MT.

Surveyed for fish species impacted by irrigation diversions on the Sun River. Used seine nets to sample for fish, identified, sexed and measured thousands of fish.

Nov. 2003 – Dec. 2003 Plankton Field Technician, Marine Biological Consulting, Costa Mesa, CA.

Surveyed for plankton as part of a research study identifying impacts to planktonic communities near an electric generating station. Used seine nets deployed from a research vessel to collect plankton samples for future identification.

Sept. 2002 – Oct. 2003 Macroinvertebrate Field Technician, Garcia and Associates, Susanville, CA.

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Surveyed for macroinvertebrates as part of study identifying impacts to riparian communities after recreational flows released from a dam on the north fork of the Feather River.

May 2002 – Aug. 2002 Biological Technician GS-04 (seasonal), Fish and Wildlife Service, Great Falls, MT.

Assisted with biological surveys of waterfoul and various other biological field tasks. Oversaw two students participating in the Montana Conservation Corps in biological tasks throughout the refuge.

VOLUNTEER WORK

Oct. 2013 – Present Board Director, Mojave Desert Land Trust, Joshua Tree, CA

Serve as a volunteer board member for the MDLT, a nonprofit dedicated to the conservation of the California deserts. I work as a scientific advisor to the land acquisition team, helping to direct efforts to areas with the most significant biodiversity. I also meet with donors and foundations, organize fundraising events and identify potential donors for the development team. I work closely with the rest of the board in overseeing budgets, the strategic plan, and general operations of the non-profit. I was elected and served as Vice President from 2013 through early 2018.

COMPUTER PROGRAM SKILLS

Salesforce
ArcGIS
Microsoft Word, Excel, Outlook and PowerPoint
Windows and Mac operating systems

AWARDS

University of Wyoming School of Arts and Sciences Summer Independent Study Award (2010)
University of Wyoming Haub School of the Environment Grant (2010)
Artist-in-residence, Sitka Center for Art and Ecology, Sitka, Oregon (2010)
Dick and Lynne Cheney International Study Abroad Grant (2010)
Distinguished Master's Student Award (2009) San Francisco State University
Honorable Mention, Student Paper Competition (2009) Wildlife Society, Western Section
California Academy of Sciences Graduate Fellowship (2006-2008)

SPEAKING ENGAGEMENTS

Stewards of the Coyote Valley Guest Lecture, Joshua Tree, California, 2016. "There is Life Here: An appeal to conserve the Mojave Desert."
The Wildlife Society (western Section) Conference, Sacramento, California, 2013. "Desert Tortoise and the Ivanpah Solar Electric Generating System (ISEGS): An update on translocation and the implementation of a long-term monitoring program."
The Irvine Ranch Conservancy Guest Lecture Series, 2011. "Ants: The tiny things that run the world."
The Wildlife Society (Western Section) Conference. Sacramento, California, 2009, "Climate and Cooperation: Nesting Strategies of the California Seed-Harvesting Ant, "*Pogonomyrmex californicus*"
Pacific Coast Entomological Society Meeting, UC Berkeley, California, 2009, "Climate and Cooperation: Nesting Strategies of the California Seed-Harvesting Ant, "*Pogonomyrmex californicus*"

PUBLICATIONS

KELLY HERBINSON

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Hegeman, E., Farnsworth, M., Zachmann, L., Herbinson, K., Jackson, T.G., Dickson, B. 2013. Exploratory Data Analysis from a translocation study of Mojave Desert tortoise, *Gopherus agassizii*. (Poster). International Congress for Conservation Biology 2013.

Herbinson, K. 2012. "Female Trouble" from Laramie: A Gem City Atlas. Mission and 10th Literary Journal.

Herbinson, K. 2010. Natural Selection. Creative Non-Fiction, Issue #40.

Herbinson, K. and Renken, M. 2010. The Science Posse: Innovative Outreach Connecting Graduate Fellows and K-12 Students. American Physical Society: Forum on Education.

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Kent Hughes

Senior Biologist

Mr. Hughes is a Botanist and Wildlife Biologist specializing in plant identification and in the identification, analysis, and restoration of Great Basin and Southwest native plant communities. He has more 15,000 hours of vegetation survey field experience in the Mojave and Sonoran Deserts, the Great Basin, and coastal and central California. Mr. Hughes has been involved in habitat restoration since 1979. He has been directly involved in the development of revegetation/restoration plans for sites ranging from 2 to 5,000 acres in size and in range condition improvement experiments in association with the Utah State University Agricultural Experimental Station, as well as range improvement projects for the BLM and private land-owners.

In addition, Mr. Hughes has over 4,500 hours of field experience conducting surveys for desert tortoises and, as a permitted handler, has handled more than 110 tortoises. In addition, Mr. Hughes is experienced in small mammal trapping and in performing burrowing owl, fringe-toed lizard, and flat-tailed horned lizard surveys. He has also performed restoration compliance inspections, assisted in the implementation of mitigation programs for large projects, conducted reconnaissance-level and focused wildlife surveys, investigated environmental impacts in terms of biological resources, field-supervised 30+ biological monitors, and conducted wetlands and jurisdictional waters delineation surveys.

Education

B.S., Zoology, California Polytechnic State University, Pomona

Designated Biologist Qualifications

Survey	Monitoring	Additional
- Slender Horned Spineflower	- Rare Plants	- Local Project Experience
- Upland Birds	- Upland Birds	- Construction Monitoring
	- Nesting Birds	

Registrations, Certifications, Permits and Affiliations

- State of California Scientific Collecting Permit including authorizations for desert tortoise handling and telemetry
- Line Distance Sampling Training, U.S. Fish and Wildlife Service
- Emergency Response, First Aid, and CPR

Professional Experience

Vegetation Survey, proposed powerline corridor, Blythe to San Bernardino, San Bernardino County.
Biologist surveyed 160-mile proposed powerline corridor for vegetation communities, burrowing owl,

desert tortoise, and Coachella fringe-toed lizard. Also assessed potential for the occurrence of special status plant species.

Desert Tortoise Nutrition Study – Smithsonian National Zoological Park. Biologist conducted protocol transect vegetation surveys to determine frequency of high nutrition plant species in 4 areas of the East Mojave Desert.

Baseline Vegetation and Sensitive Plant Surveys, Pearblossom, San Bernardino County – Vulcan Materials. Botanist performed baseline vegetation surveys and sensitive plant surveys on 800-acre gravel-mine property.

Baseline vegetation, vegetation community mapping, and sensitive plant surveys Ivanpah Valley, San Bernardino County. Biologist led vegetation surveys, including focused surveys for 17 sensitive plant species, on an 11 square mile site near Primm (Stateline), Nevada in the Ivanpah Valley.

Sensitive Plant Species Focused Surveys, Big Bear Lake, San Bernardino County. Botanist conducted focused surveys for sensitive species, including pebble plain endemics, on 400-acre site near Big Bear Lake, CA.

Baseline Vegetation, Vegetation Mapping, and Sensitive Plant Surveys, Rialto, San Bernardino County. Botanist conducted initial floristic surveys, vegetation community mapping, and subsequent focused surveys for 7 sensitive plant species on 60-acre site in Rialto, CA.

Baseline Vegetation and Sensitive Plant Surveys, Ft. Irwin, San Bernardino County. Botanist performed baseline vegetation surveys and focused plant surveys for sensitive plant species along a 31-mile proposed rail spur route from Interstate 15 to Ft. Irwin. Supervised crew of 4 botanists assisting in the survey.

Baseline Vegetation and Sensitive Plant Surveys, State Route 395, Adelanto, San Bernardino County. Botanist conducted floristic and sensitive plants survey for 8 sensitive plant species in California Department of Transportation Right-of-Way along 16 miles of State Route 395 near Adelanto, CA

Baseline Vegetation and Sensitive Plant Surveys, State Route 18, Lucerne Valley, San Bernardino County. Botanist conducted floristic and sensitive plants survey for 6 sensitive plant species in Caltrans right-of-way along 3 miles of state route 18.

Baseline vegetation community mapping, Devil's Gate Sediment Removal project, Los Angeles County. Biologist led baseline vegetation community surveys within the Devil's Gate Project area in Pasadena, California.

Baseline vegetation, vegetation community mapping, and sensitive plant surveys, Dry Lake Valley, NV. Biologist led vegetation surveys, including focused surveys for 9 sensitive plant species, on 6.5 square mile site.

Vegetation Survey, proposed powerline corridor, Lancaster to Santa Clarita, Los Angeles County. Botanist surveyed 40-mile proposed powerline corridor to determine vegetation communities and the potential for occurrence of special status plant species.

Vegetation surveys along proposed water pipeline corridor between northeastern Nevada and Las Vegas, NV. Botanist conducted surveys for plant species of special concern, vegetation community mapping, and baseline vegetation data.

Focused Sensitive Plant Surveys, Santa Clarita, Los Angeles County. Biologist conducted focused vegetation surveys for San Fernando Valley spineflower, Plummer's mariposas lily, and Nevin's bricklebush on 1700-acre site.

Quantitative Vegetation Surveys, Los Angeles County – Edwards Air Force Base (EAFB). Biologist conducted line intersect vegetation surveys on 56 sites on EAFB in conjunction with Habitat Quality Assessment annually from 2002 to 2006.

Sensitive Plant Surveys, Murrieta, Riverside County. Botanist conducted focused surveys for six listed or sensitive species on a 102-acre site in Murrieta.

Biological Reconnaissance Survey/Vegetation Mapping/Wetland Delineation, Norco, Riverside County. Biologist conducted floristic survey and vegetation mapping on 400-acre site. Also assisted in determination of presence and extent of any jurisdictional wetlands on the property.

Baseline Vegetation Study and Analysis/Restoration Plan Creation, Placerville, El Dorado County – Chile Bar Slate Mine. Biologist performed baseline vegetation surveys on 40-acre slate mine in Eldorado County. Developed and wrote restoration plan for the property in accordance with SMARA requirements.

Biological Reconnaissance Survey, Pasadena, Los Angeles County – Los Angeles Department of Public Works. Biologist performed reconnaissance-level vegetation surveys of proposed parkland restoration area in the Lower Arroyo area of Pasadena.

Baseline Vegetation, Vegetation Mapping, and Sensitive Plant Surveys, Castaic, Los Angeles County. – Botanist conducted initial floristic surveys, vegetation community mapping, and subsequent focused surveys for 8 sensitive plant species on 600-acre site near Castaic, CA

Baseline Vegetation, Vegetation Mapping, And Sensitive Plant Surveys, Soledad Canyon, Los Angeles County. Botanist conducted initial floristic surveys, vegetation community mapping, and subsequent focused surveys for 7 sensitive plant species on 1500-acre site in Soledad canyon, Los Angeles County, California.

Baseline Vegetation, Vegetation Mapping, Sensitive Plant Survey and Oak Tree Survey, Chinese Camp, Tuolumne County. Botanist conducted initial floristic surveys, vegetation community mapping, and subsequent focused surveys for 5 sensitive plant species on 400-acre site. Also, inventoried all oaks (2400+) on the site.

Sensitive Plants Flagging, Lemon Grove, San Diego County. Botanist surveyed for and flagged plants belonging to eleven plant species in path of freeway extension. Plants were to be moved to mitigation site prior to beginning of project.

Carley Lancaster

Staff Biologist

Ms. Lancaster has over 6 years of experience as a biologist working with terrestrial and aquatic biological resources throughout California and has worked in a variety of habitats in Mono, Los Angeles, Kern, Riverside, San Bernardino, and San Diego Counties. She has experience working with special status species including the burrowing owl, coastal California gnatcatcher, southwestern willow flycatcher, least bell's vireo, desert tortoise, arroyo toad, Santa Ana sucker, and San Bernardino kangaroo rat. Ms. Lancaster is experienced in construction monitoring, conducting nesting bird surveys, conducting general wildlife surveys, conducting focused protocol surveys, conducting rare plant surveys, conducting horticultural and quantitative monitoring for vegetation communities, performing CRAM assessments, and performing wetland delineations. Ms. Lancaster also has experience in design and implementation of restoration plans for upland, riparian, and wetland habitats. She has worked with a variety of government agencies, university and non-government organizations, as well as private and public clients. Ms. Lancaster has also assisted with the preparation of large and complex documents and technical reports, such as Habitat Mitigation and Monitoring Plans and annual reports for various projects.

Education

B.S., Environmental Biology, California Polytechnic University, Pomona, California, 2012

Registrations, Certifications, Permits and Affiliations

- Plant Voucher Collecting Permit #2081(a)-18-127-V Expires 12/31/21
- International Society of Arboriculture Certified Arborist – Certification ID WE-11837A exp 10/30/2020
- The Desert Tortoise Council
- International Society of Arboriculture, Western Chapter, ID CH-13237

Professional Experience

Aurora Solar Rare Plant Survey, San Bernardino County – Sub to Aspen Environmental (2017). Biologist responsible for conducting a rare plant survey on a proposed 4,500-acre solar farm in Lucerne Valley. Target species included Mojave monkey flower (CNPS 1B.2), desert *cymopterus* (CNPS 1B.2), and *Clokey's cryptantha* (CNPS 1B.2). Surveys were negative.

Cajon Creek Rare Plant Survey, San Bernardino County – County of San Bernardino (2017). Biologist responsible for leading a rare plant survey on approximately 400 acres of land to assist the County of San Bernardino in creating the San Bernardino Flood Control District Conservation Bank. Responsibilities included survey preparation, leading focused surveys, processing data, and writing a technical report for the survey. Three species of rare plants, Santa Ana River woollystar (CNPS 1B.1), Southern California black walnut (CNPS 4.2), and Plummer's mariposa lily (CNPS 4.2), were discovered during the survey.

Lebata Big Rock Creek Surface Mining Project, Los Angeles County – McGee and Associates as a sub to Sespe Consulting, Inc. (2015–Ongoing). Biologist responsible for monitoring construction, scheduling focused surveys, and conducting surveys for nesting birds and other sensitive species. Also responsible for monitoring the health and establishment of 39 Joshua trees that were transplanted as part of the mitigation measures. The Project involves the construction and operation of a new sand and gravel mine in the Antelope Valley area of Los Angeles County. The Project involves mining a total of 46.48 million gross tons of sand and gravel over a period of approximately 47 years in three distinct phases. The Project area is comprised of approximately 310 acres, of which approximately 282.4 acres are proposed for excavation. The project proponent is currently initiating Phase I of the Project, which includes 80 acres. Construction monitoring of chain link and desert tortoise fence installation was conducted prior to Phase I initiation.

MSHCP Compliance Report for Galway, Riverside County – Cask Engineering and Consulting, Inc. (2017). Biologist responsible for conducting a reconnaissance level biological survey to assess the potential need for focused surveys for a 400-acre site. The site was determined to have a low potential to support burrowing owl, Vail Lake ceanothus (CNPS 1B.1), Nevin's barberry (CNPS 1B.1), and slender-horned spineflower (CNPS 1B.1). Also assisted with the design and planning of the focused rare plant surveys for the project. One coastal California gnatcatcher was observed carrying nesting material and a second coastal California gnatcatcher was heard vocalizing during the survey.

Burrowing Owl Surveys - Santa Ana River Trail, Riverside County – First Carbon Solutions (2016). Wildlife Biologist responsible for conducting protocol level focused burrowing owl surveys for a trail creation project. The 25 miles of trail will run along the Santa Ana River from approximately Arlington Avenue at Hidden Valley Nature Center to Green River Road at the Green River Golf Course entrance. Potential burrows with signs including whitewash were discovered during the surveys.

Cactus Transplant Monitoring – Big Rock Creek Phase 2, Los Angeles County – Vulcan Materials Company (2016). Wildlife Biologist responsible for monitoring transplant activities for 29 salvageable beavertail cactus. Cactus were transplanted to the Phase 1 area where mining is complete and to an adjacent ecological restoration area. This project involves sand and gravel mining of a 840-acre project site. Ecological Area to be used as mitigation for the mining operations.

Sensitive Plant Survey Thousand Palms, Riverside County – HORUS Renewables Corporation (2015). As a botanist, performed focused botanical surveys for state and federal sensitive plants on a 157-acre site for a proposed solar site. Target species included Chaparral sand-verbena (*Abronia villosa var. aurita*), Abrams' spurge (*Chamaesyce abramsiana*), Flat-seeded spurge (*Chamaesyce platysperma*), California ditaxis (*Ditaxis serrata var. californica*), and California marina (*Marina orcuttii var. orcuttii*). Surveys were negative.

SR-2 Rare Plant Surveys, Los Angeles County – California Department of Transportation District 7 (2015). Biologist participated in focused rare plant surveys along a 20-mile section of SR-2 within the Angeles National Forest. Invasive plants such as Russian thistle were surveyed for as well. Target species included Abram's oxytheca (CNPS 1B.2 and FS Sensitive), scalloped moonwort (CNPS 2B.2 and FS Sensitive), southern alpine buckwheat (CNPS 1B.3 and FS Sensitive), and Peirson's lupine (CNPS 1B.3 and FS Sensitive). Several populations of Perison's lupine were identified and mapped during the survey.

High Desert Corridor Sensitive Plant Surveys and Focused Surveys, Victorville to Palmdale, San Bernardino and Los Angeles County – Caltrans (2015). ECORP provided biological resources studies for the High Desert Corridor Project, a proposed new 65-mile freeway between Palmdale and the Lucerne Valley and includes portions of both Los Angeles County (under jurisdiction of Caltrans District 7) and San Bernardino County (under jurisdiction of Caltrans District 8). Biologist participated in focused sensitive plant surveys for various species including Booth's evening primrose (CNPS list 2.3), Lancaster milk-vetch (CNPS list 1B.1), and San Bernardino aster (CNPS list 1B.2) along the proposed alignments. Desert tortoise sign was observed during these surveys. Biologist also participated in focused surveys for southwestern willow flycatcher, least Bell's vireo, and yellow-billed cuckoo. Survey was positive for least Bell's vireo.

Environmental Generalist Services Task Order Contract, Los Angeles County – Caltrans District 7 (2014–ongoing). Wildlife biologist responsible for biological resource studies under a task order contract for Caltrans District 7 (includes all of Los Angeles County). Under this program, the consultant/contractor serves as an extension of District 7 biological services staff, performing habitat assessments, focused surveys for sensitive species, jurisdictional waters delineations, and cultural and paleontological surveys for a wide range of Caltrans projects. ECORP staff managed and conducted studies for 13 task orders, including worked on the following tasks:

- Focused burrowing owl surveys for SR-138 between I-5 and SR-14
- Focused rare plant surveys between I-5 and SR-14

Nest Updates and Scheduling Coordination-Tehachapi Renewable Transmission Project (TRTP) Segments 4-11, Los Angeles County – Southern California Edison (2012-2013). Wildlife Biologist responsible for working with avian biologists in conducting nest status updates for various species of birds and raptors including rock wrens, common ravens, American robins, burrowing owl, and red-tailed hawks. Ms. Lancaster understands buffer implementation, nest status progression, and the procedures for establishing anticipated fledge dates for various species of birds and raptors. Worked with Southern California Edison in the scheduling coordination of qualified monitors for special status species including arroyo toad, least Bell's vireo, desert tortoise, and Mohave ground squirrel.

Pre-Construction Wildlife Surveys - Romero Canyon, Los Angeles County – City of Castaic (2012). Wildlife Biologist responsible for conducting a pre-construction wildlife surveys for special-status species including the silvery legless lizard, coastal western whiptail, San Diego horned lizard, San Diego desert woodrat, southern grasshopper mouse, American badger, San Diego black-tailed jack rabbit, California condor, and burrowing owl. Ms. Lancaster also assisted in conducting surveys for woodrat middens, burrowing owl burrows, and American badger dens.

Professional Development Courses/Training

- Desert Tortoise Surveying, Monitoring, and Handling Workshop, Desert Tortoise Council, Ridgecrest, California, November 2012
- Introduction to Plant Identification and Ecology, University of California Riverside Extension, April 2016
- Calflora Training at Starr Ranch, Calflora, January 2017

Don Mitchell

Principal Biologist/Vice President, Southern California Operations

Mr. Mitchell has over 30 years of applied and research experience in the field of environmental science, with particular emphasis on wildlife assessments, impact analysis, and project management. He has extensive experience in managing and conducting biological studies, focused threatened and endangered species surveys, sensitive habitat surveys, and the use of Geographic Information Systems (GIS) as an analysis tool for environmental studies, as well as preparing biological reports, mitigation and monitoring plans, Biological Assessments (BAs), Initial Studies (ISs), Environmental Assessments (EAs), and Environmental Impact Reports (EIRs). He specializes in designing, budgeting, and managing cost effective biological studies for large, complex projects. He has also conducted and managed surveys for the Mohave ground squirrel, desert tortoise, San Joaquin kit fox, Stephens' kangaroo rat, San Bernardino Merriam's kangaroo rat, California gnatcatcher, California red-legged frog, arroyo southwestern toad, unarmored threespine stickleback, and a wide variety of Mojave Desert and southern California terrestrial plant and wildlife species. He is familiar with the protocols and guidelines of the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and U.S. Army Corps of Engineers (USACE), as well as other local, state, and federal agencies.

Education

M.S., Zoology, Northwestern State University of Louisiana, Natchitoches

B.S., Biology, University of Redlands, California

Registrations, Certifications, Permits and Affiliations

- CDFW Scientific Collecting Permit (SC-001869)
- Principal Investigator on MOU with CDFW for studies of Mohave Ground Squirrel, Palm Springs Ground Squirrel, White-Eared Pocket Mouse, Palm Springs Pocket Mouse, Tehachapi Pocket Mouse, Jacumba Pocket Mouse, Mojave River Vole, Arizona Cotton Rat, and Hispid Cotton Rat (SC001869)
- Mohave Ground Squirrel Technical Advisory Group
- The Desert Tortoise Council Survey Techniques, Report Writing, and Handling Procedures Workshop - October 1995

Professional Experience

Biological Surveys and Reports for the Aurora Solar Project, San Bernardino County – Sub to Aspen Environmental Group for California State Lands Commission (2017–present). As a subcontractor to Aspen Environmental Group, ECORP Consulting, Inc. (ECORP) provided biological services for the proposed Aurora Solar Project, located in Lucerne Valley, San Bernardino County. Serving as ECORP's Project Manager and Principal Biologist for the project. The project site encompasses approximately 4,150 acres, and focused surveys for rare plants and desert tortoise were performed on approximately 3,000 acres. A habitat assessment for Mohave ground squirrel was conducted, and sign and individuals of burrowing owl,

American badger, and desert kit fox were documented as incidental findings during all surveys and visits conducted at the site. In addition, a GIS-based delineation of CDFW waters of the state was performed and followed up by field verification of aquatic resources. Surveys were performed in support of the CEQA process for a proposed solar facility with associated gen-tie lines. ECORP assisted Aspen with regulatory agency coordination and reporting in support of the CEQA environmental review process.

High Desert Solar Project, San Bernardino County – Middle River Power, LLC (2017-Ongoing). Principal in Charge for a proposed solar field area, generation-tie line, and associated facilities in the City of Victorville. ECORP is the environmental lead for the project and is responsible for coordinating habitat assessments and protocol-level surveys for special-status species (Mohave ground squirrel, desert tortoise, burrowing owl, rare plants); authoring the survey results reports, biological impacts analysis, and the Section 2081 Incidental Take Permit application to CDFW; providing overall guidance and permitting support for mitigation planning, Section 2081 of the California Endangered Species Act permitting process, and Section 10 of the federal Endangered Species Act permitting process; and coordinating with USFWS and CDFW regarding biological resources pertaining to the project.

On-Call Environmental Services, San Bernardino County – Golden State Water Company (2017-Ongoing). Principal in Charge and Contract Manager for environmental services for multiple Golden State Water Company (GSWC) projects. Projects included:

- **Barstow Reservoir, San Bernardino County.** Performed a literature review and biological reconnaissance survey for a 2-acre site proposed for a water reservoir in support of a Mitigated Negative Declaration. The vegetation on site was mapped and an assessment of potential habitat for desert tortoise, Mohave ground squirrel, and burrowing owl was performed. Following the site visit, a biological technical report consistent with the County of San Bernardino reporting requirements was prepared.
- **Kiowa Well Project, San Bernardino County.** The project consisted of the construction of a new water tank, a new booster station, and the drilling of one replacement groundwater well on approximately 4.4 acres in Apple Valley. The new Kiowa well would replace Mohawk Well 3A. The reservoir and boosters were constructed to meet current system demand in the Mohawk and Anoka pressure zones during maximum day demand with fire flow conditions. The California Department of Public Health (DPH) served as the CEQA lead agency and issued a water supply permit to the GSWC for the project. ECORP prepared the CEQA IS/MND and technical studies for air quality/greenhouse gas, biological resources, and cultural resources. ECORP also conducted preconstruction burrowing owl, nesting bird, and desert kit fox surveys, WEAP training, and on-call cultural resources and paleontological resources monitoring during construction.
- **Eaton Reservoir Project, San Bernardino County.** Completed several biological and cultural resources studies for GSWC's Barstow Reservoir Project on 2 acres in Barstow. ECORP performed a literature review and biological reconnaissance survey and an assessment of potential habitat for desert tortoise, Mohave ground squirrel, and burrowing owl was performed. ECORP conducted protocol-level burrowing owl surveys of the project site and the vicinity and prepared a biological technical report detailing the survey findings. ECORP conducted protocol-level rare plant and desert tortoise surveys of

the project site and the vicinity and prepared a biological technical report detailing the survey findings. ECORP performed a cultural resources records search and survey. ECORP also conducted an archaeological test program for a prehistoric and historic archaeological site. Surface scrapes and shovel test pits were completed in order to provide a sample of the artifact types present. The results were used to evaluate the site using the CRHR eligibility criteria. The methods, results, and the evaluation were provided in a cultural resources technical report. ECORP assisted with responding to agency comments on the GSWC-prepared IS/MND. Finally, ECORP conducted preconstruction burrowing owl and desert tortoise surveys, conducted WEAP training, and provided on-call monitors for Archaeology and paleontology.

