

Desert Tortoise Translocation Plan

High Desert Solar Project

San Bernardino County, California

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ECORP Consulting, Inc. has assisted public and private land owners with environmental regulation compliance since 1987. We offer full service capability, from initial baseline environmental studies through environmental planning review, permitting negotiation, liaison to obtain legal agreements, mitigation design, and construction monitoring and reporting.

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CONTENTS

1.0 INTRODUCTION1

 1.1 Project Description and Background1

 1.2 Desert Tortoises in the Project Area3

 1.3 Purpose and Goals of the Plan4

2.0 TRANSLOCATION PLAN4

 2.1 Authorized Personnel5

 2.2 Clearance6

 2.2.1 Exclusion Fencing6

 2.2.2 Clearance Surveys7

 2.2.3 Monitoring and Other Survey Activities8

 2.3 Translocation Process8

 2.3.1 Detection and Processing8

 2.3.2 Health Assessments9

 2.3.3 Release of Desert Tortoises9

 2.4 Translocation Recipient Site10

 2.4.1 Estimate of Desert Tortoise Population at the Recipient Site12

 2.4.2 Recipient Site Criteria15

 2.4.3 Recipient Site Survey16

 2.5 Translocation Review Package17

 2.5.1 Disposition Plans17

 2.6 Control Site18

 2.7 Monitoring and Reporting18

3.0 ADDITIONAL IMPACT AVOIDANCE MEASURES19

4.0 LITERATURE CITED19

LIST OF TABLES

Table 1. Live Desert Tortoise Observations Recorded during Range-Wide Monitoring Efforts between 2001 and 201515

Table 2. Recipient Site Selection Criteria and Suitability16

LIST OF FIGURES

Figure 1. Project Location.....2
Figure 2. Proposed Recipient Site 11
Figure 3. 2001-2016 Range-Wide Monitoring Results 14

LIST OF APPENDICES

Appendix A – Desert Tortoise Density and Abundance Estimates

Appendix B – Recipient Site Survey Methodology

1.0 INTRODUCTION

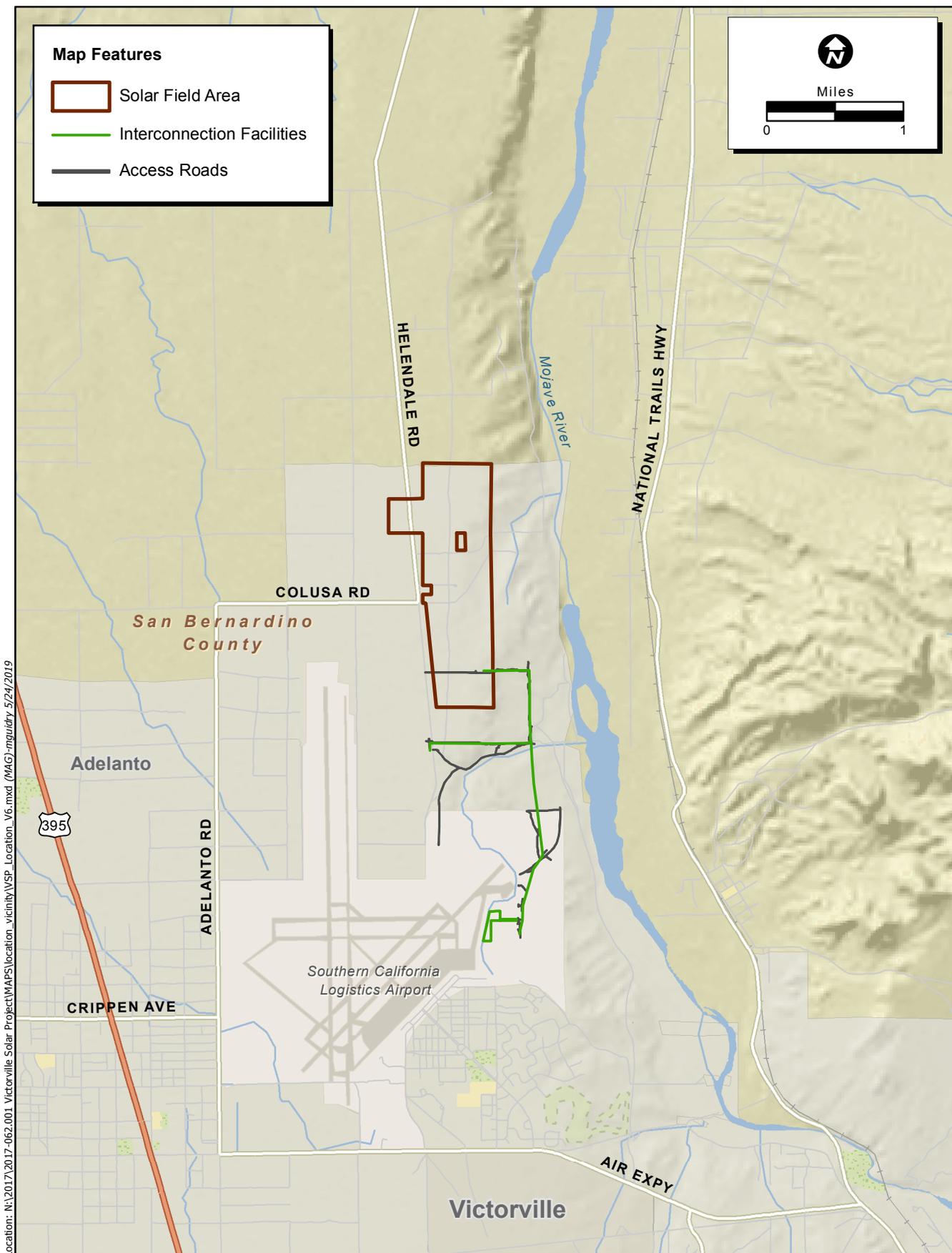
The High Desert Solar Project (Project) will be a nominal 108-megawatt (MWac) solar photovoltaic (PV) power facility with a proposed integrated battery energy storage system (BESS) located in the City of Victorville, San Bernardino County, California. The Project applicant is HDSI, Inc. (Applicant). The Project will provide renewable energy required to advance California's Renewable Portfolio Standard (RPS) goals and climate policies, and to enhance electrical grid reliability.

1.1 Project Description and Background

The following is a summarized version of the official Project description. A detailed Project description can be found in the Conditional Use Permit application filed with the City of Victorville.

The Project will consist of a solar photovoltaic field, BESS, substation, and related facilities, collectively referred to as the Solar Field Area, and a corridor consisting of a 2.3-mile 230-kV generation tie line (Gen-Tie) that will run east and then south to connect to the existing Victor-Caldwell 230-kV line, upstream of the first pole on the Southern California Edison system. The Gen-Tie corridor will be approximately 120 feet wide. Additionally, a 1.7-mile 12.47-kV service line (Service Line) will connect to the Victorville Municipal Utility Services (VMUS) system. This line will run as underbuilt with the Gen-Tie for the first mile and then diverge to the west and run on standard distribution utility poles to connect to VMUS at the Industrial Wastewater Treatment facility south of the Solar Field Area. The Service Line corridor will be approximately 40 feet wide. The Gen-Tie, Service Line, and associated wire-pulling sites are collectively referred to as the Interconnection Facilities. The third Project Component, Access Roads, includes all roads that will be used, improved, or constructed for access to the Solar Field Area and Interconnection Facilities. The Solar Field Area is the largest Project Component followed by the Interconnection Facilities, then Access Roads. Together these three Project Components are referred to as the Project or Project area in this document.

As depicted on the United States Geological Survey (USGS) Victorville NW, Helendale, and Victorville 7.5-minute topographic quadrangles, the Project area is located in the City of Victorville, in Township 6 North, Range 5 West of the San Bernardino Baseline and Meridian, in San Bernardino County, California. Elevations on the Project area range from 2,730 to 2,815 feet above mean sea level (msl). The Project area is located mostly east of Helendale Road and west of Floreate Road directly north of the Southern California Logistics Airport (SCLA) and east of the Victor Valley Wastewater Reclamation Authority (VWRA) properties (Figure 1).



Location: N:\2017\2017-062\001_Victorville Solar Project\MAPS\location_vicinity\VSP_Location_V6.mxd (MAG) nguidry 5/24/2019

Map Date: 1/21/2019
Source: ESRI

Figure 1. Project Location
2017-062 Victorville Solar Project

In support of the environmental review process for the Project, ECORP Consulting, Inc. (ECORP) completed focused biological surveys at the Project area and prepared a Comprehensive Biological Technical Report that documents the results of those surveys (ECORP 2018). Suitable habitat for desert tortoise is present in the Project area in the form of Mojave creosote bush scrub, Mojave creosote bush scrub (disturbed), and desert saltbush scrub. A total of 567.75 acres of potential desert tortoise habitat will be permanently (549.46 acres) or temporarily (18.29 acres) affected as a result of construction of the Project. The quality of the habitat in and adjacent to the Project area is considered low due to the presence of existing disturbances and development and the lack of continuity with higher quality habitat areas in the region (ECORP 2018). Presence of the Mojave River to the east presents a physical barrier within desert tortoise habitat in the region, severely limiting east-west movement opportunities and continuity between habitat blocks.

1.2 Desert Tortoises in the Project Area

Desert tortoises and their sign (i.e., burrows, scat, tracks, carcasses) were identified within and adjacent to the Project area during surveys conducted in 2017 and 2018 (ECORP 2018) and during surveys conducted in 2006 and 2007 associated with the Victorville2 Hybrid Power Plant Project (AMEC 2007). Suitable habitat for desert tortoise in the form of desert saltbush scrub, Mojave creosote bush scrub, Mojave creosote bush scrub (disturbed), and Mojave desert wash scrub is present in the Project area; however, the quality of the habitat is considered low due to the presence of existing disturbance and development and the lack of continuity with higher quality habitat areas in the region (ECORP 2018). Disturbed rabbitbrush scrub mapped within the Project was determined to not be suitable for desert tortoise due to its extremely disturbed nature and because it is isolated from existing suitable habitat in the vicinity of the Project.

Seven observations of live desert tortoises were made during protocol-level surveys conducted for the Project in 2017 and 2018; however, it is likely that only two unique individuals occur within the Solar Field Area and two to three unique individuals occur within the Interconnection Facilities (ECORP 2018). These presumptions are based on the proximity of sightings, similar sizes of desert tortoises observed in proximity to one another, and the fact that the protocol surveys were conducted over two separate survey seasons. Using the desert tortoise density calculation methods described in the U.S. Fish and Wildlife Service (USFWS) protocol survey document (USFWS 2018a), an estimated 3.2 desert tortoises greater than 180 millimeters (mm) mid-carapace length (MCL) per square kilometer (km²) are present in the Solar Field Area. The estimated desert tortoise density was used to calculate the approximate abundance of desert tortoises present in the Solar Field Area. It is estimated that approximately 3 desert tortoises larger than 180 mm MCL and 16 desert tortoises smaller than 180 mm MCL are present within the Solar Field Area. This brings the total estimate to approximately 19 desert tortoises within the Solar Field Area. A detailed explanation of the desert tortoise density and abundance calculations is included as Appendix A.

