



**California Department of Fish and Wildlife**  
**Central Region**  
**1234 EAST SHAW AVENUE**  
**FRESNO, CALIFORNIA 93710**  
 California Endangered Species Act  
 Incidental Take Permit No. 2081-2024-038-04

**Aratina 2 Solar Project**  
**Major Amendment No. 1**

**I. Authority:**

This California Endangered Species Act (CESA) incidental take permit (ITP) is issued by the California Department of Fish and Wildlife (CDFW) pursuant to Fish and Game Code section 2081, subdivisions (b) and (c), and California Code of Regulations, title 14, section 783.0 et seq. CESA prohibits the take<sup>1</sup> of any species of wildlife designated by the California Fish and Game Commission as an endangered, threatened, or candidate species.<sup>2</sup> However, CDFW may authorize the take of any such species by permit pursuant to the conditions set forth in Fish and Game Code section 2081, subdivisions (b) and (c). (See Cal. Code Regs., tit. 14, § 783.4).

<b>Permittee:</b>	<b>45MG 8me LLC</b>
<b>Principal Officer:</b>	<b>Venkatesh Inti, Chief Development Officer</b> <b>vinti@avantus.com</b> <b>(430) 329-7154</b>
<b>Contact Person:</b>	<b>Wendy Greene, Director, Permit Compliance</b> <b>(209) 914-3553</b> <b>wgreene@avantus.com</b>
<b>Mailing Address:</b>	<b>Avantus</b> <b>655 West Broadway, Suite 1550</b> <b>San Diego, California 92101</b>

**II. Amended ITP<sup>3</sup> Background:**

On November 18, 2025, CDFW issued ITP No. 2081-2024-038-04 to 45MG 8me LLC, authorizing take of desert tortoise (*Gopherus agassizii*), Mohave ground squirrel (*Xerospermophilus mohavensis*), and western burrowing owl (*Athene cunicularia hypugaea*) (Covered Species) for the Aratina 2 Solar Project in Kern County, California (Project). The Project as described in the ITP as issued by CDFW included construction, operation, and maintenance of a 530-megawatt photovoltaic solar power-

<sup>1</sup>Pursuant to Fish and Game Code section 86, “‘take’ means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” (See also *Environmental Protection Information Center v. California Department of Forestry and Fire Protection* (2008) 44 Cal.4th 459, 507 [for purposes of incidental take permitting under Fish and Game Code section 2081, subdivision (b), “‘take’ ... means to catch, capture or kill”].)

<sup>2</sup>The definition of an endangered, threatened, and candidate species for purposes of CESA are found in Fish and Game Code sections 2062, 2067, and 2068, respectively.

<sup>3</sup>When this incidental take permit and attachments refer to the “ITP”, it means the “Amended ITP” unless the context dictates otherwise.

generating facility and up to 113 MW of battery energy storage. In issuing the ITP, CDFW found, among other things, that compliance with the Conditions of Approval of the ITP would fully mitigate impacts to the Covered Species and would not jeopardize the continued existence of the Covered Species.

Take of western Joshua tree (*Yucca brevifolia*) for the Project was previously authorized through emergency regulations adopted under Fish and Game Code section 2084 and CCR Title 14, section 749.10. Projects authorized for western Joshua tree take are limited *solely* to the take of the individuals identified in the Project census. However, the emergency regulations do not include take authorization for newly germinated or clonal western Joshua tree individuals. On November 4, 2025, CDFW received an amendment request from the Permittee requesting to add all western Joshua tree (including seedbank, dead, newly germinated, and/or resprouted individuals) as a Covered Species to the ITP. On December 19, 2025, Permittee requested to add Crotch's bumble bee (*Bombus crotchii*) as a Covered Species to the ITP.

CDFW now reissues this ITP (the Amended ITP). The Amended ITP includes all of the operative provisions as of the reissue date of this Amended ITP. Attachment 6 to this Amended ITP shows the specific red-line changes made to the ITP as a result of this major amendment (Amendment No. 1).

### **III. Effective Date and Expiration Date of this ITP:**

This ITP is effective as of the date signed by CDFW below. Unless renewed by CDFW, this ITP and its authorization to take the Covered Species shall expire on **December 31, 2061**.

Notwithstanding the expiration date on the take authorization provided by this ITP, Permittee's obligations pursuant to this ITP do not end until CDFW accepts as complete as required by Condition of Approval Final Mitigation Report of this ITP.

### **IV. Project Location:**

The Aratina 2 Solar Project (Project) is generally located within an unincorporated area in the southeastern corner of Kern County, south and west of the unincorporated community of Boron (see FIGURE 1, Regional Vicinity). The Project is located on the Boron and Lehman Ridge USGS 1:24000 quadrangles within Township 10N and 11N, Range 8W and 7W –Sections 2,33,34, and 45.

### **V. Project Description:**

The Project includes the construction, operation, and maintenance of a photovoltaic (PV) solar facility and associated infrastructure to generate up to 530 megawatts (MW) of renewable electrical energy and up to 113 MW of battery energy storage. The Project consists of three assessor's parcels totaling approximately 1,059 acres of privately-owned land. Electrical collector lines will be utilized to connect remote portions of the photovoltaic field to the Project substation. The "Project Area" is defined as the sum of total potential area could be utilized to develop the photovoltaic energy facility, gen-tie lines, and collector lines (FIGURE 2).

The Project would be supported by an up to 230-kilovolt (kV) gen-tie overhead electrical transmission line originating from one or more on-site substations, running east through the Edwards Air Force Base (AFB) utility corridor and terminating at the Kramer Substation in San Bernadino County. The Project's permanent facilities would include service roads, PV panels supported on solar trackers, a power collection system, communication cables, overhead transmission lines, electrical switchyards, substations, a battery energy storage system (BESS), stormwater retention basins, weather stations, and operations and maintenance facilities including water storage and security fence.

Construction equipment that may be used during Project activities includes earthwork scrapers, excavators, dozers, water trucks, paddlewheels, haul vehicles, graders, and other similar heavy equipment. Construction traffic would access the Project from Gephart Road, Borax Road, Boron Avenue, and/or 20 Mule Team Road. Due to the size of the Project, parking for all employee vehicles could be accommodated on-site if a shuttle service is not provided. Construction worker parking areas would be located within the Project site.

Initial construction is expected to occur between 6:00 am and 5:00 pm, Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Nighttime construction activities may include all activities described above associated with construction, with the exception of the use of pneumatic tools for driving solar foundation support posts, the use of any auger drill rigs, and scrapers. Nighttime construction activities may also include refueling equipment, staging material for the following day's construction activities, quality assurance/control, security patrols, and commissioning. All nightwork to occur outside the exclusion fencing will be coordinated in advance with written approval by CDFW.

Construction materials and supplies would be delivered by truck. All construction materials and supplies would be stored on-site at the Project site and within proximity to the area where work would be undertaken. For work along the gen-tie routes, staging/laydown areas within the affected easements or rights-of-way will be available during the construction phase and off-site lands will not be affected. Truck deliveries would normally occur during daylight hours. However, there would be offloading and/or transporting on weekends and during evening hours.

Construction of the Project will occur over approximately 18 months. Operation and maintenance (O&M) is anticipated to continue for over 35 years after construction is complete. Project activities are presented below as initial construction and ongoing O&M following construction.

### Construction

Construction of the Project includes the following activities:

- Geotechnical Drilling. Subsurface drilling for soil borings, excavation of test pits, and field resistivity testing will be conducted as needed prior to construction to inform final design specifications. Test pits excavations will be 2 feet wide by 7 feet long by 8 feet deep. Approximately 15 gallons of subsurface material will be collected and the test pits immediately backfilled with native soil.
- Site Preparation, Grading, and Earthwork. The Project site will be cleared and graded as needed to allow for the installation of the solar arrays, energy storage facility, related infrastructure, access driveways, and temporary construction staging areas. Earthmoving activities will be limited to the construction of the internal access roads, solar panel arrays, substations, BESS, water storage tank and any associated water treatment systems, gentle lines, and for storm water protection or storage (detention) facilities. Water trucks will be used for dust suppression, soil compaction, and grading. Stabilized construction entrances and exits will also be installed at the project entrance driveways to ensure that potential for tracking of sediment onto adjacent public roadways is minimized.
- Site Access, Security, and Security Fencing. The perimeter of each the Project site will be enclosed within a chain link security fence measuring up to 8 feet in height (from finished grade). Additionally, security measures such as barbed wire, controlled access points, security and instruction alarms, security camera systems, sensor lights, and/or security guard vehicle patrols to deter trespassing and/or unauthorized activities will be included. Low voltage fencing, as a security measure, will not be used.

No improvements to existing off-site roadways will be required to provide construction (or permanent) access to the Project site. Controlled access gates will be maintained at the main entrances to each of the Project site. Project access would be provided to off-site emergency response teams (i.e., fire department) that would respond in the event of an “after-hours” emergency. Enclosure gates would be manually operated with a key provided in an identified key box location.

For each of the Project site, interior roadway alignments will be finalized once placement of the solar panels is determined.

- Panel Installation. The Project will use PV panels or modules [including but not limited to concentrated photovoltaic technology (CPV) or bi-facial technology, which have similar rectangular shapes, sizes and thickness] on mounting frameworks to convert sunlight directly into electricity. The solar array fields would be arranged in groups called “blocks” with inverter stations generally located centrally within the blocks. Blocks would produce direct electrical current (DC), which is converted to alternating electrical current (AC) at the inverter stations.

Maximum panel height will be 20 feet, depending on the mounting system used and County building codes. Foundations for mounting structures will be installed up to 10 feet deep, depending on the structure, soil conditions, and wind loads, and may be encased in concrete or utilize small concrete footings.

- Battery Energy Storage System. The Project Area will include one BESS, located at or near a substation/switchyard (on-site or shared) and/or at the inverter stations. The BESS will be up to 113 MW-AC in capacity and encompass up to 25 acres in total area. The BESS modules are approximately 40 feet in length by 8 feet in width by 8 feet in height and will be housed on pad- or post-mounted, stackable metal structures, but may also be housed in a dedicated building. The maximum height of a dedicated structure will not exceed 25 feet.
- Output from the inverter stations will be transferred via electrical conduits and electrical conductor wires to up to three substation(s) or switchyard(s) (collectively referred to as a “substation”). The Project will build up to three substations. Each substation may contain several components, including auxiliary power transformers, distribution cabinets, revenue metering systems, microwave transmission towers, and voltage switch gear. Each substation would occupy an area of approximately 200 feet by 200 feet, secured separately by an additional chain-link fence, and sited to locate along the perimeter of the Project.

Substations will generally include a small control building (roughly 500 square feet) standing approximately 10 feet tall constructed of either prefabricated concrete or steel housing with rooms for the voltage switch gear and the metering equipment, a room for the station supply transformer, and a separate control technology room in which the main computer, the intrusion detection system, and the main distribution equipment are housed. Components of this building (e.g., control technology room and intrusion detection system) may alternatively be located at the O&M facilities.

- Operations and Maintenance Facilities. O&M buildings of approximately 40 feet by 80 feet in size, and approximately 15 feet in height, with associated on-site parking (unpaved) will be constructed. The O&M buildings may be co-located with the substations and would be steel framed, with metal siding and roof panels. The O&M buildings will include an office, repair building/parts storage room(s), a control room, restroom, and septic tank and leach field system. Any designated O&M building on the plans not built will be developed with solar panels.
- Collection, Inverter, and Transformer Systems. PV energy will be delivered via cables to inverter stations, which will be located generally near the center of each block. Inverter stations will be comprised of one or more inverter modules with a rated power of up to

5 MW each, a unit transformer, and voltage switch gear. The unit transformer and voltage switch gear will be housed in steel enclosures, while the inverter module(s) will be housed in cabinets. The inverter station may lie within an enclosed or canopied metal structure, on a skid or concrete mounted pad. Additionally, motion-sensitive cameras may be installed within the solar fields in proximity to the inverters for purposes of security.

- Gen-Tie Transmission Line. Power generated by the Project would be delivered from the on-site substations to the existing Kramer Substation by up to 230kV overhead electrical transmission lines. A combination of monopoles, dead end structures, and h-frames will be used for the transmission line, with concrete foundations at each structure of up to 18 feet in depth. Fiber cable/communication line will be installed within a 6-inch trench within the access road that runs parallel with the transmission line. The trench will be mechanically excavated and backfilled with native material, per design specifications. Construction of the 6.5-mile gen-tie line will occur throughout an existing 150-foot wide Edwards Air Force Base utility corridor.
- Meteorological Station. A solar meteorological station, approximately 10 feet by 2 feet in size, will be located on the Project site and will include solar energy (irradiance) meters, in addition to an air temperature sensor and wind anemometer. The maximum height of this equipment would be up to 20 feet.

Project Site Lighting. Night lighting will be installed at the access gates, substations, O&M buildings, and inverters to allow for access and emergency maintenance. Night lighting would provide O&M personnel with illumination for both normal and emergency operating conditions. The minimum illumination needed to ensure worker safety and security on-site would be provided. All night lighting installed would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent areas.

- Water Storage Tanks. Each phase would have up to two above-ground water storage tanks with a total capacity of up to 50,000 gallons. These tanks may be placed near the O&M buildings. Each tank may be up to 30 feet in diameter.
- Stormwater Retention Basins. Up to 30 earthen stormwater retention basins of varying shapes and sizes will be installed as part of the Project, as determined by final engineering requirements. However, slopes will be 3:1 or flatter, constructed from the excavated basin material and will be compacted and covered with an erosion control blanket. Basins will collect stormwater runoff and will typically be placed between the perimeter road and the security fence and excavated to support a 1-foot (above ground surface) maximum water surface elevation. All stormwater retention basin berms will be tested and verified by the geotechnical consultant.

### Operations and Maintenance

Ongoing operations and maintenance activities following construction of the Project includes the following:

- Facility Maintenance. Facility maintenance may include minor ground disturbing activities and/or the replacement or repair of inverters, wiring, PV modules, or other Project infrastructure. Road repair will occur including the placement or replacement of gravel, erosion repair, and reconstruction of Arizona crossings. Up to 20 full-time O&M personnel may work at the site at a given time, driving pick-up trucks or operating specialized maintenance equipment. Routine line patrols and insulator washing, pole and tower repair or replacement, insulator replacement, cross arm replacement, anchor and guy replacement, restringing corridors, and road maintenance may occur along the transmission line.
- Solar Panel Washing. PV module washing will be required up to four times per year and is expected to take 10 days per washing activity. The activity will use up to five staff and will use approximately four acre-feet of water per year. Water will come from an on-site water well or will be trucked in from an offsite water source. This water may also be used to wash equipment or other non-sanitary uses.
- Monitoring Electricity Generation. Personnel will be visiting the site and driving along established access roads for diagnostics testing and site inspection.
- Providing Site Security. Security guard vehicle patrols will occur on a regular basis.
- Vegetation Maintenance. Vegetation maintenance will occur as needed and will include the use of string trimmers, mowing, hand pulling of weeds, and herbicide use.
- Hazardous Materials Management. The following materials are expected to be used during operations and maintenance of the Project: insulating oil, lubricating oil, various solvents and detergents, and gasoline or diesel fuels. Hazardous wastes will be managed, handled, stored, and transported in accordance with applicable local and State regulations. Spill prevention and containment for construction and operation of the Project will adhere to the Environmental Protection Agency's guidance on Spill Prevention Control and Countermeasures.

**VI. Covered Species Subject to Take Authorization Provided by this ITP:**

This ITP covers the following species:

<u>Name</u>	<u>CESA Status</u> <sup>4</sup>
1. Desert tortoise ( <i>Gopherus agassizii</i> )	Endangered <sup>5</sup>
2. Mohave ground squirrel ( <i>Xermospermophilus mohavensis</i> )	Threatened <sup>6</sup>
3. Western burrowing owl ( <i>Athene cunicularia hypugaea</i> )	Candidate <sup>7</sup>
4. Crotch’s bumble bee ( <i>Bombus crotchii</i> );	Candidate <sup>7</sup>
5. Western Joshua tree ( <i>Yucca brevifolia</i> )	Candidate <sup>7</sup>

These species and only these species are the “Covered Species” for the purposes of this ITP.

**VII. Impacts of the Taking on Covered Species:**

Project activities and their resulting impacts are expected to result in the incidental take of individuals of the Covered Species, including the seedbank of western Joshua tree. The initial construction and O&M activities described above expected to result in incidental take of individuals of the Covered Species include clearing, grubbing, and grading; removing vegetation; leveling (cut/fill); backfilling and compacting of soil; pouring concrete; operating motorized heavy equipment; drilling, pile driving, and/or vibrating piles or posts; construction and use of temporary staging and storage areas; grading of new access and perimeter roads; trenching and excavation; building of O&M buildings, substations, BESS, inverters, and transformers; installing solar panel support and mount systems; installing gen-tie and collector lines and poles; transporting construction materials and other Project-related traffic; operating vehicles and equipment during O&M; repairing or replacing cables, piles, fencing, or other infrastructure; managing vegetation; washing solar panels; and other Project-related activities described in the Project Description section of this ITP (Covered Activities).

Incidental take of individuals of the Covered Species in the form of mortality (“kill”) may occur as a result of Covered Activities such as vehicle/equipment strikes due to increased Project-related traffic for site preparation and hauling of materials and spoils resulting of the loss of individuals including young, overwintering queens, fledglings, or eggs due to abandonment or destruction of burrows/nests/hibernaculum during grubbing, grading, or construction that occur in close proximity to burrows/nests during the Covered Species reproductive/nesting season; crushing, suffocation, or burying of individuals or disturbance to seedbank by heavy equipment, soil, or materials; collapse or excavation of burrows; entombment of individuals or seedbank during earthwork; nest burrow collapse associated with vehicle or equipment parking or storage, vegetation removal, grading, excavating; entrapment and desiccation within trenches, open pipes, and uncovered excavations; removal and disposal of individual trees, seedlings, or seedbank; crushing or damaging germinating

<sup>4</sup> Under CESA, a species may be on the list of endangered species, the list of threatened species, or the list of candidate species.

<sup>5</sup>See Cal. Code Regs. tit. 14 § 670.5, subd. (a)(4)(E).

<sup>6</sup>See *Id.*, subd. (b)(6)(A).

<sup>7</sup>The species status may change following the decision of the Fish and Game Commission to designate the species as threatened or endangered but if there is such a designation, the species will remain a Covered Species.

seeds or emergent seedlings by heavy equipment or the storage of soil or materials; creating fugitive dust that may hinder photosynthesis; and noise and ground vibration that could cause individuals to leave or flush from burrows at inappropriate times increasing stress, overheating, and exposure to predation and subsequent loss of eggs, young, or fledglings due to nest abandonment.

Incidental take of individuals of the Covered Species may also occur from the Covered Activities in the form of pursue, catch, capture, or attempt to do so with entrapment of fallen individuals into trenches or excavations, with corralling by installation of temporary species exclusion fencing, with live trapping and capture and relocation, when eggs or individuals are salvaged after parental nest abandonment has occurred, or implementation of other take minimization measures required by this ITP, or with burrow excavation, and with relocation or translocation of Covered Species. These direct impact activities may reduce the viability of eggs and/or survival of Covered Species or affect migrating individuals. These direct impacts may also affect the fitness of young raised near the Project due to reduced or disrupted foraging opportunities that reduce the ability of parents to acquire food for their dependent young. Ground-disturbing activities may result in a temporary reduction of prey species or vegetative forage for Covered Species and have impacts on nesting success and successful raising of young.

Indirect impacts to the Covered Species from the Covered Activities include noise and vibration, fugitive dust, and increased human activity. Noise and vibration could cause physiological and/or behavioral disruptions that may interfere with breeding and foraging, result in nest abandonment, and a loss of fitness in dependent young resulting from interruptions to brooding and/or feeding schedules, due to impaired or interrupted foraging and nesting opportunities and because forage acquired further away from the nest is more energetically expensive for parents or worker bumble bees acquiring food for dependent young.

The areas where authorized take of the Covered Species is expected to occur include the solar arrays, inverters, substations, collector lines, access road systems, BESS, gen-tie poles, and all constructed facilities within the solar array areas, the collector line corridors, and the generation tie-line corridors (collectively, the Project Area).

Incidental take of the Covered Species is expected throughout the entire 1,059-acre Project Area, all of which will be a permanent loss of habitat for the Covered Species. In addition to habitat impacts, specifically for Crotch's bumble bee (CBB), up to two active nests, and no more than 30 individuals outside of the nest are contemplated to be taken over the duration of this ITP. Specifically for western Joshua tree (WJT), take of more than 50 individuals over the duration of this ITP may require relocation or translocation. Impacts of the authorized taking also include adverse impacts to the Covered Species related to temporal losses, increased habitat fragmentation and edge effects, and the Project's incremental contribution to cumulative impacts (indirect impacts). Short-term and long-term indirect impacts include: stress resulting from noise and vibrations; increased exposure or stress from disorientation; stress resulting from capture, and relocation; introduction or spread of invasive

species resulting in lower nutritional value for Covered Species; long-term effects due to increased pollution, displacement from preferred habitat, increased competition for food and space, and increased vulnerability to predation and disease; on-going O&M-related noise and lighting; fugitive dust; changes in drainage patterns that favor different vegetative growth; loss of burrowing habitat used for shelter and reproduction; competition between displaced individuals into unsuitable areas or areas at carrying capacity interfering with denning, foraging, and reproduction; mortality of Covered Species obligate pollinating Yucca moth (*Tegeticula synthetica*) during its dormancy within the soil or in its flight phase leading to compromised sexual recruitment of new individual Covered Species in the Project Area vicinity; suppressed activity of the Yucca moth due to artificial lighting at night during construction or during the long-term operation of the facility; mortality or disruption to the behavior of seed dispersing rodents leading to compromised germination success; loss of nurse plants compromising seedling emergence and survival; elimination or reduction of photosynthesis and evapotranspiration efficiency due to accumulated fugitive dust from Covered Activities; destruction of macro- and micro-vegetation elements; introduction and invasion of non-native plant species due to disturbance of habitat conditions that leads to invasive species outcompeting native annual plant community establishment; invasive species colonization resulting in increased anthropogenic wildfire risk with increased frequency and intensity for adjacent habitat; increased erosion associated impacts to individuals located near widened roadways or hardscapes due to concentrated runoff; compacting of soils resulting in decreased seedling survival and infiltration rates; stress or damage to individuals; long-term effects due to loss of suitable habitat and decline of the local population; severe soil impacts such as leaving subsoil on the surface and disturbance to stabilized soil crusts and biotic components leading to reduced germination due to loss of organic material and soil nutrients, and moisture retention.

#### **VIII. Incidental Take Authorization of Covered Species:**

This ITP authorizes incidental take of the Covered Species and only the Covered Species. With respect to incidental take of the Covered Species, CDFW authorizes the Permittee, its employees, contractors, and agents to take Covered Species incidentally in carrying out the Covered Activities, subject to the limitations described in this section and the Conditions of Approval identified below. This ITP does not authorize take of Covered Species from activities outside the scope of the Covered Activities, take of Covered Species outside of the Project Area, take of Covered Species resulting from violation of this ITP, or intentional take of Covered Species except for capture and relocation of Covered Species as authorized by this ITP.

#### **IX. Conditions of Approval:**

Unless specified otherwise, the following measures apply to all Covered Activities within the Project Area, including areas used for vehicular ingress and egress, staging and parking, and noise and vibration generating activities that may/will cause take. CDFW's issuance of this ITP and Permittee's authorization to take the Covered Species are subject to Permittee's compliance with and implementation of the following Conditions of Approval:

1. **Legal Compliance:** Permittee shall comply with all applicable federal, State, and local laws in existence on the effective date of this ITP or adopted thereafter.
2. **CEQA Compliance:** Permittee shall implement and adhere to the mitigation measures related to the Covered Species in the Biological Resources section of the Environmental Impact Report (SCH No.: 2021020513 certified by Kern County on 10/12/2021 as lead agency for the Project pursuant to the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.).
3. **LSA Agreement Compliance:** Permittee shall implement and adhere to the mitigation measures and conditions related to the Covered Species in the Lake and Streambed Alteration Agreement (LSAA) (Notification No. EPIMS-KER-53288-R4 for the Project executed by CDFW pursuant to Fish and Game Code section 1600 et seq.).
4. **ITP Time Frame Compliance:** Permittee shall fully implement and adhere to the conditions of this ITP within the time frames set forth below and as set forth in the Mitigation Monitoring and Reporting Program (MMRP), which is included as ATTACHMENT 1 to this ITP.

**5. General Provisions:**

**5.1. Designated Representative.** Before starting Covered Activities, Permittee shall designate a representative (Designated Representative) responsible for communications with CDFW and overseeing compliance with this ITP. Permittee shall notify CDFW in writing before starting Covered Activities of the Designated Representative's name, business address, and contact information, and shall notify CDFW in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.

**5.2. Designated Biologist(s) and Designated Monitor(s).** Permittee shall submit to CDFW in writing the name, qualifications, business address, and contact information of the Designated Biologist(s) and Biological Designated Monitor(s) using the Biologist Resume Form (ATTACHMENT 2) or another format containing the same information for CDFW review and written approval before starting Covered Activities. The Designated Monitor(s) may assist the Designated Biologist(s) in compliance monitoring under the direct supervision of the Designated Biologist(s).

Permittee shall ensure that the Designated Biologist(s) are knowledgeable and experienced in the biology, natural history, life cycle, flowering period, types of reproduction and associated components such as the pollinating Yucca moth, seed caching rodents, and rhizomal growth, trapping, handling, and relocating or other exclusion techniques, as permitted, and the excavation of burrows, as applicable to each of the Covered Species. Permittee shall ensure that the Designated Monitor(s) are

knowledgeable and experienced in the biology, natural history, and construction monitoring of the Covered Species. The Designated Biologist(s) and Designated Monitor(s) shall be responsible for monitoring Covered Activities to help minimize and fully mitigate or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain CDFW approval of the Designated Biologist(s) and Designated Monitor(s) in writing before starting Covered Activities and shall also obtain approval in advance, in writing, if the Designated Biologist(s) or Designated Monitor(s) must be changed.