Environmental Generalist Services Task Order Contract, Los Angeles County – Caltrans District 7 (2015-2019). Two-Time Program Manager for a multi-year on-call environmental services contract with Caltrans District 7. This contract covers the Mojave Desert and Angeles National Forest areas of Los Angeles County. Under this program, the consultant/contractor essentially serves as an extension of District 7 environmental staff, performing biological resources studies, cultural resources studies, preparing NEPA/CEQA documents, performing air quality, noise, public outreach, and other environmental services for a wide range of Caltrans projects. Task orders to date include:

- Biological and cultural resources studies for the widening of State Route (SR) 138 from SR14 to Interstate 5
  - Vegetation mapping
  - Specialized botanical surveys
  - Desert tortoise surveys
- High Desert Corridor Project – 65-mile new freeway/multi-modal transportation facility between Palmdale and Lucerne Valley, Los Angeles and San Bernardino Counties.
  - Final Environmental Document (with PARSONS)
  - Curation of artifacts from Cultural Resources studies

Verizon Flash II Fiber Optic Installation, Desert Tortoise Monitoring, Barstow, San Bernardino County – Verizon (2011). Project Manager for desert tortoise monitoring during the burial of 1000 feet of fiber optic cable on public BLM lands. Verizon requested to bury the 1000ft of optic cable that was being subjected to public recreational target shooting.

Biological Monitoring for a Pipeline Rehabilitation Project on the Chocolate Mountains Aerial Gunnery Range, Riverside County – Coachella Valley Water District (CVWD) (2010). Project Manager for desert tortoise monitoring during the rehabilitation of several miles of CVWD pipeline on the U. S. Navy's Chocolate Mountains Aerial Gunnery Range in Riverside and Imperial Counties.

Corey Irene Mitchell

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Education

University of Wisconsin-Madison
Bachelor of Science
Majors: Zoology
Biological Aspects of Conservation
Certificate: Environmental Studies
Completed: May 2006
Overall GPA: 3.3/4.0

University of Wisconsin-Stevens Point
Study Abroad: Tropical Ecology of Costa Rica
Winterim 2003-2004

Related Experience

Corey Mitchell Biology, Tucson, AZ **March 2008-present**
Self-employed field biologist specializing in Mojave Desert flora and fauna, including Agassizi's desert tortoise (*Gopherus agassizi)*
Current and past contracts include**:**
Ironwood Consulting, Inc., Redlands, CA for First Solar and Lockheed Martin
Alice Karl & Associates, Davis, CA for Next Era Energy
Kiva Biological, Ridgecrest, CA for Fort Irwin National Training Center
Sundance Biology, Paso Robles, CA for BrightSource Energy
•Searched for desert tortoise (*Gopherus agassizii)* sign: scat, tracks, burrows, carcasses, and live animals
•Identified and searched for desert flora and fauna species of special concern
•Created a coding system for data collection, managed and entered data using Microsoft Access/Excel
•Attached raido-transmitters to 50+ tortoises for future monitoring/translocation
•Compiled a botanical inventory of study sites by completing 100% coverage vegetation surveys
•Utilize GPS to navigate, walk transects, and mark points of interest
•Lead telemetry crew for Desert Sunlight Solar Farm project as well as two other proposed projects: Stateline Solar Project and Silver State South Solar Project

Indiana University, Semliki Chimp Project, Toro-Semliki Reserve, Uganda **January 2013-June 2013**
Assistant Project Director
•Tracked eastern chimpanzees (Pan troglodytes schweinfurthii) in the preserve by locating sign
•Continued habituation work and work to identify individual chimpanzees
•Managed data collection, local field staff, accounting, and camp maintenance

Columbia University, Kakamega Blue Monkey Project, Kakamega, Kenya **June 2008-July 2009**
Field Manager
•Managed a long-term field site including management of five local assistants, managed graduate student projects in their absence, data collation and entry, collection and organization of fecal samples, performed necropsies as needed, scheduling, payroll, bookkeeping, public and community relations
•Learned to individually recognize over 150 wild blue monkeys (*Cercopithecus mitis*)
•Recorded behavioral observations using adlib, instantaneous, and continuous all occurrence sampling
•Utilized GPS to navigate and map new territory ranges
•Learned to identify many indigenous and nonnative plant species

University of California-Los Angeles (UCLA), **June 2006-May 2007**
Lomas Barbudal Capuchin Monkey Project, Bagaces, Guanacaste, Costa Rica
Field Assistant
•Learned to individually recognize over 100 wild white-faced capuchins (*Cebus capucinus*)
•Collected and processed fecal samples for later hormone analysis and DNA paternity testing
•Recorded behavioral observations using adlib, instantaneous, and continuous all occurrence sampling on PSION handheld computers
•Utilized GPS to navigate, map territory ranges, fruit trees, and foraging routes
•Learned to identify many indigenous and nonnative plant species

Henry Vilas Zoo, Madison, WI **January 2006-May 2006**
Education Intern
•Executed educational programs for school aged children to provide education about the natural world
•Supervised the interaction of visitors with education animals
•Participated in the outreach program by taking animals off zoo grounds for demonstrations

University of Wisconsin, Department of Biochemistry, Madison, WI **November 2005-May 2006**
Lab Assistant
•Performed health checks for a rodent colony used in research studies

Research Animal Resources Center, Madison, WI **September 2002-May 2006**
Necropsy Lab Technician
•Provided laboratory support for the rodent disease surveillance program by completing necropsies, serology, and parasitology for sentinel animals
•Collaborated with a veterinary pathologist in collecting and analyzing samples during necropsies
•Utilized a variety of laboratory procedures and techniques for research purposes that include parasitology, bacteriology, urinalysis, histology, and serology

University of Wisconsin Psychiatric Institute and Clinics, Madison, WI **May 2004-May 2006**
Animal Caretaker/Research Assistant
•Designed and constructed a prototype for conducting aversive air studies specific to songbirds
•Provided overall care for 100 plus songbirds used in research studies
•Prepared and monitored birds for on-going research using learned operant behaviors

Candlin Pet Hospital, Madison, WI **August 2004-May 2006**
Kennel Assistant
•Monitored and administered medication to recovery and boarded animals
•Handled customer needs by providing prescription medication and food

Caldwell Zoo, Tyler, TX **January 2005-May 2005**
Mammals II Intern
•Participated in all aspects of exotic animal health care including veterinary procedures, yearly examinations, capture-restraint procedures, and knockdowns
•Provided overall care for primates, carnivores, and exotic hoof stock
•Created environmental enrichment for animals in exhibits and enclosures

Publications

•Ives, A.R., Paskewitz, S.M (2005). Testing Vitamin B as a Home Remedy Against Mosquitoes. *Journal of the American Mosquito Control Association*, 21(2), 213-217.
Designed and conducted research as part of course curriculum to test vitamin B as a systemic repellant of mosquitoes

Presentations

•Los Monos Azules de Africa (in Spanish). Presented to school-aged children at Escuela de Pijije, Pijije, Guanacaste, Costa Rica as part of an environmental education program. July 22, 2010.
•Testing Procedures for Pinworm Detection in Rodent Colonies. Presented at the University of Wisconsin Undergraduate Symposium 2006. April 11, 2006.
•Yellow Backed-duiker Introduction at the Caldwell Zoo in Tyler, Texas. Presented to animal care staff, Caldwell Zoo, Tyler, Texas. May 3, 2005.

Languages

Spanish

Volunteer

University of California Davis, Proboscis Monkey Project, Tolak, Borneo, Indonesia **July 2011**
•Assisted with locating study groups of proboscis monkeys (*Nasalis larvatus*) and data collection

CEDES Tortoise Project, Sonora, Mexico **September 2010**
•Handled, measured, removed, and attached transmitters to monitor desert tortoises
•Searched for and tracked tortoises in a tropical dry forest
•Utilized Spanish on a daily basis

Corey Irene Mitchell

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References

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More references will be provided upon request

Max Murray

Associate Biologist

Mr. Murray has six years of experience conducting biological research and surveys in California. He has experience working with special status ichthyofauna, herpetofauna, and avifauna including: arroyo chub (*Gila orcutti*), Owens sucker (*Catostomus fumeiventris*), Santa Ana sucker (C*atostomus santaanae*), Santa Ana speckled dace (*Rhinichthys osculus* spp.), tidewater goby (*Eucyclogobius newberryi*), threespine stickleback (*Gasterosteus aculeatus*), arroyo toad (*Anaxyrus californicus*), California Red-legged Frog (*Rana draytonii*), two-striped garter snake (*Thamnophis hammondii*), Mojave desert tortoise (*Gopherus agassizii*), Western pond turtle (*Actinemys pallida*), Western snowy plover (*Charadrius nivosus nivosus*), California least tern (*Sterna antillarum browni*), burrowing owl (*Athene cunicularia*) and least Bell's vireo (*Vireo bellii pusillus*). Mr. Murray has extensive experience with cypriniform fishes in the Santa Clara River; specifically, with hybrid populations of Owens sucker and Santa Ana sucker and the introduced population of arroyo chub found in the lower portions of the watershed. He is proficient in identifying marine and freshwater fishes, macroinvertebrates, amphibians and reptiles, algal species, and shorebirds. He has experience conducting surveys for near-shore and aquatic ichthyofauna, herpetofauna, and invertebrates using beach seines, otter trawls, plankton tows, sediment sampling, trapping, and snorkeling. Mr. Murray is an American Academy of Underwater Sciences (AAUS) scientific diver with experience conducting underwater fish and invertebrate surveys, as well as surveys for eelgrass (*Zostera marina*) and *Caulerpa taxifolia* in southern California. Mr. Murray's laboratory skill set includes identification of invertebrates, necropsy, dissection, fish ageing techniques, basic molecular and genetic techniques, and portable ultrasound. He is proficient with scientific data collection, organization, statistical analysis, and presentation of results. Mr. Murray has extensive experience with data management, analysis and visualization using the R software environment. He is experienced with the "tidyverse" collection of packages as well as base R grammar.

Education

B.S., Marine Biology, California State University Long Beach

M.S., Biology, University of California, Los Angeles

Registrations, Certifications, Permits and Affiliations

- CDFW Scientific Collecting Permit (SC# 13213)
- Member of the American Institute of Fisheries Research Biologists (2014-Ongoing)
- Member of the Southern California Academy of Sciences (2013-Ongoing)
- Member of the American Society of Parasitologists (2016-Ongoing)
- Member of the Southern California Society of Parasitologists (2016-Ongoing)
- Member of the Desert Fishes Council (2016-Ongoing)

Professional Experience

Lebata Big Rock Creek Surface Mining Project, Pearblossom, Los Angeles County – Coast Aggregates (2015).
Wildlife Biologist conducted pre-construction desert tortoise survey within the Phase 1 area and a 300-foot

buffer around Phase 1 (Biological Survey Area [BSA]). Five potential burrowing owl burrows were identified during this survey. No desert tortoise or recent sign of desert tortoise were detected within the BSA.

High Desert Corridor, Sensitive Plant Surveys, Victorville to Palmdale, San Bernardino and Los Angeles County – Caltrans (2015). ECORP provided biological resources studies for the High Desert Corridor Project, a proposed new 65-mile freeway between Palmdale and the Lucerne Valley and includes portions of both Los Angeles County (under jurisdiction of Caltrans District 7) and San Bernardino County (under jurisdiction of Caltrans District 8). Biologist participated in focused sensitive plant surveys along the proposed alignments. Mohave Desert tortoise was observed during these surveys.

Devil's Gate Reservoir Restoration Project – Los Angeles County Department of Flood Control (June 2019-Ongoing). Biologist for biological monitoring under an on-call environmental services contract with the Los Angeles County Department of Public Works (LACDPW) for the Devil's Gate Reservoir Restoration Project. The purpose of the project is to restore flood capacity of the Devil's Gate Dam and reduce flood risk by removing 1.7 million cubic yards of sediment that has accumulated upstream of the dam. The project will also establish a permanent maintenance area and more sustainable management system, in addition to restoring habitat within the project area. The project involves initial vegetation removal, construction of access roads into the reservoir, sediment removal, and restoration. ECORP provided environmental services associated and/or required by the Mitigation Measures in the Environmental Impact Report and the conditions outlined in the Streambed Alteration Agreement (SAA), Incidental Take Permit (ITP), and the Informal Section 7 Consultation for the Devil's Gate Reservoir Sediment Removal and Management Project. Services included preparing Worker Environmental Awareness Training (WEAP) and conducting biological monitoring during restoration and construction activities. Mr. Murray worked on task orders that included: biological monitoring during construction and restoration phases. Duties included monitoring construction activities, monitoring and updating biological resources on the project site (bird nests, buffer zones and special status species observations), monitoring restoration crews while removing nonnative vegetation and harvesting native vegetation cuttings for propagation, providing worker environmental awareness program (WEAP) trainings to construction and restoration workers.

Nesting Bird Survey and Construction Monitoring for Angeles National Forest Road Improvements – Los Angeles County Public Works (July 2019–August 2019). Biologist conducted nesting bird surveys and construction monitoring along San Francisquito Canyon Road and Bouquet Canyon Road. One active phainopepla (*Phainopepla nitens*) nest was detected within the 300-foot buffer on Bouquet Canyon Road (MM 8.21-8.11). The active nest was monitored during construction activity until the nestlings fledged.

North Torrey Pines Bridge Retrofit Project, Del Mar, San Diego County – City of Del Mar as a Sub to T.Y. Lin International (2016). Field biologist assisted in botanical monitoring, and maintenance of a 1.5-acre off-site restoration area and another 1.5-acre on-site restoration area, which includes the management of sensitive plant species. Performed detailed and careful weeding of non-native weeds in order to increase the survival rate of native annual plants, including rare plants, such as Orcutt's yellow pincushion (*Chaenactis glabriuscula var. orcuttiana*).

Biological Monitoring for Phase II of the Santa Ana River Trunk Sewer Replacement Project, Riverside County – City of Riverside (2016). Biologist monitoring for the City's Santa Ana River Trunk Sewer Replacement Project in Riverside, California. Phase II of the project consists of construction of approximately 10,400 feet of new 48-

inch diameter trunk sewer to replace the existing aging trunk sewers located parallel to the Santa Ana River from the northern end of the Martha McLean-Anza Narrows Park to Tequesquite Avenue. Burrowing owls and Least Bell's Vireos have been previously recorded within the project boundary and the project right-of-way has suitable locations for raptor nesting/breeding. Duties included coordinating with biological monitors, the client, and construction management/personnel regarding sensitive biological resources and ACOE and CDFW, State and Federal Jurisdictional Wetlands and delineation. Other responsibilities included providing input regarding biological resource issues and compliance to the client and contractor.

Big Tujunga Creek Nonnative Aquatic Fauna Removal within the Angeles National Forest, Los Angeles County — USDA Forest Service (2015). Biologist conducted removal efforts within Big Tujunga Creek from the Big Tujunga Dam downstream to the Angeles National Forest boundary. The focus of this project was to remove nonnative fishes, reptiles, amphibians, and invertebrates detrimental to the success of special-status and other native watershed species. Sampling methods included backpack electrofishing, beach seining, dip-netting, fyke-netting, gill netting, and spearfishing. All nonnative species captured during the course of this project were humanely euthanized and taken off Angeles National Forest land for disposal in a manner that would not promote their introduction/establishment in other areas.

Tehachapi Renewable Transmission Line Project (TRTP) Segment 6 and 11, Los Angeles County – Southern California Edison (2013-2014). Biologist monitored construction activities on Segment 6 and 11. Duties included daily communication with contractors and lead biological monitor regarding construction activities and ever-changing buffers around sensitive resources (bird nests, bat roosts, woodrat middens, arroyo toads, California red-legged frogs, and rare plants), and daily monitor report.

Tehachapi Renewable Transmission Line Project (TRTP) Segment 11, Los Angeles County – Southern California Edison (2013). Biologist conducted pre-construction surveys on Segment 11. Duties included identification of resources (bat roosts, jurisdictional drainages, and rare plants), and establishing buffer zones for the resources.

Professional Development Courses/Training

- 2016 Burrowing Owl Workshop, The Southern California Chapter of the Wildlife Society
- 2015 American Heart Association First Aid CPR AED certification
- 2015 Divers Alert Network Emergency Oxygen provider
- 2015 OSHA 10 Hour Outreach Training Program
- 2014 Mojave Desert Tortoise Workshop
- 2014 Sea and Sage Audubon Society Birds of Southern California
- 2013 American Fisheries Society, Power-Based Standardization in Electrofishing
- 2013 Angeles National Forest Safety Training
- 2013 Tehachapi Renewable Transmission Project Worker Environmental Awareness Program Training, Segments 4-11
- 2013 Tehachapi 4-11 Project Site Safety Orientation

Jonathan Renard

Biologist

Mr. Jonathan Renard is a field biologist with over seven years of experience working with the flora and fauna of the Mojave Desert and Angeles National Forest. He has performed surveys and monitored for desert tortoise, with over 1,000 individual desert tortoise encounters and 10 desert tortoise handling encounters while working under a permitted biologist. Mr. Renard also has acted as the CDFW and USFWS-approved Authorized Biologist for desert tortoise on a transportation project. He is trained in identifying many species within the southwest region and has conducted reconnaissance-level and detailed wildlife surveys, and focused surveys for threatened/endangered species such as desert tortoise, Southwestern Willow Flycatcher, Least Bell's Vireo, coastal California gnatcatcher, and California red-legged frog. He has surveyed for and positively detected over 60 California red-legged frogs, handled 14 individuals, and also implanted PIT tags in 10 individuals while working under a permitted biologist. He also has experience with desert kit fox, bats, and other small mammals, burrowing owl, and rare plants. Mr. Renard has worked on various large-scale projects as a lead biological monitor coordinating with clients, construction management and personnel, field environmental and construction coordinators, and biological and cultural/native monitors.

Education

B.S., Biology, University of La Verne, La Verne, California

Registrations, Certifications, Permits and Affiliations

- CDFW Scientific Collecting Permit #SC-13644 – Valid until 9/6/2020
- CDFW Authorization to Collect Voucher Specimens of State-Listed Plants (Number 2081(a)-17-008-V) – Valid until 12/31/2019
- California Native Plant Society (CNPS) Plant Families Identification Workshop, Tejon Ranch, CA, April 2017
- Flat-tailed Horned Lizard Biological Monitoring Training and Certification, El Centro, CA, Southwest Partners in Amphibian and Reptile Conservation (SWPARC), May 2014

Professional Experience

Aurora Solar Energy Project in Lucerne Valley, San Bernardino County – Aspen Environmental Group, Inc. (2017). Lead biological surveyor leading team of 4 biologists conducting a focused desert tortoise, burrowing owl, and rare plant surveys for an approximately 2400-acre project site. Three adult desert tortoises, one burrowing owl, and a natal desert kit fox den were observed during the effort. A summary of the findings was submitted to the client in the form of a biological technical report.

Highway 111 Road Widening Improvement Project, Riverside County – T.Y. Lin (2017-ongoing). Lead biologist responsible for conducting pre-construction nesting bird and burrowing owl surveys. Duties

included coordinating with the client, Riverside County, and construction management/personnel regarding sensitive biological resources. Other responsibilities included writing pre-construction survey reports, attending safety/construction scheduling meetings, and providing input regarding biological resource issues and compliance to the client, contractor, and County.

Commercial Developments in Desert Hot Springs, Riverside County – Coachillin Holdings, Inc. (2017). Lead biological surveyor conducting a burrowing owl habitat assessment and leading team of 4 biologists conducting a focused burrowing owl survey, desert tortoise survey, and pre-construction nesting bird survey for an approximately 250-acre project site. Two breeding pairs of burrowing owls (12 owls total) were observed at burrows during the survey. The effort also included installing one-way doors at 11 unoccupied burrows and two occupied burrows, monitoring for 48 hours, and then excavating each burrow according to an approved CDFW protocol.

High Desert Solar Energy Project in Victorville, San Bernardino County (2017). Lead biological surveyor leading team of 4 biologists conducting a focused desert tortoise, burrowing owl, and rare plant surveys for an approximately 2000-acre project site. One juvenile and three adult desert tortoises, and a natal desert kit fox den were observed during the effort. A summary of the findings was submitted to the client in the form of a biological technical report.

Biological Support for Rialto Municipal Airport San Bernardino Kangaroo Rat Habitat Assessment, San Bernardino County – Steven J. Montgomery Biological Consultants, Inc. (2017). Support biologist assisting permitted biologist conducting habitat assessment for the San Bernardino kangaroo rat (SBKR) in Rialto, San Bernardino County. Approximately 500 potential SBKR burrows were identified. SBKR sign (e.g. scat, tracks) and scat of other small mammals and reptiles was also documented during the survey. Other sensitive species observed during the survey included burrowing owl.

Biological Services for a Cemetery Project in Riverside, Western Riverside County – Undisclosed Developer (2016). Biologist responsible for conducting biological surveys for a proposed 314-acre cemetery in Riverside. Surveys included a jurisdictional wetland delineation, rare plant survey, and protocol-level burrowing owl surveys. State and Federal jurisdictional drainage features and wetlands were documented and mapped during the preliminary jurisdictional delineation. A population of a special-status species, San Diego tarweed, was observed at the site. No burrowing owls were observed. A jurisdictional delineation report, rare plant survey report, and burrowing owl survey report were prepared.

Biological Services for a Temecula Winery Project Proposal in Temecula, Western Riverside County – Private Developer (2016). Biologist responsible for a biological constraint analysis, burrowing owl habitat assessment, focused burrowing owl surveys, jurisdictional wetland delineation, and Western Riverside MSHCP Consistency Analysis for a proposed 23.66-acre winery and resort in Temecula. Four surveys were conducted for this project, three of them following MSHCP protocol for burrowing owl. A MSHCP Consistency Analysis was prepared based off of findings during the biological and burrowing owl surveys. No burrowing owl presence or other sensitive species were observed during the surveys. A State and Federal jurisdictional drainage feature and wetland were documented and mapped during the jurisdictional delineation.

On-Call Environmental Services Contract, Riverside County – Riverside County Flood Control and Water Conservation District (2016). Assistant biologist responsible for conducting focused burrowing owl and rare plant surveys for the Lakeland Village MDP Line H Project. The Project is located along the southern shore of Lake Elsinore in western Riverside County. Ten sensitive plant species were surveyed for, required under the Western Riverside MSHCP Narrow Endemic Species SSA. During the rare plant surveys of the property, it was determined that no individuals of the target plant species were present. No burrowing owls were observed during the focused burrowing owl surveys.

Lebata Focused Desert Tortoise and Burrowing Owl Surveys, Los Angeles County – McGee and Associates (2015). Lead biologist conducting focused desert tortoise and burrowing owl surveys in Pearblossom, California. Five potential burrowing owl burrows were identified during the survey.

Focused Biological Surveys for a Proposed Solar Energy Site, Edwards Air Force Base, Kern County – SunEdison (2012).

- **Biological Surveyor**. Support biologist for focused desert tortoise surveys conducted at an approximately 6,000-acre site proposed for a solar energy facility within the northwest corner of Edwards Air Force Base, Kern County. Desert tortoise sign (scat and burrows), and two live adult desert tortoises were observed.
- **Biological Surveyor**. Support biologist for focused burrowing owl surveys conducted at an approximately 6,000-acre site proposed for a solar energy facility within the northwest corner of Edwards Air Force Base, Kern County, according to an agency-approved modified version of California Department of Fish and Wildlife's 2012 Staff Report on Burrowing Owl Mitigation.

PSEC Black Jack Communication Site Monitoring, Desert Center, Riverside County – County of Riverside Economic Development Agency. (2011). Biological monitor responsible for assisting with focused surveys for desert tortoise, burrowing owl, and nesting birds. The site was planned for construction of a telecommunications tower for the Riverside county Fire Department and Police. The tower and associated structures occupied a 100x100 foot parcel approximately 30 feet from a main access road. Mr. Renard monitored the vegetation removal, grading, and fence installation in support of the installation of the communication tower.

Fort Irwin Army Base Desert Tortoise Survey, Mojave Desert, San Bernardino County – Kiva Biological Consulting (2008). Field biologist for a summer contract, which consisted of surveying for and tracking over 60 desert tortoises in the Mojave Desert in Barstow, California. Responsible for radio-tracking each tortoise twice per week. Assisted with X-raying females for eggs and replacing transmitters while working under a permitted biologist. Other duties included coordinating with other field biologists and supervisors, submitting daily documentation, and strategizing field efforts to stay on schedule.

Adam Schroeder

Staff Biologist

Adam Schroeder has more than eight years of experience conducting a variety of biological surveys and sampling efforts in southern California. He has worked on a broad range of projects in both the public and private sector that include focused biological surveys, biological and habitat assessments, special-status species population studies, construction monitoring for biological resources, fire impact analysis studies, the implementation of exotic species control programs, stream bioassessments, and the preparation of technical reports. Mr. Schroeder is an authorized individual under U.S. Fish and Wildlife 10(a)(1)(A) recovery permit for the federally listed as threatened Santa Ana sucker (*Catostomus santaanae*) and California red-legged frog (*Rana draytonii*). His experience also includes working with various other special status amphibian, reptile, avian, and fish species in southern California including: mountain yellow legged frog (*Rana muscosa*), arroyo toad (*Anaxyrus californicus*), western spadefoot (*Spea hammondii*), southwestern pond turtle (*Actinemys pallida*), Mojave desert tortoise (*Gopherus agassizii*), two-striped garter snake (*Thamnophis hammondii*), burrowing owl (*Athene cunicularia*), California least tern (*Sterna antillarum browni*), least Bell's vireo (*Vireo bellii pusillus*), Santa Ana speckled dace (*Rhinichthys osculus* ssp. 3), arroyo chub (*Gila orcuttii*), unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), and tidewater goby *(Eucyclogobius newberryi*). Mr. Schroeder also has experience performing general and species-specific worker environmental awareness training. He is an American Academy of Underwater Sciences certified scientific research diver, and has experience conducting underwater fish and invertebrate surveys, as well as surveys for eelgrass (*Zostera marina*) and *Caulerpa taxifolia* in the coastal waters of southern California. Mr. Schroeder is also a licensed Unmanned Aircraft Systems (UAS) operator with over 30 hours of flight time and over 4,500 acres surveyed and mapped.