Desert tortoise densities for the Interconnection Facilities and Access Roads were not calculated due to the minimal amount and linear nature of impact areas associated with these Project Components and based on consultation with USFWS (Ray Bransfield, personal communication, November 2018).

1.3 Purpose and Goals of the Plan

Preliminary meetings with USFWS and California Department of Fish and Wildlife (CDFW) discussed the Project's potential impacts to desert tortoises, primarily impacts related to habitat loss and increased potential for injury or mortality. Available desert tortoise habitat in the region is already somewhat fragmented with presence of the Mojave River to the east, SCLA to the south, and VVWRA to the east/southeast, and construction of the Project would further restrict connectivity and availability of desert tortoise habitat in the area. Furthermore, the condition of the desert tortoise habitat is somewhat degraded due to OHV use, trash dumping, and other anthropogenic factors and does not support a high density or large population of desert tortoises. Due to these reasons, the USFWS and CDFW requested that all desert tortoises encountered during Project survey and monitoring activities be translocated to an off-site Recipient Site. Therefore, all desert tortoises found during the course of the Project (pre-construction and construction-phase surveys and biological monitoring), both within the fenced Solar Field Area and along the unfenced Interconnection Facilities and Access Road corridors, will be translocated to suitable habitat on a Recipient Site that has been mutually agreed upon by USFWS, CDFW, and the Applicant. Specific direction for desert tortoise translocation activities conducted for the Project is discussed in this document. This direction and a selected translocation Recipient Site will be subject to approval by USFWS and CDFW prior to implementation.

The biological goals and purpose of this document are listed below and pertain to the areas within the Project's permit boundary as defined in the Project's Low Effect Habitat Conservation Plan (LEHCP) that has been prepared in support of consultation with USFWS under Section 10(a)(1)(B) of the Endangered Species Act. The goals include:

1. Successfully translocate all individual desert tortoises within and adjacent to Project Components in a manner that avoids or minimizes impacts to both the translocated desert tortoises and the Recipient Site desert tortoise population;
2. Provide a process to ensure no adverse unmitigated impacts occur to desert tortoise from construction of the Project; and
3. Provide a system to evaluate the success of the program.

2.0 TRANSLOCATION PLAN

This Desert Tortoise Translocation Plan outlines the methodologies and procedures that will be implemented during the translocation of any desert tortoises identified on the Project site. All translocation methods are consistent with the *USFWS Translocation of Mojave Desert Tortoises from Project Site: Plan Development Guidance* (USFWS 2018b) and the *Desert Tortoise (Mojave Population) Field Manual* (USFWS 2009) unless otherwise stated.

2.1 Authorized Personnel

Authorized Biologist

Authorized Biologists (ABs) are qualified biologists that will be responsible for implementing all aspects of this Plan and ensuring that all protective measures established for the Project are enforced.

Responsibilities of the ABs will include monitoring the desert tortoise fence installation, leading the clearance surveys, leading the health assessments, and leading the translocation and release process for each desert tortoise. After the initial translocation effort, ABs will lead the handling and relocation of any additional desert tortoises that may be found on the Project site when necessary. The ABs will be responsible for ensuring that the protective measures described in this Plan are implemented during all aspects of the translocation process. As described in the Desert Tortoise Field Manual (USFWS 2009), ABs will have the following qualifications, at a minimum:

"The AB must have thorough and current knowledge of desert tortoise identification, behavior, natural history, ecology, and physiology, and demonstrate substantial field experience and training to safely and successfully conduct their required duties....

...To be authorized, the applicant must have the knowledge and experience to conduct any or all of the following, as needed:

- Locate, identify, and report all forms of desert tortoise sign in accordance with approved protocols;
- Handle and temporarily hold desert tortoises;
- Relocate/translocate desert tortoises prior to implementation of projects;
- Excavate burrows to locate desert tortoises or eggs;
- Reconstruct desert tortoise burrows;
- Unearth and relocate desert tortoise eggs;
- Review and approve individual Desert Tortoise Monitors and their activities based on qualifications of the Monitors;
- Directly supervise Desert Tortoise Monitors during clearance surveys and train Monitors in all aspects of protecting desert tortoises during implementation of projects;
- Be familiar with the project biological assessment and biological opinion or incidental take permit (copy in hand);
- Ensure proper implementation of protective measures;
- Record and report incidents of noncompliance in accordance with a biological opinion or permit; and
- Halt project activities per provisions of the biological opinion or permit."

At least one AB on the Project will be qualified to perform blood draws and affix transmitters to desert tortoises to support desert tortoise translocation activities.

Desert Tortoise Monitor

The Desert Tortoise Monitors (DTMs) will be qualified biologists that have been approved by the ABs and meet the qualifications described in the Desert Tortoise Field Manual (USFWS 2009). DTMs will be

responsible for assisting the ABs during Project activities including monitoring the desert tortoise fence installation, assisting with clearance surveys, assisting with health assessments, and assisting with the translocation process for each desert tortoise. DTMs will ensure compliance with the protection measures but may only assist with clearance surveys under the direct supervision of an AB. DTMs may handle desert tortoises at the discretion and under the direct supervision of an AB.

The names and statements of qualifications in accordance with USFWS format of all proposed ABs will be submitted to resource agency representatives for review and approval at least 30 days prior to initiation of any ground-disturbing activities and pre-activity surveys. Project construction activities will not begin until the ABs are approved by the resource agencies. The ABs may be replaced with a new AB at any time during construction, operations and maintenance (O&M), or decommissioning with 30 days' notification to the agencies. If there are unforeseen circumstances (e.g., AB becomes ill, changes jobs, etc.), agencies may be provided 14 days notification.

2.2 Clearance

The entire Solar Field Area as well as the areas within and surrounding the Interconnection Facilities and Access Roads will be cleared of desert tortoises prior to the start of Project activities. Exclusion fencing installation and clearance survey efforts will be implemented to locate all desert tortoises that will be translocated per the conditions of this Plan. No desert tortoise will be translocated during a period that would jeopardize the health of desert tortoise. Details of exclusion fence installation and clearance surveys within the Project Components are described in the Sections below.

2.2.1 Exclusion Fencing

The Solar Field Area will be enclosed around its perimeter by chain-link security fencing with a gate at each site entrance, multiple operations gates, and three fire lane barrier gates. The fencing will consist of chain-link fence; topped with a one foot high (3 strands) barbed wire section per authority having jurisdiction specifications. The fencing will include desert tortoise exclusion fencing with Agency approved grates at access gates to prevent desert tortoises from entering the site.

The desert tortoise exclusion fence will be installed around the perimeter of the Solar Field Area prior to the initiation of any ground disturbing activities. The area within the exclusion fencing boundaries will be cleared of desert tortoises (see Section 2.2.2) and the fencing will be installed to prevent the re-entry of desert tortoises to the Solar Field Area. This activity will be performed under the direction of an AB. Where the location of desert tortoise exclusion fencing corresponds to the solar facility perimeter security fence, it may be attached to the security fencing. The exclusion fence will follow current fence specifications established by USFWS (2009). Where fence burial is not possible, the mesh will be bent at a right angle toward the outside of the fence and covered with dirt, rocks, or gravel to prevent desert tortoise from digging under the fence. Desert tortoise exclusion gates will be established at all solar facility entry points. The permanent exclusion fence to be installed around the perimeter of the Solar Field Area will be maintained for the life of the Project. However, if the areas surrounding the Project become heavily developed in the future, then maintenance of the exclusion fence and gates may not be necessary due to lack of desert tortoise habitat.

Temporary fencing will be installed where necessary for each Project Component outside of the Solar Field Area during construction activities to prevent desert tortoise entry during construction. Temporary fencing will be constructed in a similar fashion as permanent fencing and supporting stakes will be sufficiently spaced to maintain fence integrity.

All exclusion fence installation will be conducted under the direct supervision of the AB or the DTM. Prior to the fence installation, the boundaries of the limits of disturbance for installation will be flagged. Following installation, the fencing integrity will be inspected monthly and immediately after all major rainfall events.

Interconnection Facility and Access Road construction will begin prior to installation of desert tortoise exclusion fencing around the Solar Field Area and will not be enclosed by exclusion fencing. Clearance surveys described below will be conducted within buffers around the Interconnection Facility and Access Road construction areas to clear the area of desert tortoises prior to construction. The clearance survey protocols are described below.

2.2.2 Clearance Surveys

Solar Field Area

Clearance of the desert tortoise exclusion fencing location will occur within 24 hours prior to fence installation. After fence installation, ABs and DTMs under the direction of an AB will conduct clearance surveys for desert tortoise within the fenced Solar Field Area. Clearance surveys will be conducted by teams of biologists surveying the Project site while walking transects that are less than or equal to 15 feet (5 meters) apart. Where survey transects enter areas of dense vegetation the transect width will be narrowed accordingly to ensure total coverage of the site. Each clearance survey will be alternated in orientation (i.e., first survey to be conducted with north-south facing transects and second survey to be conducted with east-west facing transects, or vice versa).

A minimum of two surveys without finding any desert tortoise or new desert tortoise sign will occur prior to declaring the site clear of desert tortoise. All burrows that could provide shelter for desert tortoise will be excavated during the first clearance survey. Any desert tortoise found within the fenced solar facility will translocated in accordance with Section 2.3 of this Plan. The clearance surveys will follow the protocols outlined in Chapter 6 of the 2009 Field Manual (USFWS 2009). The clearance surveys will be conducted during the desert tortoise active season (spring [approximately April 1 through May 31] or fall [approximately September 1 through October 31]) to maximize the likelihood of desert tortoise encounters and will provide 100 percent coverage of the fenced area. Surveys may occur outside of these timeframes based on expected weather patterns, with the concurrence of the USFWS and CDFW

All desert tortoises encountered during the clearance surveys will be assigned a unique identifier (USFWS to provide). Data, including the details regarding the exact location where each desert tortoise was located, will be collected for each desert tortoise detected during clearance surveys and standardized for all desert tortoises. Each desert tortoise located may be fitted with a transmitter, depending on direction provided by the USFWS and CDFW in the respective incidental take permits. Details regarding procedures

that will be implemented for each desert tortoise encountered during clearance surveys are described in Section 2.3.

Interconnection Facilities and Access Roads

The Interconnection Facilities and Access Road corridors will remain unfenced during Project activities. Traditionally, desert tortoises along linear features would be allowed to move out of harm's way on their own or be moved out of harm's way by a biologist; however, at the request by the agencies and due to the limited habitat value in the area, all desert tortoises found will be translocated to the Recipient Site, including those within the corridor and wildlife clearance survey buffer area for the Interconnection Facilities and Access Roads. Therefore, comprehensive clearance surveys of these areas and a 50-ft (15-m) buffer will be conducted to ensure that any desert tortoises present within and in the vicinity of these areas that may be affected by the Project are also translocated to the Recipient Site. ABs and DTMs under the direction of an AB, will conduct a desert tortoise pre-construction clearance survey for desert tortoise within the Interconnection Facilities and Access Road corridors in accordance with current USFWS guidelines (USFWS 2009). The pre-construction clearance surveys of the Interconnection Facilities and Access Roads will occur no more than 48 hours before planned activity. The same survey protocols will be implemented as will be performed during the clearance surveys of the Solar Field Areas.