- 5.3. Designated Biologist(s) and Designated Monitor(s) Authority.** To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist(s) or Designated Monitor(s) shall immediately stop any activity that does not comply with this ITP and/or order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species. Permittee shall provide unfettered access to the Project Area and otherwise facilitate the Designated Biologist(s) and Designated Monitor(s) in the performance of their duties. If the Designated Biologist(s) or Designated Monitor(s) is/are unable to comply with the ITP, then they shall notify the CDFW Representative immediately. Permittee shall not enter into any agreement or contract of any kind, including but not limited to non-disclosure agreements and confidentiality agreements, with its contractors and/or the Designated Biologist(s) or Designated Monitor(s) that prohibit or impede open communication with CDFW, including but not limited to providing CDFW staff with the results of any surveys, reports, or studies or notifying CDFW of any non-compliance or take. Failure to notify CDFW of any non-compliance or take or injury of a Covered Species as a result of such agreement or contract may result in CDFW taking actions to prevent or remedy a violation of this ITP.
- 5.4. Education Program.** Permittee shall conduct an education program for all persons employed or otherwise working in the Project Area before starting Covered Activities. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status pursuant to CESA including legal protection, recovery efforts, penalties for violations, and Project-specific protective measures described in this ITP.

Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Project Area. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Project Area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be

repeated at least once annually for long-term and/or permanent employees that will be conducting work in the Project Area.

- 5.5. Construction Monitoring Documentation.** The Designated Biologist(s) and Designated Monitor(s) shall maintain construction-monitoring documentation on-site in either hard copy or digital format throughout the construction period, which shall include a copy of this ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring documentation is available for review at the Project Area upon request by CDFW.
- 5.6. Trash Abatement.** Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in animal-proof containers and removed, ideally at daily intervals but at least once a week, to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs.
- 5.7. Dust Control.** Permittee shall reduce fugitive dust by prohibiting ground disturbing Covered Activities when wind speed exceeds 25 miles per hour and limiting vehicle speeds on unpaved roads to 20 miles per hour. Permittee shall implement dust control measures during Covered Activities to facilitate visibility for monitoring of the Covered Species by the Designated Biologist. Permittee shall keep the amount of water used to the minimum amount needed and shall not allow water to form puddles. Dust palliatives or other chemical soil stabilizers shall not be used during construction or O&M activities without specific prior written approval by CDFW.
- 5.8. Erosion Control Materials.** Permittee shall prohibit use of erosion control materials potentially harmful to Covered Species and other wildlife, such as monofilament netting, photodegradable mesh (erosion control matting) or similar material, in potential Covered Species' habitat. Permittee shall only deploy erosion control mats, blankets, or coir rolls that consist of natural-fiber, biodegradable materials. Rock used for road improvement or other purposes shall be no greater than 4 inches in diameter unless the interstitial spaces are filled with 2-inch or smaller diameter rock to establish a passable surface for adult and juvenile desert tortoise.
- 5.9. Delineation of Property Boundaries.** Before starting Covered Activities, Permittee shall clearly delineate the boundaries of the Project Area with fencing, stakes, or flags. Permittee shall restrict all Covered Activities to within the fenced, staked, or flagged areas. Permittee shall maintain all fencing, stakes, and flags until the completion of Covered Activities in the Project Area and remove and properly dispose of any temporary delineation materials upon completion of activities in the Project Area.

- 5.10. Delineation of Habitat.** Permittee shall clearly delineate habitat of the Covered Species within the Project Area with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize the disturbance of Covered Species' habitat. All delineation materials shall be removed and disposed of properly upon completion of activities in the Project Area.
- 5.11. Project Access.** Project-related personnel shall access the Project Area using existing routes, or routes identified in the Project Description and shall not cross Covered Species' habitat outside of or en route to the Project Area. Permittee shall restrict Project-related vehicle traffic to established roads, staging, and parking areas. Permittee shall ensure that vehicle speeds do not exceed 20 miles per hour to avoid Covered Species on or traversing the roads. If Permittee determines construction of routes for travel are necessary outside of the Project Area, the Designated Representative shall contact CDFW for written approval before carrying out such an activity. CDFW may require an amendment to this ITP, among other reasons, if additional take of Covered Species will occur as a result of the Project modification.
- 5.12. Staging Areas.** Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project Area using, to the extent possible, previously disturbed areas. Additionally, Permittee shall not use or cross Covered Species' habitat outside of the marked Project Area unless provided for as described in Condition of Approval Project Access of this ITP.
- 5.13. Hazardous Waste.** Permittee shall immediately stop and, pursuant to pertinent State and federal statutes and regulations, arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the Project Area and shall properly contain and dispose of any unused or leftover hazardous products off-site.

Permittee shall ensure that all fueling, or maintenance of vehicles or equipment shall occur within established O&M buildings or designated staging areas and shall not occur within 200 feet of Covered Species burrows, unless approved in advance and in writing by CDFW.

- 5.14. CDFW Access.** Permittee shall provide CDFW staff with reasonable access to the Project and mitigation lands under Permittee control, and shall otherwise fully cooperate with CDFW efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.

- 5.15. Refuse Removal.** Upon completion of Covered Activities, Permittee shall remove from the Project Area and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.
- 5.16. Lighting.** All temporary and permanent outdoor lighting shall be aimed at the ground, shielded to prevent light from shining skyward, of minimum wattage necessary for safety and activity, and of motion-sensor type to prevent continuous nighttime lighting.
- 5.17. Herbicide Use.** Permittee shall limit herbicide use to treat and control invasive plant species only and shall only apply herbicide after hand or mechanical efforts have been ineffective. Permittee shall ensure that all application of herbicide is done by a licensed applicator in accordance with all applicable federal, State, and local laws and regulations. Herbicide sprays shall be used only when wind speeds are less than 10 miles per hour and all sprays shall contain a dye to prevent overspray. If herbicides must be used, Permittee shall consult with CDFW and obtain written approval from CDFW before using any herbicides. Further, Permittee shall follow Condition of Approval Additional Pesticide Application Measures for CBB as applicable.
- 5.18. Dogs.** Permittee shall prohibit domestic and working dogs from the Project Area and site access routes during Covered Activities, except those in the possession of authorized security personnel or federal, State, or local law enforcement officials.
- 5.19. Wildfire Avoidance.** Permittee or Permittee’s contractors shall minimize the potential for human-caused wildfires by carrying water or fire extinguishers and shovels in all Project-related vehicles and heavy equipment. The use of shields, protective mats, or use of other fire preventative methods shall be used during grinding and welding to minimize the potential for fire. Personnel shall be trained regarding the fire hazard for wildlife as part of the worker education program described in Condition of Approval Education Program above.
- 5.20. Permanent Security Fencing Plan.** Permittee shall submit a Permanent Security Fencing Plan for CDFW review and written approval before starting Covered Activities, to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) below.

The Permanent Security Fencing Plan shall include, but not be limited to the fencing materials, design, installation methods, installation locations, post-construction augmentation plans, and on-going maintenance plans. Permanent security fencing around the solar panel “blocks” and the Project Area as a whole (excluding the O&M building and substation), shall be modified to allow for small animal permeability

following the construction phase by leaving a 4 to 6-inch gap from the ground to the bottom of the fence, or other design approved by CDFW. Permittee shall ensure vegetation, debris, and materials do not block fence impacting permeability.

- 5.21. On-Site Drainage Basin Entrapment Prevention.** Permittee shall ensure that final design of the on-site stormwater drainage basins have adequate elements to ensure that Covered Species can escape should one inadvertently enter the basin or elements designed to preclude entry. Permittee shall submit a Basin Design Plan with elements necessary for Covered Species escape and/or entry prevention for review and approval by CDFW prior to implementation of Covered Activities related to basin construction and/or installation.

**6. Monitoring, Notification and Reporting Provisions:**

- 6.1. Notification Before Commencement and Pre-Construction Survey(s).** The Designated Representative shall notify CDFW before starting Covered Activities. The Notification shall include the applicable pre-construction surveys and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.
- 6.2. Lapse in Continuity of Work Activities.** Should an unplanned or planned lapse of Covered Activities occur for more than 30 calendar days, a new Notification Before Commencement and Pre-Construction Survey shall be performed and submitted per Condition of Approval Notification Before Commencement and Pre-Construction Survey above.
- 6.3. Notification of Non-Compliance.** The Designated Representative or Designated Biologist(s) shall immediately notify CDFW if the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP and/or the MMRP. The Designated Representative shall follow up within 24 hours with a written report to CDFW describing, in detail, any non-compliance with this ITP and suggested measures to remedy the situation.
- 6.4. Compliance Monitoring.** The Designated Biologist(s) shall be on-site daily, for the duration of the day, when Covered Activities occur during the entire initial construction period and on site daily, for the duration of the day, when vegetation- or ground disturbing activities occur during the O&M phase. Allowances for reduced compliance monitoring frequencies, specific for desert tortoise (DT), may be considered when temporary exclusion fencing has been installed and properly maintained, in accordance with Conditions of Approval DT Temporary Exclusion Fencing Plan and DT Temporary Exclusion Fencing Installation, Augmentation, and Removal. Allowance requests shall be submitted to CDFW for review and written approval.

Vegetation- and ground-disturbing activities include any action that modifies the existing ground or vegetated surface. Examples include the use of string trimmers, mowing, application of herbicide, washing of solar panels, trenching, grading, etc. Operation of vehicles on established roads that have been properly maintained is not considered a vegetation- or ground-disturbing activity. The Designated Biologist(s) or Designated Monitor(s) shall otherwise be on-site during the construction period a minimum of once every 14 days during periods of inactivity and after clearing, grubbing, and grading are completed. The Designated Biologist(s) shall conduct compliance inspections to: (1) minimize incidental take of the Covered Species; (2) prevent unlawful take of species; (3) check for compliance with all measures of this ITP; (4) check all exclusion zones; (5) ensure that signs, stakes, and fencing are intact, and that Covered Activities are only occurring in the Project Area; (6) maintain an on-going account of the number of acres that are permanently disturbed by the Project; and (7) document the Covered Activities that occurred.

The Designated Representative, Designated Biologist(s), or Designated Monitor(s) shall prepare daily written observation and inspection records summarizing oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by this ITP.

- 6.5. Quarterly Compliance Report (Construction Phase).** The Designated Representative or Designated Biologist(s) shall compile the observation and inspection records identified in Condition of Approval Compliance Monitoring into a Quarterly Compliance Report (QCR) during the initial construction period and into an Annual Status Report (Condition of Approval Annual Status Report (Construction Phase and O&M Phase)) during the O&M phase and submit it to CDFW along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Quarterly Compliance Reports shall be submitted via e-mail to CDFW's Regional Representative, Regional Office, and Headquarters CESA Program no later than the 15<sup>th</sup> day of the month following the reporting period. At the time of this ITP's approval, the Regional Representative is Jim Vang ([Jim.Vang@wildlife.ca.gov](mailto:Jim.Vang@wildlife.ca.gov)), the Regional Office e-mail is [RRR.R4@wildlife.ca.gov](mailto:RRR.R4@wildlife.ca.gov), and the Headquarters CESA Program e-mail is [CESA@wildlife.ca.gov](mailto:CESA@wildlife.ca.gov). CDFW may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If CDFW determines the reporting schedule must be changed, CDFW will notify Permittee in writing of the new reporting schedule.
- 6.6. Annual Status Report (Construction Phase and O&M Phase).** Permittee shall provide CDFW with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of this ITP and continuing until CDFW accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary

of all QCRs for that year (Condition of Approval Quarterly Compliance Report (Construction Phase)); (2) a record of the Education Program training sessions provided over the reporting year (Condition of Approval Education Program); (3) a general description of the status of the Project Area and Covered Activities, including actual or projected completion dates, if known; (4) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; (5) a summary of findings from all pre-construction surveys conducted, including but not limited to, the number of times a Covered Species, their burrow, or nest was encountered, locations, if avoidance was achieved, and if not, what measures were implemented; (6) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (7) all available information about Project-related incidental take of the Covered Species including running take totals for Crotch's bumble bee nests and individuals and western Joshua tree individuals; (8) a written and mapped accounting of the number of acres subject to both temporary and permanent disturbance, both for the prior calendar year, and a total since ITP issuance; and (9) information about other Project impacts on the Covered Species. The ASR shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.

- 6.7. CNDDDB Observations.** The Designated Biologist(s) shall submit all observations of Covered Species to CDFW's California Natural Diversity Database (CNDDDB) within a minimum of 60 calendar days of the observation. The Designated Biologist(s) shall include copies of the submitted forms with the next QCR or ASR, whichever is submitted first relative to the observation.
- 6.8. Construction Phase Conditions of Approval Evaluation Report.** No later than 45 days after completion of all initial construction activities for the solar site and gen-tie line, Permittee shall provide CDFW with a Conditions of Approval Evaluation Report. The Designated Biologist shall prepare the Conditions of Approval Evaluation Report which shall include, at a minimum: (1) a summary of all QCRs and all ASRs; (2) beginning and ending dates of covered activities for the construction phase; (3) a copy of the table in the MMRP with notes showing when each of the construction phase conditions were implemented and an assessment of the effectiveness of each of this ITP's Conditions of Approval associated with the construction of the Project in minimizing and mitigating Project impacts on Covered Species; (4) recommendations on how the conditions might be changed to more effectively minimize take and mitigate the impact of future projects on Covered Species; and (5) any other pertinent information. The Initial Construction Phase Conditions of Approval Evaluation Report shall be submitted via e-mail to the entities identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.

- 6.9. Final Mitigation Report.** No later than 45 calendar days after completion of all mitigation measures, Permittee shall provide CDFW with a Final Mitigation Report. The Designated Biologist(s) shall prepare the Final Mitigation Report which shall include, at a minimum: (1) a summary of all QCRs and ASRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information. The Final Mitigation Report shall be submitted via e-mail the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.
- 6.10. As-Built Development Plans.** No later than 45 calendar days after completion of all initial construction activities, Permittee shall submit as-built development plans. The as-built plan sheets shall delineate and quantify the extent of permanent Project features, including roads, utilities and all other facilities and features associated with the Project. The as-built plans shall include an estimate of the permanent disturbance during construction by highlighting the estimated disturbance areas on the as-built plan sheets. The plan scale shall be 1":250' (one inch to 250 feet) or smaller. As-built plans shall be derived from survey data acquired after initial Project construction has been completed and shall be verified by the Designated Biologist(s). The as-built plans shall be submitted in electronic format (e-mail or other available document repository/share site) to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.
- 6.11. Notification of Take or Injury.** Permittee shall immediately notify the Designated Biologist(s) if a Covered Species is taken or injured by a Project-related activity, or if a Covered Species is otherwise found dead or injured within the vicinity of the Project. The Designated Biologist(s) or Designated Representative shall provide initial notification to CDFW via email to the Regional Office at [RRR.R4@wildlife.ca.gov](mailto:RRR.R4@wildlife.ca.gov). The initial notification to CDFW shall include information regarding the location, species, number of animals taken or injured, and the ITP Number. Following initial notification, Permittee shall send CDFW a written report within two calendar days. The report shall include the date and time of the finding or incident, location of the animal or carcass, and if possible, provide a photograph, explanation as to cause of take or injury, and any other pertinent information. The written report shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.

**6.12. Notification of Non-Compliance.** The Designated Representative or Designated Biologist(s) shall immediately notify CDFW if the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP. The Designated Representative shall follow up within 24 hours with a written report to CDFW describing, in detail, any non-compliance with this ITP and suggested measures to remedy the situation.

**7. Take Minimization Measures:** The following requirements are intended to ensure the minimization of incidental take of Covered Species in the Project Area during Covered Activities. Permittee shall implement and adhere to the following conditions to minimize take of Covered Species:

**7.1. Designated Biologist(s) On Site.** The Designated Biologist(s) shall be on site during all activities that may result in the take of Covered Species and in accordance with Condition of Approval Compliance Monitoring.

**7.2. Work Hours.** Permittee shall conduct all Covered Activities during daylight hours (sunrise to sunset) except for the following activities as necessary: (1) planned and unplanned maintenance and quality assurance/control activities, repair and replacement, wiring, testing, and commissioning that must occur after dark to ensure PV arrays are not energized; (2) unanticipated emergencies (in accordance with Section 21060.3 of the Public Resources Code), including forced outages and non-routine maintenance or repair requiring immediate attention; (3) security patrols; (4) refueling equipment and staging material for the following day's construction activities, and (5) concrete pouring.

Permittee shall ensure: (1) that any vehicle traffic necessary during nighttime hours associated with these activities are conducted with caution to minimize impacts to Covered Species; (2) the speed limit during allowable night work is reduced to 10 mph for non-emergency activities; and (3) that CDFW is notified as soon as possible and no later than 24 hours after commencement of any emergency nighttime activities.

**7.3. Delineation of Ingress and Egress Routes.** Permittee shall flag or otherwise clearly mark all access roads in the field from the paved road and vehicle operation shall be limited to these designated ingress and egress routes.

**7.4. Vehicle Parking.** Permittee shall not allow vehicles to park on top of Covered Species burrows, nest burrows, or nests, except within designated staging areas for which burrows have been excavated per Conditions of Approval DT Burrow Excavation, MGS Live Trapping, Burrow Excavation, and Relocation, and/or BUOW Burrow Excavation and allowable nests have been removed/excavated per Condition of Approval CBB Nest

Impact Minimization. Vehicles left overnight shall be located outside the applicable avoidance buffers as defined in Conditions of Approval DT Burrow Avoidance, MGS Burrow Avoidance, BUOW Burrow Avoidance, CBB Nest Avoidance, and/or CBB Nest Impact Minimization.

- 7.5. Vehicle Equipment Inspection**. Workers shall inspect for Covered Species, including nests, under vehicles and equipment every time before the vehicles and equipment are moved. If a Covered Species or Covered Species nest is present, the worker shall notify the Designated Biologist(s) and wait for the Covered Species to move unimpeded to a safe location or alternatively, the Designated Biologist(s) shall move the Covered Species out of harm's way in compliance with the approved Covered Species Mortality Reduction and Relocation Plans required in Conditions of Approval DT Mortality Reduction and Relocation Plan, MGS Mortality Reduction and Relocation Plan, BUOW Mortality Reduction Plan, and CBB Mortality Reduction and Relocation Plan. Should a CBB or burrowing owl (BUOW) nest be discovered, the Designated Biologist(s) shall follow all applicable Conditions of Approval and applicable CDFW-approved Mortality Reduction and Relocation Plan.
- 7.6. Pipe and Materials Inspection**. Workers shall thoroughly inspect all construction pipe, culverts, or other similar structures with a diameter of one inch or greater that are stored for one or more overnight periods for the Covered Species before the structure is subsequently moved, buried, or capped. If during inspection, a Covered Species is discovered inside a pipe, culvert, or similar structure, workers shall notify the Designated Biologist(s) and wait for the Covered Species to move unimpeded to a safe location before moving and utilizing the structure. Alternatively, the Designated Biologist(s) shall move the Covered Species out of harm's way in compliance with the approved Covered Species Mortality Reduction and Relocation Plans required in Conditions of Approval DT Mortality Reduction and Relocation Plan, MGS Mortality Reduction and Relocation Plan, BUOW Mortality Reduction Plan, and CBB Mortality Reduction and Relocation Plan. Should a CBB or BUOW nest be discovered, the Designated Biologist(s) shall follow all applicable Conditions of Approval and applicable CDFW-approved Mortality Reduction and Relocation Plan.
- 7.7. Geotechnical Investigation**. In areas where temporary exclusion fencing has not been installed (Conditions of Approval DT Temporary Exclusion Fencing Plan and DT Temporary Exclusion Fencing Installation, Augmentation, and Removal), the Designated Biologist shall survey geotechnical investigation access routes and geotechnical drilling areas, as well as a 50-foot buffer, and flag any potential Covered Species burrows before the geotechnical drilling may proceed. If an access route does not have burrows within 50 feet, then the Designated Biologist shall guide the equipment operator to the geotechnical drilling area at a walking pace. The Designated Biologist shall remain on site

at all times while drilling work is done and shall guide the operator from the geotechnical drilling areas when exiting. However, if burrows are found within the area to be disturbed during either access to or at the geotechnical drilling areas, temporary exclusion fencing shall be installed and burrows shall be excavated in accordance with Conditions of Approval DT Mortality Reduction and Relocation Plan, DT Burrow Avoidance, DT Burrow Excavation, MGS Mortality Reduction and Relocation Plan, MGS Live Trapping, Burrow Excavation, and Relocation, BUOW Mortality Reduction Plan, BUOW Artificial Burrow Replacement Plan, BUOW Burrow Blockage, and BUOW Burrow Excavation. If a CBB nest(s) or WJT individuals (beyond the previously authorized take through emergency regulations adopted under Fish and Game Code section 2084 and CCR Title 14, § 749.10) are found within the area to be disturbed during either access to or at the geotechnical drilling areas, CBB nests shall be avoided per Condition of Approval CBB Nest Avoidance or impacted in accordance with Condition of Approval CBB Nest Impact Minimization and WJT individuals shall be avoided per Condition of Approval WJT Buffer or impacted in accordance with Condition of Approval WJT Relocation, Seed Salvage, and Topsoil Salvage. If both an auger drill system and a self-casing rotary wash wire-line drill system are used, both shall be on drill trucks so that if a change in drill systems is needed, it will not require an additional exit and entrance through Covered Species habitat.

- 7.8. Excavation Inspection.** The Designated Biologist(s) or Designated Monitor(s) shall inspect all trenches, open holes, sumps, and other excavations within the Project Area at the beginning and end of each day for trapped animals. All trenches, holes, sumps, and other excavations with sidewalls steeper than a 1:1 (45 degree) slope shall be covered when workers or equipment are not actively working in the excavation, which includes cessation of work overnight, or shall have an escape ramp of earth or a non-slip material with a less than 1:1 (45 degree) slope. To prevent inadvertent entrapment of the Covered Species, the Designated Biologist(s) or Designated Monitor(s) shall oversee the covering of all such excavations with barrier material (such as hardware cloth) at the close of each working day such that animals are unable to dig or squeeze under the barrier and become entrapped. The outer two feet of excavation cover shall conform to solid ground so that gaps do not occur between the cover and the ground and shall be secured with soil staples or similar means to prevent gaps. Each morning, the end of each day (including weekends and any other non-workdays), and immediately before trenches, holes, sumps, or other excavations are back filled, the Designated Biologist(s) or Designated Monitor(s) shall thoroughly inspect them for Covered Species. The Designated Biologist(s) or Designated Monitor(s) shall also thoroughly inspect any trenches, holes, sumps, or other excavations that are covered long term at the beginning of each working day to ensure inadvertent entrapment has not occurred and shall make any necessary repairs to the cover. If any worker discovers a Covered Species has become trapped, Permittee shall cease all Covered Activities in the vicinity and notify the

Designated Biologist(s) immediately. Project workers and the Designated Biologist(s) shall allow the Covered Species to escape unimpeded if possible before Covered Activities are allowed to continue. Alternatively, the Designated Biologist(s) shall move the Covered Species out of harm's way in compliance with the approved Covered Species Mortality Reduction and Relocation Plans required in Conditions of Approval DT Mortality Reduction and Relocation Plan, MGS Mortality Reduction and Relocation Plan, BUOW Mortality Reduction Plan, and CBB Mortality Reduction and Relocation Plan. Should a CBB or BUOW nest be discovered, the Designated Biologist(s) shall follow all applicable Conditions of Approval and applicable CDFW-approved Mortality Reduction and Relocation Plan.

For the operations and maintenance of the stormwater retention basins Permittee shall ensure that final design of the on-site stormwater retention basins have adequate elements to ensure that Covered Species can escape should one inadvertently enter. Permittee shall submit a Stormwater Basin Design Plan (Condition of Approval On-Site Drainage Basin Entrapment Prevention) with elements necessary for Covered Species escape and/or entry prevention for the stormwater retention basins for review and approval by CDFW prior to implementation of Covered Activities related to basin construction and installation. Permittee shall ensure that stormwater retention basins' wildlife escape and prevention materials, as applicable, are maintained in effective condition. Maintenance inspections of these features shall be conducted as appropriate. Should any failures be discovered, Permittee shall make necessary repairs immediately to ensure that Covered Species can escape or are prevented from entry. If permanent repairs cannot be immediately completed (within 24 hours) then temporary repairs shall be put in place until the permanent repair can be reasonably completed. Inspection of temporary repairs shall be completed daily to ensure effectiveness of wildlife escape and/or entry exclusion until the permanent repair can be completed.

- 7.9. Covered Species Observations and Notification.** All workers shall inform the Designated Biologist(s) if a Covered Species is seen within or near the Project Area during implementation of any Covered Activity. All Covered Activities in the vicinity of Covered Species, which could take or injure a Covered Species or Covered Species nest, shall cease until the Covered Species moves from the Project Area of its own accord or the Designated Biologist(s) moves the Covered Species out of harm's way in compliance with the approved Covered Species Mortality Reduction and Relocation Plans required in Conditions of Approval DT Mortality Reduction and Relocation Plan, MGS Mortality Reduction and Relocation Plan, BUOW Mortality Reduction Plan, and CBB Mortality Reduction and Relocation Plan. Should a CBB or BUOW nest be observed, the Designated Biologist(s) shall follow all applicable Conditions of Approval and applicable CDFW-approved Mortality Reduction and Relocation Plan.

Permittee shall notify CDFW within 24 hours of discovery of a Covered Species or Covered Species nest within the Project Area via e-mail to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above. The notification shall include the name of the Covered Species, the name of the individual who discovered the species, a map showing where the Covered Species was found, and photographs if possible.