Education

B.S., Zoology, University of California, Santa Barbara

A.A., Biological Sciences, Santiago Canyon College, Orange, California

Registrations, Certifications, Permits and Affiliations

- CDFW Scientific Collecting Permit (SC# 11799)
- Authorized Individual under USFWS 10(a)(1)(A) Recovery Permit for Santa Ana Sucker (TE-27460A-3) and California Red-legged Frog (TE-012973-11)
- FAA Part 107 Small Unmanned Aircraft System Certification (Cert #4089049)
- Desert Tortoise Survey Techniques Workshop (Desert Tortoise Council), 2007

Professional Experience

Aurora Solar Project - Focused Surveys for Desert Tortoise and Burrowing Owl, San Bernardino County – As a Sub to Aspen for California State Lands Commission (2017-2018). Biologist responsible for conducting protocol surveys for desert tortoise. Ten (10) meter (m) transects were walked through the

entire solar field project footprint for desert tortoise. Burrows that had previously been used by burrowing owl with sign were identified. Live tortoises, tortoise sign, and active burrowing owl burrows were identified during the survey.

Desert Tortoise Surveys for the High Desert Solar Project, San Bernardino County – Middle River Power (2019). Biologist assisted USFWS and CDFW approved authorized tortoise biologist in conducting surveys to locate tortoises in order to affix radio transmitters in preparation for their eventual translocation. Surveys were walked at 5-meter spacing and all burrows were checked using a fiber optic scope. Four tortoises were found and affixed with radio transmitters. Mr. Schroeder handled one adult female tortoise while her burrow was checked for the presence of additional tortoises.

Burrowing Owl Surveys for the Olancha/Cartago Four Lane Project, Inyo County – Caltrans District 9 (2019). Biologist responsible for conducting habitat assessment and protocol burrowing owl surveys and kit fox surveys for the Olancha/Cartago Four Lane Project. Caltrans and the Federal Highway Administration are proposing to convert approximately 12.6 miles of the existing U.S. Highway 395 from a two-lane conventional highway into a four-lane expressway or partial conventional four-lane highway form post mile 29.9 to post mile 41.8 in Inyo County. The new facility will have four 12-foot lanes with a median of variable width. There will be paved shoulders throughout the project. The project will also construct new concrete bridges to cross the Los Angeles Aqueduct and install concrete box culverts and smaller pipe culverts throughout the project limits to promote drainage.

Burrowing owl and Desert Tortoise Surveys for a High Desert Solar Facility, San Bernardino County – Middle River Power (2017-2018). 1099 Energy Consultants plans to construct a 50-megawatt solar facility on a 330-acre property in Victorville, CA. Biologist conducted protocol burrowing owl and desert tortoise surveys for the project in 2017. Protocol burrowing owl and desert tortoise surveys were conducted on the expanded section of the project footprint in 2018. A total of three desert tortoises were documented at the site in 2017 and included a mating pair and a juvenile. A total of two additional desert tortoises were documented in 2018. Burrows and scat were also documented at the site both years.

Burrowing owl and Desert Tortoise Surveys for a High Desert Solar Facility, San Bernardino County – Middle River Power (2017-2018). 1099 Energy Consultants plans to construct a 50-megawatt solar facility on a 330-acre property in Victorville, CA. Biologist conducted protocol burrowing owl and desert tortoise surveys for the project in 2017. Protocol burrowing owl and desert tortoise surveys were conducted on the expanded section of the project footprint in 2018. A total of three desert tortoises were documented at the site in 2017 and included a mating pair and a juvenile. A total of two additional desert tortoises were documented in 2018. Burrows and scat were also documented at the site both years.

Lebata Focused Desert Tortoise and Burrowing Owl Surveys, Los Angeles County – McGee and Associates (2015). Biologist conducting focused desert tortoise and burrowing owl surveys in Pearblossom, California. Five potential burrowing owl burrows were identified during the survey.

Desert Tortoise Survey, Morning Star Mine, Mojave National Preserve, San Bernardino County – National Park Service (2013). Biologist conducted straight-line transect surveys over 14 miles and covering 100 percent of the access road and mine site prior to planned mining activities for the Morning

Star Mine in the Mojave National Preserve. Survey results were negative; 2 desert tortoise carcasses and numerous scats and burrows were located in the project area. A worker education brochure was created, and a worker training was conducted.

Burrowing Owl Survey for the Oro Verde Solar Project, Edwards Air Force Base, Kern County, California – SunEdison (2012). Biologist conducted a modified protocol burrowing owl surveys for the Oro Verde Solar Project. Survey was conducted on a 6,000-acre site. Burrowing owl surveys were conducted at 40 meter spacing in order to identify owls and sign of owls including burrows, feathers, and scat. Survey was positive for burrowing owl with two adult burrowing owl observations. The only modification to the standard protocol was slightly wider spacing; all other aspect of the CDFG burrowing owl protocol were followed including time of survey and weather parameters.

Desert Tortoise Survey for the Oro Verde Solar Project, Edwards Air Force Base, Kern County – SunEdison (2012-2013). Biologist conducted a protocol-level desert tortoise survey for the Oro Verde Solar Project. Survey was conducted on a 6,000-acre site. Desert tortoise surveys were conducted at 10 meter spacing in order to achieve 100% coverage of the survey area. The surveys included looking for live tortoises as well as the sign that indicated the species were present (scat, tracks, burrows, carcasses, pellets, and etc.). The desert tortoise surveys were positive for desert tortoise. A total of nine adult tortoises and numerous pieces of sign were observed throughout the duration of the project.

High Desert Corridor Desert Tortoise Surveys, Highway 138, Los Angeles County – Caltrans as a Sub to ICF International (2011). Biologist conducted a protocol desert tortoise survey along two proposed routes to widen highway 138 east of Palmdale. Desert tortoise surveys covering one hundred percent area were conducted in the proposed project area. Five zone of influence lines were also surveyed for potential impacts to tortoises occurring in the surrounding areas.

Desert Tortoise Surveys, Sopp Road Extension, Kern County – Fotowatio Renewable Ventures, Inc. (2011). Biologist conducted a protocol desert tortoise survey on an approximately 170-acre proposed solar energy site located on and adjacent to Edwards Air Force Base, north of Rosamond, CA. Extension of Sopp Road to Division Street is also proposed in addition to the solar plant. A 1,000-foot buffer surrounding the entire project site and road extension was also surveyed for potential impacts to tortoises occurring in the surrounding areas. No positive tortoise sign was found.

Desert Tortoise Zone-of-Influence Survey at the Morning Star Mine in the Mojave National Preserve, San Bernardino County – National Park Service (2008). Biologist conducted a desert tortoise zone-of-influence survey of the access road and mine site prior to planned mining waste removal activities for the Morning Star Mine in the Mojave National Preserve. Past gold mining practices at the Morning Star Mine in the Mojave National Preserve in San Bernardino County have left a deep mine pit, tailings piles, and leach piles that will have to be removed as part of the mine reclamation. The National Park Service (NPS) is working with a private company (Minerals, Mining, and Mining Materials, LLC or 4EM) to process and remove the wastes from the old mining operation. A processing facility will be constructed on the mine site and the processed wastes will be trucked off of the site. No positive tortoise sign was found.

Xeric Specialties Consulting

Dave Silverman - Botanical Specialist - 437 Calle De Collie, Ridgecrest, CA 93555
(760) 977-7810 or (760) 608-3105, xeric@mchsi.com or xeric437@gmail.com

Qualifications:

Over 20 years independent biological/botanical consultant for 20+ clients or agencies, including 100+ environmental projects, providing services in botanical assessments, field research, and natural resources reporting. Experienced with data collection methods and protocols, writing biological descriptions for EAs, EIRs, CEQA; working with access restrictions, permits or biological opinions, mapping and digitizing with AutoCAD, ArcView, Trimble, and Garmin systems. Have digitized or classified over five million acres of vegetation and land cover polygons for clients.

Naturalist, hiker and avid photographer of the southwest since 1978, including ongoing contributions to herbaria, rare plant programs, CNDDB, and Calphotos. Expert field identification and taxonomic determination for vascular plants of California, Nevada and Arizona, offering field ID for 7000+ regional plant species. All equipment necessary to conduct extended field work, under adverse conditions, or cross-country travel, including 4WD vehicles. Excellent safety, logistical and field skills. Office-equipped for GPS, CAD/GIS, digital photo and imaging work. Small business Liability Insurance with Hartford Casualty.

Accomplishments:

From 1996 to 2010; worked as systems engineer and biologist and, with Applied Technology Associates, Boeing Corp and Tetra Tech Inc., in support of Naval Air Weapons Station, China Lake, CA. (NAWS) Land Use Planning Office for the station's Integrated Natural Resources Plan and range-wide EIS. During this time I wrote the vegetation section of the station's Integrated Natural Resources Plan including GIS mapped data for plant community layers. Also profiled for planning, all CNPS, state and fed listed plant populations and potential habitats. Accomplishments included:

Created flora database for the station's 900+ plant taxa. Doubled the known flora and tripled the known rare plants in the region by voucher collections, photos and reports.

100+ field visits on range-controlled military lands under my coordination without incident. Active escort for biologists at China Lake NAWS from 1998 to 2006.

Lead an effort to create a comprehensive GPS base layer map of one million acres of infrastructure and disturbed areas utilizing sub-meter GPS measurements, raw elevation data, aerial photos (LANSAT, NAAP), and thematic imagery. Created data layers to calculate surface area of all major anthropogenic features of the range areas, including historic disturbances, roads, buildings and test areas, rendered and attributed to point and vector data (600,000 objects). This was the among the largest GPS-based mapping efforts in the U.S. in 1997 and included a complete vegetation classification for the region between Kern, Inyo, and San Bernadino Counties and the most detailed section of the 2000 California vegetation community gap analysis.

Support of NAWS station rangewide EIS (as primary mapper, editor and lead for field and digitizing work).

Served briefly as contributor and station liaison to Mojave Ecosystem Project in 1998.

Assisted ground-truth and quality-control efforts for hyper-spectral vegetation imagery projects (TRW-NAWS and SNWA-NV).

Re-discovered plants presumed extinct or without modern record, including *Astragalus mohavensis* var. *hemigyrus*, *Cryptantha clokeyi*, and *Astragalus atratus* var. *mensanus*.

Worked on desert tortoise population trend studies and mitigation projects in AZ, CA, NV and UT, including permits, attendance at relevant workshops and symposiums for 10 years, 500+ tortoises handled and processed for field data in mark/recapture studies, with approx. 800+ field days dedicated to survey for desert tortoise, between 1990 and 2000 mostly.

Attended Jepson Herbarium workshops on specific California plant groups and treatment concepts; Phrymaceae (N. Fraga, S. Schoenig), Boraginaceae (R. Kelley), Polemoniaceae (D. Wilken, R. Patterson), *Eriogonum* (J. Reveal), *Lupinus* (T. Scholars), ferns (A. Smith), *Carex* (D. Norris), mosses (D. Norris), coastal and desert lichens (S. Bratt and L. St. Clair), *Astragalus* (M. Wojciehowski), molecular phylogeny (J. McMurray), and new species publication (B. Ertter).

EMT qualified field member of the China Lake Mountain Rescue Group from 1985-1992.

Xeric Specialties Consulting, 437 Calle De Collie, Ridgecrest, CA 93555, (760) 977-7810, Xeric437@gmail.com

Recent Experience:

April, 1998 to Present. Botanical Consultant. Various projects, primarily TnE botanical and faunal field surveys, writing/reporting, vegetation mapping, and GPS data collection/GIS development. Most recent clients include:

Phoenix Biological Consulting, Wrightwood, CA (Ryan Young 661-261-3390)
Garcia and Associates, San Anselmo, CA (Dave Kelley, 415-222-8286)
URS Corp. San Diego, CA (Patrick Mock (619) 294-9400), incl Oakland, Fresno, Santa Barbara, & Las Vegas offices.
AlphaBiota, Squaw Valley, CA (Yancey Bissonnette 559-240-7727)
AECOM Corp. San Diego, CA (Kyle Harper 619-405-5405)
Tetra Tech EM Inc. San Francisco, CA (Cindi Rose, 415-222-8286)
Las Vegas Valley Water District, NV (Seth Shanahan, 702-822-3314)
Aspen Environmental Group, Agoura Hills and San Francisco, CA (Chris Huntley, 818-597-3407)
Natural Resource Consultants, Laguna Beach, CA (David Levine, 949-497-0931)
Southwest Botanical Research, Chino Valley, AZ (Marc Baker, 928-636-0252)
Kleinfelder and Associates, Fresno, CA (Chris Enyedy, 559-486-0750)
Resource Design Technology, Eldorado Hills, CA (Dave Brown, 916-983-9193)

Recent Projects (2003 - present:)

04/2017: Aspen Environmental Consulting. Assisting with project preparation of botanical resources for proposed solar project near Barstow, CA.

04/2001 to present: Ongoing research of *Opuntia* taxonomy and new/undescribed taxa for *Phacelia*, *Astragalus*, *Dalea*, *Ericameria*, *Dalea*, *Eriogonum*, *Mentzelia*, incl. herbarium study (RSA, SBBG, CAS, UCR, UNLV and UC Jeps) for annual *Cryptantha* taxonomy.

06/2016: Jepson Herbarium. Attended workshop at Yosemite NP on monkeyflower section of Phrymaceae (N. Fraga, S. Schoenig).

04/2015: Phoenix Biological Consulting. Rare plant/botanical survey with GIS vegetation mapping for 20 acre development parcel in Adelanto, CA. sensitive plant species included *Opuntia basilaris* var. *brachyclada,* and *Castilleja plagiotoma*.

03/2015: Phoenix Biological Consulting. Rare plant & botanical survey for 60 acre substation site in El Centro, CA.

05/2012: Phoenix Biological Consulting. Rare plant & botanical survey for 40 acre development parcel in Adelanto, CA.

6/2011: Garcia and Associates. Rare plant survey for Tehachapi wind project expansions; Southwest, Morgan Hills and North Sky River sites. Sensitive plant species included *Arenaria macradenia var. kuschei, Monardella oblonga, Fritillaria pinetorum, Opuntia basilaris var. treleasei, Eriastrum signatum, Syntrichopappus lemmonii, Pentachaeta aurea, Delphinium parry subsp. purpureum* and *Chamaesyce vallis-mortae.*

05/2011: AECOM Corp. - San Diego Office. Rare plant surveys for proposed pipeline along Highway 395 corridor, east Kern Co. Sensitive plant species included *Pediomelum castoreum.*

3/2011: URS Corp. - San Diego Office. Rare plant/ vegetation surveys for Brightsource Energy Palo Verde Mesa solar plant near Blythe, Riverside Co., CA. sensitive plant species included *Cynanchum utahense*, *Astragalus insularis var. Harwodii* and *Proboscidea althaeifolia.*

1996 to 2011: China Lake Naval Weapons Center and Edwards Air Force Base. Ongoing volunteer or funded studies on floristic diversity, plant communities, springs, western Mojave seasonal pool and playa biota. Sensitive plant species surveyed for included *Astragalus jaegerianus*, *Astragalus mojavensis hemigyrus, A. atratus mensanus, A. lentiginosus micans, A. oophorus, Calochortus panamintensis, C. striatus, Cryptantha clokeyi, Goodmania luteola, Loeflingia squarrosa artemisiarum, Eriastrum hooveri, Astragalus lentiginosus var. albifolius, A. preussii laxiflorus, Cymopterus deserticola, Psorothamnus arborescens* var. *arborescens*, *Chorizanthe spinosa, Eriophyllum mohavense, Mentzelia tridentata, Linanthus arenicola, Sclerocactus polyancistrus, Phacelia nashiana, P. monoensis, P. mustelina, Eriogonum mensicola,* and *Arabis dispar.*

9/2009 to 7/2010: Tetra Tech EMI Corp. - San Francisco Office. Contract to conduct vegetation and biota inventory in support of hazardous site assessments at the Naval Air Warfare Station, China Lake, CA.

05/2010: URS Corp. - Santa Ana Office. Rare plant surveys for proposed Otay Mesa power plant, various mitigation sites in Otay Valley, San Diego County. Sensitive plant species detected included *Deinandra conjugens, Chorizanthe polygonoides var. longispina, Brodiaea orcuttii, Harpagonella palmeri, Lycium brevipes, L. californicum, Hordeum intercedens & Cylindropuntia californica var. californica,* and for proposed California High-Speed Rail route in northern Los Angeles County, sensitive plant species included *Chorizanthe spinosa, Calochortus striatus, Goodmania luteola, Eriastrum rosamondense,* and *Astragalus lentiginosus var. albifolius.*

05/2010: AECOM Corp. - San Diego Office. Rare plant surveys for proposed solar plant near Ridgecrest, Kern Co.

04/2010: AECOM Corp. - San Diego Office. Rare plant surveys in CA for proposed solar plants near Palen Dry Lake and Rio Mesa, Riverside Co., sensitive species included *Cynanchum utahense*, *Astragalus insularis var. harwoodii*, *Proboscidea althaeifolia*, and *Cylindropuntia wigginsii.*

02/2010: AlphaBiota LLC Cactus density surveys for proposed VTN wind energy project near Searchlight, Nevada.

3/2009: URS Corp. - Santa Barbara Office. Rare plant/ desert tortoise/ burrowing owl surveys for Sentinel-Ocotillo power plant project in North Palm Springs, CA.

2/2009: Kiva Biological Consulting. Ft. Irwin expansion project, conducted vegetation transects for habitat characterization in support of desert tortoise relocation project in the Calico Mountains, San Bernadino County.

6/2008 to 8/2008: Adaptive Management Services Enterprise Team, USFS. Botanical surveys for BE/BA review of fuel break and fuel stand management areas, various sites in the San Bernardino, Angeles forests, and Lake Tahoe management unit. FS sensitive species included *Calochortus plummerae*, *Lilium humboltii*, *Boykinia rotundifolia*, *Juglans californica*, *Opuntia basilaris* var. *brachyclada* and *Botrychium sp.*

3/2008 to 5/2008: Aspen Environmental Group and H.T. Harvey & Assoc. Tehachapi Renewable Transmission Project. Rare plant surveys along proposed transmission line corridor from Tehachapi wind resource area through Antelope Valley and San Gabriel National Forest to Pasadena. Sensitive species included *Opuntia basilaris* var. *brachyclada* and var. *treleasei.*

4/2008: URS Corp. -Santa Maria Office. Rare plant surveys for Solel power plant project in Johnson Valley, CA. Rare plant surveys and habitat assessment within BLM and CA State Lands Commission parcel proposed for solar plant and transmission line. Sensitive species detected included *polygala acanthoclada*, *Linanthus arenicola*, *Muilla coronata* and *Cymopterus terebinthifolius.*

3/2008: URS Corp. -San Diego Office. Rare plant surveys and habitat assessment for Kinder-Morgan CalNev pipeline upgrade along Interstate 15 in CA-NV. Sensitive species included *Coryphantha chlorantha & Enneaopogon desvauxii.*

3/2008: URS Corp. -Santa Barbara Office. Rare plant surveys for Sentinel-Ocotillo power plant project in North Palm springs, CA.

9/2007 and 3/2008: Aspen Environmental Group. Floral/vegetation survey for City of Banning, Riverside Co., Liberty Biomass project. Sensitive species surveyed for included; *Dudleya multicaulis, Allium marvinii*, *Chorizanthe xanti var. leucotheca, C. parryi var. parryi*, and *Abronia villosa var. aurita*.

12/2007: Aspen Environmental Group. Vegetation mapping survey for Army Core of Engineers Murrieta Creek Detention Basin, Riverside Co., CA.

5/2007 to 11/2007: Aspen Environmental Group. Botanical and wildlife surveys for Angeles National Forest, for BE/BA review of various management release sites, plantations, and fuel stands in the San Gabriel Mountain range. FS sensitive species surveyed included *Castilleja gleasonii*, *Huechera elegans*, *Arctostaphylos gabrielensis*, *Hulsea vestita* ssp. *gabrielensis* and *Swertia neglecta*.

8/2007: Wetlands Training Institute. Completed 40-hour basic wetlands delineation course in San Diego, CA, including Arid West supplement and forms. Course based on 1987 Wetland Delineation Manual used by the Army Corps of Engineers.

5/2007: Phoenix Environmental Consulting. Floral/rare plant survey for proposed water line between facilities at Baldwin Lake, San Bernadino Co. Status species surveyed for included *Sidalcea pedata, Castilleja cinerea, Symphyotrichum defoliatum, Ivesia argyrocoma, Mimulus exiguus, Linanthus killipii* and *Thelypodium stenopetalum*.

5/2007: Southern Nevada Water Authority - Las Vegas Wash Coordination Committee. Vegetation types, descriptions and species occurrence matrix for National Vegetation Classification Standard type associations and alliances for Las Vegas Wash Project area.

5/2007: URS Corp. Santa Barbara Office. Biota/habitat surveys for proposed Biota/habitat surveys for proposed Ocotillo power plant site and associated gas line route alternatives, in Palm Springs, California. Duties/deliverables include protocol-level field surveys for Coachella Valley fringe-toed lizard (*Uma inornata*), desert tortoise (*Gophereus agassizii*) and flat-tailed horned lizard (*Phrynosoma mcallii*) for proposed plant site and routes, vegetation and faunal species observations, photos, GPS/GIS data and report.

4/2007: Natural Resource Consultants. Vegetation sampling surveys for Centennial LLC at Tejon Ranch, Kern and Los Angeles counties. Duties/deliverables include point-intercept and daubenmire type data collection of grassland species plots.

3/2007 to 4/2007: URS Corp. San Diego Office. Biota/habitat surveys for proposed Solar One power plant site and associated power line corridor from Hesperia to Pisgah, California. Duties/deliverables include field survey of routes, list of floral and faunal species observations, streambed delineations, photos, GPS/GIS data and vegetation maps. Status species included desert tortoise (*Gophereus agassizii*), short-jointed beavertail cactus (*Opuntia basilaris* var. *brachyclada*) and white-margined penstemon (*Penstemon albomarginatus*).

10/2006: Tom Volk and Associates, research and writing of biological opinions for sensitive biota in the Tehachapi area of south-central CA, for EIR process for WZI Materials sand and gravel mine.

4/2006 to 8/2006: URS Corp. Las Vegas Office, NV. Botanical/rare plant surveys for Toquap Wash Energy and Coyote Springs project

4/2006 to 5/2006: Tetra Tech EM Inc. Biological surveys for hazardous site assessment at China Lake Naval Air Warfare Station.

3/2006: Kleinfelder and Associates. Desert tortoise and general biota survey for Terminal Project, Boron, Kern Co. CA.

9/2005 to 3/2006: Aspen Environmental Group. Mapped GIS inventory tree survey in Griffith Park for mitigation measures required for DWP proposed water line, Los Angeles, CA.

10/2005 to 12/2005: Resource Design Technology. Botanical Surveys and consulting services for revegetation/reclamation plan for F.W. Aggregates mine, southeast of Lone Pine, CA.

12/2004 to 5/2005: Southern Nevada Water Authority - Las Vegas Wash Coordination Committee. Field ground-truth vegetation mapping project utilizing national NRCS vegetation mapping protocol methods.

5/2004 to 10/2005: Aspen Environmental Group. Botanical and wildlife surveys for Angeles National Forest fuel management BE/BAs, for various management release sites, plantations, and natural stands, located in the Liebre, Sierra Pelona and San Gabriel mountain ranges. Sensitive plant species surveyed for included *Swertia neglecta, Calochortus plummerae, C. palmeri, Castilleja gleasonii, Linanthus concinnus, Perideridia pringlei, Galium jepsonii, Lupinus excubitus johnstonii, Nemacladus gracilis,* and *Arenaria macradenia var. kuschei.*

4/2004 to 4/2005: URS Corp – San Diego. Botanical and habitat surveys for initial phase of HCP planning for MWD Colorado River Aqueduct and associated properties in Riverside and SE San Bernadino Co. Sensitive plant species surveyed for included *Ditaxis californica, D. clariana, Teucrium glandulosum, Cryptantha costata, C. holoptera,* and *Linanthus maculata.*

05/2003 to 3/2006: Aspen Environmental. Botanical surveys for various project sites along DWR California Aqueduct in Los Angeles, San Bernadino and Kern Co.s. Sensitive plant species surveyed for included *Erodium macrophyllum*, *Berberis nevinii, Chorizanthe parryi*, *Scutellaria bolanderi austromontana*, and *Calochortus clavatus*. Some work conducted on USFS lands in the Castaic Creek region. Other work conducted on Tejon Ranch (Kern Co.) and Los Flores ranch (San Bernadino Co.)

6/2002 to 03/2005: Southern Nevada Water Authority - Las Vegas Wash Coordination Committee. Vegetation and floral assessment, quantitative sampling design, collections and voucher preparation, restoration consulting, revegetation monitoring and worker education for Las Vegas Wash riparian habitats in flood control and water quality project areas.