All areas outside of exclusion fencing will be cleared of desert tortoises prior to construction activities and all ground-disturbing activities in these unfenced areas will be monitored by an AB or DTM under the direction of an AB.

2.2.3 Monitoring and Other Survey Activities

Desert tortoises will be searched for during all other preconstruction surveys in addition to the clearance surveys conducted on the Project site (e.g., preconstruction burrowing owl surveys, nesting bird surveys). In the event that desert tortoises are located during other Project activities on site (including while biological monitoring) that had not previously been located during clearance surveys, the AB will be notified immediately, and the procedures outlined in this Plan will be followed to translocate the desert tortoise to the Recipient Site. No desert tortoise will be moved during the inactive season or during a period that would jeopardize the health of desert tortoise. Instead, such tortoises to be translocated will be penned or otherwise monitored until the active season to ensure the health of the animal.

2.3 Translocation Process

The following sections detail the methodologies and procedures that will be implemented during the translocation process of each desert tortoise removed from the Project site, including the detection and processing procedures, health assessment protocols, and release procedures.

2.3.1 Detection and Processing

During the initial detection and processing desert tortoises a unique identifier (to be provided by USFWS) will be assigned to each desert tortoise. At this time a transmitter may be fitted to each desert tortoise for monitoring purposes prior to and after translocation. A remote monitoring system may be used to remotely monitor the activities and behavior patterns of the desert tortoises planned for translocation.

2.3.2 Health Assessments

A health assessment will be performed by ABs that have been approved by the USFWS to perform health assessments prior to translocation for each desert tortoise encountered.

One health assessment will be performed for each desert tortoise encountered 14 to 30 days prior to the translocation effort. The health assessment will include a physical inspection; it may also include a collection of biological samples from each desert tortoise to be translocated, depending upon guidance from the USFWS and CDFW. If collection of biological samples is conducted, then the collection will occur after May 15 or once desert tortoises have been determined to be active for at least four weeks based on telemetry data collected from the transmitters that were attached to the individuals during clearance surveys. Telemetry data may be collected remotely using a remote monitoring system or manually by biologists using radio antennae.

All health inspection procedures will be consistent with the 2016 USFWS *Health Assessment Procedures for the Desert Tortoise (Gopherus agassizii): A Handbook Pertinent to Translocation*. For each health assessment performed, a Desert Tortoise Health Assessment (HA) Data Collection Form – Translocation Projects will be filled out (Appendix G of USFWS 2016b). During the health assessments, the AB will use the algorithm provided in Appendix G of the 2016 health assessment handbook (USFWS 2016b) to evaluate if each desert tortoise is suitable for translocation. Copies of all health assessment datasheets will be provided to USFWS upon completion.

2.3.3 Release of Desert Tortoises

Desert tortoises that have been identified for translocation and that have passed the health assessments will be translocated to preidentified locations within the Recipient Site (described in Section 2.4). The release of translocated desert tortoises will be conducted consistent with USFWS-approved protocols (USFWS 2018b, 2009).

Translocation will occur during the spring (approximately April 1 through May 31) whenever possible. However, any desert tortoises that are unable to be translocated during the spring active season will be translocated during the fall (approximately September 1 through October 31). Translocation activities may occur outside of the desert tortoise active period based on expected weather patterns and with the concurrence of the USFWS and CDFW. All translocation efforts will be conditional upon the weather restrictions described below.

The following conditions outlined in the 2018 USFWS Guidance will be met prior to and during the translocation and release efforts:

- Releases will occur when temperatures range from 18–30°C (65–85°F) and are not forecasted to exceed 32°C (90°F) within 3 hours of release or 35°C (95°F) within 1 week of release. Additionally, forecasted daily low temperatures will not be cooler than 10°C (50°F) for one week post-release.
- Release points will be pre-selected during visits to the release site and will be specified in the disposition plan. Release points will contain habitat characteristics that are known to increase

desert tortoise survivorship and decrease predator detection (e.g., presence of washes, vegetative cover/shade, suitable burrows, and substrate texture).

- All translocated desert tortoises will be transported to their release sites in clean, ventilated protective containers.
- If weather records prior to translocation indicate that desert tortoises likely have not had a chance to drink within the previous or current active season, or clinical signs indicate that a desert tortoise may be dehydrated, desert tortoises to be translocated will be hydrated within 12 hours before release according to existing protocols.
- Desert tortoises will be released at pre-identified unoccupied shelter sites which may include washes, unoccupied soil burrows, spaces within rock outcrops, caliche caves, and the shade of shrubs.

If any desert tortoises previously identified to be translocated are determined to be unsuitable for translocation activities according to the algorithm in Appendix G of the USFWS *Health Assessment Procedures for the Mojave Desert Tortoise* (2016b), then the tortoise(s) will be sent to an agency-approved facility where they will undergo further assessment. After the assessment, USFWS and CDFW will be contacted to determine an appropriate course of action.

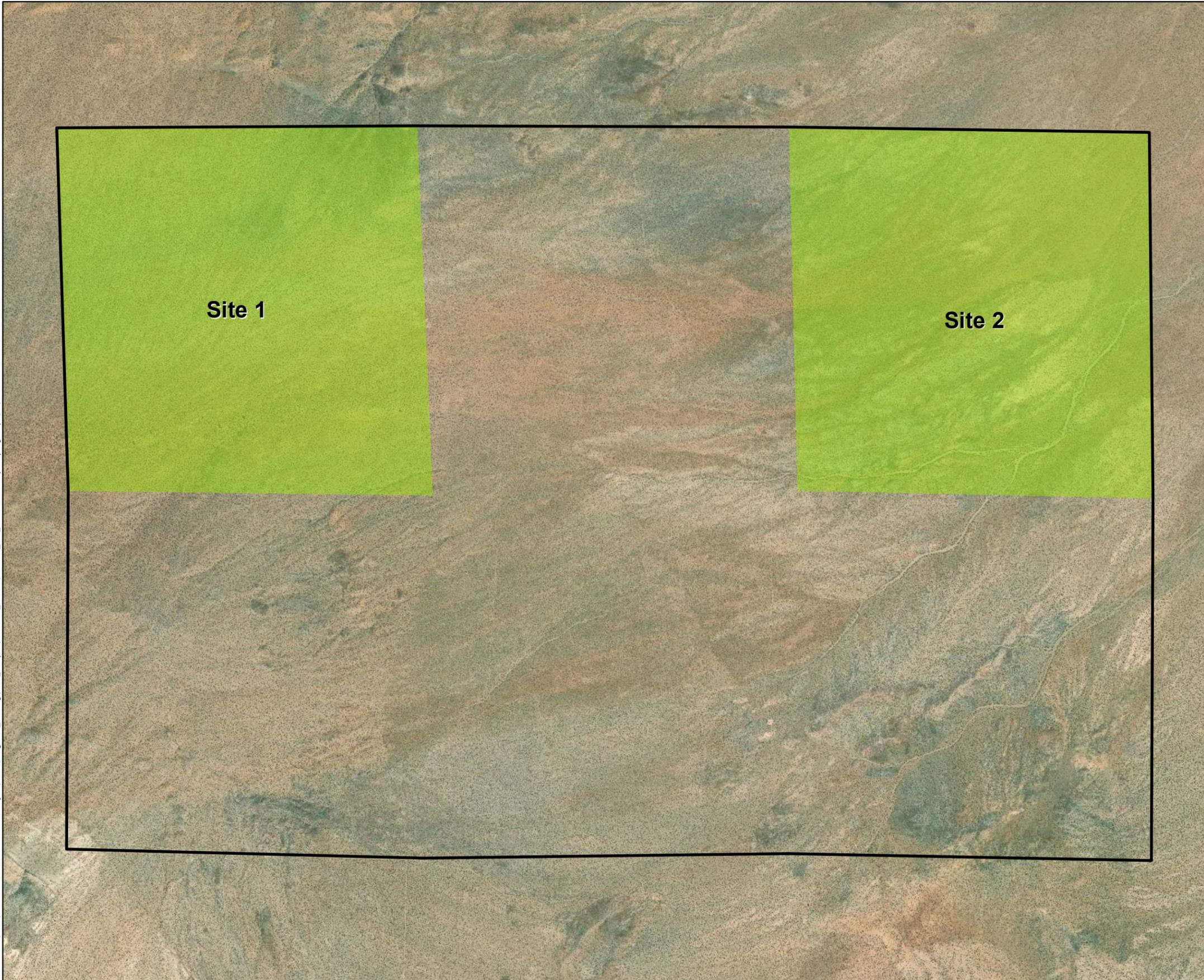
2.4 Translocation Recipient Site

A Recipient Site proposed to receive desert tortoises translocated from the Project site was identified during pre-application meetings with the Service and Department. The Recipient Site is located south of State Route 58 and east of U.S. 395 near the community of Kramer Junction, San Bernardino County, in the Mojave Desert (Figure 2), and within designated critical habitat for desert tortoise (the Fremont-Kramer Critical Habitat Unit [FKCH]) and the Fremont-Kramer Area of Critical Environmental Concern (ACEC), as designated by the Bureau of Land Management (BLM). It comprises four square miles as depicted on the Kramer Hills United States Geological Survey (USGS) 7.5-minute topographical quadrangle: Sections 6, 7, and 8 of Township 9 North, Range 5 West and Section 12 of Township 9 North, Range 6 West. Two square miles immediately northwest and northeast of the Recipient Site are known as the Cuddeback-Kramer Preserve (Preserve), located in Sections 1 and 5, and were used as mitigation for a previous project. Translocation activities will not be conducted in these Sections. The Recipient Site lands are owned by the federal government and managed by the Bureau of Land Management (BLM). Additional Recipient Site(s) located on private land may be identified as alternative location(s). The additional Recipient Site(s) will be agreed upon by the Applicant, USFWS, and CDFW.

Figure 2. Proposed Recipient Site

Map Features

-  Proposed Translocation Area
-  Cuddeback-Kramer Preserve



Location: N:\2017\2017-062.001_Victorville Solar Project\MAPS\mitigation_banking_analysis\Wildlands_Parcel\Receiver_Site_20181214.mxd (MAG)mguidry 1/10/2019

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



A reconnaissance-level survey has not yet been conducted of the proposed Recipient Site; however, the available documents for the adjacent Preserve were reviewed for information on habitat, topography, soils, and other physical characteristics of the properties within the Preserve that may pertain to the Recipient Site (CMBC 2017; TBD 2015). Habitat and topography on the two Preserve parcels appear contiguous with the proposed Recipient Site based on aerial photography review, so it is assumed that the proposed Recipient Site contains similar habitat, land features, topography, and soils. The plant community that was described for the Preserve is Mojavean creosote bush scrub, with dominant plant species including creosote bush (*Larrea tridentata*), burrobush (*Ambrosia dumosa*), indigo bush (*Psoralea arborescens*), and desert goldenhead (*Acamptopappus sphaerocephalus*). The topography is generally flat, with a modest northeastern aspect. Ephemeral drainages appear to exist on the Recipient Site based on an aerial photography review, and two USGS blue-line streams exist in the eastern portion of the Recipient Site (USFWS 2019). Elevations on the Recipient Site range from approximately 2,565 to 3,035 feet above msl.