- 7.10. Rodenticides, Pesticides, and Insecticides.** Permittee shall not use rodenticides, pesticides, and/or insecticides in the Project Area without prior written permission from CDFW. Permittee shall not use any second-generation anticoagulant rodenticide (brodifacoum, bromadiolone, difethialone, and difenacoum) in the Project Area. Permittee shall not use any first-generation anticoagulant rodenticide (diphacinone, chlorophacinone, and warfarin) in the Project Area without prior written permission from CDFW. If pesticides must be used, Permittee shall consult with CDFW and obtain written approval from CDFW before using any pesticides.

***Desert Tortoise (DT) Specific Take Minimization Measures:***

- 7.11. DT Mortality Reduction and Relocation Plan.** Permittee shall submit a DT Mortality Reduction and Relocation Plan, prepared by the Designated Biologist(s), for CDFW review and written approval prior to the start of Covered Activities. The relocation plan shall include at a minimum: (1) avoidance and minimization measures including the option to work within the established protective buffer of a burrow; (2) the proposed capture methods and handling methods; (3) implementation timing; (4) burrow excavation methods; (5) measures to be taken when a nest is encountered; (6) release methods (i.e., soft release, hard release, or some other method); (7) artificial burrow design and installation methods; (8) a map and legal description of the proposed receiver site(s) and proposed permanent conservation mechanism; (9) a comparison of the proposed receiver sites and the source site's soil, plant communities, and topography to demonstrate that the receiver site is suitable; (10) a description of the existing DT (pre-Project) status on the proposed receiver site (including density and distribution); (11) a proposed one-year monitoring plan of the receiver site; and (12) identification of a wildlife rehabilitation center or veterinary facility where injured animals will be cared for.

Once the DT Mortality Reduction and Relocation Plan is approved by CDFW, it may be used for all DT relocation activities for the duration of this ITP unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittees to discuss needed updates. Any proposed changes to the CDFW-approved DT Mortality Reduction and Relocation Plan shall be submitted for CDFW review and written approval prior to implementation of any proposed modifications. The DT Mortality Reduction and

Relocation Plan shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase).

- 7.12. Raven Management Plan.** Permittee shall prepare a Project-specific Raven Management Plan to minimize the potential for ravens to occupy the Project Area and for raven predation on DT. The Raven Management Plan shall address both the construction and O&M phase and shall include at a minimum: (1) baseline survey and results; (2) a plan for reduction of food, water, sheltering and nesting sites; (3) an evaluation of effectiveness and adaptive management strategies; and (4) an education and outreach program. The Raven Management Plan shall be submitted for CDFW review and written approval before starting Covered Activities. The Raven Management Plan shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.
- 7.13. Pre-Construction Surveys for DT.** No more than 30 days prior to conducting vegetation or ground-disturbing activities associated with initial construction or O&M activities, the Designated Biologist(s) shall perform pre-construction surveys for DT and shall remain onsite daily until the construction period ends or temporary exclusion fencing has been installed to preclude DT from entering the Project Area (Conditions of Approval DT Temporary Exclusion Fencing Plan and DT Temporary Exclusion Fencing Installation, Augmentation, and Removal) and subsequent clearance surveys have been completed (Condition of Approval DT Clearance Surveys). These surveys shall cover the Project Area and an additional 50-foot buffer zone. The Designated Biologist(s) shall flag all potential DT burrows within the Project Area to alert biological and work crews to their presence.

Permittee shall provide the pre-construction survey results and a burrow map in a written report via email to CDFW's Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) within 30 calendar days of having performed the survey. The pre-construction survey report shall include, but not be limited to, methodology, date and time of survey, results, discussion, and map of the locations of each potential DT burrow.

- 7.14. DT Burrow Avoidance.** The Designated Biologist(s) shall establish a no-disturbance buffer of 50 feet or greater around suspected or known to be occupied DT burrows in the Project Area. If the 50-foot no-disturbance buffer cannot be established, an approved reduced buffer shall be imposed according to the CDFW-approved DT Mortality Reduction and Relocation Plan. If an approved buffer reduction cannot be established, temporary exclusion fencing installation, live trapping, relocation, and burrow excavation shall occur in accordance with the CDFW-approved DT Mortality Reduction and Relocation Plan and DT Temporary Exclusion Fencing Plan.

- 7.15. DT Temporary Exclusion Fencing Plan.** Permittee shall submit a Temporary Exclusion Fencing Plan to CDFW for review and written approval prior to the installation of any temporary exclusion fencing and permanent security fencing. The Temporary Exclusion Fencing Plan shall include, but not be limited to, the fencing materials, designs of all temporary fencing, installation methods, installation locations, and removal timing and methods. Temporary exclusion fencing may be designed and installed in conjunction with the design and installation of permanent security fencing. If the temporary exclusion fencing is combined with the permanent security fencing, temporary fencing shall be removed or modified (e.g., knuckled under to allow a gap from the ground to the bottom of the fence of at least 5 inches) in areas identified as post-construction-permeable in the Permanent Security Fencing Plan (Condition of Approval Permanent Security Fencing Plan). Removal of, or modifications to, the temporary exclusion fencing shall be initiated immediately upon completion of all initial construction Covered Activities within the fenced area to minimize habitat fragmentation and diminished connectivity caused by fencing. The DT Temporary Exclusion Fencing Plan shall be submitted for CDFW review and written approval before starting Covered Activities to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase).
- 7.16. DT Temporary Exclusion Fencing Installation, Augmentation, and Removal.** Permittee shall install temporary exclusion fencing around the perimeter of the Project Area immediately following surveys to flag all potential DT burrows in accordance with Condition of Approval Pre-Construction Surveys for DT above and immediately prior to commencing DT burrow excavation in accordance with Condition of Approval DT Burrow Excavation below. Temporary exclusion fencing may also be installed and removed in a sequential manner along a collector line corridor, for example, to minimize fragmentation of habitat. The Designated Biologist(s) shall accompany the temporary exclusion fence crews conducting installation, repair, augmentation, and/or removal to ensure that DT are not killed or injured during these activities. The Designated Biologist(s) shall ensure all burrow entrances are avoided (i.e., not covered) by fencing material during fence installation. The Designated Biologist(s) shall ensure the temporary exclusion fencing is sufficiently supported to maintain its integrity under all conditions such as wind and heavy rain for the duration of the Covered Activities in the Project Area. The Designated Biologist(s) or Designated Monitor(s) shall check the temporary exclusion fence daily for fence-walking or pacing DT and shall maintain/repair the fence when necessary. Temporary exclusion fencing shall be removed or augmented to allow permeability in select areas, as approved in the Permanent Security Fencing Plan (Condition of Approval Permanent Security Fencing Plan), immediately upon completion of initial construction Covered Activities within the Project Area.

- 7.17. DT Clearance Surveys.** After the installation of the temporary exclusion fencing (Conditions of Approval DT Temporary Exclusion Fencing Plan and DT Temporary Exclusion Fencing Installation, Augmentation, and Removal) and prior to any ground disturbance within the fenced areas, the Designated Biologist(s) shall examine the area within the fence for DT and DT burrows. The survey shall provide 100 percent coverage of the area within the temporarily excluded area and the area immediately outside of the temporarily excluded area. The use of specialized equipment (e.g., fiber optics) may be necessary to thoroughly inspect all burrows. The Designated Biologist(s), using the methods described in the United State Fish and Wildlife Service's *Desert Tortoise Field Manual* (ATTACHMENT 3) shall capture, collect measurement and identification data, permanently mark, and relocate any DT found within the fenced area in accordance with the CDFW-approved DT Mortality Reduction and Relocation Plan.
- 7.18. DT Burrow Excavation.** All potential DT burrows identified during pre-construction surveys (Condition of Approval Pre-Construction Surveys for DT) and clearance surveys (Condition of Approval DT Clearance Surveys), shall be fully excavated by hand under the direct supervision of the Designated Biologist(s) in accordance with the CDFW-approved DT Mortality Reduction and Relocation Plan.
- 7.19. DT Relocation.** The Designated Biologist(s) shall relocate any DT found within the Project Area that cannot be avoided. Relocation methods shall be in accordance with the CDFW-approved DT Mortality Reduction and Relocation Plan and all relocation recipient sites shall be areas under permanent conservation for DT. If a DT is found above ground, it shall be released above ground in the shade. Any DT removed from a burrow shall be relocated to an unoccupied burrow of similar size. If no such burrows are available for relocating, an artificial burrow shall be constructed that is approximately the same size, depth, and orientation as the original burrow. Protocols found in the *Desert Tortoise Field Manual* (ATTACHMENT 3) shall be followed for the construction of artificial burrows. The location of all DT burrows, DT individuals, and CDFW-approved receiver sites shall be recorded using Global Positioning System (GPS) technology. All potential or known DT burrows present within the temporary exclusion fence will be collapsed after establishing that they are not currently occupied by DT, to prevent re-occupancy. DT burrows within the gen-tie corridor or access routes shall be left intact if ground-disturbing activities can avoid the burrows.
- 7.20. DT Handling Procedures.** The Designated Biologist(s) shall follow handling procedures described in the *Guidelines for Handling Desert Tortoises – Mojave Population and their Eggs*, contained in the *Desert Tortoise Field Manual* (ATTACHMENT 3).

- 7.21. DT Monitoring.** The Designated Biologist(s) shall monitor any DT that are relocated just outside of the temporary exclusion fencing, three (3) times daily for two (2) weeks, along the entire length of the fence to prevent mortality due to exhaustion from “fence walking” or pacing. If temperatures are anticipated to reach 109 degrees Fahrenheit or greater, the Designated Biologist(s) shall survey the entire length of all temporary exclusion fence one hour before reaching said temperature to prevent mortality due to overexposure. If the Designated Biologist(s) encounters DT fence walking during temperatures of 109 degrees Fahrenheit or greater, the Designated Biologist(s) shall move the DT to an alternate location in accordance with the CDFW-approved DT Mortality Reduction and Relocation Plan.
- 7.22. DT Handling Records.** The Designated Biologist(s) shall maintain a record of all DT handled and include the record in QCRs and ASRs (Conditions of Approval Quarterly Compliance Report (Construction Phase) and Annual Status Report (Construction Phase and O&M Phase)). This information shall include for each DT: (1) the locations (narrative and maps) and dates of observation; (2) general condition and health, including injuries, state of healing and whether DT voided their bladders; (3) location moved from and location moved to (using GPS technology); (4) diagnostic markings (i.e., identification numbers or marked lateral scutes); and, (5) ambient temperature when handled and released; and (6) digital photograph of each handled DT as described below. DT moved from within the Project Area shall be marked for future identification. An identification number using the acrylic paint/epoxy covering technique shall be placed on the fourth left costal scute as described in the *Guidelines for Handling Desert Tortoises – Mojave Population and their Eggs* contained in the *Desert Tortoise Field Manual* (ATTACHMENT 3). Digital photographs of the carapace, plastron and fourth costal scute shall be taken. Notching of scutes shall not occur.
- 7.23. DT Injury or Mortality.** If a DT is injured as a result of Project-related activities, the Designated Biologist(s) shall immediately take it to the CDFW approved wildlife rehabilitation or veterinary facility identified in the CDFW-approved DT Mortality Reduction and Relocation Plan. Permittee shall bear any costs associated with the care or treatment of such injured DT. The Permittee shall notify CDFW of the injury to the DT according to Condition of Approval Notification of Take or Injury. Notification shall include the name of the facility where the animal was taken. If a DT is found deceased, the Designated Biologist(s) shall immediately collect, bag, and freeze the carcass and consult with CDFW to determine if submittal of the carcass to a laboratory is warranted.

***Mohave Ground Squirrel (MGS) Specific Take Minimization Measures:***

- 7.24. MGS Mortality Reduction and Relocation Plan.** Permittee shall submit a MGS Mortality Reduction and Relocation Plan, prepared by the Designated Biologist(s), for CDFW review and written approval prior to the start of Covered Activities. The MGS Mortality

Reduction and Relocation Plan shall include at a minimum: (1) avoidance and minimization measures including the option to work within an established protective buffer of a burrow; (2) trapping methodology; (3) implementation timing; (4) burrow identification and excavation methods; (5) measures to be taken when dependent young are encountered; (6) release methods (i.e., soft release, hard release, or some other method); (7) artificial burrow design and installation methods; (8) a map and legal description of the proposed receiver site(s) and proposed permanent conservation mechanism; (9) a comparison of the proposed receiver sites and the source site's soil, plant communities, and topography to demonstrate that the receiver site is suitable; (10) a description of existing MGS (pre-Project) status on the proposed receiver site (including density and distribution); (11) a proposed one-year monitoring plan of the receiver site; and (12) identification of a wildlife rehabilitation center or veterinary facility where injured animals will be cared for. The MGS Mortality Reduction and Relocation Plan shall restrict MGS relocation to only after young of the year are observed above ground and during the main activity period for the species (April 1 to September 1). Permittee may request a 7-day extension to the relocation period if daytime temperatures (sunrise to sunset) are predicted by the National Weather Service to remain within the temperature criterion of 68 – 86 degrees Fahrenheit with no prediction of inclement weather (e.g., a predicted 40 percent or greater chance of precipitation). Subsequent 7-day extensions (through no later than November 1) may be requested and approved by CDFW so long as weather conditions are predicted by the National Weather Service to remain within the above temperature criterion. The relocation extension request(s) shall be approved in advance and in writing by CDFW (email will suffice).

Once the MGS Mortality Reduction and Relocation Plan is approved by CDFW, it may be used for all MGS mortality reduction and relocation activities for the duration of this ITP unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittees to discuss needed updates. Any proposed changes to the MGS Mortality Reduction and Relocation Plan shall be submitted for CDFW review and written approval prior to implementation of any proposed modifications. The MGS Mortality Reduction and Relocation Plan shall be submitted via e-mail for CDFW review and written approval before starting Covered Activities to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase).

- 7.25. Pre-Construction Surveys for MGS.** No more than 30 calendar days prior to conducting vegetation- or ground-disturbing activities the Designated Biologist(s) shall perform pre-construction surveys for MGS in the Project Area. These surveys shall cover the entirety of the Project Area including an additional 50-foot buffer zone. All known or suspected MGS burrows within the Project Area shall be flagged to alert biological and work crews

to their presence. Suspected MGS burrows are any burrow of sufficient size to allow an adult or juvenile MGS to enter.

Permittee shall provide the pre-construction survey results and a burrow map in a written report via email to CDFW's Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above within 30 calendar days of having performed the survey. The pre-construction survey report shall include, but not be limited to, methodology, date and time of survey, results, discussion, and map of the locations of each potential MGS burrow and potential MGS burrows to be excavated (Condition of Approval MGS Live Trapping, Burrow Excavation, and Relocation).

- 7.26. MGS Burrow Avoidance.** During all vegetation- or ground-disturbing activities associated with initial construction or O&M activities, any burrows present within the Project Area that are suspected or known to be occupied by MGS and that cannot be avoided by a 50-foot avoidance buffer, shall be live trapped by the Designated Biologist(s) in accordance with the CDFW-approved MGS Mortality Reduction and Relocation Plan. The Designated Biologist(s) shall relocate any captured MGS to the CDFW-approved receiver site in accordance with the CDFW-approved MGS Mortality Reduction and Relocation Plan.
- 7.27. MGS Live Trapping, Burrow Excavation, and Relocation.** Burrows suspected or known to be occupied by MGS that cannot be avoided shall be live trapped, fully excavated by hand, or both. After the installation of the DT temporary exclusion fence (Conditions of Approval DT Temporary Exclusion Fencing Plan and DT Temporary Exclusion Fencing Installation, Augmentation, and Removal) and prior to any ground disturbance within the fenced areas, burrows shall be fully excavated by hand under the direct supervision of the Designated Biologist(s) in accordance with the with the CDFW-approved MGS Mortality Reduction and Relocation Plan. The Designated Biologist(s) shall relocate any MGS found within the Project Area that cannot be avoided. Relocation methods shall be in accordance with the CDFW-approved MGS Mortality Reduction and Relocation Plan and relocation sites shall be areas under permanent conservation for MGS. Any dormant, lactating female, or dependent juvenile MGS encountered shall be collected by the Designated Biologist(s) and relocated to an artificial burrow installed at the CDFW-approved receiver site.
- 7.28. MGS Handling Records.** The Designated Biologist(s) shall maintain a record of all MGS handled and include the record in QCRs and ASRs (Conditions of Approval Quarterly Compliance Report (Construction Phase) and Annual Status Report (Construction Phase and O&M Phase)). This information shall include for each MGS: (1) the location (narrative and maps) and date of observation; (2) general condition and health, including injuries and state of healing; (3) location moved from and location moved to (using GPS

technology); (4) diagnostic markings where applicable; (5) ambient temperature when handled and released; and (6) digital photograph of each MGS handled.

- 7.29. MGS Injury or Mortality.** If a MGS is injured as a result of Project-related activities, the Designated Biologist(s) shall immediately take it to the CDFW approved wildlife rehabilitation or veterinary facility identified in the CDFW-approved MGS Mortality Reduction and Relocation Plan. Permittee shall bear any costs associated with the care or treatment of such injured MGS. The Permittee shall notify CDFW of the injury to the MGS according to Condition of Approval Notification of Take or Injury. Notification shall include the name of the facility where the animal was taken. If a MGS is found deceased, the Designated Biologist(s) shall immediately collect, bag, and freeze the carcass and consult with CDFW to determine if submittal of the carcass to a laboratory is warranted.

***Western Burrowing Owl (BUOW) Specific Take Minimization Measures:***

- 7.30. BUOW Mortality Reduction Plan.** Permittee shall submit a BUOW Mortality Reduction Plan, prepared by the Designated Biologist(s), to CDFW for written approval before starting Covered Activities. Burrow exclusion and burrow excavation shall not proceed until this plan has been approved in writing by CDFW. The BUOW Mortality Reduction Plan shall include at a minimum: (1) detailed description of survey methodology; detailed burrow exclusion and excavation methods; (2) proposed Covered Activities that may be performed within BUOW avoidance buffers; (3) identification of a wildlife rehabilitation center or veterinary facility capable of and willing to treat injured BUOW or care for at-risk BUOW, BUOW eggs, and/or BUOW chicks; and (4) procedure for collection and storage of BUOW carcasses. Only CDFW-approved Designated Biologists, or personnel following directions from and under the supervision of the Designated Biologist(s), are authorized to handle and transport injured BUOW for treatment or impacted BUOW eggs for salvage. All other BUOW handling or capture is prohibited.

Once the BUOW Mortality Reduction Plan is approved in writing by CDFW, it shall be used for the duration of this ITP unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittee to discuss needed updates. Any proposed changes to the BUOW Mortality Reduction Plan shall be submitted to CDFW for review and written approval prior to implementation of any proposed modifications. The BUOW Mortality Reduction Plan shall be submitted via e-mail for CDFW review and written approval before starting Covered Activities to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase).

- 7.31. BUOW Artificial Burrow Replacement Plan.** Permittee shall replace each known BUOW burrow (as defined in Condition of Approval BUOW Burrow Avoidance) that cannot be

avoided within the Project Area with an artificial burrow to compensate for the loss of important shelter used by BUOW for protection, reproduction, and escape from predators. Permittee shall submit a BUOW Artificial Burrow Replacement Plan prepared by an approved Designated Biologist to CDFW no more than 120 calendar days after starting Covered Activities. The BUOW Burrow Replacement Plan shall include, but not be limited to: a discussion and map of potential artificial burrow replacement locations; description of the replacement burrow design and dimensions (e.g., depth and width of burrow, width of burrow entrance, orientation of burrow entrance, number and placement of entrances); artificial burrow installation methods; long-term artificial burrow maintenance methods; and timing of BUOW burrow installation/construction. Once the BUOW Artificial Burrow Replacement Plan is approved in writing by CDFW, it shall be used for the duration of this ITP unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittee to discuss needed updates. Any proposed changes to the BUOW Artificial Burrow Replacement Plan shall be submitted, in writing, to CDFW and approved by CDFW in writing prior to the implementation of any proposed modifications.

- 7.32. BUOW Pre-Construction Surveys and Reporting.** The Designated Biologist(s) shall conduct surveys of all subterranean holes three inches or larger to identify BUOW burrows and flag and map all known, and/or nesting BUOW burrows (as defined in Condition of Approval BUOW Burrow Avoidance) within 30 calendar days prior to beginning Covered Activities in the Project Area. Surveys shall include the Project Area and 500 feet (where feasible) beyond the limits of the Project Area, unless otherwise approved in advance in writing by CDFW. If the Designated Biologist(s) identifies any known, or nesting BUOW burrows, the burrow(s) shall be monitored following Conditions of Approval BUOW Burrow Blockage and BUOW Burrow Excavation, unless avoided per Condition of Approval BUOW Burrow Avoidance. Permittee shall provide the pre-construction survey results with a Burrow Map (see Condition of Approval Burrow Map) in a written report to CDFW's Regional Representative prior to starting BUOW Exclusion Activities in the Project Area. The report shall include, but not be limited to, methodology, survey date, and apparent status of each burrow (known, or nesting).
- 7.33. Burrow Map.** The Designated Biologist shall provide a KMZ map to CDFW of all known and/or nesting BUOW burrows found during the surveys performed per Condition of Approval BUOW Pre-Construction Surveys and Reporting. The map shall show details and locations of all BUOW sightings and known and nesting BUOW burrows as defined in Condition of Approval BUOW Burrow Avoidance. The map shall include an outline of the Project Area, title, north arrow, scale bar, and legend.

**7.34. BUOW Burrow Avoidance.** The Permittee shall establish no-disturbance buffer zones around known and nesting BUOW burrows according to the following guidelines:

- If a known BUOW burrow (a burrow that shows evidence the burrow is being used, known to have been used, or past use by a BUOW) or an "atypical" burrow (e.g., a pipe, culvert, buckled concrete, etc.) showing signs of occupancy (e.g. BUOW presence, whitewash, pellets, prey remains, etc.) is discovered, the Permittee shall establish a minimum no-disturbance buffer of at least 100 feet around the burrow. A no-disturbance buffer of at least 1,600 feet shall be established around known BUOW burrows currently occupied by BUOW during the nesting season (typically February 1 to August 31 in this area).
- If a nesting BUOW burrow used for nesting (e.g. known BUOW burrow indications of the presence of an adult pair, mating behaviors, eggs, chicks, dependent young, and/or brooding or egg incubation) is discovered within or immediately adjacent to the Project Area, the Permittee shall notify CDFW's Regional Representative immediately via e-mail. A no-disturbance buffer of at least 1,600 feet shall be established around the nest burrow. A no-disturbance buffer of at least 1,600 feet shall be established around known BUOW burrows currently occupied by BUOW during the nesting season (February 1 to August 31).

If BUOW burrows cannot be avoided as described above, then the Permittee shall follow Conditions of Approval BUOW Burrow Blockage, BUOW Burrow Excavation, and BUOW Mortality Reduction Plan as appropriate. If BUOW are visibly stressed by the Covered Activities or workers in the vicinity after these no-disturbance buffers are established, all work in the vicinity shall immediately cease and increased no-disturbance buffers will be determined by the Designated Biologist(s) based on their behavioral observations of the affected BUOW.

The buffers prescribed above shall not be reduced or otherwise modified without prior written CDFW approval. If the Designated Biologist determines that specific Covered Activities are not likely to affect the BUOW using known or nesting BUOW burrows due to the nature of the specific Covered Activities and/or due to objects or topography that might reduce potential noise disturbance and obstruct view of the Covered Activities from the nest, then the Designated Biologist may email a written request to CDFW to reduce the buffer distance with documented observational data (Buffer Reduction Request). CDFW will review each Buffer Reduction Request on a case-by-case basis and provide a determination in response to each Buffer Reduction Request in writing. CDFW may request additional and/or ongoing biological monitoring prior to approving a Buffer Reduction Request.

**7.35. BUOW Burrow Blockage.** Where CDFW has approved a buffer reduction, the Permittee may block rather than destroy any known BUOW burrow located within the buffer

distances prescribed by Condition of Approval BUOW Burrow Avoidance within the Project Area where ground- and vegetation-disturbing activities will be performed. Burrows (including burrows in natural substrate and in/under man-made structures) may be blocked only immediately after the Designated Biologist(s) has conducted four consecutive 24-hour periods of monitoring with wildlife cameras and determined that BUOW is not currently present. The camera types used for camera monitoring should be chosen at the discretion of the approved BUOW Designated Biologist and shall have daytime and nighttime recording/photo-capture capabilities. Burrow blockage shall be done in a manner that prevents burrowing animals from digging back into the burrow. All blocked burrows shall be monitored by the Designated Biologist or Designated Monitor at least once a week to ensure that the exclusion material is still intact. If BUOW regain access to the burrow, the Permittee shall contact CDFW immediately and obtain written guidance regarding how to proceed. All blocked burrows shall be unblocked within 48 hours of completion of Construction Covered Activities within the prescribed buffer distance.

**7.36. BUOW Burrow Excavation.** The Designated Biologist, or Designated Monitor under direct supervision of the Designated Biologist, shall excavate known burrows that exhibit signs of current or past BUOW use or characteristics suggestive of a BUOW burrow (including burrows in natural substrate and in/under man-made structures) that cannot be avoided per Condition of Approval BUOW Burrow Avoidance that are within the Project Area. Burrows to be destroyed shall be fully excavated, filled with dirt, and compacted to ensure that BUOW cannot reenter or use the burrow during the period that Covered Activities occur in the Project Area. If an individual BUOW does not vacate a burrow within a reasonable timeframe, Permittee shall consult with CDFW for written guidance before proceeding with burrow excavation. An established BUOW burrow no-disturbance buffer may be removed once the burrow is collapsed and BUOW are no longer using the burrow.