3/2005 to 11/2005: URS Corp.-Las Vegas. Botanical/cactus surveys for FAA proposed Mesquite Airport on 2600 acre BLM takedown parcel in eastern Clark Co., NV. Sensitive plant species surveyed for included *Astragalus geyeri triquetrus, A. preussii laxiflorus, A. lentiginosus stramineus, Cirsium virginense, Eriogonum viscidulum* and *Pediomelum castoreum.*

5/2005 to 10/2005: URS Corp. – San Diego. Botanical surveys for proposed Southern California Edison Oak Valley transmission line project in Western Riverside Co (Beaumont-Banning area), California. Sensitive plant species surveyed for included *Berberis nevinii*, *Dodecahema leptoceras*, *Eriastrum densifolium* var. *sanctorum*, C*entromadia pungens* and *Calochortus plummerae*.

04/2003 to 7/2005: Twining/ESR Corp.s. Botanical/rare plant surveys for Granite/Desert Aggregate Five Bridges mining expansion project EIR, Bishop. Sensitive plant species surveyed for included *Calochortus excavatus, Spartina gracilis, Chrysothamnus albidus*, *Oryctes nevadensis* and M*entzelia torreyi*.

5/2005: Southern Nevada Water Authority - Jones and Stokes Association – Botanical survey for proposed water pipeline in Las Vegas, Hidden and Coyote Springs Valleys (I-93 corridor) survey. Sensitive plant species surveyed for included *Astragalus geyeri triquetrus, A. preussii laxiflorus, Penstemon bicolor, Enceliopsis argophylla, Arctomecon californica, Gilia nyensis, Phacelia filiae, Arenaria stenomeres, Anulocaulis leiosolenus,* and *Eriogonum corymbosum nilesii.*

05/2005: Phoenix Biological Consulting. Botanical/rare plant survey for proposed Service Rock sand and gravel mine near Garlock, E. Kern Co., CA. Sensitive plant species included *Mentzelia eremophila, Eschscholzia twisselmannii* and *Sclerocactus polyancistrus*.

04/2005: Attended Nevada Native Plant Society rare plant workshop in Las Vegas, NV.

04/2005: Wildland International. Botanical/desert tortoise survey for proposed SNWA surface water pipeline, NE of Las Vegas.

6/2004: URS Corp. Botanical surveys for Mammoth/Bishop Airport expansion, Inyo/Mono Co.s.

5/2004: Assistant instructor for Kern Co. Flora workshop sponsored by The Jepson Herbarium.

02/2004: Jepson Herbarium. Attended two workshops at UC Cal Berkeley; on molecular phylogeny (J. McMurray), and on new species description and publication (B. Ertter).

06/2003 to 11/2003: Kern Co. Planning Dept. Biota survey of two parcels in Boron, Ca. and one site near Frazier Park, CA.

3/2002 to 9/2003: URS Corp. Rare plant and blunt-nosed leopard lizard surveys for Caltrans SR119 highway widening project between Bakersfield and Taft, including Elk Hills. Sensitive plant species included *Atriplex coronata, A. vallicola, A. tularensis, Eriastrum hooveri, Caulanthus californicus, Delphinium gypsophilum* and *Stylocline citroleum*.

06/2003 to 8/2003: Caltrans-Robert Frank Construction, Inc. Pre-construction survey, monitoring and report for desert tortoise and Mojave ground squirrel per biological opinion.

03/2003 to 06/2003: Jones and Stokes Associates. General vegetation sampling for species richness, cover, density and rare plant surveys for Edwards AFB.

04/2003 to 5/2003: URS Corp. Botanical surveys for two sites in western Riverside Co., and one in Escondido, San Diego Co.

04/2003: Jepson Herbarium. Attended two workshops; on ferns (A. Smith), and desert lichens/soil crusts (St. Clair).

01/2003 to 4/2003: Sanford Stone mine. Desert tortoise fence construction monitoring, clearance surveys and worker education in the BLM Rand ACEC, Red Mountain, CA. Sensitive plant species included *Mentzelia eremophila, Eschscholzia twisselmannii* and *Cryptantha clokeyi*.

12/2002 to 02/2003: Ecology & Environment, Inc. Desert tortoise pre-construction clearance surveys and construction monitoring for Kern River Gas Transmission pipeline project along Highway 58, Barstow to Mojave, CA.

10/2003: BioResource Consultants. Desert tortoise surveys (USFWS protocol) on 29 Palms Marine Core Base, CA.

9/2001 to 2003: Cal St. Dominguez Hills Foundation (Dr. David Morafka). Ongoing pitfall trapping project for Panamint Alligator Lizard (*Elgaria panamintina*) in the northern Mojave Desert. Duties include installing and monitoring traps on NAWS CL (Coso and Argus Mountains) and processing faunal collections for data. Project suspended, but trap maintenance and construction continued for additional years at NAWS.

See attachment A for other professional project & work experience (1981-2003)

Education:

24 units, biology major, Mesa College, San Diego.
10 units, computer science major, City College, San Diego

References:

Jim Rocks – Private Consultant, San Diego, CA. (619) 843-6640
Marc Baker – Southwest Botanical Research, Chino Valley, AZ (928) 636-0252
Tom Campbell – NAWS Environmental Project Office, China Lake, CA (760) 939-3222

Xeric Specialties Consulting, 437 Calle De Collie, Ridgecrest, CA 93555, (760) 977-7810, Xeric437@gmail.com

Attachment A. Other Work Experience prior to 2003:

6/2002 to 9/2002: Eve Laeger Consulting. Assist with floristic survey of Manter Burn, sampling of various sites, in east Canell Meadow District, USFS S. Sierra NV, CA.

7/2002 to 8/2002: Garcia & Associates. Baseline vegetation sampling of riparian monitoring transects for LA DWP project located in the lower Owens River region, CA.

4/2000 to 6/2002: Varanus Biological Services, Inc. Botanical assessment of Lost Valley area in northeast San Diego County, property of Orange Co. council of BSA, ca. 800 acres, for San Diego, CA. Project associated with EIR requested by San Diego County. TnE spp incl *Astragalus oocarpus, Lessingia glandulosa var. tomentosa, Chaenactis parishii, Linanthus orcuttii, Gilia caruifolia*, *Rupertia rigida*, *Lilium humboltii* and *Horkelia clevelandii*.

6/2002: URS corp. Desert tortoise surveys in Area 62 of Nevada Test Range, for Nellis AFB.

5/2002: Impact Sciences Corp. Rare plant survey, GPS site mapping on Tejon Ranch, E. Tehachapi Mtns. Species of concern include *Erodium macrophyllum*, *Delphinium parryi* ssp. *purpureum, Thermopsis macrophylla, Navarettia setiloba* and *Eriophyllum lanatum howellii.*

3/2002 to 4/2002: Enviro-Plus Consulting/URS corp. Various pre-construction surveys (plants, tortoise, burrowing owl) and monitoring for Williams High Desert Power Plant Project along highway 395 and Victorville.

2/2002: Jepson Herbarium. Attended three workshops; on mosses (Norris), lichens (Bratt). Also attended perennial Lupine workshop (Scholars) in July of 2002.

6/2001 to 11/2001: U.S Navy (Naval Air Weapons Station China Lake (NAWS CL)) Environmental Project Office task to inventory, map and report on three alkaline spring areas in the Coso Mountains.

4/2001 to 11/2001: Jones and Stokes Associates. BLM GSA contract for rare plant surveys for Clokey's cryptantha (*Cryptantha clokeyi*), and other rare plants including Lane mountain milk-vetch (*Astragalus jaegerianus*), Desert cymopterus (*Cymopterus deserticola*), and Alkali mariposa lily (*Calochortus striatus*), associated with the Ft. Irwin expansion area and BLM West Mojave Plan, BLM Contract task order under Jones and Stokes.

7/2001 to 11/2001: Jepson Herbarium. Attended two workshops; Carex (Norris) and Polygonaceae (Reveal). Also attended SERCAL conference (11/4/01) in San Diego.

7/2001: American Reward Mill. Rare plant surveys for proposed gold mine in Mazourka Canyon of Inyo County. Sensitive plant species include *Astragalus inyoensis, Arabis dispar, Allium atrorubens* and potentially new taxa of *Eriogonum umbellatum*.

3/2001 to 7/2001: URS Corp. Rare and narrow endemic plant search, including Quino Checkerspot habitat assessment, on approx. 3,000 acres of Otay Ranch lands, San Diego Co., for URS Corp.

5/1999 to 6/2001: Kiva Biological Consulting/French and Associates. Botanical assessment of parcel in Lockwood Valley, Ventura Co. TnE species include Mt. Pinos onion (*Allium howellii* var. *clokeyi*) and *Gila leptantha* ssp. *pinetorum.*

5/2001: Varanus Biological Services, Inc. Rare plant survey for proposed powerline near Victorville, San Bernadino Co., for. Target species included Alkali mariposa lily, *Pediomelum castoreum, Cymopterus deserticola, Camissonia boothii ssp. boothii* and other TnE pls.

5/2001: McCormick Biological. Rare plant survey for National Cement plant (McCormick Biological), in S. Kern County. Species of concern include Yellow false lupine (*Thermopsis macrophylla*) and Mt. Pinos larkspur (*Delphinium parry ssp. purpureum*).

4/2001: URS Corp. Rare plant surveys for Three-corner milk-vetch (*Astragalus geyeri var. triquetrus*), Bicolored penstemon and other potential rare plants on PG&E powerline project in Meadow Valley area, NV.

10/2000 to 12/2000: Jones & Stokes Associates. Biological monitor under USFWS permit for fiber line project (Williams), from Yuma, AZ to Riverside, CA. Duties included pre-construction surveys, monitoring construction and reclamation per protocol and BO. Target species included Flat-tailed Horned Lizard (*Phrynosoma m'callii*), Coachella Valley Fringe-toed Lizard (*Uma inornata*), Desert Tortoise, Various endangered milk-vetches (*Astragalus magdalenae var. peirsonii, A. tricarinatus, A. crotalariae* and *A. lentiginosus* var. *coachellae*) and other sensitive plant and animal spp.

6/2000 to 12/2000: URS Corp. Rare plant surveys and meetings with USFWS concerning federally endangered Otay tarplant (*Hemizonia conjugens*) for U.S. Generating Company proposed Otay Mesa generating plant project.

10/1999 to 12/2000: Ojai Concrete, Inc. Mine reclamation/revegetation plan including botanical assessment, vegetation performance standard and small mining plan (SMARA) for proposed aggregate mine in Frazier Park, Kern Co., for Sensitive plant species were *Castilleja plagiotoma* and *Quercus lobata*.

7/2000: URS Woodward-Clyde - San Diego. Habitat assessment related to FE Quino Checkerspot Butterfly, for, project related to permit for generating plant on Otay Mesa in San Diego County.

7/2000: Varanus Biological Services and USFWS. Habitat assessment related to FE Willow Flycatcher, for study area along San Luis Rey River in San Diego County.

7/2000: Varanus Biological Services Inc. Plant communities assessment for FE California Gnatcatcher study on U.S. Navy Ordnance facility in Fallbrook, in San Diego County, for Varanus Biological Services (Navy contract).

4/2000 to 6/2002: Impact Sciences, Inc., BioResource Inc., and McCormick Biological. Rare and endangered plant surveys, for, in Kern and L.A counties, CA, on areas proposed for development or mitigation by Tejon Ranch Company and Newhall Ranch Land Company. Project incl. searches especially for *Chorizanthe parryi* ssp. *fernandina* (Newhall), *Navarettia setiloba, Eriophyllum lanatum hallii, Thermopsis, Erodium macrophyllum, Opuntia basilaris treleasei, O. b. brachyclada, Eschscholzia lemmonii* var. *kernensis*, and other TnE spp., combined areas of 35,000 acres.

4/2000: San Diego Natural History Museum (J. Rebman). Rare and endangered plant surveys with), San Diego, CA., with U.S Marine Corps contract for rare and endangered plant surveys project on 7300 acres at Miramar MCAS. Target spp. incl. *Dudleya variegata, Arctostaphylos glandulosa ssp. crassifolia, Baccharis vanessae, Acanthomintha ilicifolia, Ambrosia pumila, Fremontodendron mexicanum, Chorizanthe orcuttiana, Monardella linoides* var. *viminea,* and *Ferocactus viridescens.*

2/2000: URS Woodward Clyde, San Diego, CA. Rare plant habitat and soils assessment, and produced report for concerning federally endangered Otay tarplant (*Hemizonia conjugens*) for U.S. Generating Company proposed Otay Mesa generating plant.

12/1999 to 01/2000: Southwest Botanical Research, Chino Valley, AZ. Assisted with Bureau of Reclamation contract for plant community mapping project on 1.4 million acres in central AZ.

11/1999: Varanus Biological Services, Inc. San Diego, CA. Botanical assessment of San Diego County Sweetwater River mitigation and revegetation area, 26 acres.

11/1999: Agrarian Research Inc. Plant cover sampling (pin frame) on Saltgrass plots at Owens Dry Lake, Inyo Co., CA.

11/1999: Jones & Stokes Associates. Surveys (monitoring, video scoping of burrows, transects for USFWS protocol) for desert tortoise for at various localities in the Mojave Desert.

10/1999: San Diego Natural History Museum Botany Dept. Participated in botanical collecting trip to Sierra De Guadalupe region of Baja Sur Mex.

4/1999 to 10/1999: URS Corp./Varanus Biological Services. Rare plant and general vegetation surveys, provided reports, maps, text data for on Otay Mesa Generating Project and Sloane Canyon Sand and Gravel Projects. ca. 120 hours of work. Target Spp. incl *Quercus dumosa, Cupressus forbessi, Rosa, Ambrosia pumila, A. chenopodifolia, Hemizonia conjugens, Dudleya variegata, Acanthomintha, Pogogyne nudiscula, Eryngium aristulatum* ssp. *parishii, Achnatherum diegensis, Lepechina ganderi, Opuntia parryi* var. *serpentina, Bergerocactus emoryi, Brodiaea* spp., *Muilla clevelandii, Artemisia palmeri, Juglans californica*, *Astragalus deanei*,, and other TnE plant spp.

7/1997 to 9/1999: U.S. Navy. Contributed vegetation section of NAWS China Lake Integrated Natural Resources Plan (INRMP) and most vegetation planning data for NAWS EIS. Last contributions as of September 1999, included GIS mapped data for all sensitive and potentially sensitive plants coverages of sites, populations and potential habitats based on known data, habitat types, and surficial geologic units. GIS data covers 1,000,000+ acres in the region. Combination of research agreement with NAWS, with Tetra Tech. and DSI contracts.

5/1999 to 9/1999: CNPS Rare Plant Working Group. Rare plant expert for plant advisory committee meetings for Eastern Sierra, Peninsular Range-East Mojave-Colorado Desert Group, LA Co.-San Bernadino Co.-Ventura Co. Group and San Diego Co.-Riverside Co. Group. Regular contributor to rare plant E-Mail queries from CNDDB/CNPS (D. Tibor, R. Bittman).

4/1999 to 9/1999: Varanus Biological Services. Rare plant and general vegetation surveys, provided reports, for San Diego Co. dept. of Public Works Monte Vista Borrow Pit project, and for MCAS Miramar herpetological trapping arrays site vegetation and physiognomic descriptions. Sensitive spp incl. California Gnatcatcher, Red Diamond Rattlesnake, Orange-throated Whiptail, and Quino Checkerspot host plants (*Plantago, Castilleja, Lasthenia*).

3/1997 to 7/1999: Digital Systems International, Tetra Tech and Applied Technology Associates. Field surveys for NAWS China Lake for federally-listed Lane Mtn milk-vetch (*Astragalus jaegerianus*), surveys conducted over three spring seasons, incl. 1999, for contracts with

5/1999: BLM (West Mojave plan) and USFWS (Ventura office). Assisted with data, GIS templates, field surveys concerning federally listed and rare plants (*Astragalus jaegerianus* and *Cryptantha clokeyi*) affecting the proposed Ft. Irwin expansion. Volunteer-cooperative land planning project.

2/1999: San Diego Natural History Museum. Reviewed and studied specimens of all plant taxa known to occur in San Diego County from synoptic collection in preparation for botanical work in the area.

6/1998 to 8/1998: Kiva Biological Consulting & BLM West Mojave Plan. Mojave Ground Squirrel habitat characterization surveys for (2 days of vegetation/habitat surveys). Also performed ca. 225 hours of tortoise density transect surveys for West Mojave Plan.

6/1998: Kiva Biological Consulting. Vegetation surveys, provided report for sites near Needles (City of Needles proposed prison site). Target spp. incl. *Echinocereus engelmannii* var. *howei,* and *Coryphantha vivipara alversonii*.

5/1998: Western Botanical Services. Vegetation and rare plant survey for, for High Desert Pipeline project, Kramer Jct, CA.

3/1991: to 9/1996: Kiva Biological & Enviro-plus Consulting. Subcontracting biologist, mostly as a primary field investigator conducting field and lab work on desert tortoise 60-day study plots (12 BLM sites in CA, NV and AZ). Duties included preparation of carcasses and photographs, data transfer to computer formats, analysis and report writing and assistance with associated botanical work. Lab duties included preparation of carcasses and photographs, data transfer to computer formats, analysis and report writing. Principal field researcher and team leader in Nevada Department of Wildlife desert tortoise studies at three sites (Piute Valley, Christmas Tree Pass and Eldorado Valley) in Clark County. Three different survey types were performed at these sites including standard 60-day methods, one square kilometer and random hectare sampling. Duties include assisting proposal writing and personnel recruitment, searches for, capture, and processing of tortoises, field notes, coordination/quality control of three four-person crews.

4/1996: Jones & Stokes Associates. Desert tortoise surveys (including plant list) at George AFB, CA.

5/1994: BioResource Consultants. Endangered species reconstruction surveys in the San Joaquin Valley for pipeline construction (target species were Bakersfield cactus, San Joaquin kit fox and blunt-nosed leopard lizard).

4/1995 Kiva Biological Consulting. Vegetation surveys of parcels in Antelope Valley, Frazier Park.

7/1991 to 8/1994: Southwestern Botanical Research. Assisted with perennial cover transects (100m line intercept and Daubenmire grids) for Arizona BLM Study sites in the Eagletail, Silverbell, Harcuvar, Tortilla, Little Shipp & Hualapi Mountains.

5/1994: Kiva Biological & Enviro-plus Consulting. Assistance with plant surveys and BLM desert tortoise sheep grazing study.

4/1994: BLM-El Centro. Performed environmental monitoring during exploratory drilling in East Imperial County, CA (impact analysis/written report to the BLM).

4/1993: Kiva Biological Consulting. Vegetation sampling (Daubenmire grids) in BLM West Mojave Plan region.

3/1991 to 8/1991: Enviro-plus Consulting-Dames & Moore. Worked as desert tortoise biologist/environmental monitor on Kern River pipeline project in CA, NV, AZ & UT.

3/1991: Desert Tortoise Preserve Committee. Worked briefly as preserve biologist.

April, 1990 to November, 1990. Biological Aide/Forestry Technician. USDA Forest Service (Theresa Ritter-Cannell Meadow District), Sequoia National Forest, CA. Conducted spotted owl (*Strix occidentalis*) surveys per USFS protocol for two timber sale areas. Also worked as Forestry Technician for two months. Duties included use of chainsaw for thinning as part of post-harvest treatment. Also worked as a mapper and driver for US Department of Commerce 1990 census.

September, 1980 to May, 1989. Computer Specialist (334-GS-9). US Navy, NAWS, China Lake, CA. Systems Manager for central computer facility. Specialized in VAX/VMS system software and third-party products. Also worked with Univac, MS-Dos, Mac and Unix systems (Cray +Alliant front-end) which were integrated at main site. Duties included keeping systems operational, maintaining integrity of software and data, consulting and managing a large (500+) user group, creating data transfer routines and programs to bridge vendor/site gaps, customizing and installing new software, managing environmental requirements, site security, hardware configuration, creating hardware and software communication links, and documenting local software procedures. Completed software training to VAX/VMS system programmer level.

Lauren (Dorough) Simpson

Staff Biologist

Ms. Simpson has seven years of professional experience as a wildlife biologist working in terrestrial habitats throughout southern California. Ms. Simpson has over nine years of experience conducting habitat and roost assessments and night-time acoustic surveys for bats in southern California. She has conducted focused nighttime ocular emergence and re-entry surveys, and active and passive bat detector monitoring for various projects in Los Angeles and San Bernardino counties. Ms. Simpson has surveyed over 100 bridges and 60 culverts in support of projects in Los Angeles, San Bernardino, and Riverside Counties. Ms. Simpson is proficient at bat call analysis using Analook and Sonobat Software. She is able to identify bats based on their unique acoustic recordings obtained by Anabat SD2 and Pettersson bat detectors. Ms. Simpson has also conducted focused surveys for special status species including desert tortoise, burrowing owl, and least bell's vireo. Ms. Simpson has experience in conducting nesting bird surveys, rare plant surveys, construction monitoring, mature tree surveys, conducting general wildlife surveys and habitat assessments, conducting focused protocol surveys, and post-construction habitat restoration monitoring. Ms. Simpson has experience evaluating biological resources and project impacts under the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) and the Coachella Valley MSHCP and authoring associated MSHCP consistency documents. Ms. Simpson has authored and co-authored numerous technical documents including Natural Environment Studies (NES and NES[MI]), and documents supporting the CEQA such as Initial Studies, Mitigated Negative Declarations, Biological Resources Technical Reports, and Biological Resources Sections of Environmental Impact Reports.

Education

B.S., Biological Science, Concentration: Biodiversity, Ecology, and Conservation Biology, California State University, Fullerton

Registrations, Certifications, Permits and Affiliations

- Scientific Collecting Permit #12796
- Desert Tortoise Council Member

Professional Experience

Desert View Conservation Area Improvement Project, San Bernardino County – County of San Bernardino Special Districts Department (February 2020). Lead biologist and project manager led preconstruction burrowing owl and desert kit fox surveys for the trail improvement project near Joshua Tree National Park. Lead nesting bird survey sand conducted biological monitoring. Prepared and delivered worker education training to Project contractors. Incidentally observed Le Conte's thrashers during the surveys.

Biological Preconstruction Surveys for the Eaton Reservoir Project, San Bernardino County – Golden State Water Company (September 2018) Conducted desert tortoise pre-construction clearance survey

following the USFWS's Chapter 6: Clearance Survey Protocol for the Desert Tortoise – Mojave Population. Desert tortoise-proof fencing was also inspected during the survey to ensure no openings or other opportunities for tortoise to move into the project site were present.

Flora Planning Level Surveys at Fort Irwin, San Bernardino County – Department of The Army (2018). Biologist assisted with botanical surveys focusing on approximately 315 hectare plots within Fort Irwin's boundaries. Goals of the project were to identify general flora including nonnative species, determine presence/absence of threatened, endangered, and sensitive plant species on the Installation including at seeps and springs, and assist the Army with surveying and inventorying botanical species and their habitats.

Otto 8 Winery Project, Riverside County – LA Life Regional Center (2018-2019). Biologist responsible for conducting a burrowing owl habitat assessment, burrowing owl surveys and burrow checks, and a Western Riverside MSHCP Consistency Analysis for a proposed 22-acre Temecula winery project site. A site visit was conducted to confirm vegetation communities, conduct a burrowing owl habitat assessment, and identify any biological constraints within the project site.

Biological Services for the Diamond Valley Estates West Project, Riverside County – PandaClub USA (2017). Biologist responsible for a biological constraint analysis, burrowing owl habitat assessment, burrowing owl surveys and burrow checks, and Western Riverside MSHCP Consistency Analysis for a proposed 105-acre residential development in unincorporated Riverside County near Hemet. A site visit was conducted to confirm vegetation communities, conduct a burrowing owl habitat assessment, and identify any biological constraints within the project site.

Aurora Solar Project, Focused Surveys for Desert Tortoise, Burrowing Owl, and Rare Plants, Jurisdictional Declinations, San Bernardino County – As a Sub to Aspen for California State Lands Commission (2017-2018). Biologist responsible for conducting protocol surveys for desert tortoise. Ten (10) meter (m) transects were walked through the entire solar field project footprint for desert tortoise. Burrows that had previously been used by burrowing owl with sign were identified. Live tortoises, tortoise sign, and active burrowing owl burrows were identified during the survey. Also participated in a rare plant survey on the proposed 4,500-acre solar farm. Target species included Mojave monkey flower (CNPS 1B.2), desert *cymopterus* (CNPS 1B.2), and *Clokey's cryptantha* (CNPS 1B.2).

High Desert Solar Project - Focused Surveys for Desert Tortoise, Burrowing Owl, and Rare Plants, San Bernardino County – Middle River Power, LLC (April 2017–June 2017). Biologist responsible for conducting protocol surveys for desert tortoise, focused breeding season surveys for burrowing owl, and focused surveys for rare plants. Ten (10) meter (m) transects were walked through the entire solar field project footprint, buffers, and generation tie-lie project footprint to survey for desert tortoise and rare plants. Twenty (20)-m transects were walked to survey for burrowing owl. Co-authored associated biological technical report to summarize results of the surveys.

Commercial Developments in Desert Hot Springs, Focused Burrowing Owl Preconstruction Surveys, Riverside County – Coachillin Holdings, LLC (March/June/November 2017). Biologist responsible for

conducting focused burrowing owl preconstruction survey at the ±154-acre Industrial Park Project site located in Riverside County, California. The survey area consisted of the entire project site plus a 500-foot buffer. The project site is located within the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) area but is not located within a Conservation Area. The habitat assessment and focused preconstruction burrowing owl survey were conducted in accordance with the CVMSCHP burrowing owl survey guidelines.

State Route 138 Burrowing Owl, Rare Plant, and Riparian Bird Surveys, Los Angeles County – Caltrans District 7 (2016–2017).