2.4.1 Estimate of Desert Tortoise Population at the Recipient Site

A review of available database records and literature was performed to identify desert tortoises and desert tortoise sign (e.g., burrows, scat, carcasses, tracks) that were previously documented on and in the vicinity of the Recipient Site. This review was performed to establish a threshold of the general desert tortoise population density for the region against which the Recipient Site could then be compared.

California Natural Diversity Database

A search of the Department's California Natural Diversity Database (CNDDDB) and the Biogeographic Information and Observation System (BIOS) yielded no previous records of desert tortoise observations on or adjacent to the Recipient Site (CDFW 2019). This is likely because either focused survey efforts have not yet been conducted in the area or data submitted to the Department for this area have not yet been entered into these databases. However, one record covering approximately 1,700 square miles in the West Mojave (including the Recipient Site) was found during the database review, where estimated desert tortoise densities in this area in 1977 was 20 to less than 250 individuals per square mile (Occurrence #1). In 1987, density estimates within this area suggested major declines (CDFW 2019).

Cuddeback-Kramer Preserve Documents

Two documents that were prepared for the adjacent Preserve were reviewed, including the *Long-Term Management Plan for the Cuddeback-Kramer Preserve* (Management Plan; TBD 2015) and the *Cuddeback-Kramer Preserve: 2017 Annual Report* (Annual Report; Circle Mountain Biological Consultants [CMBC] 2017). Surveys were conducted on Sites 1 and 2 of the Preserve in March 2015 by CMBC (locations of Sites 1 and 2 are shown on Figure 2). Survey results for Site 1 identified desert tortoise presence in the form of sign (tracks, carcasses, burrows, scat), but no live desert tortoises were identified. Only 3.4 percent of the surface area within Site 1 was observed, with 5.6 miles of transects conducted during this survey. Site 2 was surveyed using a similar level of effort (3.2 percent of the surface area was observed, with 5.7 miles of transects surveyed). Desert tortoise presence was noted on Site 2 in the form of carcasses, burrows, and scat but no live individuals were observed. The presence of desert tortoise throughout Sites 1 and 2 was presumed; however, no density calculations were presented in the Management Plan.

A focused desert tortoise survey was performed at Site 1 in support of the 2017 Annual Report and the results indicated that two adult and one subadult desert tortoises were found during the survey. Density calculations based on these results that were presented in the 2017 Annual Report indicated that a total of four adult desert tortoises were present within the 602 acres (2.43 km²) surveyed for Site 1¹. This translates to approximately 1.6 desert tortoises per km². The 2017 Annual Report indicated that Site 2 will be surveyed in 2018 (CMBC 2017) and results of this survey have not yet been published.

Surveys conducted in support of both Preserve documents identified desert tortoise presence within the Preserve. These results indicate that desert tortoise is present within the Recipient Site, which contains contiguous habitat and similar topography as the Preserve, and likely at the similar density to what was calculated for Site 1 in 2017.

2017 Range-Wide Monitoring

A review was performed of the *Range-Wide Monitoring of the Mojave Desert Tortoise (Gopherus agassizii): 2017 Annual Reporting* (Range-Wide Monitoring Report; USFWS 2018c) to compare the estimated 2017 population density in the FKCH (the critical habitat unit where the Recipient Site is located) with the estimated population density within the Solar Field Area. A total of 4.1 desert tortoises per km² was estimated based on the results of the range-wide monitoring surveys in 2017, which is much higher than the estimated 1.6 desert tortoises per km² that were calculated for Site 1 in the Preserve's 2017 Annual Report. The disparity in density estimates between the two documents is likely due to differences in methods of and level of effort between the surveys. Furthermore, the area surveyed for the 2017 range-wide monitoring study encompassed the entire FKCH, which was approximately 2,417 km² and covered numerous habitat types, while the survey conducted for the Preserve only encompassed 2.43 km² within one contiguous habitat type present in Site 1. Due to its proximity to the Recipient Site, desert tortoise density estimates within Site 1 are expected to be more accurate for the Recipient Site than those estimated for the entire FKCH.

2001 – 2016 Range-Wide Monitoring Geographic Information Systems Data

Geographic Information Systems (GIS) data from range-wide desert tortoise monitoring efforts conducted between 2001 and 2016 were reviewed to identify whether live desert tortoises were documented on or adjacent to the Recipient Site. GIS data from the 2017 range-wide monitoring effort were not available at the time of this analysis. As shown in Figure 3, several live desert tortoises were documented within and adjacent to the Recipient Site between 2001 and 2015. It is unclear from the GIS data whether range-wide monitoring surveys were conducted in the vicinity of the Recipient Site in 2016. Six live desert tortoises were documented within the Recipient Site, only one of which measured less than 180 mm MCL. One desert tortoise measuring 60 mm MCL was documented within Site 2 of the Preserve. These data were initially used to show potential desert tortoise distribution across the Recipient Site. Table 1 shows the details of the desert tortoise observations displayed on Figure 3 that were recorded during range-wide monitoring efforts (USFWS 2016a).

¹ Density calculations in the 2017 Annual Report for the Preserve used 160 mm MCL to classify adult size.

Location: N:\2017\2017-062\001_Victorville Solar Project\MAPS\mitigation_banking\bank_analysis\Wildlands_Parcel\Receiver_Site_20181214.mxd (MAG-mgaurdy 1/16/2019)

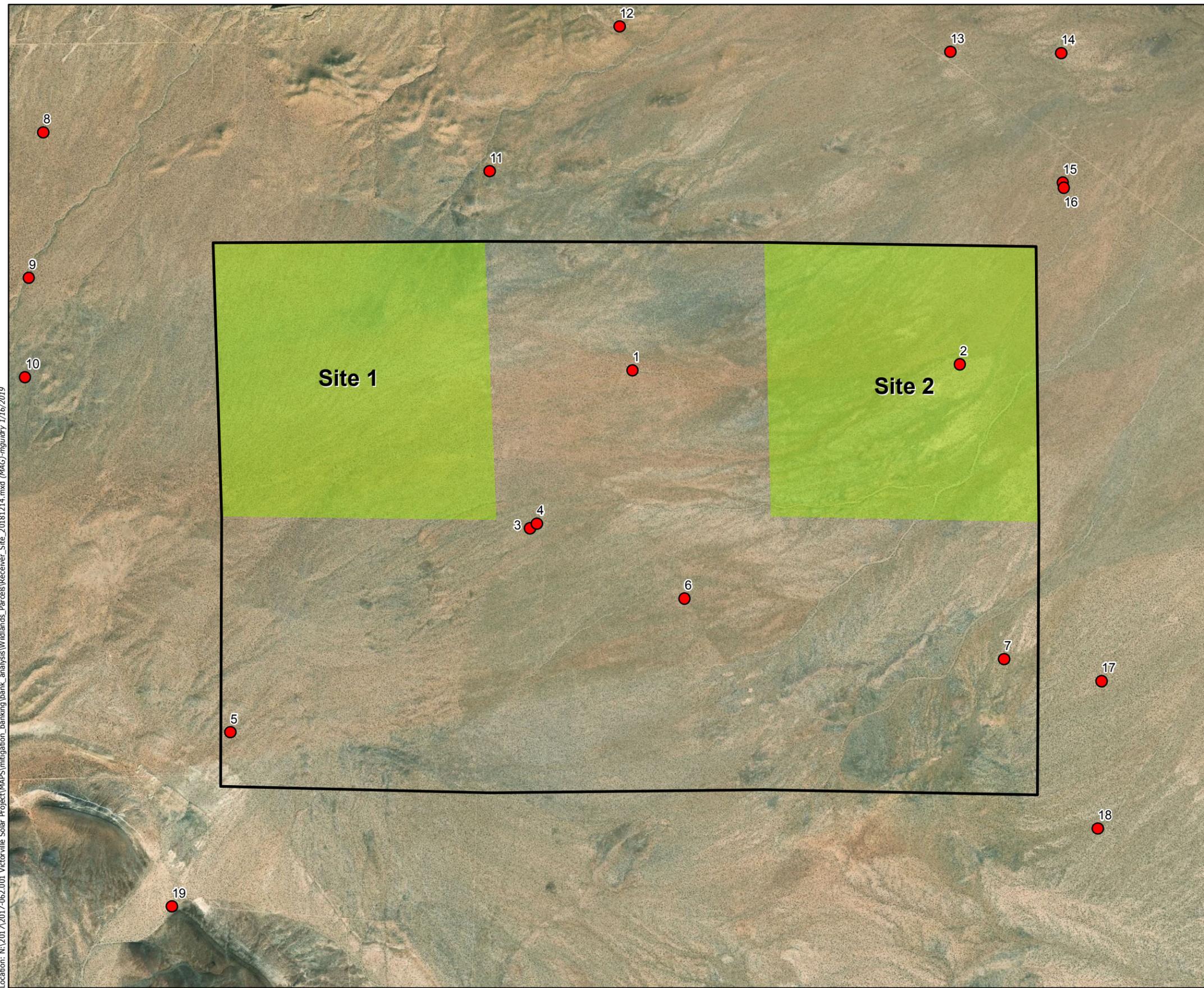


Figure 3. 2001-2016 Range-Wide Monitoring Results

Map Features

-  Proposed Translocation Area
-  Cuddeback-Kramer Preserve
-  Live Desert Tortoise Observation (USFWS)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

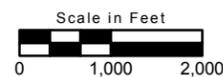


Table 1. Live Desert Tortoise Observations Recorded during Range-Wide Monitoring Efforts between 2001 and 2015

Tortoise ID Number	Date Recorded	Within Recipient Site?	MCL greater than 180 mm?	Sex	Tag Number
1	4/7/2004	Yes	Yes, 230	Male	000FK2004--6
2	4/7/2004	No, located within Site 2 of Preserve	No, 60	Unknown	000FK2004--5
3	4/26/2010	Yes	Yes, 242	Male	FW7396
4	4/13/2015	Yes	Yes (not specified)	Unknown	
5	4/26/2001	Yes	Yes, 239	male	
6	4/26/2001	Yes	No, 172	female	
7	5/2/2001	Yes	Yes, 260	male	
8	5/15/2005	No	No, 143	Unknown	1104
9	4/13/2015	No	Yes, 255	Male	FW7886
10	4/13/2015	No	Yes, 233	Male	FW7951
11	4/26/2012	No	Yes, 274	Male	FW7919
12	5/15/2005	No	Yes, 191	Male	2514
13	5/1/2001	No	Unknown	Unknown	
14	4/7/2004	No	Yes, 190	Male	000FK2004--2
15	4/7/2004	No	No, 170	Unknown	000FK2004--3
16	4/7/2004	No	Yes, 240	Male	000FK2004--4
17	4/25/2014	No	No (not specified)	Unknown	
18	4/25/2014	No	Yes, 250	Male	FW7949
19	4/18/2014	No	Yes, 214	Female	FW7947

2.4.2 Recipient Site Criteria

The Recipient Site was found to be suitable to support translocated desert tortoises based on information in available literature and data. Table 2 contains the Recipient Site criteria from USFWS's translocation plan guidelines (USFWS 2018b) and an explanation of how the Recipient Site fulfills these criteria.