- Excavation of known BUOW burrows shall only occur after the Designated Biologist has determined that BUOW is not currently present after four consecutive 24-hour periods of wildlife camera monitoring. The camera types used for camera monitoring should be chosen at the discretion of the approved BUOW Designated Biologist(s) and shall have daytime and nighttime recording/photo-capture capabilities. If the excavation process reveals evidence of current use by BUOW, then burrow excavation shall cease immediately, and camera monitoring as described above shall be conducted/resumed. BUOW burrows shall be carefully excavated with hand tools, or by mechanical means if a specific methodology is approved in writing by CDFW, until it is clear no individuals of BUOW are inside.

- BUOW burrows used for nesting shall not be excavated until biological and camera monitoring confirm that the chicks have fledged and are no longer dependent on the nest and/or the parents and then only after written concurrence from CDFW.

**7.37. BUOW Injury.** If any BUOW life stage (including eggs/nest abandonment) is found injured within the vicinity of the Project Area, the Designated Biologist(s) shall immediately take it to a CDFW-approved wildlife rehabilitation or veterinary facility, or handle in accordance with the CDFW-approved BUOW Mortality Reduction Plan. Permittee shall identify the facility before starting Covered Activities and include the facility contact information in the BUOW Mortality Reduction Plan. Permittee shall bear any costs associated with the care or treatment of such injured BUOW. The Permittee shall notify CDFW of the injury to the BUOW immediately by e-mail followed by a written incident report as described in Condition of Approval Notification of Take or Injury. If a BUOW is found deceased, the Designated Biologist(s) shall immediately collect, bag, and freeze the carcass and consult with CDFW to determine if submittal of the carcass to a laboratory is warranted or follow any approved storage or transport methods in the CDFW-approved BUOW Mortality Reduction Plan as applicable.

***Crotch's Bumble Bee (CBB) Specific Take Minimization Measures:***

**7.38. CBB Mortality Reduction Plan.** The Designated Biologist(s) shall prepare a CBB Mortality Reduction and Relocation Plan and submit it to CDFW via e-mail for review and written approval to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) **within 30 days of Amendment 1 issuance of this ITP.** The CBB Mortality Reduction and Relocation Plan shall include at a minimum: (1) handling and bee identification methods; (2) measures to minimize impacts to foraging bees during vegetation removal; (3) measures to minimize impacts to overwintering bees during overwintering habitat removal; (4) measures to minimize direct impacts to active nests; (5) methods for nest excavation/removal following minimization; (6) identification of suitable relocation areas for relocation of queens should one be detected during overwintering habitat removal; and (7) methods to relocate an overwintering queen should one be detected.

Once the CBB Mortality Reduction and Relocation Plan is approved in writing by CDFW, it shall be used for the duration of this ITP unless and until there has been cumulative take of two CBB nests and/or cumulative take of 30 CBB individuals, or unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittee to discuss needed updates. In the event that either two CBB nests or 30 CBB individuals have been taken over the duration of this ITP, CDFW shall be notified within 5 business days of either take number being reached (take notification), and a revised CBB Mortality Reduction and Relocation Plan must be provided to CDFW within 30 calendar days of the take notification, specifically to update and improve the protection and

avoidance plan. No additional take of CBB may occur until the updated CBB Mortality Reduction and Relocation Plan is approved by CDFW. Any other proposed changes to the CDFW-approved CBB Mortality Reduction and Relocation Plan shall be submitted for CDFW written approval prior to implementation of any proposed modifications. The CBB Mortality Reduction and Relocation Plan shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase).

- 7.39. CBB Survey Plan.** If Covered Activities are proposed to occur during the CBB active period (approximately February 1 through October 31; including queen flight season, colony active period, and gyne flight season), the Designated Biologist(s) shall prepare a CBB Survey Plan and submit it to CDFW for review and approval **within 30 days of Amendment 1 issuance of this ITP**. The CBB Survey Plan shall describe methods that will be implemented to survey for above ground bees, consistent and as feasible with CDFW's *Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species* (June 6, 2023). The CBB Survey Plan shall identify when the surveys are planned to take place (i.e., season and how much time between surveys), types of habitat to be surveyed for (i.e., foraging, nesting, and/or overwintering), survey method(s), justification for timing and method of survey design (e.g., elevation, climatic conditions, previous year's precipitation, average ambient temperature, species active periods, etc.), and the capture and identification protocol(s). If photographs will be used as vouchers, the CBB Survey Plan must identify the person(s) who will provide positive identification. Decontamination protocols shall be specified before and after bumble bee sampling within the Project Area, to reduce the likelihood of disease transmission, utilizing methods effective against diseases, such as *Varimorpha bombi* (formerly *Nosema*). All sampling equipment (e.g., nets, vials, other sampling materials, boots) shall be sterilized for 10 minutes following the bleach method in the 2023 Survey Considerations or with UV light (direct sunlight), by placing the equipment in direct sunlight for a minimum of two days.
- 7.40. Additional Pesticide Application Measures for CBB.** If any pesticides are to be used in the Project Area, Permittee shall follow the pesticide best management practices described by Xerces Society's 2018 [Guidance to Protect Habitat from Pesticide Contamination](#), the California Department of Pesticide Regulation's [California's Managed Pollinator Protection Plan –MP3 \(2018\)](#), and the University of California's Division of Agriculture and Natural Resources Statewide Integrated Pest Management Program's [Best management practices to protect bees from pesticides](#). Permittee shall avoid using pesticides marked with the US Environmental Protection Agency's bee hazard icon. Permittee shall preferentially use chemicals that are rated green/III in [UC IPM Bee Precaution Database](#) and shall use the least toxic products at the least concentrated application possible. Permittee shall not use neonicotinoid pesticides or mixtures with fungicides and adjuvants, like those that contain alkylphenol ethoxylates, or soil

fumigants, which penetrate the soil and can poison ground nesting bees. Permittee shall not apply pesticides to suspected or confirmed CBB nests or until a Designated Biologist approved for CBB has performed pre-application surveys and confirmed CBB are not present, each morning before pesticides are applied within 50 feet of a potential CBB nest. A Designated Biologist approved for CBB shall continue to monitor for potential CBB activity during all pesticide application activities. Pesticide application shall cease if CBB are observed within 50 feet of the application area.

- 7.41. Seasonal Limitations for Protection of CBB.** If feasible, Permittee shall avoid initial vegetation clearing and ground disturbance to potential CBB habitat during the CBB active period (approximately February 1 through October 31). If feasible, native or non-native flowering vegetation removal shall occur prior to bloom and before the CBB active period. If Covered Activities cannot be avoided during this time and vegetation needs to be removed while in bloom, the Designated Biologist(s) approved for CBB shall perform pre-construction surveys according to the Condition of Approval CBB Pre-Construction Clearance Survey. If foraging CBB are found in areas designated for vegetation removal, the Designated Biologist(s) shall search for potential nests according to the Condition of Approval Identification of CBB Nests.
- 7.42. CBB Pre-Construction Clearance Survey.** If Covered Activities are proposed to occur during the CBB active period (approximately February 1 through October 31), no more than 14 days prior to beginning vegetation- or ground-disturbing activities, the Designated Biologist(s) approved for CBB shall survey at the Project Area and a 50-foot buffer around the Project Area as described in the CDFW-approved CBB Survey Plan. The Designated Biologist(s) approved for CBB shall repeat the surveys if there has been a break in Covered Activities of more than 30 days. The Permittee shall provide survey results and Project Area mapping to CDFW prior to beginning vegetation- or ground disturbing activities. The survey results shall include a description of vegetation communities and floral resources identified in each Project Area, maps of known or suspected nest sites, any CBB observations, and measures that will be implemented to avoid or minimize direct impacts to CBB, CBB nests, or CBB habitat resources, if observed within or adjacent to a Project Area in accordance with the CDFW-approved CBB Mortality Reduction and Relocation Plan.
- 7.43. Identification of CBB Nests.** During CBB Pre-Construction Clearance Survey(s), the Designated Biologist(s) or approved Designated Monitor(s) approved for CBB shall identify and map all potential CBB nesting habitat, including rodent burrows, dry cavities in rock walls or rock piles, and bunch grasses locations, and flag potential nests that are accessible, according to the Condition of Approval CBB Nest Avoidance. For purposes of this ITP, “accessible” is defined as within the right-of-way and of a steepness that allows for safe investigation by the Designated Biologist(s). If Covered Activities will occur while

nests may be occupied (approximately February 1 to August 30, depending on seasonal conditions), the Designated Biologist(s) approved for CBB shall further investigate all accessible potential nesting habitat for occupancy according to the CDFW-approved CBB Mortality Reduction and Relocation Plan.

- 7.44. CBB Nest Avoidance.** If at any time during the duration of this ITP there has been cumulative take of two CBB nests, CDFW shall be notified within 5 business days of the take number being reached. No additional take of CBB nests may occur until the updated CBB Mortality Reduction and Relocation Plan is approved by CDFW. If an additional active CBB nest is found during pre-construction surveys or at any time during Covered Activities before a revised CBB Mortality Reduction and Relocation Plan is approved by CDFW, the Permittee shall delineate a minimum 50-foot no-disturbance buffer around the nest. Covered Activities shall not begin or resume within the buffer area until the nest has senesced (becomes inactive or is no longer in use), as determined by the Designated Biologist(s) approved for CBB, in consultation with CDFW or until a revised CBB Mortality Reduction and Relocation Plan is approved by CDFW. The Permittee shall report observation of all active CBB nests to CDFW within 24 hours of finding the nest according to the Condition of Approval Covered Species Observations and Notification. To determine whether a nest has senesced, the Designated Biologist(s) approved for CBB shall observe the nest for three consecutive days, for a minimum of one hour per day. Observation shall occur at least one hour after sunrise and at least two hours before sunset on a warm sunny day (65-90 degrees Fahrenheit), with wind less than eight miles per hour. The nest may be deemed senesced if no activity is noted within the observation period. The buffer area shall be clearly marked in the field using signs, stakes or posts with highly visible rope, or high visibility fencing. The Permittee shall contact CDFW immediately if a nest is discovered during ongoing work, to discuss measures that either have been, or will be implemented to avoid and minimize take of nesting bees.
- 7.45. CBB Nest Impact Minimization.** For impacts to the two nests authorized for take by this ITP, impacts to the nests shall be minimized (e.g. delay timing of removal, reduced buffers, etc.) before take (i.e. removal/excavation) of the nests can occur in accordance with the CDFW-approved CBB Mortality Reduction and Relocation Plan. Impacts to all other active nests may only occur according to the Condition of Approval CBB Nest Avoidance.
- 7.46. CBB Carcass Salvage.** A total of 30 CBB individuals are authorized for take by this ITP. If a CBB is killed or otherwise found deceased during Project activities, Permittee shall contact CDFW to determine the fate of the carcass. As feasible, the carcass shall be salvaged, photographed, and placed in a labeled, clean plastic, resealable bag or vial and placed in a freezer. The label shall include a unique identifier (collection number),

species name, time and date of collection, collection location, GPS location (including datum and horizontal error in feet), circumstances surrounding death (e.g. freezer may have been too cold; hot day and extreme shifts in temperature from ambient air to cooler may have contributed), collector name and contact information (phone number or email), and ITP tracking number. If deemed necessary by CDFW, the Permittee shall deliver the carcass (on dry ice if possible) to the following address:

CDFW Wildlife Genetics Research Unit (Wildlife Health Lab)  
Attention: Michael Buchalski  
1415 North Market Boulevard, Suite 9  
Sacramento, California 93834

***Western Joshua Tree (WJT) Specific Take Minimization Measures:***

**7.47. Pre-Construction Surveys for WJT.** The Designated Biologist(s) shall perform pre-construction surveys for WJT prior to initiating any vegetation- or ground disturbing activities following the initial WJT removal previously authorized through emergency regulations adopted under Fish and Game Code section 2084 and CCR Title 14, § 749.10. These surveys shall cover the access routes, the specific Project Area(s), and an additional 50-foot buffer zone. The Designated Biologist(s) shall confirm any previously identified WJT individuals as well as identify on a map any newly identified WJT individuals (i.e. germinated stem from seed, trunk, or rhizome resprout) within the Project Area.

Permittee shall provide the pre-construction survey report via email to CDFW's Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) within 30 days of having performed the survey. The pre-construction survey report shall include, but not be limited to, methodology, date and time of survey, results, discussion, and a map of the locations of all previously and newly identified WJT.

**7.48. WJT Buffer.** If pre-construction surveys have identified new WJT individuals, Permittee shall implement a 50-foot avoidance buffer for each individual WJT or submit a written buffer reduction request to CDFW. The Buffer Reduction request must include the following for each individual or group of individuals: mapped locations, color photographs, and physical description with size in centimeters or meters as appropriate (seed, plant parts, new sprout, trunk/rhizome re-sprout, etc.). If the individual(s) will be impacted, the Buffer Reduction request must include a description and proposed timing of impact (excavation, trimming, herbicide spray, etc.) along with a cumulative number of previously impacted WJT (not including those authorized under the above referenced emergency regulations) under this ITP.

**7.49. WJT Relocation, Seed Salvage, and Topsoil Salvage.** When the cumulative number of impacted WJT (new sprout, trunk, or rhizome re-sprout) exceeds 50 individuals over the duration of this ITP, Permittee shall initiate consultation with CDFW in writing regarding the potential need for relocation, seed salvage, and/or topsoil salvage. CDFW may require the preparation of a WJT Mortality Reduction Plan, which shall include at a minimum: (1) impact minimization measures; (2) relocation methods in accordance with the Western Joshua Tree Relocation Guidelines and Protocols (Attachment 7) or other updated prevailing CDFW-approved guidance; (3) methods of seed or fruit collection; (4) methods of topsoil salvage; and (5) a map and legal description of the proposed receiver site(s) for WJT individual(s) and/or topsoil and proposed permanent conservation mechanism. Take of any more than 50 WJT individuals over the duration of this ITP is prohibited until CDFW prepares a written response to the consultation request.

**8. Habitat Management Land Acquisition:** CDFW has determined that permanent protection and perpetual management of compensatory habitat is necessary and required pursuant to CESA to fully mitigate Project-related impacts of the taking on the Covered Species that will result from implementation of the Covered Activities. This determination is based on factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and CDFW’s estimate of the protected acreage required to provide for adequate compensation.

Compensatory mitigation for Project impacts occurred on a portion of what is commonly known as Onyx Ranch. Onyx Ranch encompasses 215,000 acres of BLM-administered lands in the Mojave Desert and adjacent mountainous areas in eastern Kern County (FIGURE 3). This land is comprised of eight pastures of a former grazing lease within the BLM’s Rudnick Common Allotment #05008 and lease authorization #0403872. Permittee purchased the grazing lease to permanently retire grazing on the entire 215,000 acres. Within these 215,000 acres, 82,275 acres are protected by federal Wilderness and California Desert National Conservation Lands System designations (Conservation Area). In addition to serving as Project-level mitigation for this Project, the 82,275-acre Conservation Area is intended to serve as project-level mitigation to count toward fulfillment of compensatory mitigation obligations required for four other solar development projects: Eland ITP 2081-2020-013-04, Bellefield ITP 2081-2021-037-04, Eland 2 (formerly known as Kudu) ITP 2081-2022-001-04, and Aratina 1 ITP 2081-2020-022-04.

Permittee’s compensatory mitigation obligation for this ITP was satisfied through: (1) the previously purchased and retired grazing lease and the concurrent allocation of the forage to wildlife use pursuant to BLM’s Instruction Memorandum No. 2008-204 and (2) funding for a portion of the enhancement, monitoring, and long-term management of 3,177 acres of the Onyx Ranch 82,275-acre Conservation Area. CDFW has determined that acreage at Onyx Ranch in its current state and through the enhancement of the functional quality of the habitat as a result of

the retirement of grazing and the funding and implementation of certain long-term management actions is sufficient to fully mitigate impacts of this Project.

Permittee deposited a \$6,041,302.62 endowment to the National Fish and Wildlife Foundation on January 27, 2025, to meet the funding requirement for the 3,177-acre portion of Onyx Ranch referenced above, which encompassed the obligation for both Aratina 1 Solar (4,128 acres; 2081-2020-022-04) and Aratina 2 Solar (3,177 acres) Projects.

The financial security (Surety Bond) that was previously held by CDFW in the amount of \$6,041,302.62 was cancelled and returned to the issuing insurance company on January 27, 2025. The cancellation was received by the insurance company on February 3, 2025.

**X. Amendment:**

This ITP may be amended as provided by California Code of Regulations, title 14, section 783.6, subdivision (c), and other applicable law. This ITP may be amended without the concurrence of the Permittee as required by law, including if CDFW determines that continued implementation of the Project as authorized under this ITP would jeopardize the continued existence of the Covered Species or where Project changes or changed biological conditions necessitate an ITP amendment to ensure that all Project-related impacts of the taking to the Covered Species are minimized and fully mitigated.

Permittee may request an extension of this ITP provided that the request is received 60 days prior to the expiration of the ITP, a fee to amend for renewal of this ITP is received, and all of the Conditions of Approval required in this ITP are met. To request the extension, Permittee shall submit a written application to the Regional Manager at least 60 days prior to the expiration date of this ITP and include with the request a payment of the amendment fee identified on CDFW's website at the time the request is submitted (Fish & G. Code, § 2081.2, subd. (e)(1)). CDFW shall process the renewal request in accordance with California Code Regulations, title 14, section 783.6, subdivisions (b)(1-3), or the applicable provisions of the Fish and Game Code in existence at that time. Permittee must also submit with the request their certification in writing that all statements, information, and environmental conditions included in the original application remain current and correct, unless previously changed or corrected. If the information is no longer current or correct, the applicant must provide the corrected information. The Director will renew the ITP if the application meets the standards in California Code Regulations, title 14, section 783.4. If the Permittee submits the application for renewal at least 60 days prior to the expiration date of the ITP and provides all requested items, Permittee may continue the activities authorized by the expired permit until the Director has acted on such a person's application for renewal (see Cal. Code Regs., tit. 14, § 783.6, subdivision (b)(1-3)).

**XI. Stop-Work Order:**

If CDFW determines the Permittee has violated any term or condition of this ITP or has engaged in unlawful take, CDFW may issue Permittee a written stop-work order instructing the Permittee to suspend any Covered Activity for an initial period of up to 30 calendar days or risk suspension or revocation of this ITP. CDFW can issue a stop-work order to prevent or remedy a violation of this ITP, including but not limited to the failure to comply with reporting or monitoring obligations, or to prevent the unauthorized take of any CESA endangered, threatened, or candidate species, regardless of whether that species is a Covered Species under this ITP. Permittee shall stop work immediately as directed by CDFW upon receipt of any such stop-work order. Upon written notice to Permittee, CDFW may extend any stop-work order issued to Permittee for a period not to exceed 30 additional days.

If Permittee fails to remedy the violation or to comply with a stop-work order, CDFW may proceed with suspension and revocation of this ITP. Suspension and revocation of this ITP shall be governed by California Code of Regulations, title 14, section 783.7, and any other applicable law. Neither the Designated Biologist nor CDFW shall be liable for any costs incurred in complying with stop-work orders.

**XII. Compliance with Other Laws:**

This ITP sets forth CDFW's requirements for the Permittee to implement the Project pursuant to CESA. This ITP does not necessarily create an entitlement to proceed with the Project. Permittee is responsible for complying with all other applicable federal, state, and local law.

**XIII. Notices:**

Written notices, reports and other communications relating to this ITP shall be delivered to CDFW by email or registered first class mail at the following address, or at addresses CDFW may subsequently provide the Permittee. Notices, reports, and other communications shall reference the Project name, Permittee, and ITP Number (2081-2024-038-04) in a cover letter and on any other associated documents.

Original cover with attachment(s) to:

Julie A. Vance, Regional Manager  
California Department of Fish and Wildlife  
1234 East Shaw Avenue  
Fresno, California 93710  
Telephone (559) 243-4005  
[RRR.R4@wildlife.ca.gov](mailto:RRR.R4@wildlife.ca.gov)

Incidental Take Permit – Major Amendment No. 1  
No. 2081-2024-038-04  
**45MG 8ME LLC;**  
**ARATINA 2 SOLAR PROJECT**

and a copy to:

Habitat Conservation Planning Branch  
California Department of Fish and Wildlife  
Attention: CESA Permitting Program  
Post Office Box 944209  
Sacramento, California 94244-2090  
[CESA@wildlife.ca.gov](mailto:CESA@wildlife.ca.gov)

Unless Permittee is notified otherwise, CDFW's Regional Representative for purposes of addressing issues that arise during implementation of this ITP is:

Jim Vang  
California Department of Fish and Wildlife  
1234 East Shaw Avenue  
Fresno, California 93710  
Telephone (559) 580-3203  
[Jim.Vang@wildlife.ca.gov](mailto:Jim.Vang@wildlife.ca.gov)

**XIV. Compliance with the California Environmental Quality Act:**

CDFW's issuance of this ITP is subject to CEQA. CDFW is a responsible agency pursuant to CEQA with respect to this ITP because of prior environmental review of the Project by the lead agency, Kern County. (See generally Pub. Resources Code, §§ 21067, 21069.) The lead agency's prior environmental review of the Project is set forth in Aratina Solar Farm Project EIR, (SCH No.: 2021020513) dated August 2021 that the Kern County certified for Aratina Solar Farm Project on 10/12/2021. At the time the lead agency certified the EIR and approved the Project it also adopted various mitigation measures for the Covered Species as conditions of Project approval.

This ITP, along with CDFW's related CEQA findings, which are available as a separate document, provide evidence of CDFW's consideration of the lead agency's EIR for the Project and the environmental effects related to issuance of this ITP (CEQA Guidelines, § 15096, subd. (f)). CDFW finds that issuance of this ITP will not result in any previously undisclosed potentially significant effects on the environment or a substantial increase in the severity of any potentially significant environmental effects previously disclosed by the lead agency. Furthermore, to the extent the potential for such effects exists, CDFW finds adherence to and implementation of the Conditions of Project Approval adopted by the lead agency, and that adherence to and implementation of the Conditions of Approval imposed by CDFW through the issuance of this ITP, will avoid or reduce to below a level of significance any such potential effects. CDFW consequently finds that issuance of this ITP will not result in any significant, adverse impacts on the environment.

**XV. Findings Pursuant to CESA:**

These findings are intended to document CDFW's compliance with the specific findings requirements set forth in CESA and related regulations. (Fish & G. Code § 2081, subs. (b)-(c); Cal. Code Regs., tit. 14, §§ 783.4, subs. (a)-(b), 783.5, subd. (c)(2).)

CDFW finds based on substantial evidence in the ITP application, Aratina Solar Farm Project, the results of consultations, and the administrative record of proceedings, that issuance of this ITP complies and is consistent with the criteria governing the issuance of ITPs pursuant to CESA:

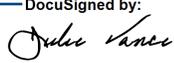
- (1) Take of Covered Species as defined in this ITP will be incidental to the otherwise lawful activities covered under this ITP;
- (2) Impacts of the taking on Covered Species will be minimized and fully mitigated through the implementation of measures required by this ITP and as described in the MMRP. Measures include: (1) permanent retirement of grazing on a 215,000-acre portion of Onyx Ranch, of which 82,275 acres is within a Conservation Area protected by Federal Wilderness and California Desert National Conservation Lands System designations; (2) funding for the installation and maintenance of perimeter fencing and a perpetual endowment to fund vertical mulching, installation of vehicle barriers, and species and vegetation monitoring on 7,305 acres of Onyx Ranch; (3) establishment of avoidance zones; (4) worker education; and (5) Quarterly Compliance Reports. CDFW evaluated factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and CDFW's estimate of the acreage required to provide for adequate compensation. Based on this evaluation, CDFW determined that the permanent retirement of grazing on the 215,000-acre Onyx Ranch coupled with implementation of management actions to achieve additional ecological lift for the Covered Species, along with the minimization, monitoring, reporting, and funding requirements of this ITP minimizes and fully mitigates the impacts of the taking caused by the Project;
- (3) The take avoidance and mitigation measures required pursuant to the conditions of this ITP and its attachments are roughly proportional in extent to the impacts of the taking authorized by this ITP;
- (4) The measures required by this ITP maintain Permittee's objectives to the greatest extent possible;
- (5) All required measures are capable of successful implementation;
- (6) This ITP is consistent with any regulations adopted pursuant to Fish and Game Code sections 2112 and 2114;

- (7) Permittee has ensured adequate funding to implement the measures required by this ITP as well as for monitoring compliance with, and the effectiveness of, those measures for the Project; and
- (8) Issuance of this ITP will not jeopardize the continued existence of the Covered Species based on the best scientific and other information reasonably available, and this finding includes consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (1) known population trends; (2) known threats to the species; and (3) reasonably foreseeable impacts on the species from other related projects and activities. Moreover, CDFW's finding is based, in part, on CDFW's express authority to amend the terms and conditions of this ITP without concurrence of the Permittee as necessary to avoid jeopardy and as required by law.