- Wildlife biologist responsible for conducting burrowing owl surveys and habitat assessments along 36 miles of the western-most portion of State Route (SR)-138 from SR-14 to Interstate-5, plus a 500-foot buffer. Burrowing owl surveys and habitat assessments were conducted along the entire 36-mile project corridor plus a 500-foot buffer. Potential active burrows were identified, and habitats were ranked either non-suitable, marginal, or suitable for burrowing owls to be present. CDFW burrowing owl survey protocols were followed.
- Assisted in conducting rare plant surveys along select segments of the 36-mile project corridor. Populations of four rare plant species were documented.

Desert Tortoise Surveys for SR-58 Realignment Project – Caltrans District 8 (2015). Biologist conducted protocol desert tortoise surveys along the proposed highway realignment as well as within two potential translocation sites. Ten (10) meter transects were walked as well as the zone of influence. Over 40 live tortoises were observed during surveys.

Desert Tortoise and Burrowing Owl Surveys forInstall Turn Lane and Shoulder Widening Project on State Route 62 – Caltrans District 8 (2014). Biologist participated in protocol surveys for desert tortoise and burrowing owl along State Route 62 near Joshua Tree National Park. Contributing author on the subsequent technical report.

Rare Plant and Burrowing Owl Surveys for SR-395 Realignment Project Adelanto to Kramer Junction – Caltrans District 8 (2014). Biologist conducted rare plant surveys and burrowing owl surveys along 40 linear miles of State Route 395. All live desert tortoises and desert tortoise sign were also recorded during surveys. Thirty-eight (38) live tortoises were observed over the course of the survey. Populations of Mojave spineflower (*Chorizanthe spinosa*), a California Native Plant Society Watch List species were documented on the project site. Also conducted follow-up burrow monitoring for burrowing owl at locations where burrowing owl sign was identified during transect surveys. Contributing author on the associated survey report.

Professional Development Courses/Training

- Desert Tortoise Surveying, Monitoring, and Handling Workshop, Desert Tortoise Council, Ridgecrest, California, November 2013

Michael Tuma, Ph.D., CWB, RPA

Senior Biologist

Ms. Wasz is the Biology Group Manager for the Inland Empire region and has over 15 years of professional experience involving project management and extensive field survey and report preparation for terrestrial and aquatic biological resources in southern California. Ms. Wasz has managed projects of varying sizes throughout southern California and is proficient at coordinating various tasks and project needs ranging from focused surveys and document preparation to construction monitoring and permit compliance. Ms. Wasz specializes in leading and conducting biological surveys and habitat assessments for listed and sensitive wildlife species in southern California, including Mohave ground squirrel, Palm Springs round-tailed ground squirrel, least Bell's vireo, coastal California gnatcatcher, burrowing owl, desert tortoise, various small mammal species, and nesting birds and raptors. Additionally, Ms. Wasz has considerable experience in designing and executing remote camera and wildlife movement studies for various species of native large mammals. She is proficient in biological monitoring and working with construction crews to avoid project-related impacts to sensitive biological resources. She regularly conducts biological constraints analyses and assessments of potential project-related impacts to sensitive biological resources. Ms. Wasz has also authored many large and complex documents and technical reports, such as Biological Assessments, the specific documents required by the Caltrans and performing analyses and reviews of impacts to natural resources for projects of varying sizes for CEQA documents.

Education

Ph.D. Integrative and Evolutionary Biology, University of Southern California

M.S., Anthropology, University of Southern Mississippi, Hattiesburg

M.S., Zoology, Eastern Illinois University, Charleston

B.S., Zoology, Truman State University, Kirksville, Missouri

Registrations, Certifications, Permits and Affiliations

- Holder of USFWS 10(a)1(A) Recovery Permit No. TE-32004C-2 (Agassiz's desert tortoise)
- CDFW Memorandum of Understanding (Agassiz's desert tortoise)
- Certified Wildlife Biologist ®
- Registered Professional Archaeologist
- County of San Bernardino Qualified Biologist
- County of Los Angeles Certified SEATAC Biota Report Consultant
- County of San Diego Approved CEQA Consultant, Archaeological Resources
- County of Orange Certified Archaeologist

Professional Experience

Biological and Archaeological On-Call Services Contract, Multiple Counties – Southern California Edison (2019-2020). Served as Project Manager, responsible for client management, QA/QC of data and technical deliverables (biological and cultural resources), and management and mentoring of technical staff. Additional duties included preparation of biological reports for Los Angeles County SEATAC review, development of training program, and desktop reviews for biological and cultural resources.

Desert Quartzite Solar Energy Project, Riverside County – First Solar, Inc. (2016). Served as project manager, responsible for client management, biological studies, technical report preparation, and CEQA/NEPA documentation for a large-scale solar development in east Riverside County, California. Duties included reviewing studies prepared by prior consultants, conducting updated field surveys (vegetation mapping, rare plant and desert tortoise surveys) and technical reports, preparing EIR/EIS Biological Resources section and appendices (Invasive Weed Management Plan, Raven Management Plan, Desert Tortoise Translocation Plan, Desert Kit Fox & American Badger Management Plan, Rare Plant Management Plan, and Vegetation Restoration Plan).

Edom Hills Wind Energy Facility, Riverside County – BP Wind Energy North America, Inc. (2015-2016). Served as project manager responsible for conducting a habitat assessment, eolian dune characterization study, and biomonitoring of project activities in support of minimizing the potential for take of Coachella Valley fringe-toed lizard and Coachella Valley milk-vetch during installation of equipment in two project turbines. Coordinated with the BLM project biologist to gain approval of biologists to monitor the work, and concurrence for the recommended mitigation measures, which included removal of wind-blown sands from portions of the access road and placing the sands in adjacent areas where they could continue transport in the eolian ecosystem. Authored a post-construction memo that detailed the restoration of the eolian sands and avoidance of sensitive microhabitats where fringe-toed lizards typically hibernate during the project activities.

Dune Palms Road Crossing Replacement, Riverside County – As a Sub to Parsons Brinkerhoff for Caltrans (2014). Served as project manager responsible for coordinating natural resources studies and agency consultation in support of the preparation of a Caltrans Natural Environment Study (NES). Project tasks included a general biological survey, focused surveys for burrowing owl and rare plants, trapping efforts for Palm Springs round-tailed ground squirrel and Palm Springs pocket mouse, a jurisdictional waters/habitats determination, agency consultation, preparation of a Biological Assessment in support of Section 7 consultation, documentation of study results, and preparation of the NES.

Environmental Generalist Services Task Order Contract, Los Angeles County – Caltrans District 7 (2014). Served as senior biologist for this two-year, on-call environmental services contract with Caltrans District 7. While serving in this capacity, contributed to two task orders in support of the State Route 138 NW project, which consists of environmental studies on SR-138 between State Route 14 and Interstate 5. Led task order responses that included 1) desert tortoise surveys and 2) an analysis of wildlife crossing and movements. Participated in the fieldwork, planned field and desktop analyses, directed a group of biologists and GIS specialists, and served as primary author of the deliverables produced for these task orders.

Dry Lake Solar Energy Zone Desert Tortoise Translocations, Clark County, Nevada – As a Sub to Ironwood Consulting, Inc for First Solar, NV Energy, and Invenergy (2014). Served as senior wildlife biologist responsible for conducting focused, protocol health assessments and tissue sampling of desert tortoises within the Project site and translocation areas in support of disease testing and assessment. The Project involved translocating desert tortoise from a designated Solar Energy Zone on Bureau of Land Management lands in the vicinity of Dry Lake in Clark County, Nevada, in support of the development of the area for solar energy facilities. Captured and handled tortoises encountered during surveys of the development area and proposed translocation areas, performed U.S. Fish and Wildlife Service-protocol health assessments, collected blood samples through subcarapacial venipuncture, collected oral swabs, and weighed, measured, photographed, and released the tortoises.

Biological and Archaeological Services On-call Contract, Multiple Counties – Southern California Edison (2013). Served as Biological Resources Program Director for SCE's Emergency On-call Natural and Cultural Resources Services Contract. While serving in this capacity, was responsible for leading SWCA's response to task orders involving biological resources. This included managing technical specialists, support staff, and subconsultants in responding to multiple, concurrent emergency and fast-burn task orders. Tasks conducted under this contract included biological assessments of gen-tie line alternatives, pre-construction surveys and monitoring in support of construction of a new substation and associated tie-in with a transmission line and preparing a Biological Assessment in support of Section 7 consultation for a deteriorated pole replacement project in the Angeles National Forest.

Kramer Junction Solar Energy Center, San Bernardino County – NextEra Energy, Inc. (2009-2011). Served as co-project manager and senior biologist on this project, which included designing and implementing measures to avoid sensitive biological resources, including desert tortoise, in support of development of a solar power project. Consulted with FWS and CDFG for permitting the project, developed a fencing plan to keep desert tortoises from accessing the project site, developed and implemented a desert tortoise monitoring program, and served as senior author of the technical report deliverables.

Riverside Energy Resource Center; Riverside County – Power Engineers (2004-2008). Served as project manager for this project, which included conducting assessments of biological, cultural, paleontological, and socioeconomic resources that could be impacted by the project in conformance with the California Energy Commission's (CEC) Small Power Plant Exemption Application process. Led biological, cultural, and paleontological tasks, which included coordinating with CEC biologists, developing mitigation measures for burrowing owl, a species that was determined to occupy the site prior to its development, and authoring documents. Designed and implemented a burrowing owl mitigation plan that included installation of artificial burrows and revegetation of mitigation area with California native vegetation communities.

Professional Development Courses/Training

- ESRI, ArcMap Training, 2016
- Desert Tortoise Council, Desert Tortoise Health Assessments for Translocation Projects, 2015

Wendy Turner

Senior Biologist

Ms. Turner has over nine years of professional experience as a biologist involving field surveys and report preparation for terrestrial and aquatic biological resources in southern California. She provides technical support for all aspects of projects involving biological resources from preconstruction surveys and permitting, to construction monitoring and permit compliance, through the post-construction habitat restoration process. Ms. Turner regularly works on a variety of projects, including infrastructure (highways, bridges, transmission lines), alternative energy (solar facilities and waste to energy plants), and private and commercial development, some of which occurred on Department of Defense installations. She has experience working in a variety of habitats, including coastal, inland, desert, mountain, and riparian areas. Ms. Turner has considerable experience leading and conducting a wide range of biological surveys and habitat assessments, as well as construction monitoring for special-status species. She has assisted in conducting protocol surveys for the coastal California gnatcatcher, southwestern willow flycatcher, western yellow-billed cuckoo, and conducted independent surveys for general nesting birds, least Bell's vireo, burrowing owl, desert tortoise, desert kit fox, various sensitive small mammals and plants, raptors, and many other coastal and riparian bird species. In addition to her wildlife experience, Ms. Turner conducts wetland and jurisdictional delineations. She holds a California Department of Fish and Wildlife (CDFW) Memorandum of Understanding for conducting live-trapping surveys of various sensitive small mammals in southern California, a U.S. Fish and Wildlife Service (USFWS) recovery permit for listed vernal pool Branchiopods (fairy shrimp), and has been approved by both CDFW and USFWS as an authorized desert tortoise handler. She has authored and co-authored Due Diligence Biological Reports, Biological Technical Reports, and Biological Assessments (BAs). She also assists with the preparation of the biological resources sections for Environmental Impact Reports (EIRs), Environmental Impact Statements (EISs), Initial Studies/Mitigated Negative Declarations (IS/MNDs), and Environmental Assessments (EAs) as part of CEQA and NEPA, Federal Endangered Species Act Section 7, and Fish and Game Code Section 2081 compliance and permitting processes.

Education

B.S. Environmental Management with a Minor in Human-Animal Studies, University of Redlands, Redlands California

Registrations, Certifications, Permits and Affiliations

- CDFW Scientific Collecting Permit (SC 11760)
- Authorized as an Assistant Field Investigator under CDFW MOU for the Mohave Ground Squirrel, Palm Springs Round Tailed Ground Squirrel, Arizona Cotton Rat, Hispid Cotton Rat, Palm Springs Pocket Mouse, Jacumba Pocket Mouse, White-eared Pocket Mouse, and Tehachapi Pocket Mice.
- Surveying, Monitoring, and Handling Techniques Workshop, Desert Tortoise Council (2010)

- Introduction to Desert Tortoises and Field Techniques, Desert Tortoise Council (2015)
- Mammal Tracking and Identification Workshop, Earth Skills (2012)
- Authorized Independent Surveyor under USFWS Recovery Permit for Listed Vernal Pool Branchiopods (TE-012973-11 – exp. 8/7/2022)
- CDFW-Authorized Flat-tailed Horned Lizard Biological Monitor

Professional Experience

Aurora Solar Project, San Bernardino County – As a Sub to Aspen for California State Lands Commission (2017-2018). Wildlife biologist responsible for leading protocol surveys for desert tortoise in support of the proposed solar project and associated generation-tie alignments. Live tortoises, tortoise sign, and active burrowing owl burrows were identified during the survey. Area surveyed included a total of 4,500 acres.

Brown Field Municipal Airport Burrowing Owl Translocation to Rancho Jamul Ecological Reserve, San Diego County – San Diego Zoo Institute for Conservation Research (ICR) (2018) Participated in the active translocation of five pairs of burrowing owls from Brown Field Municipal Airport to Rancho Jamul Ecological Reserve as part of implementation of ICR's Burrowing Owl Conservation and Management Plan for San Diego County. At the donor site (Brown Field), conducted pre-translocation surveys and post-translocation burrow exclusion, monitoring, and collapse under coordination and approvals from CDFW, USFWS, City of San Diego, County of San Diego, and ICR. The owl pairs were translocated to the receiver site (Rancho Jamul Ecological Reserve) and contained in hacking cages with artificial burrows and breeding chambers for approximately 30 days to encourage settlement. After this period, assisted ICR with the owl release by disassembly and removal of the hacking cages and monitoring burrows to determine emergence time and general behavior. The goal of this translocation effort is to establish a new burrowing owl population node in San Diego County.

High Desert Solar Project, Focused Surveys for Desert Tortoise, Burrowing Owl, and Rare Plants, San Bernardino County – Middle River Power, LLC (2017). Biologist responsible for conducting protocol surveys for desert tortoise and focused breeding season surveys for burrowing owl. Potential burrowing owl burrows and sign were identified but no burrowing owls were observed during the first of four burrowing owl surveys. Four live desert tortoises and twenty pieces of sign were observed during the protocol desert tortoise surveys.

Environmental Generalist Services Task Order Contract, Los Angeles County – Caltrans District 7 (2014-2017). Wildlife biologist for biological resource studies under a task order contract for Caltrans-proposed improvements to State Route 138 from its connection to State Route 14 in Lancaster to its terminus with Interstate 5 in Gorman. The SR-138 is commonly used as a local by-pass for trucks and commuters when emergency closures happen on the I-5 or SR-14. Worked on the following task orders:

- **Burrowing owl surveys and habitat assessment:** Lead biologist for focused burrowing owl surveys and performing an updated habitat assessment throughout the 36-mile project corridor. Responsible for coordinating the survey effort.
- **Nocturnal small mammal trapping:** Assisted with two trapping studies; one in the summer and one in the spring. The primary focus of the study was the Tehachapi pocket mouse, a California Species of Special Concern. Established grids, identified rodents, and assisted in authoring the results reports.
- **Sensitive Plant Surveys:** Biologist responsible for assisting with surveys for rare and sensitive plants.

Environmental Services for Lebata Big Rock Creek, Los Angeles County – McGee and Associates (2016). Biologist responsible for assisting with protocol MGS trapping. Also responsible for leading preconstruction burrowing owl clearance and nesting bird surveys. Lebata, Inc. has proposed surface mining activities on approximately 310 acres in Big Rock Creek, near the town of Pearblossom, in Los Angeles County, California.

Tehachapi Renewable Transmission Project (TRTP) Segments 4-11, Los Angeles, San Bernardino and Kern Counties – As a Sub to BonTerra for Southern California Edison (2010–2015). ECORP, as a subcontractor to BonTerra Inc., is providing biological services and construction monitoring in support of the construction of a 175-mile transmission line for Southern California Edison (SCE). Duties performed included:

- Conducted protocol 100-percent coverage surveys for desert tortoise throughout project impact areas for Segments 3A, 3B and 10. Survey results were negative for desert tortoise presence.
- Responsible for conducting pre-construction surveys for sensitive species within project boundaries.
- Approved desert tortoise monitor, responsible for ensuring compliance measures for desert tortoise protection during construction activities are properly implemented.
- Approved nesting bird monitor responsible for conducting nesting bird surveys and submitting a daily report of the findings

Burrowing Owl Survey in Lucerne Valley for Southern California Edison, San Bernardino County – SWCA Environmental Consultants (2013). Surveyor for protocol-level burrowing owl surveys conducted in support of Southern California Edison's (SCE) maintenance requirements in Lucerne Valley, San Bernardino County.

Focused Burrowing Owl and Desert Tortoise Surveys, Oro Verde Solar Project, Edwards Air Force Base, Kern County – Sun Edison (2012–2013). Biologist responsible for conducting focused surveys for burrowing owl and assisting in writing the biological technical report. ECORP was contracted to conduct biological and cultural resources studies at an approximately 8,000-acre site proposed for solar energy development located in the northwest corner of Edwards Air Force Base in Kern County. ECORP conducted thorough cultural resources records searches and field studies in addition to focused biological surveys such as vegetation mapping, rare plant habitat mapping, desert tortoise surveys, and burrowing owl surveys.

Kristen (Mobraaten) Wasz

Inland Empire Biology Manager/Senior Biologist

Ms. Wasz is the Biology Group Manager for the Inland Empire region and has over 15 years of professional experience involving project management and extensive field survey and report preparation for terrestrial and aquatic biological resources in southern California. Ms. Wasz has managed projects of varying sizes throughout southern California and is proficient at coordinating various tasks and project needs ranging from focused surveys and document preparation to construction monitoring and permit compliance. Ms. Wasz specializes in leading and conducting biological surveys and habitat assessments for listed and sensitive wildlife species in southern California, including Mohave ground squirrel, Palm Springs round-tailed ground squirrel, least Bell's vireo, coastal California gnatcatcher, burrowing owl, desert tortoise, various small mammal species, and nesting birds and raptors. Additionally, Ms. Wasz has considerable experience in designing and executing remote camera and wildlife movement studies for various species of native large mammals. She is proficient in biological monitoring and working with construction crews to avoid project-related impacts to sensitive biological resources. She regularly conducts biological constraints analyses and assessments of potential project-related impacts to sensitive biological resources. Ms. Wasz has also authored many large and complex documents and technical reports, such as Biological Assessments, the specific documents required by the Caltrans and performing analyses and reviews of impacts to natural resources for projects of varying sizes for CEQA documents.

Education

B.S., Environmental Science with a Minor in Biology, University of Redlands, California

Registrations, Certifications, Permits and Affiliations

- Current California Department of Fish and Wildlife (CDFW) Scientific Collecting Permit (SC# 8007)
- Authorized Field Investigator under CDFW Memorandum of Understanding (MOU) for the Mohave ground squirrel, Palm Springs round-tailed ground squirrel, Arizona cotton rat, hispid cotton rat, Palm Springs pocket mouse, Jacumba pocket mouse, Tehachapi pocket mouse, and white-eared pocket mouse; authorized Field Assistant for giant kangaroo rat and San Joaquin antelope squirrel.
- Authorized Independent Surveyor under United States Fish and Wildlife Service (USFWS) 10 (a)(1)(A) Recovery Permit for surveying for coastal California gnatcatcher (TE46552A-1)
- Authorized Independent Surveyor under USFWS 10 (a)(1)(A) Recovery Permit for listed vernal pool branchiopods: Riverside fairy shrimp, San Diego fairy shrimp, vernal pool fairy shrimp, conservancy fairy shrimp, longhorn fairy shrimp, and vernal pool tadpole shrimp (TE012973-11)

Professional Experience

High Desert Solar Project, San Bernardino County – Middle River Power, LLC (2017-Present). Lead project biologist for a proposed solar field area, generation-tie line, and associated facilities in the City of Victorville. Ms. Wasz is responsible for coordinating habitat assessments and protocol-level surveys for

special-status species (Mohave ground squirrel, desert tortoise, burrowing owl, rare plants); authoring the survey results reports, biological impacts analysis, and the Section 2081 Incidental Take Permit application to CDFW; providing overall guidance and permitting support for mitigation planning, Section 2081 of the California Endangered Species Act permitting process, and Section 10 of the federal Endangered Species Act permitting process; and coordinating with USFWS and CDFW regarding biological resources pertaining to the project.

Aurora Solar Project, San Bernardino County – As a Sub to Aspen for California State Lands Commission (2017-2018). Task Manager and wildlife biologist responsible for managing and conducting protocol surveys for desert tortoise and performing a detailed habitat assessment for Mohave ground squirrel in support of the proposed solar project and associated generation-tie alignments. Live tortoises, tortoise sign, and active burrowing owl burrows were identified during the survey. Area surveyed included a total of 4,500 acres.

Environmental Generalist Services Task Order Contract, Los Angeles County – Caltrans District 7 (2014-2019). Task Manager and wildlife biologist for biological resource studies under a task order contract for Caltrans-proposed improvements to State Route 138 from its connection to State Route 14 in Lancaster to its terminus with Interstate 5 in Gorman. Work on task orders that included:

- State Route 138 Northwest Corridor Improvement Project: Task order manager, coordinating multiple focused biological surveys, preparation of and reviewing focused survey reports, assisting Caltrans with impacts analyses and determining avoidance/minimization and mitigation measures for the project.
- Burrowing owl surveys and habitat assessment: Task manager for focused burrowing owl surveys and performing an updated habitat assessment throughout the project corridor. Responsible for coordinating the survey efforts, authoring the focused results report, and performing an impacts analysis on three project alternatives.
- Desert tortoise surveys: Lead focused desert tortoise surveys within suitable habitat within the project corridor. No tortoises were detected.

Lebata Big Rock Creek Mine, Los Angeles County – McGee and Associates (2014-2015). Task manager and wildlife biologist responsible for conducting protocol-level Mohave ground squirrel trapping, agency consultation, performing nesting bird surveys, coordinating construction monitoring, and authoring reports. Trapping results for Mohave ground squirrel were negative.

Environmental Generalist Services Task Order Contract, Inyo and Kern Counties – Caltrans Districts 6 and 9 (2012-Ongoing). Wildlife Biologist responsible for leading and conducting biological resource studies under a task order contract for the Caltrans, Districts 6 and 9 (Inyo and Kern Counties). Worked on the following tasks:

- Haiwee Clear Recovery Zone Project: Mohave ground squirrel biologist for the proposed safety improvements along a two-mile stretch of U.S. Highway 395. Responsible for conducting a pre-construction burrow survey and burrow collapse effort for Mohave ground squirrel.

- Freeman Gulch Widening Project: Wildlife biologist and lead surveyor for a wildlife crossing study along four miles of State Route 14 located west of Ridgecrest. Also assisted lead botanist during a rare plant survey in plant identification, data collection, and checking reference populations.
- SR-14 Red Rock Canyon Bridge Replacement Monitoring: Biological monitor for replacement of Red Rock Canyon Bridge on SR-14 at post mile 40.0. Duties included biological monitoring, conducting contractor worker awareness trainings, coordinating with project managers, and writing the weekly monitoring reports. Biological monitoring was performed to ensure compliance with avoidance/ minimization measures in place for desert tortoise, Mohave ground squirrel, Red Rock tarplant, golden eagle, burrowing owl, and to ensure compliance with the Streambed Alteration Agreement for the project. Authorized biologist for Mohave ground squirrel monitoring and desert tortoise worker training.
- Olancha Desert Tortoise Surveys: Wildlife biologist and co-lead surveyor for protocol-level desert tortoise presence/absence surveys for realignment of State Route 395 for the 11.9-mile Olancha Cartago Four-Lane Project. Desert tortoise survey results were positive; while no live tortoises were observed, several active burrows, recent scats and tracks were detected. Responsible for surveying; leading field crews; organizing, entering, and analyzing the survey data; and co-authoring the technical report.

Burrowing Owl Survey in Lucerne Valley for Southern California Edison, San Bernardino County – SWCA Environmental Consultants (2013). Lead surveyor for a protocol-level burrowing owl survey conducted in support of Southern California Edison's (SCE) maintenance requirements in Lucerne Valley, San Bernardino County. The survey was performed throughout approximately six linear miles of transmission line with a 500-foot buffer on either side of the proposed transmission line right-of-way.

Desert Tortoise Zone of Influence and Pre-construction Surveys, Morning Star Mine, Mojave National Preserve, San Bernardino County – National Park Service (2009-2010). Lead surveyor and wildlife biologist for clean-up, habitat restoration, and hazardous soils removal efforts at the Morning Star Mine in the Mojave National Preserve, San Bernardino County. Lead biologist for protocol presence/absence zone of influence and pre-construction desert tortoise surveys conducted at the mine site and along the 4-mile dirt entrance road to the site. Ms. Wasz authored the desert tortoise results report. Several live tortoises and sign were observed during the surveys.

Desert Tortoise Mortality Study, Mojave National Preserve, San Bernardino County – Burleson Consulting, Inc (2009). Lead surveyor and crew trainer for a desert tortoise mortality study in the northern portion of the Mojave National Preserve, San Bernardino County. One training site, two mortality study sites (comprised of four survey blocks each), and one control site were surveyed using a modified protocol that was established during a previous desert tortoise mortality study. Several live desert tortoises, scat, burrows, and desert tortoise carcasses were encountered during the survey.

Professional Development Courses/Training

- The Desert Tortoise Council
- Mammal Tracking and Identification Workshop, Earth Skills, 2007
- Surveying, Monitoring, and Handling Techniques Workshop, Desert Tortoise Council, 2005

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SKILLS

Project management ability and extensive experience with environmental compliance activities and documentation, desert tortoise (*Gopherus agassizii*) surveys, research and handling including blood drawing and disease symptom recognition, telemetry, behavioral observations, herptile, avian, small mammal, insect and marine species field work, botanical surveys and sampling, assessment of human impacts on desert ecosystems, deliverables preparation, familiarity with remote primitive field locations and conditions.