Table 2. Recipient Site Selection Criteria and Suitability	
Recipient Site Selection Criteria (from USFWS 2018b)	Response and Recipient Site Suitability
<i>1. The site supports desert tortoise habitat suitable (including accessible land ownership) for all life stages.</i>	Occupied and potential burrows as well as desert tortoises measuring greater than and less than 180 mm MCL have been documented in and adjacent to the Recipient Site during focused surveys. The proposed Recipient Site contains suitable desert scrub habitat, is situated more than three km away from a paved road (U.S. Route 395), and is located immediately adjacent to the Cuddeback-Kramer Preserve.
<i>2. The site contains a depleted tortoise population (see Determination of recipient-site size).</i>	Density estimates for Site 1 of the adjacent Preserve calculated desert tortoise density to be approximately 1.6 desert tortoises per km ² . Desert tortoise density on the proposed Recipient Site is expected to be similar to what was calculated for Site 1 of the Preserve. This is much less than 3.9 adult desert tortoises per km ² , as outlined in the USFWS translocation plan guidelines (USFWS 2018b).
<i>3. There is no evidence of an active outbreak of disease, such as high prevalence of clinical signs of disease or seropositive responses to disease agents. Such scenarios will require additional coordination with wildlife health professionals to determine the appropriate course of action.</i>	No evidence of an active outbreak of disease has been documented on or adjacent to the proposed Recipient Site to date.
<i>4. Major unfenced roads (i.e., high traffic volumes/speed limits and no desert tortoise exclusion fence), highways, or human development that would pose a risk to desert tortoises, are no closer than 6.5 km to the release site. Distances from unfenced hazards may be reduced if proposed monitoring justifies a shorter distance.</i>	The proposed Recipient Site is located approximately 1.9 miles (3 km) east of U.S. Route 395 and approximately 2.5 miles (4 km) south of State Route-58. Both of these roadways have permanent desert tortoise fencing that reduces the potential for collision with vehicles.
<i>5. The recipient population should be less than 200 km straight-line distance of the Project site, or 249 km around topographic features or natural barriers to movement.</i>	The proposed Recipient Site is located approximately 26 km north of the Project site, which is less than 200 km straight-line distance.
<i>6. The site has no detrimental rights-of-way or other encumbrances.</i>	No detrimental rights-of-way or other encumbrances exist.
<i>7. The site will be managed compatibly with continued desert tortoise occupancy.</i>	The proposed Recipient Site is located within designated critical habitat for desert tortoise and the BLM's Fremont-Kramer Area of Critical Environmental Concern, and as such, will be managed compatibly with continued desert tortoise occupancy.

2.4.3 Recipient Site Survey

The proposed Recipient Site may be surveyed prior to the start of translocation activities. Existing available data (e.g., CNDDDB, Preserve documents and monitoring data, USFWS's Range-Wide Monitoring data) will be reviewed prior to the survey to give surveyors context of existing desert tortoise presence in the area. The methodology of the Recipient Site survey has been developed based on input from both USFWS and CDFW and is included in detail as Appendix B.

The survey will be led by a USFWS-Authorized Biologist who will be assisted by biologists who are experienced with surveying for and identifying desert tortoise and their sign. The purpose of the survey will be to identify and map locations of live desert tortoises and occupied burrows as well as locations of

unoccupied burrows and shelters (i.e., unoccupied by desert tortoise at the time of survey and no sign present but of suitable size and shape for desert tortoise use) and potential areas for depositing translocated desert tortoises that contain the habitat characteristics that are known to increase desert tortoise survivability and decrease predator detection (e.g., washes, vegetative cover, substrate texture). Following the survey effort, the estimated density of the desert tortoises occupying the survey area within the Recipient Site will be calculated. The methods used for the survey and density calculations are identified in USFWS's *Preparing for Any Action that May Occur within the Range of the Mojave Desert Tortoise* (USFWS 2018a).

The results of the Recipient Site survey and proposed recipient locations will be documented in a report that will be submitted to the USFWS and CDFW for review and comment.

2.5 Translocation Review Package

A translocation review package will be prepared and submitted to USFWS for approval at least two weeks prior to scheduled translocation activities. The translocation review package will include the following information:

- Disposition plan for each desert tortoise that will be removed from the Project site (see Section 2.5.1)
- Survey data from the Project and Recipient Sites
- Photographs of individual desert tortoises
- Health assessment data sheets for Project-site desert tortoises
- Maps of the Recipient Site that specify proposed release points for desert tortoises translocated from the Project site
- Maps of the Project site showing the distribution and health status of desert tortoises
- Any other information pertaining to translocation activities.

Once the translocation review package is reviewed and accepted, translocation activities may begin in accordance with the most up-to-date and standard protocols.

2.5.1 Disposition Plans

An individual disposition plan will be prepared for each desert tortoise that is removed from the Project site. Disposition plan preparation will occur after a transmitter has been affixed to the desert tortoise or while the desert tortoise is contained within a temporary pen and prior to being translocated to the Recipient Site. Each disposition plan will include details on the desert tortoise's health assessment that will be performed upon removal from the site, and a discussion as to whether the individual is healthy enough for translocation activities will also be included. The health assessment algorithm in USFWS's translocation plan guidance document (USFWS 2018b) will be used to determine whether the individual is suitable for translocation. If the individual is deemed healthy and eligible for translocation to the Recipient Site, then the plan will identify the exact location within the Recipient Site that the desert tortoise will be

translocated. If the individual is found to be ineligible for translocation activities due to health concerns or other factors, then the individual will be taken out of the wild population and the disposition plan will describe the fate of that individual (e.g., being placed for adoption or given to a sanctuary). The disposition plan will be submitted to USFWS and CDFW as part of the translocation review package.

2.6 Control Site

Designation of a control site will not be required for the translocation effort because the anticipated number of desert tortoises needing to be translocated from the Project site is relatively low (see Section 1.2) and overcrowding or carrying capacity issues at the Recipient Site are not expected. Therefore, comparison of monitoring results from the Recipient Site to those of a control site will not be necessary. Furthermore, monitoring efforts at a control site were not found to be required during consultation with both the USFWS and the CDFW and will not be conducted as part of the translocation activities.

2.7 Monitoring and Reporting

All data collected during all aspects of the translocation process will be compiled and entered into a master database consistent with the USFWS 2018 Guidelines. Data to be entered will include, but not be limited to, all desert tortoise observations (both translocated desert tortoises and those observed at the Recipient Site), habitat characteristics at release location(s), telemetry monitoring data, and health assessment data.

A statistically-sound effectiveness monitoring program will not be developed to assess the ability to meet success criteria for translocation due to the small number of desert tortoises that are anticipated to be translocated. Due to the expected small number of desert tortoises proposed for translocation, follow-up monitoring efforts will largely focus on monitoring the condition of the translocation area(s) within the proposed Recipient Site and the activity and health of the desert tortoises that were translocated from the Project. Focused monitoring by way of processing transmitter data from the individual translocated desert tortoises would provide information on the activities, location, and/or fate of the individuals that were translocated. Initial recipient site surveys and limited monitoring in the form of on-site surveys will provide data on the condition of the site and potential presence of resident tortoises in the area and may provide anecdotal information on how the translocation has affected resident desert tortoises that were located in the Recipient Site prior to the translocation effort. If a remote monitoring system is used to monitor translocated desert tortoises, then the data collected from the remote monitoring system will be incorporated into the data collected during on-site monitoring efforts as described below. If necessary, battery replacement and transmitter unit maintenance will be performed during the on-site monitoring efforts.

The translocation areas will be monitored for three years following translocation activities using a variety of methods to identify and document the health, presence, and activity levels of desert tortoises in the translocation area. Pedestrian transect surveys, visual observation periods, telemetry and/or an alternative monitoring method that has been agreed upon by the Permittee, USFWS, and CDFW may be used to gather this information. Post-translocation monitoring visits will occur at the following intervals:

- Within one week of release;

- Once monthly between March and November throughout the first-year monitoring period;
- Quarterly throughout the second- and third-year monitoring period.

Once follow-up monitoring activities are complete, the transmitters that were affixed to the translocated desert tortoises will be left on the individuals and no further maintenance or battery replacement activities will occur.

Annual monitoring reports will be prepared at the end of each calendar year during the monitoring period and submitted to the agencies by January 31 of the following year. The annual reports will summarize the monitoring activities conducted over the course of the year prior and provide results and analysis of the monitoring efforts. A final Desert Tortoise Translocation Report will be submitted to the agencies within 30 days prior to the end of the monitoring period.

3.0 ADDITIONAL IMPACT AVOIDANCE MEASURES

In addition to the procedures described above, impact avoidance measures described in the LEHCP will be implemented to minimize and mitigate effects to desert tortoise (AECOM 2019). General Measures 1 through 8 relate to all biological resources, including desert tortoise. Desert-tortoise-specific measures (DT-1 through 24) include specific measures to minimize take of individual desert tortoises.

Four mitigation measures (BIO2 through BIO-4) were developed in support of the Biological Impact Analysis and Mitigation Report (ECORP 2019a) and included in the Initial Study (ECORP 2019b) that will offset, minimize, or avoid take of desert tortoise.

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LIST OF APPENDICES

Appendix A – Desert Tortoise Density and Abundance Estimates

Appendix B – Recipient Site Survey Methodology

Desert Tortoise Density and Abundance Estimates

DESERT TORTOISE DENSITY AND ABUNDANCE ESTIMATES

USFWS 2018 Methods

Due to the minimal amount and linear nature of impact areas associated within the Interconnection Facilities and Access Roads, and in consultation with the USFWS, desert tortoise density and abundance calculations were only based on the impact area associated with the Solar Field Area. The survey results associated with the Interconnection Facilities and Access Roads were not included because tortoises move around too much in those small areas to complete a valid estimate. Following the USFWS methods described in *Preparing for Any Action that May Occur within the Range of the Mojave Desert Tortoise* (USFWS 2018), tortoise abundance estimates were calculated for the Solar Field Area. Table 2, taken directly from the 2018 USFWS Desert Tortoise Pre-Project Survey Guidance, has been filled out for the Solar Field Area and is included as Attachment 1 for additional information, but the equation below calculates the estimate.