**XVI. Attachments:**

FIGURE 1	Project Vicinity
FIGURE 2	Project Area
FIGURE 3	Map of Onyx Ranch
ATTACHMENT 1	Mitigation Monitoring and Reporting Program
ATTACHMENT 2	Biologist Resume Form
ATTACHMENT 3	U.S. Fish and Wildlife Service's <i>Desert Tortoise Field Manual</i>
ATTACHMENT 4	Letter of Credit Form
ATTACHMENT 5	Mitigation Payment Transmittal Form
ATTACHMENT 6	Amended and Restated with Track Changes
ATTACHMENT 7	Western Joshua Tree Relocation Guidelines and Protocols

**ISSUED BY THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE ON** 1/30/2026

DocuSigned by:  
  
 FA83F09FE08945A...  
 Julie A. Vance, Regional Manager  
 Central Region

Incidental Take Permit – Major Amendment No. 1  
 No. 2081-2024-038-04  
**45MG 8ME LLC;**  
**ARATINA 2 SOLAR PROJECT**

## ATTACHMENTS

Figure 1: Project Vicinity

Figure 2: Project Area

Figure 3: Map of Onyx Ranch

Attachment 1: Mitigation Monitoring and Reporting Program

Attachment 2: Biologist Resume Form

Attachment 3: U.S. Fish and Wildlife Service's *Desert Tortoise Field Manual*

Attachment 4: Letter of Credit Form

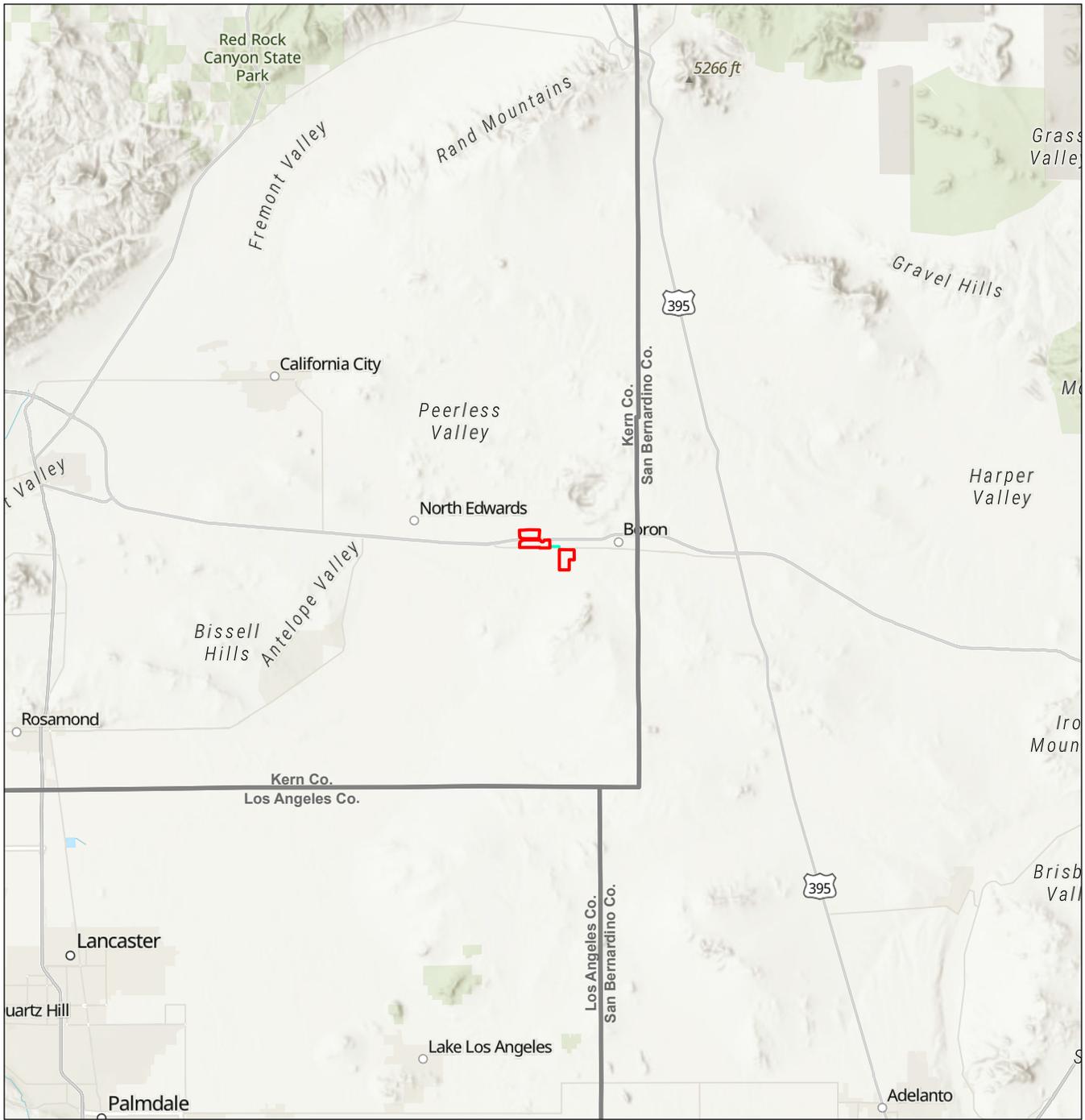
Attachment 5: Mitigation Payment Transmittal Form

Attachment 6: Amended and Restated ITP with Track Changes

Amendment 7: Western Joshua Tree Relocation Guidelines and Protocols

FIGURE 1

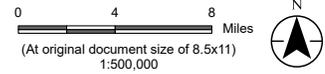
Project Vicinity



V:\1857\Active\185706738\03\_data\gis\proj\AratinaSolar\_1\AratinaSolar\_1.aprx Revised: 2025-09-05 By: pglending



- Aratina 2 Project Area
- A2 MV Corridor
- County



Project Location: T 11N, R 8W, S 33, 34  
 T 10N, R 8W, S 2  
 Kern County, CA  
 Prepared by PG on 2025-09-05  
 TR by JE on 2025-09-05  
 Client/Project: Aratina 2 Solar Project 185706738

Figure No. **1**  
 Title **Project Vicinity**

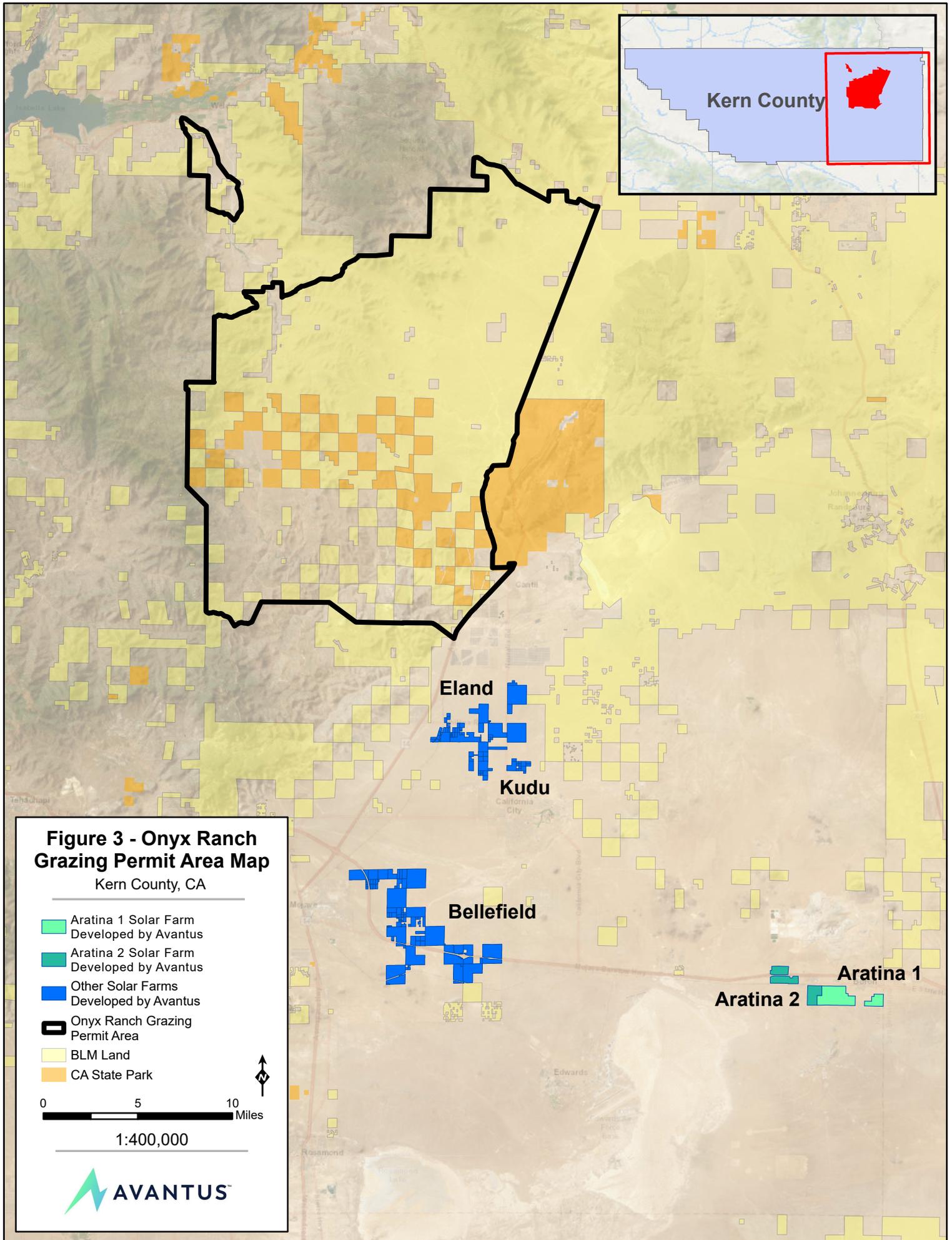
FIGURE 2

Project Area



FIGURE 3

Map of Onyx Ranch



## ATTACHMENT 1

### Mitigation Monitoring and Reporting Program

**Attachment 1**

**CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE  
MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)  
CALIFORNIA ENDANGERED SPECIES ACT**

**AMENDED INCIDENTAL TAKE PERMIT NO. 2081-2024-038-04  
(Amendment No. 1)**

**PERMITTEE: 45MG 8me LLC**

**PROJECT: Aratina 2 Solar Project**

**PURPOSE OF THE MMRP**

The purpose of this MMRP is to ensure that the impact minimization and mitigation measures required by the Department of Fish and Wildlife (CDFW) for the above-referenced Project are properly implemented, and thereby to ensure compliance with section 2081(b) of the Fish and Game Code and section 21081.6 of the Public Resources Code. A table summarizing the mitigation measures required by CDFW is attached. This table is a tool for use in monitoring and reporting on implementation of mitigation measures, but the descriptions in the table do not supersede the mitigation measures set forth in the California Incidental Take Permit (ITP) and in attachments to the ITP, and the omission of a permit requirement from the attached table does not relieve the Permittee of the obligation to ensure the requirement is performed.

**OBLIGATIONS OF PERMITTEE**

Mitigation measures must be implemented within the time periods indicated in the table that appears below. Permittee has the primary responsibility for monitoring compliance with all mitigation measures and for reporting to CDFW on the progress in implementing those measures. These monitoring and reporting requirements are set forth in the ITP itself and are summarized at the front of the attached table.

**VERIFICATION OF COMPLIANCE, EFFECTIVENESS**

CDFW may, at its sole discretion, verify compliance with any mitigation measure or independently assess the effectiveness of any mitigation measure.

## **TABLE OF MITIGATION MEASURES**

The following items are identified for each mitigation measure: Mitigation Measure, Source, Implementation Schedule, Responsible Party, and Status/Date/Initials. The Mitigation Measure column summarizes the mitigation requirements of the ITP. The Source column identifies the ITP condition that sets forth the mitigation measure. The Implementation Schedule column shows the date or phase when each mitigation measure will be implemented. The Responsible Party column identifies the person or agency that is primarily responsible for implementing the mitigation measure. The Status/Date/Initials column shall be completed by the Permittee during preparation of each Status Report and the Final Mitigation Report, and must identify the implementation status of each mitigation measure, the date that status was determined, and the initials of the person determining the status.