EXPERIENCE

RESEARCH AND WILDLIFE SURVEYS

Resource Lead, Desert Tortoise

Ironwood Consulting

2008-Present

FWS-ERIV-08BO0789-11F0041 and TE 218901-3

Oversight of clearance, health assessments, translocation, transmittering, tracking, presence absence and relative density surveys, monitoring, reporting and compliance with state and federal measures concerned with desert tortoise for Ironwood Consulting projects 2011-present. Managed and participated in extensive sensitive species survey field efforts related to solar projects in the Colorado and Mojave deserts 2008-2013 in Riverside, San Bernardino and Clark Counties including annual health assessments on over 100 transmittered tortoises.

Desert tortoise lead and on-site management of listed activities for Desert Sunlight Solar Farm, Riverside County during intensive construction phases in 2011-2012. Successfully translocated tortoises off the 6 square mile project site. Scheduled daily tasks for a team of up to 40 field personnel. Please also see compliance section.

Botanical Inventory Team Member

2010 -2013

Participated in botanical inventories conducted on solar sites in Riverside and San Bernardino Counties, including special status plants. Identification of common to rare annuals and perennials daily, assisted in keying of unfamiliar plants. Integral in data collection and navigation duties. Directly supervised by botanists Tim Thomas, Glenn Rink, Dr. Marc Baker, Dr. Alice Karl, and Michael Honer in the field on various projects for Ironwood Consulting and Alice Karl and Associates.

Field Biologist

Alice Karl and Associates

2007-2013

Surveyed BLM and DOD lands as assigned for burrowing owl, Mojave fringed toed lizard, chuckwalla, and desert tortoise. Walked 6 to 15 km/day of Tortoise Relative Estimate of Density (TRED) transects on and around 29Palms Marine Corps Base. Terrain varied from playa to mountainous. Collected data on habitat characteristics and vegetation in all weather conditions.

Also performed protocol surveys on solar sites as part of biological team recording special status plant and animal species, particularly desert tortoise, burrowing owl and fringe toed lizards in Colorado and Mojave Desert locations. Participated in small mammal trapping efforts on these

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sites.

Blood Collection Ft. Irwin and 29 Palms

2004-2008

Permit # TE006556-11 and B.O. 1-8-03-F-48

Project manager for team of 10-15 biologists collecting desert tortoise blood samples on National Training Center (Ft. Irwin) translocation project and separately for Marine Corps Air Ground Combat Center (29 Palms). Aspects of the projects included locating wild tortoises, telemetry, handling and advanced health assessment of desert tortoises, collection and management of data and samples in the field. Administered complex logistics and data, and was solely responsible for deliverables to USGS. Several different projects were completed for principle investigators Dr. Kristin Berry, USGS at Ft. Irwin and under Kiva Biological for Dr. Brian Henen, MCAGCC.

Tortoise Blood Drawing Field Techniques

2000-2004

Permit # TE006556-11

Completed two disease recognition /blood drawing workshops with Dr. Kristin Berry and Dr. Lori Wendland. Participated as project manager and instructor in the second training course. Training included classroom and laboratory instruction on obtaining blood via brachial and subcarapacial veinipuncture; nasal lavage samples, and advanced symptom recognition using captive animals. Field blood collection involved extensive health assessments, drawing blood and nasal lavage samples from wild tortoises on site in the field.

Field Researcher

Ft. Irwin, CA

2005-2008

Team leader for large scale translocation effort for Southern Expansion of Ft. Irwin. Multi-faceted project included thousands of miles of walking transects, data collection on tortoise sign, transmitter application on hundreds of subadult and adult tortoises, telemetry, personnel and data logistics. Assisted in training many of the less experienced crew members and overseeing their efforts in the field.

Behavioral Survey

USGS

Fall 2001-2005

Permit # TE006556-11

Recorded behaviors of wild desert tortoises throughout entire activity period during daylight hours at the Fort Irwin Control Study Plot. Activities observed included courtship, mating, foraging, burrow construction, agonistic encounters and resting behaviors. Radio telemetry techniques were utilized for locating tortoises. (Approved to apply radio transmitters 2003-5.) Video recorded tortoise behavior 2002-2004.

Line Distance Surveyor

Kiva Biological

Functioned as assistant to Pete Woodman, project manager (2002-2004). Annually participated in extensive survey of desert tortoise using distance sampling methodologies on transects located throughout the Mojave and Colorado deserts. Responsibilities included orienteering and use of global positioning systems, transect installation, walking a daily minimum of ten

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Spring, 1999 – 2005

Permit # TE-702631

miles, drawing and management of blood samples, data collection including morphological traits and advanced health profiles. Assisted in training new blood collectors, location of tortoises using radio telemetry, application of radio transmitters, and data management.

Field Biologist
Chambers Group
2001

Surveyed endangered species habitat north of Palm Springs. Focus species was the Coachella Valley Fringe-Toed Lizard. Collected, recorded, and compiled data for federal and state consideration.

Field Researcher Wildlife Assistant

Idaho Power Company, Boise, ID

1997-1998

Collected data on vegetation, bird populations and small mammals in remote study area surrounding the Snake River in Hell's Canyon Oregon and Idaho. Extensive vegetation surveys were conducted in upland, riparian, shoreline and island plant communities. Identification of herbaceous and woody species in the field. Operated company vehicles and equipment daily, including ATVs, jet boat, white-water rafts, canoe, motorboat and trailers. Other duties included data entry and quality assurance, miscellaneous projects, and incidental wildlife observations.

Banding Intern

Point Reyes Bird Observatory
1994-1996

Banded passerines at Palo Marin field station, Bolinas California 6-7 days per week July-Oct 1994. Southeast Farallon Island volunteer fall, 1994-1996. Banded passerine migrants, counted shorebirds and pinnepeds on the island, recorded any and all species observations during residence on SEFI including participating in White Shark observation efforts.

EXPERIENCE

COMPLIANCE MONITORING AND MANAGEMENT

Resource Lead, Desert Tortoise

Ironwood Consulting

2011-Present

FWS-ERIV-08BO0789-11F0041

Assured compliance with terms of Biological Opinion for Desert Sunlight Solar Farm, Riverside Co. Oversight of and participation in biological monitoring, tortoise clearance and translocation-related activities detailed above during intensive construction and clearance phases of the project. Liaised with construction to ensure understanding of compliance measures and timing. Named as designated biologist and performed occasional WEAP trainings. Coordinated with agency personnel during development of adaptive management strategies. Author of tortoise sections in quarterly and annual reports submitted to BLM for Sunlight.
Compiled lists of candidates for authorization by state and federal agencies and participated in writing and editing translocation plans for Desert Sunlight, Stateline and Silver State Solar projects in California and Nevada.

Compliance Monitor
Great Basin Sage

2012

Nevada BLM authorized desert tortoise biologist for com tower installation associated with On-Line transmission project. Performed oversight of Joshua tree salvage and replanting, vehicle escort through tortoise habitat and conducted tortoise training for all new personnel. Averted multiple

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tortoise-vehicle interactions along 6 mile access road near Alamo, NV.

Construction Monitor
UltraSystems
Winter, 2005-06

USFWS-CDFG approved desert tortoise monitor for shoulder widening and installation of tortoise fencing along 25 miles of Ft. Irwin Road. Walked up to 14 miles per day ahead of and alongside construction activities. Coordinated with work crews daily.

Assistant Project Manager, Biologist

EnviroPlus Consulting

2004-2005

DARPA Grand Challenge automated robotic vehicle test between Barstow and Las Vegas March 2004. Assembled, helped manage, and participated in crew of 20 tortoise biologists whose duties included pre-event route surveys, building pens around known tortoises, and course monitoring. Responsibilities included pre-event communications and prioritizing placement of personnel resources during the unmanned vehicle event. Biological team member for second Grand Challenge event in Primm NV October, 2005- drove lead survey vehicle ahead of robots following pre-event surveys.

Desert Tortoise Monitor

Rincon Consulting

2004

Agency approved desert tortoise handler and environmental compliance monitor for Southern California Gas. Accompanied pipeline maintenance and road crews during routine upkeep activities. Special concerns included desert tortoise, burrowing owl, Coachella Valley Fringe-Toed Lizard (*Uma inornata*), and cacti.

Field Manager High Desert Gas Pipeline

EnviroPlus Consulting

Summer, 2002

Managed and supervised crew of over 25 compliance monitors on zero-take 32-mile gas pipeline installation during desert tortoise active season. Assigned monitors on as-needed basis throughout changes in daily construction activities. Responded to varying tortoise activity levels throughout the right-of-way while assuring compliance with all federal and state documents. Handled tortoises daily and utilized innovative field techniques of burrow transmitters and tortoise pens to monitor tortoise activity levels and maintain knowledge of active tortoise locations in construction zone. Interacted with biological and construction staff to achieve maximum efficiency in coverage and personnel management.

Desert Tortoise Monitor

Sempra Gas

Agency approved desert tortoise handler and environmental compliance monitor on Southern California Gas/Sempra natural gas transmission line between Adelanto and Kramer Junction, California. Special concerns included desert tortoise, burrowing owl, hazardous material spills and right-of-way issues.

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2002

Environmental Compliance Monitor and Special Liaison

Level (3) Long Haul Fiber Project

1999-2001

Conducted Federal and State-listed species pre-construction surveys and monitored all phases of construction activities along the Tehachapi to Cajon segment of the Level (3) Long Haul fiber optic project. Primary species of concern included the desert tortoise, Mojave ground squirrel, Joshua tree, and birds of prey. Served as special California State Parks liaison at Ventura River and biological monitor on coastal route between San Louis Obispo and Oxnard CA. Performed compliance monitoring on the San Diego to Yuma segment. On all segments implemented environmental protection measures listed in resource agency environmental compliance documents (*e.g.* Frac-out contingency plan, Storm water Pollution Prevention plan, Streambed Alteration Agreement). Coordinated with construction personnel, environmental inspectors and biological staff and provided daily reports to biological and environmental management. Provided constant on-site presence and environmental awareness training sessions for all project-related personnel on an as needed basis.

Endangered Species Compliance Monitoring

Kiva Biological

1999

Field endangered species compliance monitor on water utility enhancements along an 8-mile corridor and construction of 1-mile long earthen berm at Twentynine Palms Marine Corps Air-Ground Combat Center. Desert tortoise was focus species. Provided environmental compliance briefings to project personnel and enforced terms and conditions of federal biological opinion.

Rachel Woodard

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PERMITS

California resident scientific collecting permit #SC-6890 valid through 2012 (*in renewal*) includes small mammal capture & release; herptile and insect collection, capture & release.

EDUCATION

Bachelor of Arts, Knox College, Galesburg, Illinois 61401

Cum laude with College Honors in Biology, June 1993.

VOLUNTEER

Instructor for the Desert Tortoise Council's annual techniques workshop in Ridgecrest, CA. Taught field demonstrations for tortoise handling, artificial burrow construction, fence construction, and transects from about 1999-present.

Mohave Ground Squirrel trapper- California Department of Fish and Game volunteer effort (Inyo, Kern and San Bernardino Co.), 2010-2013.

Bird bander, Canebrake Ecological Reserve under Denise LaBerteaux. Occasional volunteer at seasonal bird banding stations since 2001.
Bander, Maui Forest Bird Recovery Project, winter 2010.

Desert Tortoise Preserve Committee Board of Trustees member, Recording Secretary 2013-present.

RELATED SKILLS & INTERESTS

Mountaineering, hiking, birding, photography, camping, 4x4 exploration, cooking, reading.

Proficient with Windows, GPS, and mapping software.

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Attachment E

Representative Photographs,
Biological Survey Area

Attachment E. Representative Photographs, Biological Survey Area

Photo 1. Representative desert tortoise habitat; facing south.

Photo 2. Representative desert tortoise habitat; facing east.

Photo 3. Representative desert tortoise habitat; facing north.

Photo 4. Representative desert tortoise habitat; facing south.

Photo 5. Lucerne Valley Cutoff Road bisecting the Desert Tortoise Survey Area; facing west.

Photo 6. Mojavean Desert Scrub in flat areas of the plant survey area.

Photo 7. Slopes leading into mountains.

Photo 8. Desert wash within the plant survey area.

Photo 9. Adult desert tortoise incidentally observed crossing Lucerne Valley Cutoff Road approximately 0.5 mile southeast of the Desert Tortoise Survey Area, May 12, 2017.

Photo 10. Adult female desert tortoise (230 mm MCL) observed within the northeast portion of the Desert Tortoise Survey Area on May 8, 2017.

Photo 11. Adult female desert tortoise observed within the western portion of the Desert Tortoise Survey Area on April 21, 2020.

Photo 12. Adult female desert tortoise observed within the gen-tie portion of the Desert Tortoise Survey Area south of SR-247 on April 22, 2020.

Photo 13. Class 2 desert tortoise scat.

Photo 14. Class 3 desert tortoise carcass.

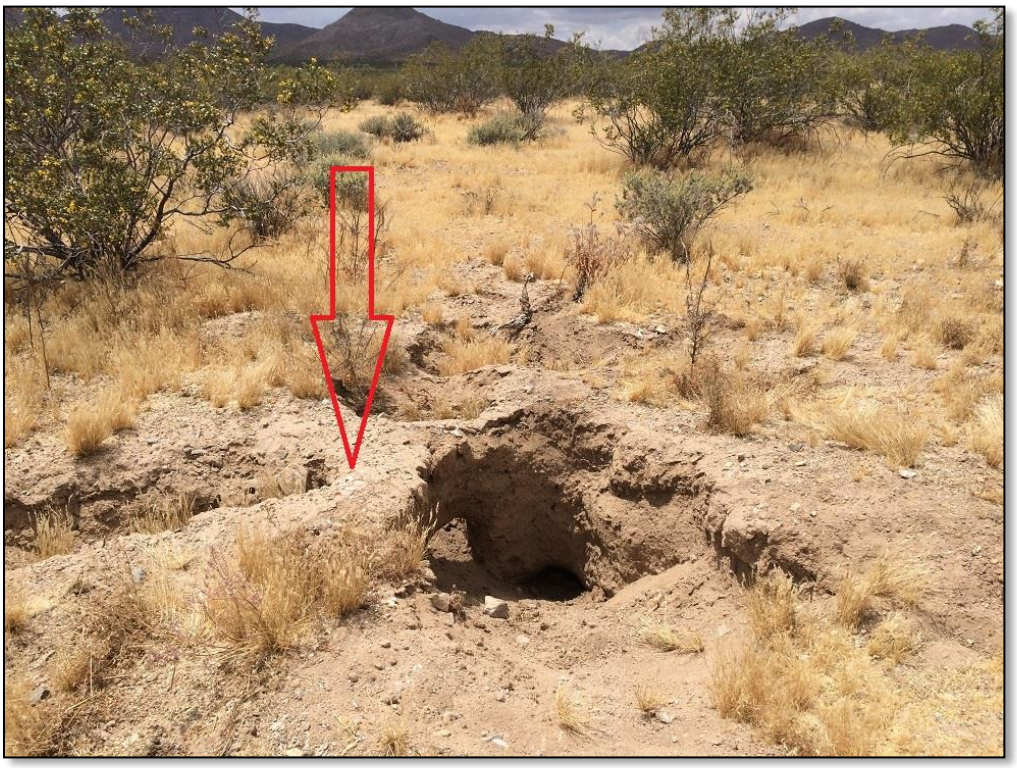


Photo 15. Occupied burrowing owl burrow with whitewash shown by red arrow.

Photo 16. Desert kit fox den natal den complex.

Photo 17. Active loggerhead shrike nest with four eggs, located in fork of Joshua tree.

Photo 18. Active black-throated sparrow nest with four hatchlings, located within cholla cactus.

Attachment F

Plant Compendium

Attachment F. Plant Species Compendium

Scientific Name	Common Name	2017 Spring Survey	2017 Fall Survey	2018 Spring Survey	2020 Spring Survey
GYNOSPERMS (GNETALES)					
EPHEDRACEAE	**EPHEDRA FAMILY**				
Ephedra nevadensis	Nevada jointfir	X	X	X	X
ANGIOSPERMS (EUDICOTS)					
APIACEAE	**CARROT FAMILY**				
Lomatium mohavense	Mojave lomatium	X			X
APOCYNACEAE	**DOGBANE FAMILY**				
Asclepias erosa	desert milkweed	X			
Funastrum utahense [CRPR 4.2]	Utah vine milkweed				X
ANACARDIACEAE	**CASHEW FAMILY**				
*Searsia lancea**	African sumac				X
ASTERACEAE	**SUNFLOWER FAMILY**				
Acamptopappus sphaerocephalus	golden head	X	X		X
Adenophyllum cooperi	Cooper's dogweed	X			X
Ambrosia acanthicarpa	annual bur-sage	X			X
Ambrosia dumosa	burrobush	X	X	X	X
Ambrosia salsola	cheesebush	X	X	X	X
Bebbia juncea	sweetbush	X	X		X
Brickellia desertorum	desert brickellia		X		
Calycoseris parryi	yellow tack-stem	X			X
Chaenactis fremontii	Fremont's pincushion	X			X
Chaenactis stevioides	desert pincushion	X			
Ericameria cooperi	Cooper's goldenbush	X	X		X
Ericameria linearifolia	linear-leaved goldenbush	X			
Ericameria teretifolia	green rabbitbrush	X			
Encelia actoni	acton brittlebush	X	X	X	X
Gutierrezia microcephala	matchweed		X		X
Lasthenia gracilis	needle goldfields	X			X
Leptosyne bigelovii	bigelow coreopsis	X			
Logfia depressa	dwarf cottonrose	X			X
Malacothrix glabrata	desert dandelion	X			X
Malacothrix coulteri	snake's head	X			X
Monoptilon sp.	desert star	X			
Nicolletia occidentalis	hole-in-the-sand plant			X	
Porophyllum gracile	pore-leaf	X			
Stephanomeria parryi	Parry's wire lettuce	X	X		
Stephanomeria pauciflora	wirelettuce	X	X		X
Tetradymia stenolepis	Mojave cottonthorn	X	X		X
Xylorhiza tortifolia	desert aster	X		X	X
BORAGINACEAE	**BORAGE FAMILY**				
Amsinckia menziesii	small flowered fiddleneck	X			
Amsinckia tessellata	bristly fiddleneck	X		X	X
Cryptantha circumscissa	cushion cryptantha	X			X
Cryptantha micrantha	purple root cryptantha	X			X
Cryptantha muricata	prickly cryptantha	X			
Cryptantha nevadensis	Nevada cryptantha	X			X
Cryptantha pterocarya var. *cycloptera*	wing-nut cryptantha	X			X

Scientific Name	Common Name	2017 Spring Survey	2017 Fall Survey	2018 Spring Survey	2020 Spring Survey
Cryptantha pterocarya var. *pterocarya*	wingnut cryptantha	X			X
Pectocarya linearis	comb-bur	X			X
Pectocarya penicillata	winged combseed	X			X
Pectocarya recurvata	curvenut combseed	X			X
Phacelia fremontii	Fremont's phacelia	X			X
Phacelia tanacetifolia	tansy phacelia	X			X
Pholistoma membranaceum	white fiesta-flower	X			X
Plagiobothrys canescens	valley popcornflower	X			X
Tiquilia plicata	fanleaf crinklemat				X
BRASSICACEAE	**MUSTARD FAMILY**				
Caulanthus lasiophyllus	California mustard	X		X	X
Descurainia pinnata	western tansymustard	X			X
Lepidium densiflorum	common pepperweed	X			
Lepidium lasiocarpum	peppergrass	X		X	X
Sisymbrium orientale	Indian hedge mustard	X			X
Streptanthella longirostris	long beaked twist flower	X			
Thysanocarpus curvipes	fringe pod				X
Tropidocarpum gracile	slender keel-fruit	X			X
CACTACEAE	**CACTUS FAMILY**				
Cylindropuntia echinocarpa	Wiggins' cholla	X	X		X
Cylindropuntia ramosissima	branched pencil cholla	X	X	X	X
Echinocactus polycephalus	cottontop cactus	X	X	X	X
Echinocereus engelmannii	hedgehog Cactus	X	X	X	X
Opuntia basilaris var. *basilaris*	beavertail cactus	X	X	X	X
CHENOPODIACEAE	**GOOSEFOOT FAMILY**				
Atriplex canescens	fourwing saltbush				X
Grayia spinosa	hopsage	X		X	X
Krascheninnikovia lanata	winter fat	X	X	X	X
CRASSULACEAE	**STONECROP FAMILY**				
Dudleya saxosa ssp. *aloides*	desert live-forever	X			X
EUPHORBIACEAE	**SPURGE FAMILY**				
Chamaesyce albomarginata	rattlesnake weed			X	
Croton setiger	doveweed		X		
Euphorbia albomarginata	whitemargin sandmat	X			X
FABACEAE	**LEGUME FAMILY**				
Acmispon brachycarpus	hill lotus	X			X
Astragalus didymocarpus	dwarf white milk vetch				X
Astragalus layneae	layne locoweed	X			X
Astragalus lentiginosus var. *variabilis*	freckled milkvetch	X			X
Lupinus concinnus var. *orcutti*	bajada lupine	X			X
Lupinus odoratus	Mojave lupine	X			X
Senna armata	desert senna				X
Trifolium gracilentum	pinpoint clover	X			
KRAMERIACEAE	**RHATANY FAMILY**				
Krameria erecta	littleleaf rhatany	X	X		X
GERANIACEAE	**GERANIUM FAMILY**				
*Erodium cicutarium**	redstem stork's bill	X	X	X	X
LAMIACEAE	**MINT FAMILY**				
Salvia columbariae	chia	X	X	X	X

Scientific Name	Common Name	2017 Spring Survey	2017 Fall Survey	2018 Spring Survey	2020 Spring Survey
Scutellaria mexicana	bladder sage	X			X
LOASACEAE	**LOASA FAMILY**				
Mentzelia albicaulis	whitestem blazingstar	X			
Mentzelia veatchiana	Veatch's blazingstar	X			X
Petalonyx thurberi ssp. *thurberi*	Thurber's sandpaper plant		X	X	X
MALVACEAE	**MALLOW FAMILY**				
Sphaeralcea ambigua	apricot mallow	X	X		X
MONTIACEAE	**MINER'S LETTUCE FAMILY**				
Calyptridium monandrum	common pussypaws				X
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**				
Allionia incarnata	winmills				X
Mirabilis laevis var. *retrorsa*	desert four o'clock	X			X
ONAGRACEAE	**EVENING PRIMROSE FAMILY**				
Camissonia campestris subsp. *campestris*	Mojave sun cups	X			X
Camissoniopsis pallida	pale yellow sun cum	X			X
Chylismia claviformis subsp. *claviformis*	browneyed Primrose	X			
Eremothera boothii subsp. *desertorum*	Booth's desert suncup	X			X
Tetrapteron palmeri	Palmer's evening Primrose	X			X
PAPAVERACEAE	**POPPY FAMILY**				
Eschscholzia californica	California poppy	X			
Eschscholzia minutiflora	Coville poppy	X			X
Platystemon californicus	cream-cups	X			X
POLEMONIACEAE	**PHLOX FAMILY**				
Eriastrum eremicum	desert wooly-star	X			X
Eriastrum sapphirinum var. *sapphirinum*	sapphire wooly-star	X			X
Gilia sp.	gilia	X	X		X
Gilia cf. *brecciarum*	gilia	X			
Gilia cf. *transmontana*	gilia	X			
Linanthus dichotomus	evening snow				X
Loeseliastrum matthewsii	desert calico	X			X
POLYGONACEAE	**BUCKWHEAT FAMILY**				
Centrostegia thurberi	red triangles	X			
Chorizanthe brevicornu var. *brevicornu*	brittle spineflower	X	X	X	X
Chorizanthe rigida	rigid spiny herb		X		X
Chorizanthe watsonii	brittle spineflower	X			X
Eriogonum angulosum	anglestem buckwheat	X			
Eriogonum fasciculatum var. *polifolium*	Mojave wild buckwheat	X	X	X	X
Eriogonum gracillimum	rose and white buckwheat	X	X		X
Eriogonum inflatum var. *inflatum*	desert trumpet	X	X	X	X
Eriogonum maculatum	spotted wild buckwheat	X			
Eriogonum nidularium	wisk broom	X	X		X
Eriogonum pusillum	yellow turbans	X			X
Eriogonum thomasii	Thomas' buckwheat			X	

Scientific Name	Common Name	2017 Spring Survey	2017 Fall Survey	2018 Spring Survey	2020 Spring Survey
Oxytheca perfoliata	punctured bract	X		X	
RANUNCULACEAE	**BUTTERCUP FAMILY**				
Delphinium parishii var. *parishii*	parish larkspur	X			
ROSACEAE	**ROSE FAMILY**				
Coleogyne ramosissima	blackbush	X	X		X
RUTACEAE	**RUE FAMILY**				
Thamnosma montana	turpentine broom	X	X	X	X
SOLANACEAE	**NIGHTSHADE FAMILY**				
Lycium andersonii	water jacket	X	X		X
Lycium cooperi	peach thorn	X	X		X
VISCACEAE	**MISTLETOE FAMILY**				
Phoradendron californicum	desert mistletoe	X			
ZYGOPHYLLACEAE	**CALTROP FAMILY**				
Larrea tridentata	South American creosote bush	X	X	X	X
ANGIOSPERMS (MONOCOTS)					
AGAVACEAE	**CENTURY PLANT FAMILY**				
Yucca brevifolia	Joshua tree	X	X	X	X
Yucca schidigera	Mojave yucca	X	X	X	X
AMARYLLIDACEAE	**AMARYLLIS FAMILY**				
Allium fimbriatum var. *mohavense*	Mojave fringed onion	X			X
THEMIDACEAE	**BRODIAEA FAMILY**				
Dichelostemma capitatum	school bells	X			X
LILIACEAE	**LILY FAMILY**				
Calochortus kennedyi	desert mariposa lily	X			
MELANTHIACEAE	**FALSE-HELLEBORE FAMILY**				
Toxicoscordion brevibracteatum	desert death camus	X	X		X
POACEAE	**GRASS FAMILY**				
*Avena sativa**	wild oat				X
Bromus madritensis subsp. *rubens**	red brome	X	X		X
*Bromus tectorum**	cheatgrass		X		X
Dasyochloa pulchella	desert fluff-grass	X	X		X
Hilaria rigida	big galleta	X		X	X
*Schismus barbatus**	common Mediterranean grass	X	X	X	X
Stipa hymenoides	indian ricegrass	X	X		X
Stipa speciosa	desert needlegrass	X			X

*Not native to California

California Native Plant Society (CNPS) Rare Plant Ranks:
4: Plants of limited distribution; a watch list.