Two desert tortoises larger than 180-millimeter (mm) mid-carapace length (MCL) were observed during the protocol surveys in the Solar Field Area. The probability that a desert tortoise is visible (P_a) relative to the previous winter's rainfall is 0.85 because there was 1.61 inches (41mm) of rainfall at the Victorville weather station (Western Regional Climate Center) between October 2017 and March 2018. The probability of detecting a tortoise if it is visible (P_d) is 0.63. At the time of the survey, the action area included a 300-foot buffer surrounding the footprint of the Solar Field Area. 100 percent of the action area (764 acres) was surveyed. Based on the calculation below, 3.7 desert tortoises larger than 180mm are estimated within the action area associated with the Solar Field Area, giving a density estimate of 1.2 tortoises per square kilometer (km^2) in the surveyed area. Within the project footprint of the Solar Field Area (excluding the 300-foot survey buffer), 2.8 desert tortoises larger than 180mm were estimated (Attachment 1). Table 2 from the 2018 USFWS Desert Tortoise Pre-Project Survey Guidance uses the average density of the West Mojave Recovery Unit from USFWS 2015.

$$\begin{array}{l} \text{3.7 tortoises estimated} \\ \text{within action area} \end{array} = \frac{\begin{array}{l} \text{(2 desert tortoises >180mm MCL)} \\ \text{[0.850 (P}_a\text{)]} \end{array}}{\begin{array}{l} \text{[0.63 (P}_d\text{)]} \end{array}} \frac{\begin{array}{l} \text{(764-acre action area)} \\ \text{(764 acres surveyed)} \end{array}}$$

Turner et al. (1987) determined that desert tortoises smaller than 180mm comprised approximately 87 percent of a population of desert tortoises. To determine the number of non-hatchlings smaller than 180mm, the estimated number of adult tortoises is multiplied by 5.2 (the annual population multiplier; USFWS 2017). In the Solar Field Area action area, it is estimated that there are 19.3 (3.7x5.2) tortoises smaller than 180mm, which brings the total estimate to 23 desert tortoises. In the Solar Field Area project footprint, 14.8 (2.8x5.2) tortoises smaller than 180mm are estimated to occur, which brings the total estimate to nearly 18 desert tortoises within the Solar Field Area.

For discussion purposes, the same number of tortoises larger than 180mm (2) were observed during protocol surveys within the Interconnection Facilities and Access Roads Project Components. Although the USFWS stated that those Project Components and survey areas are too small from which to obtain a valid estimate, the equation used for the Solar Field Area would result in the same estimate of tortoises larger and smaller than 180mm because 100 percent of the action area (212 acres, comprising the

footprint of the Interconnection Facilities and Access Roads plus a 300-foot buffer) was surveyed. In the Interconnection Facilities and Access Roads action area, it is estimated that there are 19.3 (3.7x5.2) tortoises smaller than 180mm, which brings the total estimate to 23 desert tortoises. However, because the Interconnection Facilities and Access Roads project footprint is much smaller, 0.7 desert tortoises larger than 180mm are estimated and 3.6 (0.7x5.2) tortoises smaller than 180mm are estimated, which brings the total estimate to 4 desert tortoises within the actual footprint of the Interconnection Facilities and Access Roads. In summary, if the Project Components are combined (which the USFWS has not requested), 46 desert tortoises are estimated in the action area and 22 desert tortoises are estimated in the project footprint. Table 2, taken directly from the 2018 USFWS Desert Tortoise Pre-Project Survey Guidance, has been filled out for the Interconnection Facilities and Access Roads and is included as Attachment 2 for additional information.

Alternative Density Estimates

For discussion purposes, desert tortoise density estimates from the Desert Tortoise Recovery Office’s annual range-wide line distance monitoring surveys were used to calculate the number of tortoises potentially within each Project Component based on amount of suitable habitat in project footprint. The nearest study stratum to the project that contains similar habitat is the Fremont-Kramer Stratum of the West Mojave Recovery Unit. Estimated densities from the three most recent survey years, 2014, 2015, and 2017 (Fremont-Kramer was not surveyed in 2016) were averaged and are shown in Table D-1 (USFWS 2015, 2016, 2018).

Table D-1. Western Mojave Recovery Unity/Fremont-Kramer Stratum Desert Tortoise Density Calculations (for tortoises of MCL ≥180mm)			
Year	Area (km2)	Number of tortoises	Density (number of tortoises per km2)
2014	2,417	11,359.9	4.7
2015	2,417	10,876.5	4.5
2017	2,417	9,909.7	4.1
<i>Average</i>	<i>2,417</i>	<i>10,715.37</i>	<i>4.43</i>

*Fremont-Kramer Stratum was not surveyed in 2016.

Tortoise density calculations for the Project Components using the averaged estimated density in the Fremont Kramer Stratum are presented below.

Solar Field Area: A total of 567.75 acres of desert tortoise habitat exists in this Project Component.

$$\frac{X \text{ desert tortoises in footprint}}{4.43 \text{ desert tortoises on } 1 \text{ km}^2} = \frac{547.23 \text{ acres in footprint}}{247 \text{ acres in } 1 \text{ km}^2} = 9.81 \text{ desert tortoises larger than } 180\text{mm}$$

This was rounded to 10 desert tortoises larger than 180mm (7 inches [in]) in the Solar Field Area.

Turner et al. (1987) determined that desert tortoises smaller than 180mm comprised approximately 87 percent of a population of desert tortoises. To account for desert tortoises smaller than 180mm, the following equation was applied:

$$\frac{10 \text{ desert tortoises} > 180\text{mm in footprint}}{X \text{ total desert tortoises in footprint}} = \frac{13\% \text{ of total}}{100\%} = 76.92 \text{ desert tortoises smaller than 180mm}$$

This was rounded to 77 desert tortoises smaller than 180mm in the Solar Field Area.

A total of 87 desert tortoises are estimated to occur within the Solar Field Area.

Interconnection Facilities and Access Roads: A total of 20.52 acres of desert tortoise habitat exists in these Project Components.

$$\frac{X \text{ desert tortoises in footprint}}{4.43 \text{ desert tortoises on } 1 \text{ km}^2} = \frac{20.52 \text{ acres in footprint}}{247 \text{ acres in } 1 \text{ km}^2} = 0.37 \text{ desert tortoise larger than 180mm}$$

This was rounded to 1 desert tortoise larger than 180mm in the Interconnection Facilities and Access Roads.

$$\frac{1 \text{ desert tortoise} > 180\text{mm in footprint}}{X \text{ total desert tortoises in footprint}} = \frac{13\% \text{ of total}}{100\%} = 7.69 \text{ desert tortoises smaller than 180mm}$$

This was rounded to 8 desert tortoises smaller than 180mm in the Interconnection Facilities and Access Roads.

A total of 9 desert tortoises are estimated to occur within the Interconnection Facilities and Access Roads.

In summary, if the Project Components are combined, 96 desert tortoises are estimated to occur in the project footprint.

Attachment 1. Solar Field Area Calculations

Table 2. USFWS Desert Tortoise Pre-Project Survey Guidance

What is the estimated number of tortoises in the action area and project footprint?

INSTRUCTIONS Use this tab when your transects were of differing lengths.

Enter the appropriate values from the survey into the yellow cells below. The number of tortoises for the action area and project footprint will be calculated.

	Action area	Project footprint
N =	3.7	2.8
Lower 95%CI =	1.21	0.92
Upper 95%CI =	11.50	8.75
Number of hatchlings (young-of-year) =	4.9	3.7
Number of tortoises < 180 mm MCL, not young-of-year =	19.4	14.8
Total action area (acres)	764	581
D (tortoises/km ²) in surveyed area =	1.209	
Average density in Recovery Unit =	2.8	
Probability that a tortoise is visible given winter rainfall (Pa in Table 1) =	0.850	
var(Pa) (from Table 1) =	0.002	
Probability of detecting a tortoise, if visible (Pd) =	0.630	
var(Pd) =	0.010	
var(n) (assume various transect lengths)		1.447
var(D)		0.569
C for N		3.078
Project/site name	High Desert Solar (Solar Field Area)	
Desert tortoise Recovery Unit	West Mojave	
Survey start date	April 6, 2017	
Survey end date	October 9, 2018	
Pre-survey Oct-March rainfall (mm)	41	
Total length of transects walked (km) =	309	
Number of transects walked =	142	
Number of tortoises found during surveys (n) =	2	

<i>Transects of various lengths</i>			
Transect	Length (km)	Tortoises within 5m of centerline	
1	0.272	0	
2	0.489	0	
3	0.52	0	
4	0.541	0	
5	0.557	0	
6	0.569	0	
7	0.578	0	
8	0.584	0	
9	0.587	0	
10	0.589	0	
11	0.589	0	
12	0.589	0	
13	0.589	0	
14	0.589	0	
15	0.589	0	
16	0.589	0	
17	0.589	0	
18	0.589	0	
19	0.589	0	
20	0.589	0	
21	0.589	0	
22	0.589	0	
23	0.589	0	
24	0.589	0	
25	0.589	0	
26	0.589	0	
27	0.589	0	
28	0.589	0	
29	0.589	0	
30	0.589	0	
31	0.589	0	
32	0.589	0	
33	0.589	0	
34	0.589	0	
35	0.589	0	
36	0.589	0	
37	0.589	0	
38	0.589	0	
39	0.589	0	
40	0.589	0	
41	0.589	0	
42	0.814	0	
43	1.358	0	
44	1.655	0	
45	1.741	0	
46	1.773	0	
47	1.792	0	
48	1.843	0	
49	1.943	0	
50	2.042	0	
51	2.140	0	
52	2.236	0	

<i>Transects of various lengths</i>			
Transect	Length (km)	Tortoises within 5m of centerline	
53	2.332	0	
54	2.427	0	
55	2.522	0	
56	2.535	0	
57	2.617	0	
58	2.712	0	
59	2.807	0	
60	2.902	0	
61	2.962	0	
62	2.964	0	
63	2.965	0	
64	2.965	0	
65	2.965	0	
66	2.965	0	
67	2.965	0	
68	2.965	0	
69	2.965	0	
70	2.965	0	
71	2.965	0	
72	2.966	1	
73	2.966	1	
74	2.966	0	
75	2.966	0	
76	2.966	0	
77	2.966	0	
78	2.966	0	
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80	2.966	0	
81	2.966	0	
82	2.966	0	
83	2.966	0	
84	2.966	0	
85	2.966	0	
86	2.966	0	
87	2.966	0	
88	2.966	0	
89	2.966	0	
90	2.966	0	
91	2.966	0	
92	2.966	0	
93	2.966	0	
94	2.966	0	
95	2.966	0	
96	2.966	0	
97	2.966	0	
98	2.966	0	
99	2.966	0	
100	2.966	0	
101	2.966	0	
102	2.966	0	
103	2.966	0	
104	2.966	0	

<i>Transects of various lengths</i>			
Transect	Length (km)	Tortoises within 5m of centerline	
105	2.966	0	
106	2.966	0	
107	2.966	0	
108	2.966	0	
109	2.966	0	
110	2.966	0	
111	2.966	0	
112	2.966	0	
113	2.966	0	
114	2.966	0	
115	2.966	0	
116	2.989	0	
117	3.001	0	
118	3.005	0	
119	3.014	0	
120	3.022	0	
121	3.027	0	
122	3.035	0	
123	3.037	0	
124	3.044	0	
125	3.044	0	
126	3.050	0	
127	3.050	0	
128	3.054	0	
129	3.056	0	
130	3.058	0	
131	3.058	0	
132	3.058	0	
133	3.058	0	
134	3.058	0	
135	3.058	0	
136	3.058	0	
137	3.058	0	
138	3.058	0	
139	3.058	0	
140	3.058	0	
141	3.058	0	
142	3.058	0	

Table 2. USFWS Desert Tortoise Pre-Project Survey Guidance

What is the estimated number of tortoises in the action area and project footprint?