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
1	<p><u>Designated Representative.</u> Before starting Covered Activities, Permittee shall designate a representative (Designated Representative) responsible for communications with CDFW and overseeing compliance with the ITP. Permittee shall notify CDFW in writing before starting Covered Activities of the Designated Representative's name, business address, and contact information, and shall notify CDFW in writing if a substitute Designated Representative is selected or identified at any time during the term of the ITP.</p>	ITP Condition # 5.1	Before commencing ground- or vegetation-disturbing activities	Permittee	
2	<p><u>Designated Biologist(s) and Designated Monitor(s).</u> Permittee shall submit to CDFW in writing the name, qualifications, business address, and contact information of the Designated Biologist(s) and Biological Designated Monitor(s) using the Biologist Resume Form (ATTACHMENT 2) or another format containing the same information for CDFW review and written approval before starting Covered Activities. The Designated Monitor(s) may assist the Designated Biologist(s) in compliance monitoring under the direct supervision of the Designated Biologist(s).</p> <p>Permittee shall ensure that the Designated Biologist(s) are knowledgeable and experienced in the biology, natural history, life cycle, flowering period, types of reproduction and associated components such as the pollinating Yucca moth, seed caching rodents, and rhizomal growth, trapping, handling, and relocating or other exclusion techniques, as permitted, and the excavation of burrows, as applicable to each of the Covered Species. Permittee shall ensure that the Designated Monitor(s) are knowledgeable and experienced in the biology, natural history, and construction monitoring of the Covered Species. The Designated Biologist(s) and Designated Monitor(s) shall be responsible for monitoring Covered Activities to help minimize and fully mitigate or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain CDFW approval of the Designated Biologist(s) and Designated Monitor(s) in writing before starting Covered Activities and shall also obtain approval in advance, in writing, if the Designated Biologist(s) or Designated Monitor(s) must be changed.</p>	ITP Condition # 5.2	Before commencing ground- or vegetation-disturbing activities	Permittee	
3	<p><u>Designated Biologist(s) and Designated Monitor(s) Authority.</u> To ensure compliance with the Conditions of Approval of the ITP, the Designated Biologist(s) or Designated Monitor(s) shall immediately stop any activity that does not comply with the ITP and/or order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species. Permittee shall provide unfettered access to the Project Area and otherwise facilitate the Designated Biologist(s) and Designated Monitor(s) in the performance of their duties. If the Designated Biologist(s) or Designated Monitor(s) is/are unable to comply with the ITP, then they shall notify the CDFW Representative immediately. Permittee shall not enter into any agreement or contract of any kind, including but not limited to non-disclosure agreements and confidentiality agreements, with its contractors and/or the Designated Biologist(s) or Designated Monitor(s) that prohibit or impede open communication with CDFW, including but not limited to providing CDFW staff with the results of any surveys, reports, or studies or notifying CDFW of any non-compliance or take. Failure to notify CDFW of any non-compliance or take or injury of a Covered Species as a result of such agreement or contract may result in CDFW taking actions to prevent or remedy a violation of the ITP.</p>	ITP Condition # 5.3	Entire Project	Designated Biologist(s)	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
4	<p><u>Education Program.</u> Permittee shall conduct an education program for all persons employed or otherwise working in the Project Area before starting Covered Activities. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status pursuant to CESA including legal protection, recovery efforts, penalties for violations, and Project-specific protective measures described in the ITP.</p> <p>Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Project Area. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Project Area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be repeated at least once annually for long-term and/or permanent employees that will be conducting work in the Project Area.</p>	ITP Condition # 5.4	Before commencing ground- or vegetation-disturbing activities	Permittee	
5	<p><u>Construction Monitoring Documentation.</u> The Designated Biologist(s) and Designated Monitor(s) shall maintain construction-monitoring documentation on-site in either hard copy or digital format throughout the construction period, which shall include a copy of the ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring documentation is available for review at the Project Area upon request by CDFW.</p>	ITP Condition # 5.5	During Project Construction	Designated Biologist(s)	
6	<p><u>Trash Abatement.</u> Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in animal-proof containers and removed, ideally at daily intervals but at least once a week, to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs.</p>	ITP Condition # 5.6	Entire Project	Permittee	
7	<p><u>Dust Control.</u> Permittee shall reduce fugitive dust by prohibiting ground disturbing Covered Activities when wind speed exceeds 25 miles per hour and limiting vehicle speeds on unpaved roads to 20 miles per hour. Permittee shall implement dust control measures during Covered Activities to facilitate visibility for monitoring of the Covered Species by the Designated Biologist. Permittee shall keep the amount of water used to the minimum amount needed and shall not allow water to form puddles. Dust palliatives or other chemical soil stabilizers shall not be used during construction or O&amp;M activities without specific prior written approval by CDFW.</p>	ITP Condition # 5.7	Entire Project	Permittee	
8	<p><u>Erosion Control Materials.</u> Permittee shall prohibit use of erosion control materials potentially harmful to Covered Species and other wildlife, such as monofilament netting, photodegradable mesh (erosion control matting) or similar material, in potential Covered Species' habitat. Permittee shall only deploy erosion control mats, blankets, or coir rolls that consist of natural-fiber, biodegradable materials. Rock used for road improvement or other purposes shall be no greater than 4 inches in diameter unless the interstitial spaces are filled with 2-inch or smaller diameter rock to establish a passable surface for adult and juvenile desert tortoise.</p>	ITP Condition # 5.8	Entire Project	Permittee	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
9	<u>Delineation of Property Boundaries.</u> Before starting Covered Activities, Permittee shall clearly delineate the boundaries of the Project Area with fencing, stakes, or flags. Permittee shall restrict all Covered Activities to within the fenced, staked, or flagged areas. Permittee shall maintain all fencing, stakes, and flags until the completion of Covered Activities in the Project Area and remove and properly dispose of any temporary delineation materials upon completion of activities in the Project Area.	ITP Condition # 5.9	Before commencing ground- or vegetation-disturbing activities	Permittee	
10	<u>Delineation of Habitat.</u> Permittee shall clearly delineate habitat of the Covered Species within the Project Area with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize the disturbance of Covered Species' habitat. All delineation materials shall be removed and disposed of properly upon completion of activities in the Project Area.	ITP Condition #5.10	Entire Project	Permittee	
11	<u>Project Access.</u> Project-related personnel shall access the Project Area using existing routes, or routes identified in the Project Description and shall not cross Covered Species' habitat outside of or en route to the Project Area. Permittee shall restrict Project-related vehicle traffic to established roads, staging, and parking areas. Permittee shall ensure that vehicle speeds do not exceed 20 miles per hour to avoid Covered Species on or traversing the roads. If Permittee determines construction of routes for travel are necessary outside of the Project Area, the Designated Representative shall contact CDFW for written approval before carrying out such an activity. CDFW may require an amendment to the ITP, among other reasons, if additional take of Covered Species will occur as a result of the Project modification.	ITP Condition #5.11	Entire Project	Permittee	
12	<u>Staging Areas.</u> Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project Area using, to the extent possible, previously disturbed areas. Additionally, Permittee shall not use or cross Covered Species' habitat outside of the marked Project Area unless provided for as described in Condition of Approval <u>Project Access</u> of the ITP.	ITP Condition #5.12	Entire Project	Permittee	
13	<u>Hazardous Waste.</u> Permittee shall immediately stop and, pursuant to pertinent State and federal statutes and regulations, arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the Project Area and shall properly contain and dispose of any unused or leftover hazardous products off-site.  Permittee shall ensure that all fueling, or maintenance of vehicles or equipment shall occur within established O&M buildings or designated staging areas and shall not occur within 200 feet of Covered Species burrows, unless approved in advance and in writing by CDFW.	ITP Condition #5.13	Entire Project	Permittee	
14	<u>CDFW Access.</u> Permittee shall provide CDFW staff with reasonable access to the Project and mitigation lands under Permittee control, and shall otherwise fully cooperate with CDFW efforts to verify compliance with or effectiveness of mitigation measures set forth in the ITP.	ITP Condition #5.14	Entire Project	Permittee	
15	<u>Refuse Removal.</u> Upon completion of Covered Activities, Permittee shall remove from the Project Area and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.	ITP Condition #5.15	Upon Completion of Covered Activities	Permittee	
16	<u>Lighting.</u> All temporary and permanent outdoor lighting shall be aimed at the ground, shielded to prevent light from shining skyward, of minimum wattage necessary for safety and activity, and of motion-sensor type to prevent continuous nighttime lighting.	ITP Condition #5.16	Entire Project	Permittee	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
17	<u>Herbicide Use.</u> Permittee shall limit herbicide use to treat and control invasive plant species only and shall only apply herbicide after hand or mechanical efforts have been ineffective. Permittee shall ensure that all application of herbicide is done by a licensed applicator in accordance with all applicable federal, State, and local laws and regulations. Herbicide sprays shall be used only when wind speeds are less than 10 miles per hour and all sprays shall contain a dye to prevent overspray. If herbicides must be used, Permittee shall consult with CDFW and obtain written approval from CDFW before using any herbicides. Further, Permittee shall follow Condition of Approval <u>Additional Pesticide Application Measures for CBB</u> as applicable.	ITP Condition #5.17	Entire Project	Permittee	
18	<u>Dogs.</u> Permittee shall prohibit domestic and working dogs from the Project Area and site access routes during Covered Activities, except those in the possession of authorized security personnel or federal, State, or local law enforcement officials.	ITP Condition #5.18	Entire Project	Permittee	
19	<u>Wildfire Avoidance.</u> Permittee or Permittee's contractors shall minimize the potential for human-caused wildfires by carrying water or fire extinguishers and shovels in all Project-related vehicles and heavy equipment. The use of shields, protective mats, or use of other fire preventative methods shall be used during grinding and welding to minimize the potential for fire. Personnel shall be trained regarding the fire hazard for wildlife as part of the worker education program described in Condition of Approval <u>Education Program</u> above.	ITP Conditions #5.19	Entire Project	Permittee	
20	<u>Permanent Security Fencing Plan.</u> Permittee shall submit a Permanent Security Fencing Plan for CDFW review and written approval before starting Covered Activities, to the Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u> below.  The Permanent Security Fencing Plan shall include, but not be limited to the fencing materials, design, installation methods, installation locations, post-construction augmentation plans, and on-going maintenance plans. Permanent security fencing around the solar panel "blocks" and the Project Area as a whole (excluding the O&M building and substation), shall be modified to allow for small animal permeability following the construction phase by leaving a 4 to 6-inch gap from the ground to the bottom of the fence, or other design approved by CDFW. Permittee shall ensure vegetation, debris, and materials do not block fence impacting permeability.	ITP Conditions #5.20	Before commencing ground- or vegetation-disturbing activities	Permittee	
21	<u>On-Site Drainage Basin Entrapment Prevention.</u> Permittee shall ensure that final design of the on-site stormwater drainage basins have adequate elements to ensure that Covered Species can escape should one inadvertently enter the basin or elements designed to preclude entry. Permittee shall submit a Basin Design Plan with elements necessary for Covered Species escape and/or entry prevention for review and approval by CDFW prior to implementation of Covered Activities related to basin construction and/or installation.	ITP Conditions #5.21	Before commencing ground- or vegetation-disturbing activities	Permittee	
22	<u>Notification Before Commencement and Pre-Construction Survey(s).</u> The Designated Representative shall notify CDFW before starting Covered Activities. The Notification shall include the applicable pre-construction surveys and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.	ITP Conditions #6.1	Before commencing ground- or vegetation-disturbing activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
23	<p><u>Lapse in Continuity of Work Activities.</u> Should an unplanned or planned lapse of Covered Activities occur for more than 30 calendar days, a new Notification Before Commencement and Pre-Construction Survey shall be performed and submitted per Condition of Approval Notification Before Commencement and Pre-Construction Survey above.</p>	ITP Conditions #6.2	Before commencing ground- or vegetation-disturbing activities/Entire Project	Permittee	
24	<p><u>Notification of Non-Compliance.</u> The Designated Representative or Designated Biologist(s) shall immediately notify CDFW if the Permittee is not in compliance with any Condition of Approval of the ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in the ITP and/or this MMRP. The Designated Representative shall follow up within 24 hours with a written report to CDFW describing, in detail, any non-compliance with the ITP and suggested measures to remedy the situation.</p>	ITP Conditions #6.3	Entire Project	Designated Biologist(s)	
25	<p><u>Compliance Monitoring.</u> The Designated Biologist(s) shall be on-site daily, for the duration of the day, when Covered Activities occur during the entire initial construction period and on site daily, for the duration of the day, when vegetation- or ground disturbing activities occur during the O&amp;M phase. Allowances for reduced compliance monitoring frequencies, specific for desert tortoise (DT), may be considered when temporary exclusion fencing has been installed and properly maintained, in accordance with Conditions of Approval <u>DT Temporary Exclusion Fencing Plan</u> and <u>DT Temporary Exclusion Fencing Installation, Augmentation, and Removal</u>. Allowance requests shall be submitted to CDFW for review and written approval.</p> <p>Vegetation- and ground-disturbing activities include any action that modifies the existing ground or vegetated surface. Examples include the use of string trimmers, mowing, application of herbicide, washing of solar panels, trenching, grading, etc. Operation of vehicles on established roads that have been properly maintained is not considered a vegetation- or ground-disturbing activity. The Designated Biologist(s) or Designated Monitor(s) shall otherwise be on-site during the construction period a minimum of once every 14 days during periods of inactivity and after clearing, grubbing, and grading are completed. The Designated Biologist(s) shall conduct compliance inspections to: (1) minimize incidental take of the Covered Species; (2) prevent unlawful take of species; (3) check for compliance with all measures of the ITP; (4) check all exclusion zones; (5) ensure that signs, stakes, and fencing are intact, and that Covered Activities are only occurring in the Project Area; (6) maintain an on-going account of the number of acres that are permanently disturbed by the Project; and (7) document the Covered Activities that occurred.</p> <p>The Designated Representative, Designated Biologist(s), or Designated Monitor(s) shall prepare daily written observation and inspection records summarizing oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by the ITP.</p>	ITP Conditions #6.4	Entire Project	Designated Biologist(s)	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
26	<p><u>Quarterly Compliance Report (Construction Phase)</u>. The Designated Representative or Designated Biologist(s) shall compile the observation and inspection records identified in Condition of Approval <u>Compliance Monitoring</u> into a Quarterly Compliance Report (QCR) during the initial construction period and into an Annual Status Report (Condition of Approval <u>Annual Status Report (Construction Phase and O&amp;M Phase)</u>) during the O&amp;M phase and submit it to CDFW along with a copy of this MMRP table with notes showing the current implementation status of each mitigation measure. Quarterly Compliance Reports shall be submitted via e-mail to CDFW's Regional Representative, Regional Office, and Headquarters CESA Program no later than the 15<sup>th</sup> day of the month following the reporting period. At the time of the ITP's approval, the Regional Representative is Jim Vang (<a href="mailto:Jim.Vang@wildlife.ca.gov">Jim.Vang@wildlife.ca.gov</a>), the Regional Office e-mail is <a href="mailto:RRR.R4@wildlife.ca.gov">RRR.R4@wildlife.ca.gov</a>, and the Headquarters CESA Program e-mail is <a href="mailto:CESA@wildlife.ca.gov">CESA@wildlife.ca.gov</a>. CDFW may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If CDFW determines the reporting schedule must be changed, CDFW will notify Permittee in writing of the new reporting schedule.</p>	ITP Condition # 6.5	During Project Construction	Permittee	
27	<p><u>Annual Status Report (Construction Phase and O&amp;M Phase)</u>. Permittee shall provide CDFW with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of the ITP and continuing until CDFW accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all QCRs for that year (Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u>); (2) a record of the Education Program training sessions provided over the reporting year (Condition of Approval <u>Education Program</u>); (3) a general description of the status of the Project Area and Covered Activities, including actual or projected completion dates, if known; (4) a copy of the table in this MMRP with notes showing the current implementation status of each mitigation measure; (5) a summary of findings from all pre-construction surveys conducted, including but not limited to, the number of times a Covered Species, their burrow, or nest was encountered, locations, if avoidance was achieved, and if not, what measures were implemented; (6) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (7) all available information about Project-related incidental take of the Covered Species including running take totals for Crotch's bumble bee nests and individuals and western Joshua tree individuals; (8) a written and mapped accounting of the number of acres subject to both temporary and permanent disturbance, both for the prior calendar year, and a total since ITP issuance; and (9) information about other Project impacts on the Covered Species. The ASR shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u> above.</p>	ITP Condition # 6.6	Entire Project	Permittee	
28	<p><u>CNDDDB Observations</u>. The Designated Biologist(s) shall submit all observations of Covered Species to CDFW's California Natural Diversity Database (CNDDDB) within a minimum of 60 calendar days of the observation. The Designated Biologist(s) shall include copies of the submitted forms with the next QCR or ASR, whichever is submitted first relative to the observation.</p>	ITP Condition # 6.7	Entire Project	Designated Biologist(s)	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
29	<u>Construction Phase Conditions of Approval Evaluation Report</u> . No later than 45 days after completion of all initial construction activities for the solar site and gen-tie line, Permittee shall provide CDFW with a Conditions of Approval Evaluation Report. The Designated Biologist shall prepare the Conditions of Approval Evaluation Report which shall include, at a minimum: (1) a summary of all QCRs and all ASRs; (2) beginning and ending dates of covered activities for the construction phase; (3) a copy of the table in this MMRP with notes showing when each of the construction phase conditions were implemented and an assessment of the effectiveness of each of the ITP's Conditions of Approval associated with the construction of the Project in minimizing and mitigating Project impacts on Covered Species; (4) recommendations on how the conditions might be changed to more effectively minimize take and mitigate the impact of future projects on Covered Species; and (5) any other pertinent information. The Initial Construction Phase Conditions of Approval Evaluation Report shall be submitted via e-mail to the entities identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u> above.	ITP Condition # 6.8	After Completion of Initial Construction Activities	Permittee	
30	<u>Final Mitigation Report</u> . No later than 45 calendar days after completion of all mitigation measures, Permittee shall provide CDFW with a Final Mitigation Report. The Designated Biologist(s) shall prepare the Final Mitigation Report which shall include, at a minimum: (1) a summary of all QCRs and ASRs; (2) a copy of the table in this MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of the ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information. The Final Mitigation Report shall be submitted via e-mail the Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u> above.	ITP Condition # 6.9	After Completion of All Mitigation Measures	Permittee	
31	<u>As-Built Development Plans</u> . No later than 45 calendar days after completion of all initial construction activities, Permittee shall submit as-built development plans. The as-built plan sheets shall delineate and quantify the extent of permanent Project features, including roads, utilities and all other facilities and features associated with the Project. The as-built plans shall include an estimate of the permanent disturbance during construction by highlighting the estimated disturbance areas on the as-built plan sheets. The plan scale shall be 1":250' (one inch to 250 feet) or smaller. As-built plans shall be derived from survey data acquired after initial Project construction has been completed and shall be verified by the Designated Biologist(s). The as-built plans shall be submitted in electronic format (e-mail or other available document repository/share site) to the Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u> above.	ITP Condition # 6.10	After Completion of Initial Construction Activities	Permittee	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
32	<u>Notification of Take or Injury.</u> Permittee shall immediately notify the Designated Biologist(s) if a Covered Species is taken or injured by a Project-related activity, or if a Covered Species is otherwise found dead or injured within the vicinity of the Project. The Designated Biologist(s) or Designated Representative shall provide initial notification to CDFW via email to the Regional Office at <a href="mailto:RRR.R4@wildlife.ca.gov">RRR.R4@wildlife.ca.gov</a> . The initial notification to CDFW shall include information regarding the location, species, number of animals taken or injured, and the ITP Number. Following initial notification, Permittee shall send CDFW a written report within two calendar days. The report shall include the date and time of the finding or incident, location of the animal or carcass, and if possible, provide a photograph, explanation as to cause of take or injury, and any other pertinent information. The written report shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u> above.	ITP Condition # 6.11	Entire Project	Permittee	
33	<u>Notification of Non-Compliance.</u> The Designated Representative or Designated Biologist(s) shall immediately notify CDFW if the Permittee is not in compliance with any Condition of Approval of the ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in the ITP. The Designated Representative shall follow up within 24 hours with a written report to CDFW describing, in detail, any non-compliance with the ITP and suggested measures to remedy the situation.	ITP Condition # 6.12	Entire Project	Permittee	
34	<u>Designated Biologist(s) On Site.</u> The Designated Biologist(s) shall be on site during all activities that may result in the take of Covered Species and in accordance with Condition of Approval <u>Compliance Monitoring</u> .	ITP Condition # 7.1	Entire Project	Designated Biologist(s)	
35	<u>Work Hours.</u> Permittee shall conduct all Covered Activities during daylight hours (sunrise to sunset) except for the following activities as necessary: (1) planned and unplanned maintenance and quality assurance/control activities, repair and replacement, wiring, testing, and commissioning that must occur after dark to ensure PV arrays are not energized; (2) unanticipated emergencies (in accordance with Section 21060.3 of the Public Resources Code), including forced outages and non-routine maintenance or repair requiring immediate attention; (3) security patrols; (4) refueling equipment and staging material for the following day's construction activities, and (5) concrete pouring.  Permittee shall ensure: (1) that any vehicle traffic necessary during nighttime hours associated with these activities are conducted with caution to minimize impacts to Covered Species; (2) the speed limit during allowable night work is reduced to 10 mph for non-emergency activities; and (3) that CDFW is notified as soon as possible and no later than 24 hours after commencement of any emergency nighttime activities.	ITP Condition # 7.2	Entire Project	Permittee	
36	<u>Delineation of Ingress and Egress Routes.</u> Permittee shall flag or otherwise clearly mark all access roads in the field from the paved road and vehicle operation shall be limited to these designated ingress and egress routes.	ITP Condition # 7.3	Entire Project	Permittee	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
37	<u>Vehicle Parking</u> . Permittee shall not allow vehicles to park on top of Covered Species burrows, nest burrows, or nests, except within designated staging areas for which burrows have been excavated per Conditions of Approval <u>DT Burrow Excavation</u> , <u>MGS Live Trapping</u> , <u>Burrow Excavation</u> , and <u>Relocation</u> , and/or <u>BUOW Burrow Excavation</u> and allowable nests have been removed/excavated per Condition of Approval <u>CBB Nest Impact Minimization</u> . Vehicles left overnight shall be located outside the applicable avoidance buffers as defined in Conditions of Approval <u>DT Burrow Avoidance</u> , <u>MGS Burrow Avoidance</u> , <u>BUOW Burrow Avoidance</u> , <u>CBB Nest Avoidance</u> , and/or <u>CBB Nest Impact Minimization</u> .	ITP Condition # 7.4	Entire Project	Permittee	
38	<u>Vehicle Equipment Inspection</u> . Workers shall inspect for Covered Species, including nests, under vehicles and equipment every time before the vehicles and equipment are moved. If a Covered Species or Covered Species nest is present, the worker shall notify the Designated Biologist(s) and wait for the Covered Species to move unimpeded to a safe location or alternatively, the Designated Biologist(s) shall move the Covered Species out of harm's way in compliance with the approved Covered Species Mortality Reduction and Relocation Plans required in Conditions of Approval <u>DT Mortality Reduction and Relocation Plan</u> , <u>MGS Mortality Reduction and Relocation Plan</u> , <u>BUOW Mortality Reduction Plan</u> , and <u>CBB Mortality Reduction and Relocation Plan</u> . Should a CBB or burrowing owl (BUOW) nest be discovered, the Designated Biologist(s) shall follow all applicable Conditions of Approval and applicable CDFW-approved Mortality Reduction and Relocation Plan.	ITP Condition # 7.5	Entire Project	Permittee	
39	<u>Pipe and Materials Inspection</u> . Workers shall thoroughly inspect all construction pipe, culverts, or other similar structures with a diameter of one inch or greater that are stored for one or more overnight periods for the Covered Species before the structure is subsequently moved, buried, or capped. If during inspection, a Covered Species is discovered inside a pipe, culvert, or similar structure, workers shall notify the Designated Biologist(s) and wait for the Covered Species to move unimpeded to a safe location before moving and utilizing the structure. Alternatively, the Designated Biologist(s) shall move the Covered Species out of harm's way in compliance with the approved Covered Species Mortality Reduction and Relocation Plans required in Conditions of Approval <u>DT Mortality Reduction and Relocation Plan</u> , <u>MGS Mortality Reduction and Relocation Plan</u> , <u>BUOW Mortality Reduction Plan</u> , and <u>CBB Mortality Reduction and Relocation Plan</u> . Should a CBB or BUOW nest be discovered, the Designated Biologist(s) shall follow all applicable Conditions of Approval and applicable CDFW-approved Mortality Reduction and Relocation Plan.	ITP Condition # 7.6	Entire Project	Designated Biologist(s)	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
40	<p><u>Geotechnical Investigation</u>. In areas where temporary exclusion fencing has not been installed (Conditions of Approval <u>DT Temporary Exclusion Fencing Plan</u> and <u>DT Temporary Exclusion Fencing Installation, Augmentation, and Removal</u>), the Designated Biologist shall survey geotechnical investigation access routes and geotechnical drilling areas, as well as a 50-foot buffer, and flag any potential Covered Species burrows before the geotechnical drilling may proceed. If an access route does not have burrows within 50 feet, then the Designated Biologist shall guide the equipment operator to the geotechnical drilling area at a walking pace. The Designated Biologist shall remain on site at all times while drilling work is done and shall guide the operator from the geotechnical drilling areas when exiting. However, if burrows are found within the area to be disturbed during either access to or at the geotechnical drilling areas, temporary exclusion fencing shall be installed and burrows shall be excavated in accordance with Conditions of Approval <u>DT Mortality Reduction and Relocation Plan</u>, <u>DT Burrow Avoidance</u>, <u>DT Burrow Excavation</u>, <u>MGS Mortality Reduction and Relocation Plan</u>, <u>MGS Live Trapping</u>, <u>Burrow Excavation, and Relocation</u>, <u>BUOW Mortality Reduction Plan</u>, <u>BUOW Artificial Burrow Replacement Plan</u>, <u>BUOW Burrow Blockage</u>, and <u>BUOW Burrow Excavation</u>. If a CBB nest(s) or WJT individuals (beyond the previously authorized take through emergency regulations adopted under Fish and Game Code section 2084 and CCR Title 14, § 749.10) are found within the area to be disturbed during either access to or at the geotechnical drilling areas, CBB nests shall be avoided per Condition of Approval <u>CBB Nest Avoidance</u> or impacted in accordance with Condition of Approval <u>CBB Nest Impact Minimization</u> and WJT individuals shall be avoided per Condition of Approval <u>WJT Buffer</u> or impacted in accordance with Condition of Approval <u>WJT Relocation, Seed Salvage, and Topsoil Salvage</u>. If both an auger drill system and a self-casing rotary wash wire-line drill system are used, both shall be on drill trucks so that if a change in drill systems is needed, it will not require an additional exit and entrance through Covered Species habitat.</p>	ITP Condition # 7.7	Before Starting Covered Activities /Entire Project	Designated Biologist(s)	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
41	<p><b>Excavation Inspection.</b> The Designated Biologist(s) or Designated Monitor(s) shall inspect all trenches, open holes, sumps, and other excavations within the Project Area at the beginning and end of each day for trapped animals. All trenches, holes, sumps, and other excavations with sidewalls steeper than a 1:1 (45 degree) slope shall be covered when workers or equipment are not actively working in the excavation, which includes cessation of work overnight, or shall have an escape ramp of earth or a non-slip material with a less than 1:1 (45 degree) slope. To prevent inadvertent entrapment of the Covered Species, the Designated Biologist(s) or Designated Monitor(s) shall oversee the covering of all such excavations with barrier material (such as hardware cloth) at the close of each working day such that animals are unable to dig or squeeze under the barrier and become entrapped. The outer two feet of excavation cover shall conform to solid ground so that gaps do not occur between the cover and the ground and shall be secured with soil staples or similar means to prevent gaps. Each morning, the end of each day (including weekends and any other non-workdays), and immediately before trenches, holes, sumps, or other excavations are back filled, the Designated Biologist(s) or Designated Monitor(s) shall thoroughly inspect them for Covered Species. The Designated Biologist(s) or Designated Monitor(s) shall also thoroughly inspect any trenches, holes, sumps, or other excavations that are covered long term at the beginning of each working day to ensure inadvertent entrapment has not occurred and shall make any necessary repairs to the cover. If any worker discovers a Covered Species has become trapped, Permittee shall cease all Covered Activities in the vicinity and notify the Designated Biologist(s) immediately. Project workers and the Designated Biologist(s) shall allow the Covered Species to escape unimpeded if possible before Covered Activities are allowed to continue. Alternatively, the Designated Biologist(s) shall move the Covered Species out of harm's way in compliance with the approved Covered Species Mortality Reduction and Relocation Plans required in Conditions of Approval <a href="#">DT Mortality Reduction and Relocation Plan</a>, <a href="#">MGS Mortality Reduction and Relocation Plan</a>, <a href="#">BUOW Mortality Reduction Plan</a>, and <a href="#">CBB Mortality Reduction and Relocation Plan</a>. Should a CBB or BUOW nest be discovered, the Designated Biologist(s) shall follow all applicable Conditions of Approval and applicable CDFW-approved Mortality Reduction and Relocation Plan.</p> <p>For the operations and maintenance of the stormwater retention basins Permittee shall ensure that final design of the on-site stormwater retention basins have adequate elements to ensure that Covered Species can escape should one inadvertently enter. Permittee shall submit a Stormwater Basin Design Plan (Condition of Approval <a href="#">On-Site Drainage Basin Entrapment Prevention</a>) with elements necessary for Covered Species escape and/or entry prevention for the stormwater retention basins for review and approval by CDFW prior to implementation of Covered Activities related to basin construction and installation. Permittee shall ensure that stormwater retention basins' wildlife escape and prevention materials, as applicable, are maintained in effective condition. Maintenance inspections of these features shall be conducted as appropriate. Should any failures be discovered, Permittee shall make necessary repairs immediately to ensure that Covered Species can escape or are prevented from entry. If permanent repairs cannot be immediately completed (within 24 hours) then temporary repairs shall be put in place until the permanent repair can be reasonably completed. Inspection of temporary repairs shall be completed daily to ensure effectiveness of wildlife escape and/or entry exclusion until the permanent repair can be completed.</p>	ITP Condition # 7.8	Entire Project	Designated Biologist(s)/Permittee	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
42	<p><u>Covered Species Observations and Notification</u>. All workers shall inform the Designated Biologist(s) if a Covered Species is seen within or near the Project Area during implementation of any Covered Activity. All Covered Activities in the vicinity of Covered Species, which could take or injure a Covered Species or Covered Species nest, shall cease until the Covered Species moves from the Project Area of its own accord or the Designated Biologist(s) moves the Covered Species out of harm's way in compliance with the approved Covered Species Mortality Reduction and Relocation Plans required in Conditions of Approval <u>DT Mortality Reduction and Relocation Plan</u>, <u>MGS Mortality Reduction and Relocation Plan</u>, <u>BUOW Mortality Reduction Plan</u>, and <u>CBB Mortality Reduction and Relocation Plan</u>. Should a CBB or BUOW nest be observed, the Designated Biologist(s) shall follow all applicable Conditions of Approval and applicable CDFW-approved Mortality Reduction and Relocation Plan.</p> <p>Permittee shall notify CDFW within 24 hours of discovery of a Covered Species or Covered Species nest within the Project Area via e-mail to the Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u> above. The notification shall include the name of the Covered Species, the name of the individual who discovered the species, a map showing where the Covered Species was found, and photographs if possible.</p>	ITP Condition # 7.9	Entire Project	Permittee	
43	<p><u>Rodenticides, Pesticides, and Insecticides</u>. Permittee shall not use rodenticides, pesticides, and/or insecticides in the Project Area without prior written permission from CDFW. Permittee shall not use any second-generation anticoagulant rodenticide (brodifacoum, bromadiolone, difethialone, and difenacoum) in the Project Area. Permittee shall not use any first-generation anticoagulant rodenticide (diphacinone, chlorophacinone, and warfarin) in the Project Area without prior written permission from CDFW. If pesticides must be used, Permittee shall consult with CDFW and obtain written approval from CDFW before using any pesticides.</p>	ITP Condition # 7.10	Entire Project	Permittee	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
44	<p><u>DT Mortality Reduction and Relocation Plan</u>. Permittee shall submit a DT Mortality Reduction and Relocation Plan, prepared by the Designated Biologist(s), for CDFW review and written approval prior to the start of Covered Activities. The relocation plan shall include at a minimum: (1) avoidance and minimization measures including the option to work within the established protective buffer of a burrow; (2) the proposed capture methods and handling methods; (3) implementation timing; (4) burrow excavation methods; (5) measures to be taken when a nest is encountered; (6) release methods (i.e., soft release, hard release, or some other method); (7) artificial burrow design and installation methods; (8) a map and legal description of the proposed receiver site(s) and proposed permanent conservation mechanism; (9) a comparison of the proposed receiver sites and the source site's soil, plant communities, and topography to demonstrate that the receiver site is suitable; (10) a description of the existing DT (pre-Project) status on the proposed receiver site (including density and distribution); (11) a proposed one-year monitoring plan of the receiver site; and (12) identification of a wildlife rehabilitation center or veterinary facility where injured animals will be cared for.</p> <p>Once the DT Mortality Reduction and Relocation Plan is approved by CDFW, it may be used for all DT relocation activities for the duration of the ITP unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittees to discuss needed updates. Any proposed changes to the CDFW-approved DT Mortality Reduction and Relocation Plan shall be submitted for CDFW review and written approval prior to implementation of any proposed modifications. The DT Mortality Reduction and Relocation Plan shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u>.</p>	ITP Condition # 7.11	Before Starting Covered Activities	Permittee	
45	<p><u>Raven Management Plan</u>. Permittee shall prepare a Project-specific Raven Management Plan to minimize the potential for ravens to occupy the Project Area and for raven predation on DT. The Raven Management Plan shall address both the construction and O&amp;M phase and shall include at a minimum: (1) baseline survey and results; (2) a plan for reduction of food, water, sheltering and nesting sites; (3) an evaluation of effectiveness and adaptive management strategies; and (4) an education and outreach program. The Raven Management Plan shall be submitted for CDFW review and written approval before starting Covered Activities. The Raven Management Plan shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u> above.</p>	ITP Condition # 7.12	Before Starting Covered Activities	Permittee	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
46	<p>Pre-Construction Surveys for DT. No more than 30 days prior to conducting vegetation or ground-disturbing activities associated with initial construction or O&amp;M activities, the Designated Biologist(s) shall perform pre-construction surveys for DT and shall remain onsite daily until the construction period ends or temporary exclusion fencing has been installed to preclude DT from entering the Project Area (Conditions of Approval <u>DT Temporary Exclusion Fencing Plan</u> and <u>DT Temporary Exclusion Fencing Installation, Augmentation, and Removal</u>) and subsequent clearance surveys have been completed (Condition of Approval <u>DT Clearance Surveys</u>). These surveys shall cover the Project Area and an additional 50-foot buffer zone. The Designated Biologist(s) shall flag all potential DT burrows within the Project Area to alert biological and work crews to their presence.</p> <p>Permittee shall provide the pre-construction survey results and a burrow map in a written report via email to CDFW's Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u> within 30 calendar days of having performed the survey. The pre-construction survey report shall include, but not be limited to, methodology, date and time of survey, results, discussion, and map of the locations of each potential DT burrow.</p>	ITP Condition # 7.13	Before Starting Covered Activities	Permittee	
47	<p><u>DT Burrow Avoidance</u>. The Designated Biologist(s) shall establish a no-disturbance buffer of 50 feet or greater around suspected or known to be occupied DT burrows in the Project Area. If the 50-foot no-disturbance buffer cannot be established, an approved reduced buffer shall be imposed according to the CDFW-approved DT Mortality Reduction and Relocation Plan. If an approved buffer reduction cannot be established, temporary exclusion fencing installation, live trapping, relocation, and burrow excavation shall occur in accordance with the CDFW-approved <u>DT Mortality Reduction and Relocation Plan</u> and <u>DT Temporary Exclusion Fencing Plan</u>.</p>	ITP Condition # 7.14	Entire Project	Permittee	
48	<p><u>DT Temporary Exclusion Fencing Plan</u>. Permittee shall submit a Temporary Exclusion Fencing Plan to CDFW for review and written approval prior to the installation of any temporary exclusion fencing and permanent security fencing. The Temporary Exclusion Fencing Plan shall include, but not be limited to, the fencing materials, designs of all temporary fencing, installation methods, installation locations, and removal timing and methods. Temporary exclusion fencing may be designed and installed in conjunction with the design and installation of permanent security fencing. If the temporary exclusion fencing is combined with the permanent security fencing, temporary fencing shall be removed or modified (e.g., knuckled under to allow a gap from the ground to the bottom of the fence of at least 5 inches) in areas identified as post-construction-permeable in the Permanent Security Fencing Plan (Condition of Approval <u>Permanent Security Fencing Plan</u>). Removal of, or modifications to, the temporary exclusion fencing shall be initiated immediately upon completion of all initial construction Covered Activities within the fenced area to minimize habitat fragmentation and diminished connectivity caused by fencing. The DT Temporary Exclusion Fencing Plan shall be submitted for CDFW review and written approval before starting Covered Activities to the Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u>.</p>	ITP Condition # 7.15	Before Starting Covered Activities/Entire Project	Permittee	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
49	<p><u>DT Temporary Exclusion Fencing Installation, Augmentation, and Removal.</u> Permittee shall install temporary exclusion fencing around the perimeter of the Project Area immediately following surveys to flag all potential DT burrows in accordance with Condition of Approval <u>Pre-Construction Surveys for DT</u> above and immediately prior to commencing DT burrow excavation in accordance with Condition of Approval <u>DT Burrow Excavation</u> below. Temporary exclusion fencing may also be installed and removed in a sequential manner along a collector line corridor, for example, to minimize fragmentation of habitat. The Designated Biologist(s) shall accompany the temporary exclusion fence crews conducting installation, repair, augmentation, and/or removal to ensure that DT are not killed or injured during these activities. The Designated Biologist(s) shall ensure all burrow entrances are avoided (i.e., not covered) by fencing material during fence installation. The Designated Biologist(s) shall ensure the temporary exclusion fencing is sufficiently supported to maintain its integrity under all conditions such as wind and heavy rain for the duration of the Covered Activities in the Project Area. The Designated Biologist(s) or Designated Monitor(s) shall check the temporary exclusion fence daily for fence-walking or pacing DT and shall maintain/repair the fence when necessary. Temporary exclusion fencing shall be removed or augmented to allow permeability in select areas, as approved in the Permanent Security Fencing Plan (Condition of Approval <u>Permanent Security Fencing Plan</u>), immediately upon completion of initial construction Covered Activities within the Project Area.</p>	ITP Condition # 7.16	Before Starting Covered Activities/Entire Project	Permittee	
50	<p><u>DT Clearance Surveys.</u> After the installation of the temporary exclusion fencing (Conditions of Approval <u>DT Temporary Exclusion Fencing Plan</u> and <u>DT Temporary Exclusion Fencing Installation, Augmentation, and Removal</u>) and prior to any ground disturbance within the fenced areas, the Designated Biologist(s) shall examine the area within the fence for DT and DT burrows. The survey shall provide 100 percent coverage of the area within the temporarily excluded area and the area immediately outside of the temporarily excluded area. The use of specialized equipment (e.g., fiber optics) may be necessary to thoroughly inspect all burrows. The Designated Biologist(s), using the methods described in the United State Fish and Wildlife Service's <i>Desert Tortoise Field Manual</i> (ATTACHMENT 3) shall capture, collect measurement and identification data, permanently mark, and relocate any DT found within the fenced area in accordance with the CDFW-approved <u>DT Mortality Reduction and Relocation Plan</u>.</p>	ITP Condition # 7.17	Before Starting Covered Activities	Permittee	
51	<p><u>DT Burrow Excavation.</u> All potential DT burrows identified during pre-construction surveys (Condition of Approval <u>Pre-Construction Surveys for DT</u>) and clearance surveys (Condition of Approval <u>DT Clearance Surveys</u>), shall be fully excavated by hand under the direct supervision of the Designated Biologist(s) in accordance with the CDFW-approved <u>DT Mortality Reduction and Relocation Plan</u>.</p>	ITP Condition # 7.18	Before Starting Covered Activities	Permittee	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
52	<u>DT Relocation</u> . The Designated Biologist(s) shall relocate any DT found within the Project Area that cannot be avoided. Relocation methods shall be in accordance with the CDFW-approved <u>DT Mortality Reduction and Relocation Plan</u> and all relocation recipient sites shall be areas under permanent conservation for DT. If a DT is found above ground, it shall be released above ground in the shade. Any DT removed from a burrow shall be relocated to an unoccupied burrow of similar size. If no such burrows are available for relocating, an artificial burrow shall be constructed that is approximately the same size, depth, and orientation as the original burrow. Protocols found in the <i>Desert Tortoise Field Manual</i> (ATTACHMENT 3) shall be followed for the construction of artificial burrows. The location of all DT burrows, DT individuals, and CDFW-approved receiver sites shall be recorded using Global Positioning System (GPS) technology. All potential or known DT burrows present within the temporary exclusion fence will be collapsed after establishing that they are not currently occupied by DT, to prevent re-occupancy. DT burrows within the gen-tie corridor or access routes shall be left intact if ground-disturbing activities can avoid the burrows.	ITP Condition # 7.19	Entire Project	Designated Biologist(s)	
53	<u>DT Handling Procedures</u> . The Designated Biologist(s) shall follow handling procedures described in the <i>Guidelines for Handling Desert Tortoises – Mojave Population and their Eggs</i> , contained in the <i>Desert Tortoise Field Manual</i> (ATTACHMENT 3).	ITP Condition # 7.20	Entire Project	Designated Biologist(s)	
54	<u>DT Monitoring</u> . The Designated Biologist(s) shall monitor any DT that are relocated just outside of the temporary exclusion fencing, three (3) times daily for two (2) weeks, along the entire length of the fence to prevent mortality due to exhaustion from “fence walking” or pacing. If temperatures are anticipated to reach 109 degrees Fahrenheit or greater, the Designated Biologist(s) shall survey the entire length of all temporary exclusion fence one hour before reaching said temperature to prevent mortality due to overexposure. If the Designated Biologist(s) encounters DT fence walking during temperatures of 109 degrees Fahrenheit or greater, the Designated Biologist(s) shall move the DT to an alternate location in accordance with the CDFW-approved <u>DT Mortality Reduction and Relocation Plan</u> .	ITP Condition # 7.21	Entire Project	Designated Biologist(s)	
55	<u>DT Handling Records</u> . The Designated Biologist(s) shall maintain a record of all DT handled and include the record in QCRs and ASRs (Conditions of Approval <u>Quarterly Compliance Report</u> (Construction Phase) and <u>Annual Status Report</u> (Construction Phase and O&M Phase)). This information shall include for each DT: (1) the locations (narrative and maps) and dates of observation; (2) general condition and health, including injuries, state of healing and whether DT voided their bladders; (3) location moved from and location moved to (using GPS technology); (4) diagnostic markings (i.e., identification numbers or marked lateral scutes); and, (5) ambient temperature when handled and released; and (6) digital photograph of each handled DT as described below. DT moved from within the Project Area shall be marked for future identification. An identification number using the acrylic paint/epoxy covering technique shall be placed on the fourth left costal scute as described in the <i>Guidelines for Handling Desert Tortoises – Mojave Population and their Eggs</i> contained in the <i>Desert Tortoise Field Manual</i> (ATTACHMENT 3). Digital photographs of the carapace, plastron and fourth costal scute shall be taken. Notching of scutes shall not occur.	ITP Condition # 7.22	Entire Project	Designated Biologist(s)	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
56	<p><u>DT Injury or Mortality</u>. If a DT is injured as a result of Project-related activities, the Designated Biologist(s) shall immediately take it to the CDFW approved wildlife rehabilitation or veterinary facility identified in the CDFW-approved DT Mortality Reduction and Relocation Plan. Permittee shall bear any costs associated with the care or treatment of such injured DT. The Permittee shall notify CDFW of the injury to the DT according to Condition of Approval <u>Notification of Take or Injury</u>. Notification shall include the name of the facility where the animal was taken. If a DT is found deceased, the Designated Biologist(s) shall immediately collect, bag, and freeze the carcass and consult with CDFW to determine if submittal of the carcass to a laboratory is warranted.</p>	ITP Condition # 7.23	Entire Project	Permittee	
57	<p><u>MGS Mortality Reduction and Relocation Plan</u>. Permittee shall submit a MGS Mortality Reduction and Relocation Plan, prepared by the Designated Biologist(s), for CDFW review and written approval prior to the start of Covered Activities. The MGS Mortality Reduction and Relocation Plan shall include at a minimum: (1) avoidance and minimization measures including the option to work within an established protective buffer of a burrow; (2) trapping methodology; (3) implementation timing; (4) burrow identification and excavation methods; (5) measures to be taken when dependent young are encountered; (6) release methods (i.e., soft release, hard release, or some other method); (7) artificial burrow design and installation methods; (8) a map and legal description of the proposed receiver site(s) and proposed permanent conservation mechanism; (9) a comparison of the proposed receiver sites and the source site's soil, plant communities, and topography to demonstrate that the receiver site is suitable; (10) a description of existing MGS (pre-Project) status on the proposed receiver site (including density and distribution); (11) a proposed one-year monitoring plan of the receiver site; and (12) identification of a wildlife rehabilitation center or veterinary facility where injured animals will be cared for. The MGS Mortality Reduction and Relocation Plan shall restrict MGS relocation to only after young of the year are observed above ground and during the main activity period for the species (April 1 to September 1). Permittee may request a 7-day extension to the relocation period if daytime temperatures (sunrise to sunset) are predicted by the National Weather Service to remain within the temperature criterion of 68 – 86 degrees Fahrenheit with no prediction of inclement weather (e.g., a predicted 40 percent or greater chance of precipitation). Subsequent 7-day extensions (through no later than November 1) may be requested and approved by CDFW so long as weather conditions are predicted by the National Weather Service to remain within the above temperature criterion. The relocation extension request(s) shall be approved in advance and in writing by CDFW (email will suffice).</p> <p>Once the MGS Mortality Reduction and Relocation Plan is approved by CDFW, it may be used for all MGS mortality reduction and relocation activities for the duration of the ITP unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittees to discuss needed updates. Any proposed changes to the MGS Mortality Reduction and Relocation Plan shall be submitted for CDFW review and written approval prior to implementation of any proposed modifications. The MGS Mortality Reduction and Relocation Plan shall be submitted via e-mail for CDFW review and written approval before starting Covered Activities to the Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u>.</p>	ITP Condition # 7.24	Before Starting Covered Activities	Permittee	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
58	<p><b>Pre-Construction Surveys for MGS.</b> No more than 30 calendar days prior to conducting vegetation- or ground-disturbing activities the Designated Biologist(s) shall perform pre-construction surveys for MGS in the Project Area. These surveys shall cover the entirety of the Project Area including an additional 50-foot buffer zone. All known or suspected MGS burrows within the Project Area shall be flagged to alert biological and work crews to their presence. Suspected MGS burrows are any burrow of sufficient size to allow an adult or juvenile MGS to enter.</p> <p>Permittee shall provide the pre-construction survey results and a burrow map in a written report via email to CDFW's Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u> above within 30 calendar days of having performed the survey. The pre-construction survey report shall include, but not be limited to, methodology, date and time of survey, results, discussion, and map of the locations of each potential MGS burrow and potential MGS burrows to be excavated (Condition of Approval <u>MGS Live Trapping, Burrow Excavation, and Relocation</u>).</p>	ITP Condition # 7.25	Before Starting Covered Activities	Permittee	
59	<p><b>MGS Burrow Avoidance.</b> During all vegetation- or ground-disturbing activities associated with initial construction or O&amp;M activities, any burrows present within the Project Area that are suspected or known to be occupied by MGS and that cannot be avoided by a 50-foot avoidance buffer, shall be live trapped by the Designated Biologist(s) in accordance with the CDFW-approved <u>MGS Mortality Reduction and Relocation Plan</u>. The Designated Biologist(s) shall relocate any captured MGS to the CDFW-approved receiver site in accordance with the CDFW-approved <u>MGS Mortality Reduction and Relocation Plan</u>.</p>	ITP Condition # 7.26	Entire Project	Permittee	
60	<p><b>MGS Live Trapping, Burrow Excavation, and Relocation.</b> Burrows suspected or known to be occupied by MGS that cannot be avoided shall be live trapped, fully excavated by hand, or both. After the installation of the DT temporary exclusion fence (Conditions of Approval <u>DT Temporary Exclusion Fencing Plan</u> and <u>DT Temporary Exclusion Fencing Installation, Augmentation, and Removal</u>) and prior to any ground disturbance within the fenced areas, burrows shall be fully excavated by hand under the direct supervision of the Designated Biologist(s) in accordance with the with the CDFW-approved <u>MGS Mortality Reduction and Relocation Plan</u>. The Designated Biologist(s) shall relocate any MGS found within the Project Area that cannot be avoided. Relocation methods shall be in accordance with the CDFW-approved <u>MGS Mortality Reduction and Relocation Plan</u> and relocation sites shall be areas under permanent conservation for MGS. Any dormant, lactating female, or dependent juvenile MGS encountered shall be collected by the Designated Biologist(s) and relocated to an artificial burrow installed at the CDFW-approved receiver site.</p>	ITP Condition # 7.27	Before Starting Covered Activities	Designated Biologist(s)	
61	<p><b>MGS Handling Records.</b> The Designated Biologist(s) shall maintain a record of all MGS handled and include the record in QCRs and ASRs (Conditions of Approval <u>Quarterly Compliance Report (Construction Phase)</u> and <u>Annual Status Report (Construction Phase and O&amp;M Phase)</u>). This information shall include for each MGS: (1) the location (narrative and maps) and date of observation; (2) general condition and health, including injuries and state of healing; (3) location moved from and location moved to (using GPS technology); (4) diagnostic markings where applicable; (5) ambient temperature when handled and released; and (6) digital photograph of each MGS handled.</p>	ITP Condition # 7.28	Entire Project	Designated Biologist(s)	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
62	<p><u>MGS Injury or Mortality</u>. If a MGS is injured as a result of Project-related activities, the Designated Biologist(s) shall immediately take it to the CDFW approved wildlife rehabilitation or veterinary facility identified in the CDFW-approved <u>MGS Mortality Reduction and Relocation Plan</u>. Permittee shall bear any costs associated with the care or treatment of such injured MGS. The Permittee shall notify CDFW of the injury to the MGS according to Condition of Approval <u>Notification of Take or Injury</u>. Notification shall include the name of the facility where the animal was taken. If a MGS is found deceased, the Designated Biologist(s) shall immediately collect, bag, and freeze the carcass and consult with CDFW to determine if submittal of the carcass to a laboratory is warranted.</p>	ITP Condition # 7.29	Entire Project	Permittee	
63	<p><u>BUOW Mortality Reduction Plan</u>. Permittee shall submit a BUOW Mortality Reduction Plan, prepared by the Designated Biologist(s), to CDFW for written approval before starting Covered Activities. Burrow exclusion and burrow excavation shall not proceed until this plan has been approved in writing by CDFW. The BUOW Mortality Reduction Plan shall include at a minimum: (1) detailed description of survey methodology; detailed burrow exclusion and excavation methods; (2) proposed Covered Activities that may be performed within BUOW avoidance buffers; (3) identification of a wildlife rehabilitation center or veterinary facility capable of and willing to treat injured BUOW or care for at-risk BUOW, BUOW eggs, and/or BUOW chicks; and (4) procedure for collection and storage of BUOW carcasses. Only CDFW-approved Designated Biologists, or personnel following directions from and under the supervision of the Designated Biologist(s), are authorized to handle and transport injured BUOW for treatment or impacted BUOW eggs for salvage. All other BUOW handling or capture is prohibited.</p> <p>Once the BUOW Mortality Reduction Plan is approved in writing by CDFW, it shall be used for the duration of the ITP unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittee to discuss needed updates. Any proposed changes to the BUOW Mortality Reduction Plan shall be submitted to CDFW for review and written approval prior to implementation of any proposed modifications. The BUOW Mortality Reduction Plan shall be submitted via e-mail for CDFW review and written approval before starting Covered Activities to the Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u>.</p>	ITP Condition # 7.30	Before Starting Covered Activities	Permittee	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
64	<p><u>BUOW Artificial Burrow Replacement Plan</u>. Permittee shall replace each known BUOW burrow (as defined in Condition of Approval <u>BUOW Burrow Avoidance</u>) that cannot be avoided within the Project Area with an artificial burrow to compensate for the loss of important shelter used by BUOW for protection, reproduction, and escape from predators. Permittee shall submit a BUOW Artificial Burrow Replacement Plan prepared by an approved Designated Biologist to CDFW no more than 120 calendar days after starting Covered Activities. The BUOW Burrow Replacement Plan shall include, but not be limited to: a discussion and map of potential artificial burrow replacement locations; description of the replacement burrow design and dimensions (e.g., depth and width of burrow, width of burrow entrance, orientation of burrow entrance, number and placement of entrances); artificial burrow installation methods; long-term artificial burrow maintenance methods; and timing of BUOW burrow installation/construction.</p> <p><u>BUOW Artificial Burrow Replacement Plan</u>. Permittee shall replace each known BUOW burrow (as defined in Condition of Approval <u>BUOW Burrow Avoidance</u>) that cannot be avoided within the Project Area with an artificial burrow to compensate for the loss of important shelter used by BUOW for protection, reproduction, and escape from predators. Permittee shall submit a BUOW Artificial Burrow Replacement Plan prepared by an approved Designated Biologist to CDFW no more than 120 calendar days after starting Covered Activities. The BUOW Burrow Replacement Plan shall include, but not be limited to: a discussion and map of potential artificial burrow replacement locations; description of the replacement burrow design and dimensions (e.g., depth and width of burrow, width of burrow entrance, orientation of burrow entrance, number and placement of entrances); artificial burrow installation methods; long-term artificial burrow maintenance methods; and timing of BUOW burrow installation/construction.</p> <p>Once the BUOW Artificial Burrow Replacement Plan is approved in writing by CDFW, it shall be used for the duration of the ITP unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittee to discuss needed updates. Any proposed changes to the BUOW Artificial Burrow Replacement Plan shall be submitted, in writing, to CDFW and approved by CDFW in writing prior to the implementation of any proposed modifications.</p>	ITP Condition # 7.31	Before Starting Covered Activities	Permittee	
65	<p><u>BUOW Pre-Construction Surveys and Reporting</u>. The Designated Biologist(s) shall conduct surveys of all subterranean holes three inches or larger to identify BUOW burrows and flag and map all known, and/or nesting BUOW burrows (as defined in Condition of Approval <u>BUOW Burrow Avoidance</u>) within 30 calendar days prior to beginning Covered Activities in the Project Area. Surveys shall include the Project Area and 500 feet (where feasible) beyond the limits of the Project Area, unless otherwise approved in advance in writing by CDFW. If the Designated Biologist(s) identifies any known, or nesting BUOW burrows, the burrow(s) shall be monitored following Conditions of Approval <u>BUOW Burrow Blockage</u> and <u>BUOW Burrow Excavation</u>, unless avoided per Condition of Approval <u>BUOW Burrow Avoidance</u>. Permittee shall provide the pre-construction survey results with a Burrow Map (see Condition of Approval <u>Burrow Map</u>) in a written report to CDFW's Regional Representative prior to starting BUOW Exclusion Activities in the Project Area. The report shall include, but not be limited to, methodology, survey date, and apparent status of each burrow (known, or nesting).</p>	ITP Condition # 7.32	Before Starting Covered Activities	Designated Biologist(s)	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
66	<p><u>Burrow Map</u>. The Designated Biologist shall provide a KMZ map to CDFW of all known and/or nesting BUOW burrows found during the surveys performed per Condition of Approval <u>BUOW Pre-Construction Surveys and Reporting</u>. The map shall show details and locations of all BUOW sightings and known and nesting BUOW burrows as defined in Condition of Approval <u>BUOW Burrow Avoidance</u>. The map shall include an outline of the Project Area, title, north arrow, scale bar, and legend.</p>	ITP Condition # 7.33	Before Starting Covered Activities	Designated Biologist(s)	
67	<p><u>BUOW Burrow Avoidance</u>. The Permittee shall establish no-disturbance buffer zones around known and nesting BUOW burrows according to the following guidelines:</p> <ul style="list-style-type: none"> <li>• If a <u>known BUOW burrow</u> (a burrow that shows evidence the burrow is being used, known to have been used, or past use by a BUOW) or an "atypical" burrow (e.g., a pipe, culvert, buckled concrete, etc.) showing signs of occupancy (e.g. BUOW presence, whitewash, pellets, prey remains, etc.) is discovered, the Permittee shall establish a minimum no-disturbance buffer of at least 100 feet around the burrow. A no-disturbance buffer of at least 1,600 feet shall be established around known BUOW burrows currently occupied by BUOW during the nesting season (typically February 1 to August 31 in this area).</li> <li>• If a <u>nesting BUOW burrow</u> used for nesting (e.g. known BUOW burrow indications of the presence of an adult pair, mating behaviors, eggs, chicks, dependent young, and/or brooding or egg incubation) is discovered within or immediately adjacent to the Project Area, the Permittee shall notify CDFW's Regional Representative immediately via e-mail. A no-disturbance buffer of at least 1,600 feet shall be established around the nest burrow. A no-disturbance buffer of at least 1,600 feet shall be established around known BUOW burrows currently occupied by BUOW during the nesting season (February 1 to August 31).</li> </ul> <p>If BUOW burrows cannot be avoided as described above, then the Permittee shall follow Conditions of Approval <u>BUOW Burrow Blockage</u>, <u>BUOW Burrow Excavation</u>, and <u>BUOW Mortality Reduction Plan</u> as appropriate. If BUOW are visibly stressed by the Covered Activities or workers in the vicinity after these no-disturbance buffers are established, all work in the vicinity shall immediately cease and increased no-disturbance buffers will be determined by the Designated Biologist(s) based on their behavioral observations of the affected BUOW.</p> <p>The buffers prescribed above shall not be reduced or otherwise modified without prior written CDFW approval. If the Designated Biologist determines that specific Covered Activities are not likely to affect the BUOW using known or nesting BUOW burrows due to the nature of the specific Covered Activities and/or due to objects or topography that might reduce potential noise disturbance and obstruct view of the Covered Activities from the nest, then the Designated Biologist may email a written request to CDFW to reduce the buffer distance with documented observational data (Buffer Reduction Request). CDFW will review each Buffer Reduction Request on a case-by-case basis and provide a determination in response to each Buffer Reduction Request in writing. CDFW may request additional and/or ongoing biological monitoring prior to approving a Buffer Reduction Request.</p>	ITP Condition # 7.34	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
68	<p><u>BUOW Burrow Blockage</u>. Where CDFW has approved a buffer reduction, the Permittee may block rather than destroy any known BUOW burrow located within the buffer distances prescribed by Condition of Approval <u>BUOW Burrow Avoidance</u> within the Project Area where ground- and vegetation-disturbing activities will be performed. Burrows (including burrows in natural substrate and in/under man-made structures) may be blocked only immediately after the Designated Biologist(s) has conducted four consecutive 24-hour periods of monitoring with wildlife cameras and determined that BUOW is not currently present. The camera types used for camera monitoring should be chosen at the discretion of the approved BUOW Designated Biologist and shall have daytime and nighttime recording/photo-capture capabilities. Burrow blockage shall be done in a manner that prevents burrowing animals from digging back into the burrow. All blocked burrows shall be monitored by the Designated Biologist or Designated Monitor at least once a week to ensure that the exclusion material is still intact. If BUOW regain access to the burrow, the Permittee shall contact CDFW immediately and obtain written guidance regarding how to proceed. All blocked burrows shall be unblocked within 48 hours of completion of Construction Covered Activities within the prescribed buffer distance.</p>	ITP Condition # 7.35	Before Starting Covered Activities/Entire Project	Permittee	
69	<p><u>BUOW Burrow Excavation</u>. The Designated Biologist, or Designated Monitor under direct supervision of the Designated Biologist, shall excavate known burrows that exhibit signs of current or past BUOW use or characteristics suggestive of a BUOW burrow (including burrows in natural substrate and in/under man-made structures) that cannot be avoided per Condition of Approval <u>BUOW Burrow Avoidance</u> that are within the Project Area. Burrows to be destroyed shall be fully excavated, filled with dirt, and compacted to ensure that BUOW cannot reenter or use the burrow during the period that Covered Activities occur in the Project Area. If an individual BUOW does not vacate a burrow within a reasonable timeframe, Permittee shall consult with CDFW for written guidance before proceeding with burrow excavation. An established BUOW burrow no-disturbance buffer may be removed once the burrow is collapsed and BUOW are no longer using the burrow.</p> <ul style="list-style-type: none"> <li>• Excavation of known BUOW burrows shall only occur after the Designated Biologist has determined that BUOW is not currently present after four consecutive 24-hour periods of wildlife camera monitoring. The camera types used for camera monitoring should be chosen at the discretion of the approved BUOW Designated Biologist(s) and shall have daytime and nighttime recording/photo-capture capabilities. If the excavation process reveals evidence of current use by BUOW, then burrow excavation shall cease immediately, and camera monitoring as described above shall be conducted/resumed. BUOW burrows shall be carefully excavated with hand tools, or by mechanical means if a specific methodology is approved in writing by CDFW, until it is clear no individuals of BUOW are inside.</li> <li>• BUOW burrows used for nesting shall not be excavated until biological and camera monitoring confirm that the chicks have fledged and are no longer dependent on the nest and/or the parents and then only after written concurrence from CDFW.</li> </ul>	ITP Condition # 7.36	Before Starting Covered Activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
70	<p><u>BUOW Injury</u>. If any BUOW life stage (including eggs/nest abandonment) is found injured within the vicinity of the Project Area, the Designated Biologist(s) shall immediately take it to a CDFW-approved wildlife rehabilitation or veterinary facility, or handle in accordance with the CDFW-approved <u>BUOW Mortality Reduction Plan</u>. Permittee shall identify the facility before starting Covered Activities and include the facility contact information in the <u>BUOW Mortality Reduction Plan</u>. Permittee shall bear any costs associated with the care or treatment of such injured BUOW. The Permittee shall notify CDFW of the injury to the BUOW immediately by e-mail followed by a written incident report as described in Condition of Approval <u>Notification of Take or Injury</u>. If a BUOW is found deceased, the Designated Biologist(s) shall immediately collect, bag, and freeze the carcass and consult with CDFW to determine if submittal of the carcass to a laboratory is warranted or follow any approved storage or transport methods in the CDFW-approved <u>BUOW Mortality Reduction Plan</u> as applicable.</p>	ITP Condition # 7.37	Entire Project	Permittee	
71	<p><u>CBB Mortality Reduction Plan</u>. The Designated Biologist(s) shall prepare a CBB Mortality Reduction and Relocation Plan and submit it to CDFW via e-mail for review and written approval to the Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u> <b>within 30 days of Amendment 1 issuance of the ITP</b>. The CBB Mortality Reduction and Relocation Plan shall include at a minimum: (1) handling and bee identification methods; (2) measures to minimize impacts to foraging bees during vegetation removal; (3) measures to minimize impacts to overwintering bees during overwintering habitat removal; (4) measures to minimize direct impacts to active nests; (5) methods for nest excavation/removal following minimization; (6) identification of suitable relocation areas for relocation of queens should one be detected during overwintering habitat removal; and (7) methods to relocate an overwintering queen should one be detected.</p> <p>Once the CBB Mortality Reduction and Relocation Plan is approved in writing by CDFW, it shall be used for the duration of the ITP unless and until there has been cumulative take of two CBB nests and/or cumulative take of 30 CBB individuals, or unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittee to discuss needed updates. In the event that either two CBB nests or 30 CBB individuals have been taken over the duration of the ITP, CDFW shall be notified within 5 business days of either take number being reached (take notification), and a revised CBB Mortality Reduction and Relocation Plan must be provided to CDFW within 30 calendar days of the take notification, specifically to update and improve the protection and avoidance plan. No additional take of CBB may occur until the updated CBB Mortality Reduction and Relocation Plan is approved by CDFW. Any other proposed changes to the CDFW-approved CBB Mortality Reduction and Relocation Plan shall be submitted for CDFW written approval prior to implementation of any proposed modifications. The CBB Mortality Reduction and Relocation Plan shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u>.</p>	ITP Condition # 7.38	Before commencing ground- or vegetation-disturbing activities	Permittee/ Designated Biologist(s)	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
72	<p><u>CBB Survey Plan</u>. If Covered Activities are proposed to occur during the CBB active period (approximately February 1 through October 31; including queen flight season, colony active period, and gyne flight season), the Designated Biologist(s) shall prepare a CBB Survey Plan and submit it to CDFW for review and approval <b>within 30 days of Amendment 1 issuance of the ITP</b>. The CBB Survey Plan shall describe methods that will be implemented to survey for above ground bees, consistent and as feasible with CDFW's <i>Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species</i> (June 6, 2023). The CBB Survey Plan shall identify when the surveys are planned to take place (i.e., season and how much time between surveys), types of habitat to be surveyed for (i.e., foraging, nesting, and/or overwintering), survey method(s), justification for timing and method of survey design (e.g., elevation, climatic conditions, previous year's precipitation, average ambient temperature, species active periods, etc.), and the capture and identification protocol(s). If photographs will be used as vouchers, the CBB Survey Plan must identify the person(s) who will provide positive identification. Decontamination protocols shall be specified before and after bumble bee sampling within the Project Area, to reduce the likelihood of disease transmission, utilizing methods effective against diseases, such as <i>Varimorpha bombi</i> (formerly <i>Nosema</i>). All sampling equipment (e.g., nets, vials, other sampling materials, boots) shall be sterilized for 10 minutes following the bleach method in the 2023 Survey Considerations or with UV light (direct sunlight), by placing the equipment in direct sunlight for a minimum of two days.</p>	ITP Condition # 7.39	Before commencing ground- or vegetation-disturbing activities	Permittee/ Designated Biologist(s)	
73	<p><u>Additional Pesticide Application Measures for CBB</u>. If any pesticides are to be used in the Project Area, Permittee shall follow the pesticide best management practices described by Xerces Society's 2018 <a href="#">Guidance to Protect Habitat from Pesticide Contamination</a>, the California Department of Pesticide Regulation's <a href="#">California's Managed Pollinator Protection Plan –MP3 (2018)</a>, and the University of California's Division of Agriculture and Natural Resources Statewide Integrated Pest Management Program's <a href="#">Best management practices to protect bees from pesticides</a>. Permittee shall avoid using pesticides marked with the US Environmental Protection Agency's bee hazard icon. Permittee shall preferentially use chemicals that are rated green/III in <a href="#">UC IPM Bee Precaution Database</a> and shall use the least toxic products at the least concentrated application possible. Permittee shall not use neonicotinoid pesticides or mixtures with fungicides and adjuvants, like those that contain alkylphenol ethoxylates, or soil fumigants, which penetrate the soil and can poison ground nesting bees. Permittee shall not apply pesticides to suspected or confirmed CBB nests or until a Designated Biologist approved for CBB has performed pre-application surveys and confirmed CBB are not present, each morning before pesticides are applied within 50 feet of a potential CBB nest. A Designated Biologist approved for CBB shall continue to monitor for potential CBB activity during all pesticide application activities. Pesticide application shall cease if CBB are observed within 50 feet of the application area.</p>	ITP Condition # 7.40	Entire Project	Permittee	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
74	<u>Seasonal Limitations for Protection of CBB</u> . If feasible, Permittee shall avoid initial vegetation clearing and ground disturbance to potential CBB habitat during the CBB active period (approximately February 1 through October 31). If feasible, native or non-native flowering vegetation removal shall occur prior to bloom and before the CBB active period. If Covered Activities cannot be avoided during this time and vegetation needs to be removed while in bloom, the Designated Biologist(s) approved for CBB shall perform pre-construction surveys according to the Condition of Approval <u>CBB Pre-Construction Clearance Survey</u> . If foraging CBB are found in areas designated for vegetation removal, the Designated Biologist(s) shall search for potential nests according to the Condition of Approval <u>Identification of CBB Nests</u> .	ITP Condition # 7.41	Entire Project	Permittee	
75	<u>CBB Pre-Construction Clearance Survey</u> . If Covered Activities are proposed to occur during the CBB active period (approximately February 1 through October 31), no more than 14 days prior to beginning vegetation- or ground-disturbing activities, the Designated Biologist(s) approved for CBB shall survey at the Project Area and a 50-foot buffer around the Project Area as described in the CDFW-approved <u>CBB Survey Plan</u> . The Designated Biologist(s) approved for CBB shall repeat the surveys if there has been a break in Covered Activities of more than 30 days. The Permittee shall provide survey results and Project Area mapping to CDFW prior to beginning vegetation- or ground disturbing activities. The survey results shall include a description of vegetation communities and floral resources identified in each Project Area, maps of known or suspected nest sites, any CBB observations, and measures that will be implemented to avoid or minimize direct impacts to CBB, CBB nests, or CBB habitat resources, if observed within or adjacent to a Project Area in accordance with the CDFW-approved <u>CBB Mortality Reduction and Relocation Plan</u> .	ITP Condition # 7.42	Before commencing ground- or vegetation-disturbing activities	Permittee/ Designated Biologist(s)	
76	<u>Identification of CBB Nests</u> . During <u>CBB Pre-Construction Clearance Survey(s)</u> , the Designated Biologist(s) or approved Designated Monitor(s) approved for CBB shall identify and map all potential CBB nesting habitat, including rodent burrows, dry cavities in rock walls or rock piles, and bunch grasses locations, and flag potential nests that are accessible, according to the Condition of Approval <u>CBB Nest Avoidance</u> . For purposes of the ITP, "accessible" is defined as within the right-of-way and of a steepness that allows for safe investigation by the Designated Biologist(s). If Covered Activities will occur while nests may be occupied (approximately February 1 to August 30, depending on seasonal conditions), the Designated Biologist(s) approved for CBB shall further investigate all accessible potential nesting habitat for occupancy according to the CDFW-approved <u>CBB Mortality Reduction and Relocation Plan</u> .	ITP Condition # 7.43	Before commencing ground- or vegetation-disturbing activities	Designated Biologist(s)	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
77	<p><u>CBB Nest Avoidance.</u> If at any time during the duration of the ITP there has been cumulative take of two CBB nests, CDFW shall be notified within 5 business days of the take number being reached. No additional take of CBB nests may occur until the updated CBB Mortality Reduction and Relocation Plan is approved by CDFW. If an additional active CBB nest is found during pre-construction surveys or at any time during Covered Activities before a revised CBB Mortality Reduction and Relocation Plan is approved by CDFW, the Permittee shall delineate a minimum 50-foot no-disturbance buffer around the nest. Covered Activities shall not begin or resume within the buffer area until the nest has senesced (becomes inactive or is no longer in use), as determined by the Designated Biologist(s) approved for CBB, in consultation with CDFW or until a revised CBB Mortality Reduction and Relocation Plan is approved by CDFW. The Permittee shall report observation of all active CBB nests to CDFW within 24 hours of finding the nest according to the Condition of Approval <u>Covered Species Observations and Notification.</u> To determine whether a nest has senesced, the Designated Biologist(s) approved for CBB shall observe the nest for three consecutive days, for a minimum of one hour per day. Observation shall occur at least one hour after sunrise and at least two hours before sunset on a warm sunny day (65-90 degrees Fahrenheit), with wind less than eight miles per hour. The nest may be deemed senesced if no activity is noted within the observation period. The buffer area shall be clearly marked in the field using signs, stakes or posts with highly visible rope, or high visibility fencing. The Permittee shall contact CDFW immediately if a nest is discovered during ongoing work, to discuss measures that either have been, or will be implemented to avoid and minimize take of nesting bees.</p>	ITP Condition # 7.44	Entire Project	Permittee	
78	<p><u>CBB Nest Impact Minimization.</u> For impacts to the two nests authorized for take by the ITP, impacts to the nests shall be minimized (e.g. delay timing of removal, reduced buffers, etc.) before take (i.e. removal/excavation) of the nests can occur in accordance with the CDFW-approved <u>CBB Mortality Reduction and Relocation Plan.</u> Impacts to all other active nests may only occur according to the Condition of Approval <u>CBB Nest Avoidance.</u></p>	ITP Condition # 7.45	Entire Project	Permittee	
79	<p><u>CBB Carcass Salvage.</u> A total of 30 CBB individuals are authorized for take by the ITP. If a CBB is killed or otherwise found deceased during Project activities, Permittee shall contact CDFW to determine the fate of the carcass. As feasible, the carcass shall be salvaged, photographed, and placed in a labeled, clean plastic, resealable bag or vial and placed in a freezer. The label shall include a unique identifier (collection number), species name, time and date of collection, collection location, GPS location (including datum and horizontal error in feet), circumstances surrounding death (e.g. freezer may have been too cold; hot day and extreme shifts in temperature from ambient air to cooler may have contributed), collector name and contact information (phone number or email), and ITP tracking number. If deemed necessary by CDFW, the Permittee shall deliver the carcass (on dry ice if possible) to the following address:</p> <p>CDFW Wildlife Genetics Research Unit (Wildlife Health Lab)                      Attention: Michael Buchalski                      1415 North Market Boulevard, Suite 9                      Sacramento, California 93834</p>	ITP Condition # 7.46	Entire Project	Permittee	