List 1B, 2, and 4 extension meanings:
.2 - Fairly endangered in California (20-80% occurrences threatened)

Sources: California Natural Diversity Data Base (CDFW, 2020); CNPS Rare and Endangered Plant Inventory (CNPS, 2020).

Attachment G

Wildlife Compendium & Observations

Attachment G. Wildlife Compendium and Observations (2017-2020 Surveys)

Scientific Name	Common Name
REPTILES	
Colubridae	**Colubrids and Typical Snakes**
Lampropeltis californiae	California kingsnake
Masticophis flagellum	coachwhip
Pituophis catenifer	gopher snake
Salvadora hexalepis	western patch-nosed snake
Crotaphytidae	**Collared and Leopard Lizards**
Crotaphytus collaris	collared lizard
Gambelia wislizenii	long-nosed leopard lizard
Iguanidae	**Iguanids**
Dipsosaurus dorsalis	desert iguana
Phrynosomatidae	**Spiny Lizards**
Uta stansburiana	common side-blotched lizard
Phrynosoma platyrhinos	desert horned lizard
Callisaurus draconoides rhodostictus	western zebratail lizard
Teiidae	**Ground Lizards, Racerunners, and Whiptails**
Cnemidophorus tigris	western whiptail
Testudinidae	**Tortoises**
*Gopherus agassizii**	desert tortoise
Viperidae	**Pit Vipers and Vipers**
Crotalus scutulatus	Mojave rattlesnake
Crotalus mitchelli	speckled rattlesnake
BIRDS	
Apodidae	**Swifts**
Aeronautes saxatalis	white-throated swift
*Chaetura vauxi**	Vaux's swift
Accipitridae	**Hawks**
Buteo jamaicensis	red-tailed hawk
*Buteo swainsonii**	Swainson's hawk
Alaudidae	**Larks**
Eremophila alpestris	horned lark
Cardinalidae	**Cardinals and Grosbeaks**
Pheucticus melanocephalus	black-headed grosbeak
Columbidae	**Pigeons and Doves**
Zenaida macroura	mourning dove
Corvidae	**Jays and Crows**
Corvus corax	common raven
Falconidae	**Falcons**
Falco mexicanus	prairie falcon
*Falco peregrinus**	peregrine falcon
Fringillidae	**Finches**
Spinus psaltria	lesser goldfinch
Hirundinidae	**Swallows**
Hirundo rustica	barn swallow
Petrochelidon pyrrhonota	cliff swallow
Stelgidopteryx serripennis	northern rough-winged swallow

Scientific Name	Common Name
Icteridae	**Blackbirds and orioles**
Icterus cucullatus	hooded oriole
Iceterus parisorum	Scott's oriole
Laniidae	**Shrikes**
*Lanius ludovicianus**	loggerhead shrike
Mimidae	**Mockingbirds and Thrashers**
Mimus polyglottos	northern mockingbird
*Toxostoma lecontei**	LeConte's thrasher
Parulidae	**Wood warblers**
Dendroica townsendi	Townsend's Warbler
Leiothlypis celata	orange-crowned warbler
Setophaga coronata	yellow-rumped warbler
Wilsonia pusilla	Wilson's warbler
Picidae	**Woodpeckers**
Picoides scalaris	ladder-backed woodpecker
Emberizidae	**Sparrows and Towhees**
Aimophila ruficeps	rufous-crowned sparrow
Amphispiza bilineata	black-throated sparrow
Spizella breweri	Brewer's sparrow
Zonotrichia leucophrys	white-crowned sparrow
Remizidae	**Verdin**
Auriparus flaviceps	verdin
Strigidae	**Typical Owls**
*Athene cunicularia**	burrowing owl
Sylviidae	**Gnatcatchers**
Polioptila caerula	blue-gray gnatcatcher
Trochilidae	**Hummingbirds**
Calypte costae	Costa's hummingbird
Troglodytidae	**Wrens**
Campylorhynchus brunneicapillus	cactus wren
Salpinctes obsoletus	rock wren
Tyrannidae	**Tyrant Flycatchers**
Sayornis saya	Say's phoebe
Myiarchus cinerascens	ash-throated flycatcher
Tyrannus verticalis	western kingbird
Contopus soradidulus	western wood pewee
MAMMALS	
Canidae	**Dogs, Wolves, and Foxes**
Canis latrans	coyote (den, scat)
*Vulpes macrotis arsipus**	desert kit fox (den)
Cricetidae	**New World Rats and Mice**
Neotoma lepida	desert woodrat
Heteromyidae	**Kangaroo Rats and Pocket Mice**
Dipodomys sp.	kangaroo rat (carcass)
Leporidae	**Hares and Rabbits**
Lepus californicus	black-tailed jackrabbit
Sciuridae	**Squirrels**
Ammospermophilus leucurus	white-tailed antelope squirrel
Otospermophilus beecheyi	California ground squirrel

*CDFW California Species of Special Concern/CDFW Fully Protected Species/Watch List Species

Incidentally Observed Special Status Species and Nesting Birds

Species	Observation Type	Date Observed	11N UTM		Other Notes
			Easting	Northing	
SPECIAL-STATUS SPECIES					
Swainson's hawk (*Buteo swainsoni*)	individual	5/10/2017	497416	3834190	Individual observed flying
Vaux's swift (*Chaetura vauxi*)	individual	5/14/2017	498458	3832598	Individual observed
Loggerhead shrike (*Lanius ludovicianus*)	individual	5/11/2017	497642	3835326	Three individuals perched on Mojave yucca and calling
	individual	5/11/2017	497726	3834877	One individual perched on Mojave yucca
	individual	5/15/2017	498281	3832903	Individual heard calling
	individual	5/16/2017	498070	3832918	Two individuals heard calling and observed foraging
	individual	5/16/2017	497953	3833724	One adult observed atop Joshua tree
	pair	4/13/2020	503365	3824249	Pair observed
	individual	4/20/2020	497715	3831006	Individual observed
	pair	5/13/2020	498984	3830852	Pair observed
Desert tortoise (*Gopherus agassizii*)	carcass	4/17/2020	498092	3830294	Class 5 piece of shell fragment, likely from female ~210 mcl; potentially dropped by golden eagle
	individual, burrow	4/21/2020	497428	3832195	Female ~195 mcl, carapace has been chewed on, basking outside of rock shelter; Class 1 burrow, NE facing, 4”h x 11”w x 1.5’ deep
	burrow	4/21/2020	497487	3831952	Class 2, rocky soil, E facing, 5”h x 8”w x 2.5’ deep
	carcass	4/22/2020	500095	3831889	Class 4A, female, ~165 mcl, signs of domestic dog predation
	burrow*	4/22/2020	502545	3829326	Class 4, SE facing, 6”h x 10”w x 2’+ deep, moderately appropriately shaped for tortoise, owl sign present
	pallet	4/22/2020	502619	3829358	Class 1, N facing, 5”h x 6”w x 6” deep, small tortoise, fresh tracks, evidence of use last night
	burrow**	4/22/2020	502592	3829278	Class 4, E facing, 6”h x 12”w x 2’+ deep, in old kit fox den, possible tortoise burrow, owl sign present
	individual	4/22/2020	502649	3829573	Female, 215 mcl, previous laminae damage that has healed over, unusual, healthy
	individual	5/13/2020	498654	3830969	Adult male, healthy, 200 mcl
	carcass	5/13/2020	498649	3831030	Category 5, adult
	carcass	5/13/2020	498678	3830461	Category 5, disarticulated adult
	burrow	5/13/2020	499599	3835157	Potential tortoise burrow
	burrow	5/15/2020	502626	3829528	Class 1, SE facing, 5”h x 12”w x 1.5’ deep, curved, no scat, recent tracks on apron

Species	Observation Type	Date Observed	11N UTM		Other Notes
			Easting	Northing	
Burrowing owl (*Athene cunicularia*)	burrow	4/13/2020	503369	3823988	Whitewash and old pellet present
	burrow	4/14/2020	502292	3830268	Coyote den with 9 entrances, 4 entrances with owl sign (whitewash and pellets) present
	burrow	4/14/2020	502601	3829816	Old desert kit fox den, 4 entrances, 1 entrance with owl sign (old whitewash) present
	burrow	4/16/2020	500001	3831418	Old desert kit fox den with 4 entrances, owl sign (whitewash) present
	burrow	4/20/2020	500062	3831540	Canid den
	individual, burrow with 2 entrances	4/21/2020	497386	3831693	Occupied burrow in hillside with owl, 10"h x 10"w x 2'+ deep, owl flushed, whitewash, pellets, and feathers present
	burrow	4/21/2020	497579	3831418	Canid den
	burrow	4/22/2020	502629	3829639	Old desert kit fox den, 8 entrances, 2 entrances with owl sign (whitewash) present
	burrow with 4 entrances	4/22/2020	503462	3827551	Canid den
	burrow*	4/22/2020	502545	3829326	SE facing, 6"h x 10"w x 2'+ deep, owl sign (pellets, whitewash, feathers, fresh prey remains) present
	burrow**	4/22/2020	502592	3829278	E facing, 6"h x 12"w x 2'+ deep, owl sign (whitewash) present
	burrow	4/23/2020	502889	3828474	Den complex, 4 entrances, 1 entrance with owl sign
	burrow	4/23/2020	503479	3826662	Canid den
ACTIVE BIRD NESTS					
Black-throated sparrow (*Amphispiza bilineata*)	nest	5/11/2017	497936	3835240	Active nest at base of creosote, 2 eggs
	nest	5/12/2017	498044	3835088	Active nest with 4-5 hatchlings/ eggs
Cactus wren (*Campylorhynchus brunneicapillus*)	nest	5/8/2017	499559	3834863	Active nest in cholla cactus, adult observed feeding young.
	nest	5/17/2017	499447	3834120	Active nest in cholla cactus
Common raven (*Corvus corax*)	nest	5/9/2017	499254	3833915	Active nest, two adutls flushed
Le Conte's thrasher (*Toxostoma lecontei*)	nest	5/12/2017	499448	3834115	Active nest with one egg in cholla cactus
	nest	5/13/2020	498386	3832270	Active nest with 4 eggs, adult observed
Loggerhead shrike (*Lanius ludovicianus*)	nest	5/14/2017	498442	3833055	Adult observed feeding young
	nest	5/15/2017	497547	3833637	Active nest in Joshua tree with 4 eggs

*Same burrow
**Same burrow

Attachment H

Spring 2021 Biological Resources Surveys Memo, Gen-tie Line

615 N. Benson Ave., Suite E
Upland, CA 91786
(909) 480-4124
www.aspeneg.com

PROJECT MEMORANDUM
STAGECOACH SOLAR

Date: June 23, 2021

To: Sarah Mongano, California State Lands Commission

From: Erin Jones

Subject: Results of Spring 2021 Biological Surveys of the Underground Gen-tie Line in County Roads Alternative

Biological surveys for the Stagecoach Solar Project were performed by ECORP Consulting, Inc. (ECORP) in Spring 2021 to document conditions along the gen-tie and alternative gen-tie routes. The route of the County Roads Underground Gen-tie in County Roads Alternative is illustrated in Draft EIR Figure 5-12c (see page 3 of this memorandum). Portions of the gen-tie route surveyed were previously inaccessible. Surveys included a rare plant survey and a desert tortoise survey (see Attachments 1 and 2 to this memo, respectively). A jurisdictional delineation was also performed (see Attachment B of the BRTR). A 150-foot right-of-way (ROW) is proposed for the gen-tie.

Rare Plant Survey. A rare plant survey was conducted along the gen-tie and alternative gen-tie routes and a 100-foot buffer (Attachment 1). The surveys were performed to coincide with the target species' blooming periods and when they are most likely to be identified. Three reference populations were visited to verify blooming status on April 5, 2021. References populations included: Mojave monkeyflower (*Diplacus mohavensis*), creamy blazing star (*Mentzelia tridentata*), and Mojave menodora (*Menodora spinescens* var. *mohavensis*). Mojave menodora was the only observable species of all three reference populations, however no inflorescences or foliage were observed.

The rare plant survey was conducted on April 6 and 7, 2021. The following rare plant were considered target plant species for their potential to occur in the survey area: Borrego milk-vetch (*Astragalus lentiginosus* var. *borreganus*), desert cymopterus (*Cymopterus deserticola*), Joshua Tree poppy (*Eschscholzia androuxii*), Torrey's box-thorn (*Lycium torreyi*), creamy blazing star, graceful nemacladus (*Nemacladus gracilis*), California androsace (*Androsace elongata* ssp. *acuta*), pinyon rockcress (*Boechera dispar*), Mojave spineflower (*Chorizanthe spinosa*), Clokey's cryptantha (*Cryptantha clokeyi*), appressed muhly (*Muhlenbergia appressa*), Barstow woolly sunflower (*Eriophyllum mohavense*), Mojave menodora, Beaver Dam breadroot (*Pediomelum castoreum*), Mojave indigo-bush (*Psorothamnus arborescens* var. *arborescens*), Mojave monkeyflower, Mojave fish-hook cactus (*Sclerocactus polyancistrus*), Emory's crucifixion-thorn (*Castela emoryi*), Clark Mountain buckwheat (*Eriogonum heermannii* var. *floccosum*), Boyd's monardella (*Monardella boydii*), and revolute spurge (*Euphorbia revoluta*).

Rare plant species were not observed within the survey area.

Sections of the survey area where surveyors had no access were surveyed with binoculars. These sections contained developed and disturbed habitats that were not likely to support target rare plant species; however, some non-accessible areas did contain potential habitat for rare plant species. The number of blooming plant species observed during the survey was lower than normal for this time of year. Drought conditions should be considered.

Jurisdictional Delineation. Three separate field surveys were conducted by ECORP in 2018, 2020, and 2021; the second and third surveys were required in order to include expanded study limits for the Project, to verify

conditions observed in previous survey efforts had not changed, and to collect additional information and photographs. The entire Study Area was visually surveyed and special attention was given to the features identified during a preliminary desktop exercise.

Where jurisdictional features were present, the extent of potential Waters of the State and CDFW-regulated streambed and TOB limits were determined using the OHWM in accordance with USACE requirements and guidelines and other agency delineation guidance.

Vegetation within the Project Area is characteristic of desert scrub and desert wash habitats of the Mojave Desert. Mojavean desert scrub was the dominant plant community and found mostly within the flat, low-lying portions of the Project Area. Dominant species that were observed included creosote bush (*Larrea tridentata*), Joshua tree (*Yucca brevidifolia*), white bursage (*Ambrosia dumosa*), winter fat (*Krascheninnikovia lanata*), and spiny hopsage (*Grayia spinosa*). Plant species richness was observed to be low within these flats with a high abundance of non-native plant species, such as common Mediterranean grass (*Schismus barbatus*) and red brome (*Bromus madritensis* ssp. *rubens*); most likely originating from historical disturbances such as cattle grazing. Species richness appeared to be higher at the higher elevation slopes abutting adjacent mountains to the north, west, and south of the Project Area. Dominant species observed in these areas included species such as Mojave yucca (*Yucca schidigera*), branched pencil cholla (*Cylindropuntia ramosissima*), hedgehog cactus (*Echinocereus engelmannii*), blackbrush (*Coleogyne ramosissima*), littleleaf rhatany (*Krameria erecta*), and Mojave lomatium (*Lomatium mohavense*).

Features determined to be non-jurisdictional lacked signs of water concentrations along roadsides, indicating that features with bed and bank and other OHWM indicators observed in aerial imagery had dissipated once the feature entered areas with sandy soils within the Study Area.

Features identified as aquatic resources, preliminarily determined to be regulated under the Porter-Cologne Act and California Fish and Game Code Section 1602, had physical evidence of flow including OHWM, defined bed and bank, presence of a clear and natural line impressed on the bank, the presence or absence of sediment deposits, litter/debris, and/or exposed roots indicating active hydrology within the channel (see Table 5 in Attachment B of the BRTR). All of these features are ephemeral dry washes.

Five features were mapped along the underground gen-tie alternative, totaling 1,180 linear feet (0.08 acre). There is no federal jurisdiction for features within the Study Area.

Desert Tortoise Survey. Focused protocol desert tortoise (*Gopherus agassizii*) surveys were conducted by ECORP on April 5 and 7, 2021. Some private lands located within the survey area were not surveyed on foot due to lack of access permissions. However, whenever possible, inaccessible areas were surveyed using binoculars.

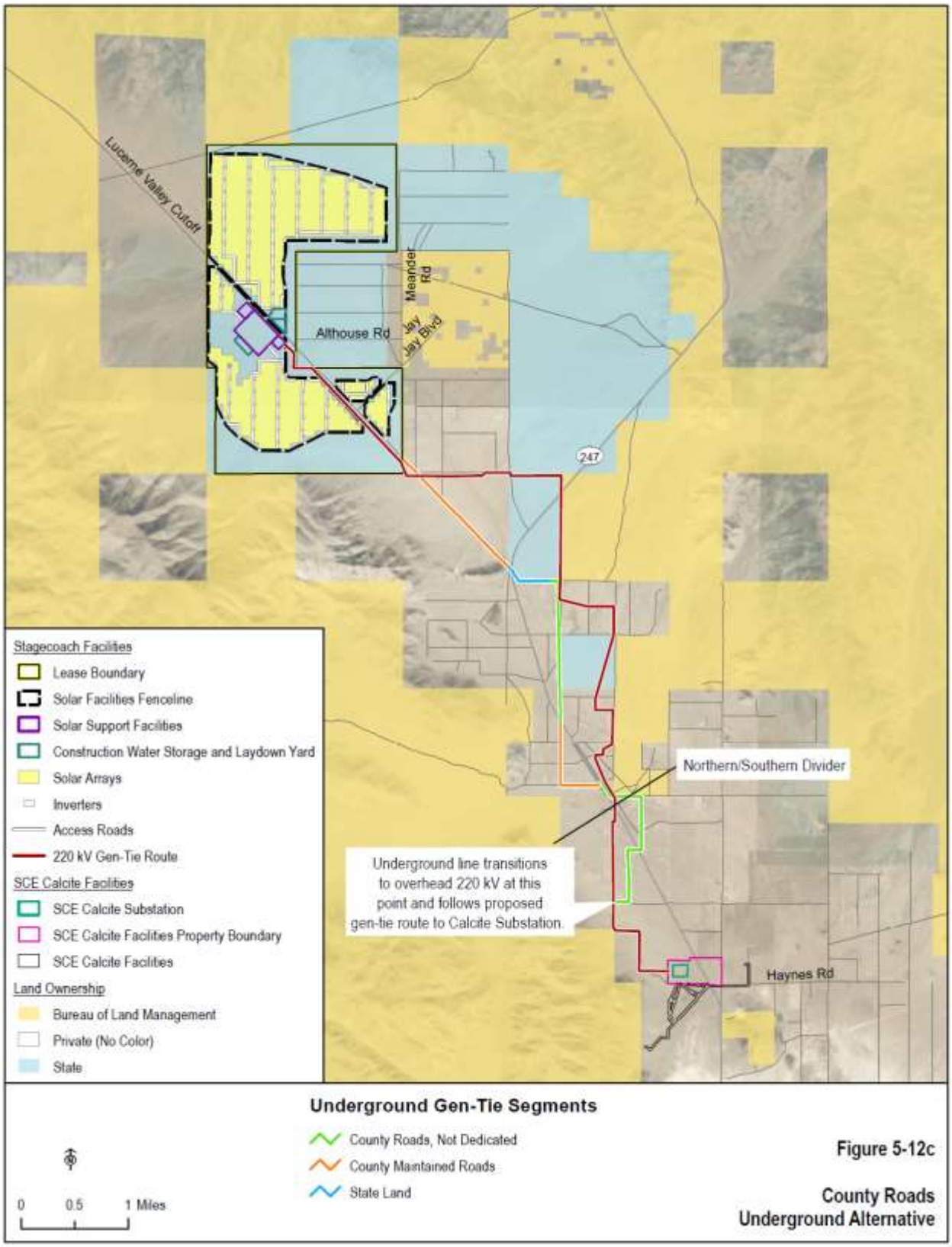
Habitat in the survey area consisted of creosote bush scrub. Dominant plant species included creosote bush (*Larrea tridentata*), and Mediterranean grass (*Schismus barbatus*). Disturbances included trash dumping, and off-road vehicle use, non-native plant species were prevalent throughout the survey area.

No desert tortoises were observed within the survey area during the protocol survey. One Class 4 burrow (good condition; possibly desert tortoise) was observed (Figure 1 in Attachment 2). No other tortoise sign was observed during the survey.

Attachment 1: Stagecoach Solar Spring 2021 Rare Plant Survey Report

Attachment 2: Results of April 2021 Desert Tortoise Surveys for the Stagecoach Solar Project (Gen-tie line alternatives)

Attachment B of the BRTR: Jurisdictional Delineation, Stagecoach Solar Project, May 2021


Lucerne Valley Cutoff
Meander Rd
Althouse Rd
Jay
Jay Blvd
247
Northern/Southern Divider
Underground line transitions to overhead 220 kV at this point and follows proposed gen-tie route to Calcite Substation.
Haynes Rd
Stagecoach Facilities
Lease Boundary
Solar Facilities Fenceline
Solar Support Facilities
Construction Water Storage and Laydown Yard
Solar Arrays
Inverters
Access Roads
220 kV Gen-Tie Route
SCE Calcite Facilities
SCE Calcite Substation
SCE Calcite Facilities Property Boundary
SCE Calcite Facilities
Land Ownership
Bureau of Land Management
Private (No Color)
State
Underground Gen-Tie Segments
County Roads, Not Dedicated
County Maintained Roads
State Land
0
0.5
1 Miles
Figure 5-12c
County Roads
Underground Alternative

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

April 12, 2021
(2017-103)

Avangrid Renewables

Kristen Goland
Western Regional Permit Manager, Permitting and Environmental
1125 NW Couch Street, Suite 700, Portland, OR, 97209

Subject: Stagecoach Solar Project Spring 2021 Rare Plant Survey Report

Dear Ms. Goland:

This memorandum presents a summary of the results of the 2021 rare plant survey conducted by ECORP Consulting, Inc. (ECORP) at the Stagecoach Solar Project site, which includes the gen-tie and alternative gen-tie routes. This is a preliminary presentation of data, which will be formally submitted in the coming weeks for inclusion in the comprehensive Biological Resources Technical Report (BRTR), prepared by Aspen Environmental Group.

Reference Population Checks

A total of three reference populations were visited to verify the blooming status of target special-status plant species. Reference populations were visited on April 5, 2021 by ECORP biologists Greg Hampton and Carley Lancaster, and were located off Camp Rock Road, about 20 miles Northeast of the Project site and seven miles south of Daggett. References populations included: Mojave monkeyflower (*Diplacus mohavensis*), creamy blazing star (*Mentzelia tridentata*), and Mojave menodora (*Menodora spinescens* var. *mohavensis*). Mojave menodora was the only observable species of all three reference populations, however no inflorescences or foliage were observed.

Rare Plant Survey

The survey area included the gen-tie and alternative gen-tie alignment, and a 100-foot buffer. The portions of the gen-tie routes that the surveyors did not have access to were surveyed with binoculars from the public road right-of-way and surrounding accessible property. The surveys were scheduled to coincide with the target species' blooming periods and during a period when target species were most likely identifiable.

Survey methods were devised with consideration of the following resources: 1) *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants*

(USFWS 1996), 2) *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018), and 3) *CNPS Botanical Survey Guidelines* (CNPS 2001). ECORP surveyors walked transects parallel to the survey area spaced approximately 33 feet [10 meters] apart during the survey to provide 100 percent visual coverage of the accessible survey areas. Global Positioning System (GPS) devices (iPads® running Collector software) were used during surveys to record the coordinates of any rare plant species. A Geode™ receiver was used to obtain sub-meter accuracy on the GPS devices. Each GPS device displayed a position using the Universal Transverse Mercator (UTM) coordinate system, North American Datum 1983.