INSTRUCTIONS Use this tab when your transects were of differing lengths.

Enter the appropriate values from the survey into the yellow cells below. The number of tortoises for the action area and project footprint will be calculated.

	Action area	Project footprint
N =	3.7	0.7
Lower 95%CI =	1.08	0.21
Upper 95%CI =	12.81	2.46
Number of hatchlings (young-of-year) =	4.8	0.9
Number of tortoises < 180 mm MCL, not young-of-year =	19.4	3.7
Total action area (acres)	212	41
D (tortoises/km ²) in surveyed area =	4.352	
Average density in Recovery Unit =	2.8	
Probability that a tortoise is visible given winter rainfall (Pa in Table 1) =	0.850	
var(Pa) (from Table 1) =	0.002	
Probability of detecting a tortoise, if visible (Pd) =	0.630	
var(Pd) =	0.010	
var(n) (assume various transect lengths)		1.836
var(D)		9.226
C for N		3.437
Project/site name	High Desert Solar (Interconn. Facilities and Roads)	
Desert tortoise Recovery Unit	West Mojave	
Survey start date	April 6, 2017	
Survey end date	October 9, 2018	
Pre-survey Oct-March rainfall (mm)	41	
Total length of transects walked (km) =	86	
Number of transects walked =	145	
Number of tortoises found during surveys (n) =	2	

<i>Transects of various lengths</i>			
Transect	Length (km)	Tortoises within 5m of centerline	
1	0.095	0	
2	0.116	0	
3	0.157	0	
4	0.176	0	
5	0.183	0	
6	0.183	0	
7	0.183	0	
8	0.183	0	
9	0.183	0	
10	0.183	0	
11	0.183	0	
12	0.183	0	
13	0.183	0	
14	0.183	0	
15	0.183	0	
16	0.183	0	
17	0.183	0	
18	0.183	0	
19	0.183	0	
20	0.183	0	
21	0.183	0	
22	0.183	0	
23	0.183	0	
24	0.183	0	
25	0.183	0	
26	0.183	0	
27	0.183	0	
28	0.183	0	
29	0.183	0	
30	0.183	0	
31	0.183	0	
32	0.183	0	
33	0.183	0	
34	0.183	0	
35	0.183	0	
36	0.183	0	
37	0.183	0	
38	0.183	0	
39	0.183	0	
40	0.183	0	
41	0.183	0	
42	0.183	0	
43	0.183	0	
44	0.183	0	
45	0.183	0	
46	0.183	0	
47	0.183	0	
48	0.183	0	
49	0.183	0	
50	0.183	0	
51	0.183	0	
52	0.183	0	

<i>Transects of various lengths</i>			
Transect	Length (km)	Tortoises within 5m of centerline	
53	0.183	0	
54	0.183	0	
55	0.183	0	
56	0.183	0	
57	0.183	0	
58	0.183	0	
59	0.183	0	
60	0.183	0	
61	0.183	0	
62	0.188	0	
63	0.189	0	
64	0.197	0	
65	0.203	0	
66	0.208	0	
67	0.211	0	
68	0.213	0	
69	0.214	0	
70	0.214	0	
71	0.214	0	
72	0.214	0	
73	0.214	0	
74	0.215	0	
75	0.215	0	
76	0.215	0	
77	0.215	0	
78	0.232	0	
79	0.271	0	
80	0.308	0	
81	0.343	0	
82	0.364	0	
83	0.376	0	
84	0.409	0	
85	0.442	0	
86	0.462	0	
87	0.473	0	
88	0.496	0	
89	0.501	0	
90	0.528	0	
91	0.551	0	
92	0.556	0	
93	0.584	0	
94	0.611	0	
95	0.64	0	
96	0.673	0	
97	0.682	0	
98	0.683	0	
99	0.683	0	
100	0.69	0	
101	0.706	0	
102	0.745	0	
103	0.76	0	
104	0.766	0	

<i>Transects of various lengths</i>			
Transect	Length (km)	Tortoises within 5m of centerline	
105	0.768	0	
106	0.768	0	
107	0.771	0	
108	0.771	0	
109	0.783	0	
110	0.8	0	
111	0.815	0	
112	0.829	0	
113	0.841	0	
114	0.854	0	
115	0.866	0	
116	0.879	0	
117	0.892	0	
118	0.902	0	
119	0.913	0	
120	0.95	0	
121	0.957	0	
122	0.985	0	
123	1.232	0	
124	1.254	0	
125	1.266	0	
126	1.274	2	
127	1.393	0	
128	1.585	0	
129	1.647	0	
130	1.672	0	
131	1.695	0	
132	1.913	0	
133	1.988	0	
134	2.006	0	
135	2.018	0	
136	2.029	0	
137	2.041	0	
138	2.051	0	
139	2.061	0	
140	2.069	0	
141	2.076	0	
142	2.082	0	
143	2.086	0	
144	2.093	0	
145	2.093	0	

Recipient Site Survey Methodology

215 North 5th Street
Redlands, CA 92374
(909) 307-0046

Memo

To: Mr. Ray Bransfield, U.S. Fish and Wildlife Service
Ms. Wendy Campbell, California Department of Fish and Wildlife

CC: Mr. Dennis Corn, HDSI, Inc.
Mr. Jon Boyer, HDSI, Inc.
Ms. Jennifer Guigliano, AECOM
Mr. Freddie Olmos, ECORP Consulting, Inc.

From: Ms. Kristen Wasz, ECORP Consulting, Inc.

Date: May 13, 2019

Re: Proposed Desert Tortoise Survey Methodology for the High Desert Solar Project
Translocation Recipient Site near Kramer Junction, San Bernardino County

The purpose of this memorandum is to provide the U.S. Fish and Wildlife Service (Service) and the California Department of Fish and Wildlife (Department) with details regarding a proposed survey methodology for the focused desert tortoise survey that is to be conducted at the proposed translocation Recipient Site located near Kramer Junction, San Bernardino County, in support of the High Desert Solar Project (project). This document was prepared to outline the proposed survey methodology for the Recipient Site in order to identify suitable desert tortoise deposition locations.

A Recipient Site proposed to receive desert tortoises translocated from the project site was identified during pre-application meetings with the Service and Department. The Recipient Site is located south of State Route 58 and east of U.S. 395 near the community of Kramer Junction, San Bernardino County, in the Mojave Desert, and within designated critical habitat for desert tortoise (the Fremont-Kramer Critical Habitat Unit [FKCH]) and the Fremont-Kramer Area of Critical Environmental Concern (ACEC), as designated by the Bureau of Land Management (BLM). It comprises four square miles as depicted on the Kramer Hills United States Geological Survey (USGS) 7.5-minute topographical quadrangle: Sections 6, 7, and 8 of Township 9 North, Range 5 West and Section 12 of Township 9 North, Range 6 West. Two square miles immediately northwest and northeast of the Recipient Site are known as the Cuddeback-Kramer Preserve (Preserve), located in Sections 1 and 5, and were used as mitigation for a previous project. Translocation activities will not be conducted in these Sections. The Recipient Site lands are

owned by the federal government and managed by the Bureau of Land Management (BLM). Additional recipient sites located on private land may be identified as alternative locations for approval by the USFWS and CDFW.

Prior to depositing desert tortoises, a survey of the Recipient Site will be necessary to determine current desert tortoise presence and the locations of occupied and suitable burrows. The anticipated number of tortoises needing to be translocated from the project site is relatively low (see Attachment 1) and the amount of available desert tortoise data for the Recipient Site and the immediately surrounding areas is considerable (see Attachment 2). The proposed survey methodology below takes these two factors into consideration.

Detailed Habitat Assessment of the Recipient Site

A desktop analysis of available data and reports (described in Attachment 2) will be performed to identify areas within the Recipient Site that may be suitable for translocation activities. These areas will be marked on a field survey map and will be classified as high, moderate, and low probability areas for translocation activities.

Following the desktop analysis of available data and identification of high, moderate, and low probability areas for translocation activities, a detailed habitat assessment will be conducted at the Recipient Site. The habitat assessment will be conducted by biologists who are not only proficient in conducting surveys for desert tortoise but also experienced with the habitat requirements and ecology of the species. During the habitat assessment, the biologists will walk throughout the Recipient Site and drive existing dirt roads (if present) to document vegetation communities and other habitat characteristics that are conducive to desert tortoise presence. Habitat characteristics conducive to desert tortoise presence that may be qualitatively assessed include, but are not limited to, topography, soils, available forage plants, plant species diversity and cover (native and nonnative), and perennial cover and density. A focused effort will be made to assess the presence of washes and dense vegetative cover, which are important considerations for identifying good release sites (pers comm, Ray Bransfield). Disturbances, including trash dumping or off-highway vehicle (OHV) use, and proximity to frequently used roads and/or anthropogenic features will also be documented. Special attention will be paid to the areas that were identified as high, moderate, and low probability areas for translocation activities during the desktop analysis of available data. If desert tortoises and their sign are incidentally observed during the habitat assessment, the locations will be recorded using hand-held global positioning system (GPS) units.

Using the results of the assessment, biologists will create a detailed habitat assessment map that will identify any differences in vegetation or habitat characteristics within the Recipient Site that may indicate certain areas are more suitable for desert tortoise translocation than others. Biologists will then identify an area within the Recipient Site of up to two square miles, or 1,280 acres in size, that will serve as the area proposed for receiving desert tortoises translocated from the project. This area will be referred to as the Recipient Area. To the greatest extent practicable,

the Recipient Area will exhibit high quality desert tortoise habitat with little to no evidence of human disturbance and will be located away from frequently used roads or structures.

Focused Desert Tortoise Survey

A protocol-level survey will be conducted within the two-square-mile (1,280-acre) Recipient Area that was identified during the detailed habitat assessment. The survey will be led by a USFWS-Authorized Biologist who will be assisted by biologists who are experienced with surveying for and identifying desert tortoise and their sign. The purpose of the survey will be to identify and map locations of live desert tortoises and occupied burrows as well as unoccupied burrows (i.e., no desert tortoise sign present at the time of the survey but of suitable size and shape for desert tortoise use) and potential locations for depositing translocated desert tortoises.

The Recipient Area will be surveyed for desert tortoises using the recommended methodology in the Service's *Preparing for Any Action that May Occur within the Range of the Mojave Desert Tortoise* (USFWS 2018a) or the most current survey methodology at the time the surveys will be conducted. Biologists will systematically walk transect lines throughout the survey area at 10-meter spacing to provide 100-percent coverage. The survey will be conducted in the spring or the fall, during the desert tortoise activity period identified in USFWS 2018a, to increase the probability of detecting live individuals. Live tortoises, carcasses, occupied burrows and shelters, scat, tracks, and any other sign of desert tortoise will be documented on data sheets and using a GPS unit. Detailed notes on habitat characteristics known to increase desert tortoise survivorship and decrease predator detection, including presence of washes, vegetative cover, and substrate texture (i.e., size and prevalence of rocks), will be documented as well. Biologists will also note any unoccupied desert tortoise burrows or shelters that appear to be suitable for translocation activities. Burrow aspect, depth, layout (i.e., straight vs curved inside), and any other important characteristics will also be documented in case these metrics are found to be necessary during the translocation effort. Live tortoises encountered during the survey will be visually assessed for obvious signs of illness using binoculars (i.e., the animals will not be handled during the Recipient Area survey).