	<b>Mitigation Measure</b>	<b>Source</b>	<b>Implementation Schedule</b>	<b>Responsible Party</b>	<b>Status / Date / Initials</b>
80	<p><u>Pre-Construction Surveys for WJT</u>. The Designated Biologist(s) shall perform pre-construction surveys for WJT prior to initiating any vegetation- or ground disturbing activities following the initial WJT removal previously authorized through emergency regulations adopted under Fish and Game Code section 2084 and CCR Title 14, § 749.10. These surveys shall cover the access routes, the specific Project Area(s), and an additional 50-foot buffer zone. The Designated Biologist(s) shall confirm any previously identified WJT individuals as well as identify on a map any newly identified WJT individuals (i.e. germinated stem from seed, trunk, or rhizome resprout) within the Project Area.</p> <p>Permittee shall provide the pre-construction survey report via email to CDFW's Regional Representative and Regional Office identified in Condition of Approval <u>Quarterly Compliance Report (Construction Phase)</u> within 30 days of having performed the survey. The pre-construction survey report shall include, but not be limited to, methodology, date and time of survey, results, discussion, and a map of the locations of all previously and newly identified WJT.</p>	ITP Condition # 7.47	Before commencing ground- or vegetation-disturbing activities	Designated Biologist(s)	
81	<p><u>WJT Buffer</u>. If pre-construction surveys have identified new WJT individuals, Permittee shall implement a 50-foot avoidance buffer for each individual WJT or submit a written buffer reduction request to CDFW. The Buffer Reduction request must include the following for each individual or group of individuals: mapped locations, color photographs, and physical description with size in centimeters or meters as appropriate (seed, plant parts, new sprout, trunk/rhizome re-sprout, etc.). If the individual(s) will be impacted, the Buffer Reduction request must include a description and proposed timing of impact (excavation, trimming, herbicide spray, etc.) along with a cumulative number of previously impacted WJT (not including those authorized under the above referenced emergency regulations) under the ITP.</p>	ITP Condition # 7.48	Entire Project	Permittee	
82	<p><u>WJT Relocation, Seed Salvage, and Topsoil Salvage</u>. When the cumulative number of impacted WJT (new sprout, trunk, or rhizome re-sprout) exceeds 50 individuals over the duration of the ITP, Permittee shall initiate consultation with CDFW in writing regarding the potential need for relocation, seed salvage, and/or topsoil salvage. CDFW may require the preparation of a WJT Mortality Reduction Plan, which shall include at a minimum: (1) impact minimization measures; (2) relocation methods in accordance with the Western Joshua Tree Relocation Guidelines and Protocols (Attachment 7) or other updated prevailing CDFW-approved guidance; (3) methods of seed or fruit collection; (4) methods of topsoil salvage; and (5) a map and legal description of the proposed receiver site(s) for WJT individual(s) and/or topsoil and proposed permanent conservation mechanism. Take of any more than 50 WJT individuals over the duration of the ITP is prohibited until CDFW prepares a written response to the consultation request.</p>	ITP Condition # 7.49	Entire Project	Permittee	