Common plant species were identified and recorded to maintain a compendium of plant species that occur in the survey area. In some cases, biologists took samples from the site so that a dissecting microscope could be used for plant identification. Taxonomy of plant species identified within the survey area is based on the following sources:

- *The Jepson Manual* (Hickman 1993)
- *The Jepson Desert Manual* (Baldwin et al. 2002)
- *The Jepson Manual, 2nd Ed.* (Baldwin et al. 2012)

The following rare plant were considered target plant species for their potential to occur in the survey area: Borrego milk-vetch (*Astragalus lentiginosus* var. *borreganus),* desert cymopterus (*Cymopterus deserticola*), Joshua Tree poppy (*Eschscholzia androuxii*), Torrey's box-thorn (*Lycium torreyi*), creamy blazing star, graceful nemacladus (*Nemacladus gracilis*), California androsace (*Androsace elongata* ssp. *acuta*), pinyon rockcress (*Boechera dispar*), Mojave spineflower (*Chorizanthe spinosa*), Clokey's cryptantha (*Cryptantha clokeyi*), appressed muhly (*Muhlenbergia appressa*), Barstow woolly sunflower (*Eriophyllum mohavense*), Mojave menodora, Beaver Dam breadroot (*Pediomelum castoreum*), Mojave indigo-bush (*Psorothamnus arborescens* var. *arborescens*), Mojave monkeyflower, Mojave fish-hook cactus (*Sclerocactus polyancistrus*), Emory's crucifixion-thorn (*Castela emoryi*), Clark Mountain buckwheat (*Eriogonum heermannii* var. *floccosum*), Boyd's monardella (*Monardella boydii*), and revolute spurge (*Euphorbia revoluta*).

Survey Results

The rare plant survey was conducted on April 6 and April 7, 2021, by ECORP biologists Greg Hampton, Christina Clark, and Carley Lancaster. Greg Hampton led the survey effort. Field staff and weather conditions during the survey are included in Table 1 below. Rare plant species were not observed within the survey area during the rare plant survey.

Table 1. Weather Conditions during the Rare Plant Survey								
Date	Surveyors*	Time		Temperature (°F)		Cloud Cover (%)		Wind Speed (mph)
		Start	End	Start	End	Start	End	
4/6/21	GH, CC, CL	0730	1410	60	81	25	20	0-3
4/7/21	GH, CC, CL	0725	1045	63	92	20	75	0-5

* GH= Greg Hampton, CC= Christina Clark, CL= Carley Lancaster.

Rare Plant Survey Limitations

Sections of the survey area where surveyors had no access were surveyed with binoculars. These sections contained habitat that was not likely to support target rare plant species (developed and disturbed habitats) however, some non-accessible areas did contain habitat that has the potential to support target rare plant species and may not have been observable via binoculars. In addition, the number of blooming plant species observed during the rare plant survey was lower than normal for this time of year. Drought conditions in the area should be considered when reviewing the results of the survey.

If you have any questions regarding the content of this letter report, please contact me at (858) 279-4040.

I hereby certify that the statements furnished above present the data and information required for this biological survey results report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Greg Hampton
Staff Biologist/Botanist

04/12/21
Date

Attachment
1 – 2021 Stagecoach Solar Project Plant Species Compendium

2021 Stagecoach Solar Project Plant Species Compendium	
Scientific Name	**Common Name**
VASCULAR PLANTS	
GYNOSPERMS (GNETALES)	
EPHEDRACEAE	**EPHEDRA FAMILY**
Ephedra nevadensis	Nevada jointfir
ANGIOSPERMS (EUDICOTS)	
ASTERACEAE	**SUNFLOWER FAMILY**
Acamptopappus sp.	goldenhead
Adenophyllum cooperi	Cooper's dogweed
Ambrosia acanthicarpa	annual bur-sage
Ambrosia dumosa	burrobush
Ambrosia salsola	cheesebush
Ericameria cooperi	Cooper's goldenbush
Ericameria linearifolia	linear-leaved goldenbush
Ericameria teretifolia	green rabbitbrush
Encelia actoni	acton brittlebush
Lasthenia gracilis	needle goldfields
Malacothrix glabrata	desert dandelion
Nicolletia occidentalis	Western nicolletia
Stephanomeria pauciflora	wirelettuce
Tetradymia stenolepis	Mojave cottonthorn
BORAGINACEAE	**BORAGE FAMILY**
Amsinckia tessellata	bristly fiddleneck
Cryptantha circumscissa var. *circumscissa*	cushion cryptantha
Cryptantha nevadensis	Nevada cryptantha
Cryptantha pterocarya var. *pterocarya*	wingnut cryptantha
Pectocarya linearis	comb-bur
Pectocarya penicillata	winged combseed
Phacelia tanacetifolia	tansy phacelia
Plagiobothrys arizonicus	Arizona popcornflower
Tiquilia plicata	fanleaf crinklemat
BRASSICACEAE	**MUSTARD FAMILY**
Caulanthus lasiophyllus	California mustard
*Hirschfeldia incana**	short podded mustard
Lepidium lasiocarpum	peppergrass
CACTACEAE	**CACTUS FAMILY**
Cylindropuntia echinocarpa	Wiggins' cholla
Cylindropuntia ramosissima	branched pencil cholla
Echinocactus polycephalus	cottontop cactus
Opuntia basilaris var. *basilaris*	beavertail cactus
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Atriplex canescens	fourwing saltbush
Grayia spinosa	hopsage
FABACEAE	**LEGUME FAMILY**
Acmispon brachycarpus	hill lotus
Astragalus sp.	milkvetch
Astragalus layneae	layne locoweed
Astragalus lentiginosus var. *variabilis*	freckled milkvetch
Lupinus concinnus	bajada lupine
Senna armata	desert senna
GERANIACEAE	**GERANIUM FAMILY**
*Erodium cicutarium**	redstem stork's bill

2021 Stagecoach Solar Project Plant Species Compendium	
LOASACEAE	**LOASA FAMILY**
Mentzelia albicaulis	whitestem blazingstar
Petalonyx sp.	sandpaper plant
MALVACEAE	**MALLOW FAMILY**
Sphaeralcea ambigua	apricot mallow
MELANTHIACEAE	**BUNCHFLOWER FAMILY**
Toxicoscordion venenosum	death camas
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**
Mirabilis laevis	desert four o'clock
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Camissonia campestris ssp. *campestris*	Mojave sun cups
Chylismia claviformis ssp. *claviformis*	browneyed Primrose
Eremothera boothii ssp. *desertorum*	Booth's desert suncup
Tetrapteron palmeri	Palmer’s evening Primrose
PAPAVERACEAE	**POPPY FAMILY**
Eschscholzia minutiflora ssp. *minutiflora*	pygmy poppy
POLEMONIACEAE	**PHLOX FAMILY**
Eriastrum sp.	woolly star
POLYGONACEAE	**BUCKWHEAT FAMILY**
Chorizanthe brevicornu var. *brevicornu*	brittle spineflower
Eriogonum fasciculatum var. *polifolium*	Mojave wild buckwheat
Eriogonum gracillimum	rose and white buckwheat
Eriogonum inflatum var. *inflatum*	desert trumpet
Eriogonum nidularium	wisk broom
RUTACEAE	**RUE FAMILY**
Thamnosma montana	turpentine broom
SOLANACEAE	**NIGHTSHADE FAMILY**
Datura wrightii	jimsonweed
Lycium andersonii	water jacket
Lycium cooperi	peach thorn
ZYGOPHYLLACEAE	**CALTROP FAMILY**
Larrea tridentata	creosote bush
ANGIOSPERMS (MONOCOTS)	
AGAVACEAE	**CENTURY PLANT FAMILY**
Yucca schidigera	Mojave yucca
POACEAE	**GRASS FAMILY**
Bromus madritensis ssp. *rubens**	red brome
*Bromus tectorum**	cheatgrass
Hilaria rigida	big galleta
*Hordeum murinum**	foxtail barley
*Schismus barbatus**	common Mediterranean grass
Stipa hymenoides	indian ricegrass
Stipa speciosa	desert needlegrass
* Not native to California.	

April 29, 2021
(2017-103)

Aspen Environmental Group
Hedy Koczwara
Vice President
615 N. Benson Ave., Suite E, Upland, CA, 91786

Subject: Results of April 2021 Desert Tortoise Surveys for the Stagecoach Solar Project, San Bernardino County, California

Dear Ms. Koczwara:

This memorandum provides a summary of the results of the supplemental focused protocol desert tortoise (*Gopherus agassizii*) survey conducted by ECORP Consulting, Inc. (ECORP) along newly added sections of the generation tie-line alignment (gen-tie) at the Stagecoach Solar Project site.

Methods

The survey area included sections of the gen-tie alignment that were previously inaccessible. The survey was conducted in accordance with the recommended survey protocol methods in the USFWS document *Preparing for Any Action That May Occur within the Range of the Mojave Desert Tortoise (Gopherus agassizii)* (USFWS 2019). Methods used to conduct the survey are described below.

ECORP biologists with extensive experience conducting surveys for desert tortoise, walked transects spaced approximately 33-feet (10 meters) apart to provide 100-percent survey coverage of the site. The biologists checked under shrubs and trees and visually inspected any burrows encountered for desert tortoise or desert tortoise sign. Some private lands located within the survey area were not surveyed on foot due to lack of access permissions. However, whenever possible, inaccessible areas were surveyed using binoculars. The biologists conducted surveys during atmospheric conditions most conducive to observing desert tortoise and avoided adverse conditions that might have inhibited tortoise activity, including high winds and temperature extremes (less than 50 degrees Fahrenheit [°F] and greater than 104°F). If encountered, desert tortoises or their sign (e.g., burrows, carcasses, scat, pallets, drinking sites, tracks, mating rings) were recorded using a global positioning system device. The date of observation, sign type, sign classification (according to the survey protocol), amount of sign, and any pertinent comments were recorded for any sign encountered. When feasible, photographs were taken of desert tortoises and representative desert tortoise sign.

Results

The desert tortoise survey was conducted by ECORP biologists between April 5 and April 7, 2021. Field staff and weather conditions during the surveys are included in Table 1. Representative photographs taken during the survey are included in Attachment A; wildlife species observed during the survey are included in Attachment B; and field data sheets are included in Attachment C.

Habitat in the survey area consisted of creosote bush scrub. Dominant plant species included creosote bush (*Larrea tridentata*), and Mediterranean grass (*Schismus barbatus*). Disturbances included trash dumping, and off-road vehicle use, non-native plant species were prevalent throughout the survey area.

Table 1. Weather Conditions during the Desert Tortoise Surveys

Date	Surveyors*	Time		Temperature (°F)		Cloud Cover (%)		Wind Speed (mph)	
		Start	End	Start	End	Start	End	Start	End
04/05/21	LS, WT, AS, VR	0730	1310	63.4	80	0	90	8-12	7-12
04/06/21	LS, WT, AS, VR	0800	1415	56	89	25	15	0-1	0-3
04/07/21	LS, WT, VR	0749	1040	66	77.7	35	5	0-1	3-6

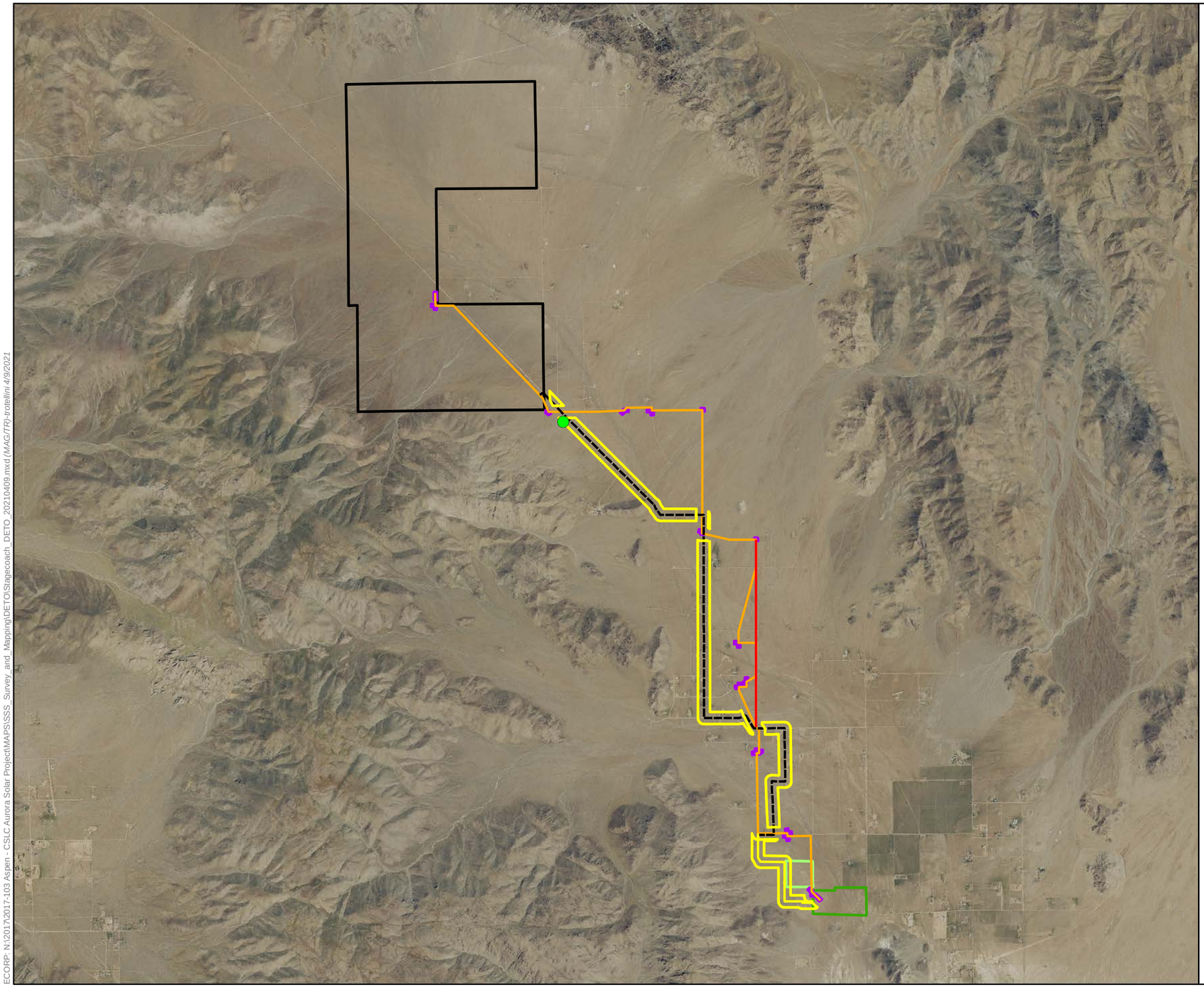
* LS= Lauren Simpson, WT= Wendy Turner, AS= Adam Schroeder, VR=Verity Richardson.

No desert tortoises were observed within the survey area during the protocol survey. One Class 4 burrow was observed. Burrow class definitions are detailed in Table 2 below. No other tortoise sign was observed during the survey. Figure 1 illustrates the location of the burrow observed during the survey.

Table 2. Burrow Class Definitions (USFWS 2009)

Burrow Class	Definition
1	Currently active, with desert tortoise or recent desert tortoise sign
2	Good condition, definitely desert tortoise; no evidence of recent use
3	Deteriorated condition that includes collapsed burrows; definitely desert tortoise
4	Good condition; possibly desert tortoise
5	Deteriorated condition that includes collapsed burrows; possibly desert tortoise

Figure 1. Desert Tortoise Survey Results



Map Features

- Solar Field
- Preferred Calcite Substation
- Alternative Calcite Substation
- Pulling Area - Main
- Pulling Area - Alt
- Desert Tortoise Survey Area

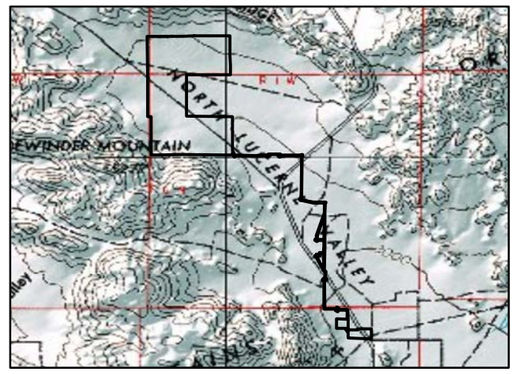
Gen-Tie Routes

- Main Route
- Alternative Route
- Southern Gen-Tie Route
- Ungerground Gen-Tie Alternative

Desert Tortoise Survey Results

- Class 4 Desert Tortoise Burrow

Sources: Avagrid, ECORP, NAIP, Esri



ECORP- N:\2017\2017-103 Aspen - CSLC Aurora Solar Project\MAPS\SSS_Survey_and_Mapping\DETO\Stagecoach_DETO_20210409.mxd (MAG/TR)-trotellini 4/9/2021

Map Date: 4/9/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 5,000

Figure 1. Desert Tortoise Survey Results

2017-103 Aspen - CSLC Stagecoach Solar Project

If you have any questions regarding the content of this letter report, please contact me at (909) 307-0056.

I hereby certify that the statements furnished above present the data and information required for this biological survey results report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

_____ 04/29/21

Lauren Simpson Date
Staff Biologist

REFERENCES

USFWS. 2009. Desert Tortoise (Mojave Population) Field Manual (*Gopherus agassazii*). Region 8. Sacramento, California. December.

USFWS. 2019. Preparing for Any Action that May Occur within the Range of the Mojave Desert Tortoise (*Gopherus agassizii*). October 8.

Attachments

Attachment A: Representative Site Photographs
Attachment B: Wildlife Species Observed
Attachment C: Survey Datasheets

Representative Photographs

Photo 1: Creosote bush scrub dominated by creosote and Mediterranean grass

Photo 2: Example of trash dumping on the site

Photo 3: Trash dumping within the survey area

Photo 4: Potential Desert tortoise Burrow observed within survey area

ATTACHMENT B

Wildlife Species Observed

SCIENTIFIC NAME	COMMON NAME
Amphispiza bilineata	black-throated sparrow
Ammospermophilus leucurus	white-tailed antelope squirrel
Aspidoscelis tigris	western whiptail lizard
Auriparus flaviceps	verdin
Buteo jamaicensis	Red-tailed hawk
Columba livia	Rock pigeon
Corvus corax	common raven
Chionactic occipitalis	Mohave shovel-nosed snake
Dipsosaurus dorsalis	desert iguana
Eremophila alpestris	horned lark
Haemorhous mexicanus	house finch
Lepus Californicus	black-tailed jackrabbit
Phyrnosoma platyrhinos	desert horned lizard
Pogonomyrmex sp.	harvester ant
Sayornis saya	Say's phoebe
Streptopelia decaocto	Eurasian collared dove
Sturnus vulgaris	European starling
Sylvilagus audubonii	desert cottontail
Uta stansburiana	side-blotched lizard
Zonotrichia leucophrys	white-crowned sparrow

ATTACHMENT C

Survey Datasheets

Date: 4/5/21
GPS File: _____

Desert Tortoise Survey

ECORP Consulting, Inc.

Project #: 2017-103/005/002
Client: Aspen

General Information

Observers: Verity Richardson
Lauren Simpson
Adam Schwede
Wendy Turner

Weather Data

Time (24 hr)	Start: 0730	End: 1310
Temp* (°F) 6" above ground in shade	Start: 63.4	End: 80°F
Wind (mph)	Start: 8-12	End: 7-41 (max 12)
% Cloud Cover	Start: 0%	End: 90%

Area(s) surveyed

Northern Gentle NW of SR-247

Site Information

Project Name: Stagecoach
Location: Lucerne Valley
County: San Bernardino
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation:
Aspect:
Land Form*:
%Slope:
* e.g. mesa, bajada, wash
Soils:
Other:

Land Uses:
NW: Undeveloped CBJ / Residential
NE: "
SE: "
SW: "

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]
Dumping, OHV use

Is site staked or marked? [Y] [N]
Transect Width: 10-m

Field Observations

Vegetation Communities:
Plants Creosote bush Scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Shovel-nosed snake - Mojave HOFI
side blotched lizard WCSP
Jackrabbit (black-tailed) MOLA
COLA

Date: 4/5/21
Recorder: Verity Richardson
GPS file: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0842	B	4	34.6320517	-116.99[illegible]	SW aspect, 6 x 5 in x 1ft + deep
2						under creosote bush. No sign.
3						
4						
5						
6						
7						
8	NOTE: Some issues with recording tracklogs occurred at the start of day					
9						
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11						
12						
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

***BURROW / PALLET (Note Aspect)**
1 - Currently active, w/tortoise or recent sign
2 - Good condition, definitely tortoise, no evidence of recent use
3 - Deteriorated condition (describe), definitely tortoise
4 - Good condition, possibly tortoise (describe)
5 - Deteriorated condition, possibly tortoise (describe)

***SCAT**
1 - Wet or freshly dried, obvious odor
2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Bleached or consisting only of plant fiber

***LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)**
1 - Healthy
2 - URTD
3 - Shell Cracked
4 - Peeling scutes
5 - Ticks

A - Foraging
B - Basking
C - In burrow
D - Digging
E - Traveling

***CARCASS**
1 - Fresh or putrid
2 - Normal color, scutes adhered to bone
3 - Scutes peeled off bone
4 - Shell bone is falling apart; growth rings on scutes are peeling
5 - Disarticulated and scattered

A - signs of predation
B - No signs of predation

Form Updated: 11/5/2018

Date: 4/6/21

Desert Tortoise Survey

ECORP Consulting, Inc.

Project #: 2017-103
Client: Aspen

General Information

Observers: Verity Reclamation
Lauren Simpson,
Wendy Tucker
Adam Schneider

Weather Data

Time (24 hr)	Start: 0800	End: 1415
Temp* (°F) 6" above ground in shade	Start: 56°F	End: 89°F
Wind (mph)	Start: 0-1	End: 0-3
% Cloud Cover	Start: 25%	End: 15%
GPS File Name:		

Area(s) surveyed

Center guide line and Road ROW

Site Information

Project Name: Hagerdach
Location: Lucerne Valley
County: San Bernardino
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)

N: [PHOTOS?___]
E: [PHOTOS?___]
S: [PHOTOS?___]
W: [PHOTOS?___]

Physical Characteristics

Elevation:
Aspect:
Land Form*:
%Slope:
* e.g. mesa, bajada, wash

Soils:
Other:

Land Uses: Undeveloped CRS, scattered residential

NW:
NE:
SE:
SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Dumping, OHV use

Is site staked or marked? [Y] ([N])
Transect Width: 10-m

Field Observations

Vegetation Communities: Creosote bush scrub - disturbed

Plants Creosote

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Side-blotched lizard	RTHA
Whiptail	CORA
Jackrabbit (black-tailed)	BTSP
Cottontail	MOLA
Desert iguana	ROPA
White-tailed ground Squirrel	
Horned lizard	

Date: 04/06/21
Recorder: Verity Richardson
GPS file: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-103
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2						∅ No tortoise, no tortoise sign or burrows
3						
4						
5						
6						NOTE: Some issues with recording tracklogs occurred
7						at start of day
8						
9						
10						
11						
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Form Updated: 4/2/2021

Date: 4/7/21

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2017-163/005/002
Client: Aspen

General Information

Observers: Verity Richardson
Lauren Simpson
Wendy Turner

Weather Data

	Start	End
Time (24 hr)	0749	1040
Temp* (°F) 6" above ground in shade	66°F	77.7°F
Wind (mph)	3-5%	5%
% Cloud Cover	0-1	3-6
GPS File Name:		

Area(s) surveyed

Southern gen-tie line and Road ROW

Site Information

Project Name: Stagecoach
Location: Lucerne Valley
County: San Bernardino
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS?___]
E: [PHOTOS?___]
S: [PHOTOS?___]
W: [PHOTOS?___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses: Undeveloped CBS + Scattered residential
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]
Dumping, OHV use

Is site staked or marked? [Y] [N] (N circled)
Transect Width: 10-m

Field Observations

Vegetation Communities: Creosote bush scrub / Disturbed - Developed
Plants Creosote

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Cottontail
Jackrabbit (black tailed)
White-tailed ground squirrel
Whiptail
Swallowtail butterfly

EUCD VERD
MODO COPA
BTSP RTHA
EUST
SAPH
ROPI
HOLA
WCSP

Date: 4/7/21
Recorder: Jenny Richardson
GPS file: Collector

Desert Tortoise Survey

ECORP Consulting, Inc.

Project #: 2017-103/005/002
Client: Aspen

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
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No tortoises, no tortoise sign.

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
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*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Attachment I

Special-status Species Not Addressed

Attachment I. Special-status Species Not Addressed

Scientific Name	Common Name	Reason for Exclusion
PLANTS		
Acanthoscyphus parishii var. *goodmaniana*	Cushenbury oxytheca	No suitable calcium carbonate substrates.
Astragalus albens	Cushenbury milk-vetch	No suitable calcium carbonate substrates.
Astragalus bernardinus	San Bernardino milk-vetch	Outside of geographic range.
Boechera shockleyi	Shockley's rockcress	Outside of geographic range.
Calochortus striatus	Alkali mariposa-lily	No suitable alkali substrate or wetland habitat.
Elymus salina	Salina Pass wild-rye	No suitable alkali substrate or wetland habitat.
Eriogonum heermannii var. *floccosum*	Clark Mountain buckwheat	Outside of geographic range.
Erigeron parishii	Parish's daisy	No suitable calcium carbonate substrates.
Eriogonum ovalifolium var. *vineum*	Cushenbury buckwheat	No suitable calcium carbonate substrates.
Monardella boydii	Boyd's monardella	Below elevation range.
Phacelia parishii	Parish's phacelia	No suitable alkali substrate or wetland habitat.
Plagiobothrys parishii	Parish's popcornflower	No suitable alkali substrate or wetland habitat.
Polygala intermontana	Intermountain milkwort	Outside of geographic range.
Puccinellia parishii	Parish's alkali grass	No suitable alkali substrate or wetland habitat.
Puccinellia simplex	California alkali grass	No suitable alkali substrate or wetland habitat.
Rosa woodsii var. *glabrata*	Cushenbury rose	Outside of geographic range.
Saltugilia latimeri	Latimer's woodland-gilia	Outside of geographic range.
Sidalcea neomexicana	Salt Spring checkerbloom	No suitable alkali substrate or wetland habitat.
WILDLIFE		
Fishes		
Siphateles bicolor mohavensis	Mohave tui chub	No aquatic habitat present in the Project area.