Data collected during the survey will be post-processed using geographic information systems (GIS) software. The locations of live tortoises, occupied burrows/shelters, unoccupied burrows/shelters, and other habitat characteristics (e.g., washes) will be displayed with the vegetation communities and results from the detailed habitat assessment on an aerial background of the Recipient Area. Biologists will use this information to identify specific recipient locations that will be used during the translocation effort. Proposed recipient locations will be those that contain unoccupied burrows, suitable desert tortoise habitat, and are located away from frequently used roads and structures. Note that a higher number of proposed recipient locations than the number of tortoises expecting to be translocated will be identified so there will be an ample amount of backup recipient locations available.

If, during the translocation activities, more desert tortoises needing to be translocated are found on the project than anticipated, then a larger Recipient Area may need to be identified. If this is the case, the lands within the four-square-mile Recipient Site that were not originally included in the two-square-mile Recipient Area will be considered for translocation activities for the additional desert tortoises. If necessary, the additional areas will be surveyed using the protocol described above.

The results of the detailed habitat assessment of the Recipient Site, protocol-level survey of the Recipient Area, and the proposed recipient locations will be documented in a report that will be submitted to the Service and Department for review and comment.

References from Text and Attachments

Author to be Determined (TBD). 2015. Long-Term Management Plan for the Cuddeback-Kramer Preserve. Dated July 7, 2015.

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ECORP Consulting, Inc. 2018. Comprehensive Biological Technical Report for the High Desert Solar Project: 2017-2018 Survey Results. San Bernardino County, California. Prepared for HDSI, LLC.

U.S. Fish and Wildlife Service (USFWS). 2016. 2001 – 2016 Range-Wide Monitoring Geographic Information Systems (GIS) Data.

U.S. Fish and Wildlife Service (USFWS). 2018a. Preparing for Any Action That May Occur Within the Range of the Mojave Desert Tortoise (*Gopherus agassizii*).

U.S. Fish and Wildlife Service (USFWS). 2018b. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2017 Annual Reporting. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada.

Attachment 1. Project Desert Tortoise Density Estimates

Surveys rarely detect every desert tortoise in a given area, in large part because they spend so much of their lives underground. For this reason, the number of desert tortoises within the Solar Field Area has been estimated in two ways. First, the equation contained in the USFWS’s 2018 survey protocol was used; this equation uses the results of surveys and an estimation of the percentage of desert tortoises that were likely to be above ground at the time of the survey (which is developed through the USFWS’s range-wide sampling program) to produce a point estimate and 95% confidence intervals. Second, an estimation of density was made by averaging the density of desert tortoises from the most recent 3 years of range-wide sampling in the Fremont-Kramer Critical Habitat Unit for which data were available (2014, 2015, and 2017).

Additionally, in both cases, the USFWS only considers desert tortoises greater than 180 mm in its equations because animals smaller than that are more difficult to detect. To account for these smaller animals, the USFWS recommended we base our estimate on Turner et al. 1987, who found that desert tortoises smaller than 180 comprise 87 percent of the total number of animals.

Estimates using the first option were calculated using protocol survey results; however, surveys were conducted during two different periods due to Project boundary changes; therefore, consideration to that was made in the determination of transects and calculations of tortoise densities and confidence intervals. The results of the analyses from these two estimation approaches are provided in Table 1 below.

Table 1. Desert Tortoise Density Estimations						
	Area used km ² (acres)	>180mm MCL		<180mm MCL	Total # of tortoises	
		Point Estimate	Upper 95% CI	Point Estimate	Point estimate	Upper 95%
USFWS 2018 Equation* Results (Action Area)	3.09 km ² (764 acres)	3.2	8.28	16.8	20.0	25.08
USFWS 2018 Equation* Results (Project Footprint)	2.35 km ² (581 acres)	2.5	6.3	12.8	15.3	19.1
Average** of Fremont-Kramer Stratum of West Mojave Recovery Unit (suitable habitat in Project footprint)	2.21 km ² (547 acres)	9.81	n/a	76.92	86.73	n/a

* The USFWS 2018 Equation uses the average density of entire Recovery Unit, not individual Stratums (West Mojave RU=2.8 tortoises per km²). This is not a factor in the density calculations.

** Fremont-Kramer Stratum of the West Mojave Recovery Unit was surveyed in 2014, 2015, and 2017 (not 2016). The average density for those three years was 4.4 tortoises per km².

The areas encompassing the gen-tie line were not included in the calculations because desert tortoises too often move in and out of areas of that size to provide a valid estimate.

Attachment 2. Review and Analysis of Recipient Site Background Information

A review of available database records and literature was performed to identify desert tortoises and desert tortoise sign (e.g., burrows, scat, carcasses, tracks) that were previously documented on and in the vicinity of the Recipient Site. This review was performed to establish a threshold of the general desert tortoise population density for the region against which the Recipient Site could then be compared.

California Natural Diversity Database

A search of the Department's California Natural Diversity Database (CNDDDB) and the Biogeographic Information and Observation System (BIOS) yielded no previous records of desert tortoise observations on or adjacent to the Recipient Site (CDFW 2019). This is likely because either focused survey efforts have not yet been conducted in the area or data submitted to the Department for this area have not yet been entered into these databases. However, one record covering approximately 1,700 square miles in the West Mojave (including the Recipient Site) was found during the database review, where estimated desert tortoise densities in this area in 1977 was 20 to less than 250 individuals per square mile (Occurrence #1). In 1987, density estimates within this area suggested major declines (CDFW 2019).

Cuddeback-Kramer Preserve Documents

Two documents that were prepared for the adjacent Preserve were reviewed, including the *Long-Term Management Plan for the Cuddeback-Kramer Preserve* (Management Plan; TBD 2015) and the *Cuddeback-Kramer Preserve: 2017 Annual Report* (Annual Report; Circle Mountain Biological Consultants [CMBC] 2017). Surveys were conducted on Sites 1 and 2 of the Preserve in March 2015 by CMBC. Survey results for Site 1 identified desert tortoise presence in the form of sign (tracks, carcasses, burrows, scat), but no live tortoises were identified. Only 3.4 percent of the surface area within Site 1 was observed, with 5.6 miles of transects conducted during this survey. Site 2 was surveyed using a similar level of effort (3.2 percent of the surface area was observed, with 5.7 miles of transects surveyed). Desert tortoise presence was noted on Site 2 in the form of carcasses, burrows, and scat but no live individuals were observed. The presence of desert tortoise throughout Sites 1 and 2 was presumed; however, no density calculations were presented in the Management Plan.

A focused desert tortoise survey was performed at Site 1 in support of the 2017 Annual Report and the results indicated that two adult and one subadult tortoises were found during the survey. Density calculations based on these results that were presented in the 2017 Annual Report indicated that a total of four adult desert tortoises were present within the 602 acres (2.43 km²) surveyed for Site 1¹. This translates to approximately 1.6 desert tortoises per km². The 2017 Annual Report indicated that Site 2 will be surveyed in 2018 (CMBC 2017) and results of this survey have not yet been published.

¹ Density calculations in the 2017 Annual Report for the Preserve used 160 mm MCL to classify adult size.

Surveys conducted in support of both Preserve documents identified desert tortoise presence within the Preserve. These results indicate that desert tortoise is present within the Recipient Site, which contains contiguous habitat and similar topography as the Preserve, and likely at the similar density to what was calculated for Site 1 in 2017.

2017 Range-Wide Monitoring

Finally, a review was performed of the *Range-Wide Monitoring of the Mojave Desert Tortoise (Gopherus agassizii): 2017 Annual Reporting* (Range-Wide Monitoring Report; USFWS 2018b) to compare the estimated 2017 population density in the FKCH (the critical habitat unit where the Recipient Site is located in) with the estimated population density within the Solar Field Area. A total of 4.1 desert tortoises per km² was estimated based on the results of the range-wide monitoring surveys in 2017, which is much higher than the estimated 1.6 desert tortoises per km² that were calculated for Site 1 in the Preserve's 2017 Annual Report. The disparity in density estimates between the two documents is likely due to differences in methods of and level of effort between the surveys. Furthermore, the area surveyed for the 2017 range-wide monitoring study encompassed the entire FKCH, which was approximately 2,417 km² and covered numerous habitat types, while the survey conducted for the Preserve only encompassed 2.43 km² within one contiguous habitat type present in Site 1. Due to its proximity to the Recipient Site, desert tortoise density estimates within Site 1 are expected to be more accurate for the Recipient Site than those estimated for the entire FKCH.

2001 – 2016 Range-Wide Monitoring Geographic Information Systems Data

Geographic Information Systems (GIS) data from range-wide desert tortoise monitoring efforts conducted between 2001 and 2016 were reviewed to identify whether live desert tortoises were documented on or adjacent to the proposed Recipient Site. GIS data from the 2017 range-wide monitoring effort were not available at the time of this analysis. Several live desert tortoises were documented within and adjacent to the proposed Recipient Site between 2001 and 2015. It is unclear from the GIS data whether range-wide monitoring surveys were conducted in the vicinity of the proposed Recipient Site in 2016. Six live desert tortoises were documented within the proposed Recipient Site, only one of which measured less than 180 mm MCL. One desert tortoise measuring 60 mm MCL was documented within Site 2 of the Preserve. These data were initially used to show potential desert tortoise distribution across the proposed Recipient Site. Table 2 shows the details of the desert tortoise observations that were recorded during range-wide monitoring efforts (USFWS 2016).

Table 2. Live Desert Tortoise Observations Recorded during Range-Wide Monitoring Efforts between 2001 and 2015					
Tortoise ID Number	Date Recorded	Within Proposed Recipient Site?	MCL greater than 180 mm?	Sex	Tag Number
1	4/7/2004	Yes	Yes, 230	Male	000FK2004-6
2	4/7/2004	No, located within Site 2 of Preserve	No, 60	Unknown	000FK2004-5
3	4/26/2010	Yes	Yes, 242	Male	FW7396
4	4/13/2015	Yes	Yes (not specified)	Unknown	
5	4/26/2001	Yes	Yes, 239	male	
6	4/26/2001	Yes	No, 172	female	
7	5/2/2001	Yes	Yes, 260	male	
8	5/15/2005	No	No, 143	Unknown	1104
9	4/13/2015	No	Yes, 255	Male	FW7886
10	4/13/2015	No	Yes, 233	Male	FW7951
11	4/26/2012	No	Yes, 274	Male	FW7919
12	5/15/2005	No	Yes, 191	Male	2514
13	5/1/2001	No	Unknown	Unknown	
14	4/7/2004	No	Yes, 190	Male	000FK2004-2
15	4/7/2004	No	No, 170	Unknown	000FK2004-3
16	4/7/2004	No	Yes, 240	Male	000FK2004-4
17	4/25/2014	No	No (not specified)	Unknown	
18	4/25/2014	No	Yes, 250	Male	FW7949
19	4/18/2014	No	Yes, 214	Female	FW7947