ATTACHMENT 2

Biologist Resume Form





Department of Fish and Wildlife

**BIOLOGIST RESUME FORM**

*This form requests information about the qualifications of the Qualified Biologist, Designated Biologist and Designated Monitor specified in California Endangered Species Act Incidental Take Permits (ITP) and Lake or Streambed Alteration (LSA) Agreements issued by California Department of Fish and Wildlife (CDFW).*

**Completing this form will ensure the receipt of adequate information and expedite CDFW review of qualifications.**

**SECTION I. NAME AND CONTACT INFORMATION**

Name:		Title:	
Company Name & Address:		Phone:	
		Email:	

**SECTION II. EDUCATION**

College/University & Degree Type Related to Natural Resource Science:	
Other Relevant Workshops & Training:	

**SECTION III. ROLE(S) AND PERMIT REQUIREMENTS**

Requested Role(s):	
Relevant LSA Agreement Measures or ITP Conditions <sup>2</sup> :	

**SECTION IV. SPECIES AND RESOURCE EXPERIENCE – SUMMARY**

*This section summarizes experience by special status species and other resource. Use one row for each species or other resource where surveys or special protections are required in the CESA ITP or LSA Agreement for which biologist approval is requested.<sup>3</sup> If more space is needed, add rows to this table. Provide details in Section 5.*

Species or Resource	Number of Field Seasons & Hours, Life Stages Observed <i>Provide project details in Section 5</i>	Life History Knowledge <i>Describe formal workshops &amp; training with dates, or informal training details</i>	CDFW SCP, MOU, & USFWS 10a1a Authorization Number & Authorized Activities <i>This form does not fulfill SCP, MOU, &amp; USFWS 10a1a reporting requirements</i>	
Insert Species or Resource 1	Field seasons: Hours: Life Stages:			Issued to: Expiration: Agency contact:
Insert Species or Resource 2	Field seasons: Hours: Life Stages:			Issued to: Expiration: Agency contact:
Insert Species or Resource 3	Field seasons: Hours: Life Stages:			Issued to: Expiration: Agency contact:

<sup>2</sup> List all measures and conditions from the LSA Agreement or ITP requiring biological staff (i.e., Qualified Biologist, Designated Biologist, or Designated Monitor).

<sup>3</sup> Often LSA Agreements/ITPs require surveys and other protections for multiple species and other resources. Include only those for which the biologist has experience and is requesting approval.

**SECTION V. SPECIES AND RESOURCE EXPERIENCE – DETAILS**

*This section details experience from the three most recent and relevant projects for each species and resource identified in Section 4. If more space is needed, attach additional pages in the same table format (i.e., copy/paste format).*

<b>A. Species or Resource:</b>			
Project 1 Name & Location:		Project Start & End Dates:	
LSA Agreement, ITP, or Other Agency Permit Number:		Role(s) <sup>4</sup> :	
Survey Type(s) <sup>5</sup> :		Construction Monitoring <sup>6</sup> :	Days: Activities:
Species Life Stages Observed & Handled, Number of Each:	Life Stage: Number Observed: Number Handled: Reported to CNDDDB <sup>7</sup> (Y/N):	Company Name, Professional Reference Name, Phone, Email:	
If <u>not</u> reported to CNDDDB, why:			
CDFW and Other Agency Email:			
Project 2 Name & Location:		Project Start & End Dates:	
LSA Agreement, ITP, or Other Agency Permit Number:		Role(s):	
Survey Type(s):		Construction Monitoring:	Days: Activities:
Species Life Stages Observed & Handled, Number of Each:	Life Stage: Number Observed: Number Handled: Reported to CNDDDB (Y/N):	Company Name, Professional Reference Name, Phone, Email:	
If <u>not</u> reported to CNDDDB, why:			
CDFW and Other Agency Email:			
Project 3 Name & Location:		Project Start & End Dates:	
LSA Agreement, ITP, or Other Agency Permit Number:		Role(s):	
Survey Type(s):		Construction Monitoring:	Days: Activities:

<sup>4</sup> Insert the role as described in the associated LSA Agreement, ITP or other agency permit. If these permits were not issued, describe the role based on the duties, e.g., “lead biologist with handling authorization” or “designated monitor.”

<sup>5</sup> For example, pre-construction survey or description of the protocol or guideline followed.

<sup>6</sup> Include the number of days and describe the types of activities monitored (e.g., heavy equipment operation).

<sup>7</sup> CNDDDB is the abbreviation for California Natural Diversity Database.

**Project Name:  
LSA Agreement/ITP Number(s):**

Species Life Stages Observed & Handled, Number of Each:	Life Stage: Number Observed: Number Handled: Reported to CNDDDB (Y/N):	Company Name, Professional Reference Name, Phone, Email:	
If <u>not</u> reported to CNDDDB, why:			
CDFW and Other Agency Email:			
Additional Information:			

<b>B. Species or Resource:</b>			
Project 1 Name & Location:		Project Start & End Dates:	
LSA Agreement, ITP, or Other Agency Permit Number:		Role(s):	
Survey Type(s):		Construction Monitoring:	Days: Activities:
Species Life Stages Observed & Handled, Number of Each:	Life Stage: Number Observed: Number Handled: Reported to CNDDDB (Y/N):	Company Name, Professional Reference Name, Phone, Email:	
If <u>not</u> reported to CNDDDB, why:			
CDFW and Other Agency Email:			
Project 2 Name & Location:		Project Start & End Dates:	
LSA Agreement, ITP, or Other Agency Permit Number:		Role(s):	
Survey Type(s):		Construction Monitoring:	Days: Activities:
Species Life Stages Observed & Handled, Number of Each:	Life Stage: Number Observed: Number Handled: Reported to CNDDDB (Y/N):	Company Name, Professional Reference Name, Phone, Email:	
If <u>not</u> reported to CNDDDB, why:			
CDFW and Other Agency Email:			
Project 3 Name & Location:		Project Start & End Dates:	
LSA Agreement, ITP, or Other Agency Permit Number:		Role(s):	
Survey Type(s):		Construction Monitoring:	Days: Activities:

**Project Name:**  
**LSA Agreement/ITP Number(s):**

Species Life Stages Observed & Handled, Number of Each:	Life Stage: Number Observed: Number Handled: Reported to CNDDDB (Y/N):	Company Name, Professional Reference Name, Phone, Email:	
If <u>not</u> reported to CNDDDB, why:			
CDFW and Other Agency Email:			
Additional Information:			

<b>C. Species or Resource:</b>			
Project 1 Name & Location:		Project Start & End Dates:	
LSA Agreement, ITP, or Other Agency Permit Number:		Role(s):	
Survey Type(s):		Construction Monitoring:	Days: Activities:
Species Life Stages Observed & Handled, Number of Each:	Life Stage: Number Observed: Number Handled: Reported to CNDDDB (Y/N):	Company Name, Professional Reference Name, Phone, Email:	
If <u>not</u> reported to CNDDDB, why:			
CDFW and Other Agency Email:			
Project 2 Name & Location:		Project Start & End Dates:	
LSA Agreement, ITP, or Other Agency Permit Number:		Role(s):	
Survey Type(s):		Construction Monitoring:	Days: Activities:
Species Life Stages Observed & Handled, Number of Each:	Life Stage: Number Observed: Number Handled: Reported to CNDDDB (Y/N):	Company Name, Professional Reference Name, Phone, Email:	
If <u>not</u> reported to CNDDDB, why:			
CDFW and Other Agency Email:			
Project 3 Name & Location:		Project Start & End Dates:	
LSA Agreement, ITP, or Other Agency Permit Number:		Role(s):	
Survey Type(s):		Construction Monitoring:	Days: Activities:

**Project Name:**  
**LSA Agreement/ITP Number(s):**

Species Life Stages Observed & Handled, Number of Each:	Life Stage: Number Observed: Number Handled: Reported to CNDDDB (Y/N):	Company Name, Professional Reference Name, Phone, Email:	
If <u>not</u> reported to CNDDDB, why:			
CDFW and Other Agency Email:			
Additional Information:			

ATTACHMENT 3

U.S. Fish and Wildlife Service's *Desert Tortoise Field Manual*

Attachment 3

**DESERT TORTOISE (MOJAVE POPULATION)  
FIELD MANUAL  
(*Gopherus agassizii*)**

[December 2009]

**prepared by:**

U.S. Fish and Wildlife Service

***Warning: This Manual does not authorize individuals to handle desert tortoises. Such authorization comes from both Federal and State wildlife resource agencies, including, at least, those listed above. This document supersedes what was previously titled Guidelines for Handling Desert Tortoises during Construction Projects (Desert Tortoise Council 1994, revised 1999).***

Cite as: U.S. Fish and Wildlife Service. 2009. Desert Tortoise (Mojave Population) Field Manual: (*Gopherus agassizii*). Region 8, Sacramento, California.

## ACKNOWLEDGEMENTS

The Desert Tortoise Council provided desert tortoise handling guidelines in 1994. Edward L. LaRue, Jr. assembled the information and drafted these guidelines on behalf of the Council with input from the U.S. Fish and Wildlife Service (USFWS) field offices in California, Arizona, Nevada, and Utah. Mr. LaRue initiated review of these guidelines in April 1996 and revised them in July 1999. Information was provided by the Desert Tortoise Council, the USFWS, California Department of Fish and Game (CDFG), Utah Division of Wildlife Resources (UDWR), Nevada Department of Wildlife (NDOW), Arizona Game and Fish Department (AGFD), U.S. Bureau of Land Management (BLM), U.S. Geological Survey (USGS), private consultants, universities, Tortoise Group, and other individuals and organizations. The latest document, the Desert Tortoise Field Manual, is a revision of the handling guidelines and assembly/revision of other documents that provide regulatory guidance and requirements for the desert tortoise. The Desert Tortoise Field Manual is a compilation of efforts by many offices of the USFWS with input and review by the CDFG, NDOW, AGFD, UDWR, and consultants. We appreciate the efforts of all involved in this evolving document from the first version in 1994 to the current version.

## AGENCY/ORGANIZATION CONTACT INFORMATION

### U.S. Fish and Wildlife Service

Desert Tortoise Recovery Office  
Nevada Fish and Wildlife Office  
1340 Financial Boulevard  
Reno, Nevada 89502  
(775) 861-6300

Nevada Fish and Wildlife Office-Las Vegas  
4701 North Torrey Pines Drive  
Las Vegas, Nevada 89130  
(702) 515-5230

In California, for Inyo, Kern, Los Angeles, and San Bernardino Counties:

U.S. Fish and Wildlife Service  
Ventura Fish and Wildlife Office  
2493 Portola Road, Ste. B  
Ventura, California 93003  
(805) 644-1766

In California, for Imperial and Riverside Counties, and Joshua Tree National Park and the San Bernardino National Forest in San Bernardino Co:

Carlsbad Fish and Wildlife Office  
6010 Hidden Valley Road  
Carlsbad, California 92009  
(760) 431-9440

Utah Fish and Wildlife Office  
2369 West Orton Circle  
West Valley City, Utah 84119  
(801) 975-3330

Arizona Fish and Wildlife Office- Flagstaff  
323 North Leoux Street, Suite 101  
Flagstaff, Arizona 86001  
(928) 226-0614

Nevada Department of Wildlife

Southern Region  
4747 Vegas Drive  
Las Vegas, Nevada 89108  
(702) 486-5127

California Department of Fish and Game

Region 4 (Kern County)  
1234 East Shaw Avenue  
Fresno, California 993710  
(559) 243-4005

Region 5 (Los Angeles and  
San Diego Counties)  
4949 Viewridge Avenue  
San Diego, California 92123  
(858) 467-4201

Region 6 (Imperial, Inyo, Riverside,  
and San Bernardino Counties)  
3602 Inland Empire Boulevard  
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(909) 484-0167

Utah Division of Wildlife Resources

Southern Region  
1470 N Airport Rd  
Cedar City, Utah 84720  
(435) 865-6100

Washington County Field Office  
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St. George, Utah 84790  
(435) 688-1426

Arizona Game and Fish Department

State Headquarters--Nongame  
Branch  
5000 W. Carefree Highway  
Phoenix, Arizona 85086  
(623) 236-7767

Bureau of Land Management- Nevada

Southern Nevada District Office  
4701 North Torrey Pines Drive  
Las Vegas, Nevada 89130  
(702) 515-5000

Ely District Office  
702 N. Industrial Way  
HC 33 Box 33500  
Ely, Nevada 89301  
(775) 289-1800

Caliente Field Office  
U.S. Highway 93  
P.O. Box 237  
Caliente, Nevada 89008  
(775) 726-8100

Tonopah Field Office  
1553 South Main Street  
PO Box 911  
Tonopah, Nevada 89049  
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Bureau of Land Management - California

California Desert District Office  
22835 Calle San Juan de Los Lagos  
Moreno Valley, California 92553  
(951) 697- 5200

Ridgecrest Field Office  
300 South Richmond Road  
Ridgecrest, California 93555  
(760) 384-5400

Barstow Field Office  
2601 Barstow Road  
Barstow, California 92311  
(760) 252-6000

Palm Springs Field Office  
1201 Bird Center Drive  
Palm Springs, California 92262  
(760) 833-7100

BLM- Utah

St. George Field Office  
345 East Riverside Drive  
St. George, Utah 84790  
(435) 688-3200

Needles Field Office  
1303 South Hwy 95  
Needles, California 92363  
(760) 326-7000

El Centro Field Office  
1661 South 4<sup>th</sup> Street  
El Centro, California 92243  
(760) 337-4400

BLM- Arizona

Arizona Strip Field Office  
345 East Riverside Drive  
St. George, Utah 84790  
(435) 688-3200

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USFWS Desert Tortoise Pre-Project Survey Guidance (Excel Table)

Chapter 5 Preliminary Consideration Before Going to the Field

Chapter 6 Desert Tortoise Clearance Survey Protocol

Chapter 7 Guidelines for Handling Desert Tortoises and Their Eggs

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## CHAPTER 1. PURPOSE

The purpose of the Desert Tortoise Field Manual (Manual) is to update and consolidate existing survey and handling protocols, procedures, and applicable Federal regulations related to the federally-threatened desert tortoise – Mojave population (*Gopherus agassizii*) into one document. This Manual supersedes all previous handling guidelines and procedures documents for the Mojave population of the desert tortoise. This Manual was developed specifically for the Mojave population of the desert tortoise. Additional information on the desert tortoise, including its biology, ecology, and Federal status, can be downloaded at [http://www.fws.gov/nevada/desert\\_tortoise/](http://www.fws.gov/nevada/desert_tortoise/)

This Manual is a consolidation and revision of the following documents:

- Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise (USFWS 1992a)
- Field Survey Protocol for Any Federal Action that May Occur Within the Range of the Desert Tortoise (USFWS 1992b)
- Field Survey Protocol for Any Non-Federal Action that May Occur Within the Range of the Desert Tortoise (USFWS 1992c)
- Guidelines for Handling Desert Tortoises during Construction Projects, previously prepared by the Desert Tortoise Council (July 1994, revised July 1999)
- Desert Tortoise Exclusion Fence Specifications, prepared by the USFWS (Chapter 8).

This Manual provides guidance for pre-project survey methods to determine the status of the desert tortoise for projects occurring within the species' range on Federal and non-Federal lands. The purpose of this guidance is to provide technical assistance to entities to determine whether a biological opinion or incidental take permit may be needed prior to project implementation. This Manual is also intended for use by Authorized Biologists and desert tortoise Monitors (section 3.1) conducting activities under an Endangered Species Act (ESA) section 7 biological opinion or section 10 incidental take permit and provides guidance on handling desert tortoises that need to be moved out of harm's way or prevented from re-entering a project site.

This Manual does not authorize desert tortoise handling/capturing or any other form of take (See Chapter 2 for definition of "take") without appropriate Federal and State authorizations. The responsible Federal and State agencies will review the qualifications statement for each potential desert tortoise biologist and authorize him/her to serve as an Authorized desert tortoise Biologist for a given project. The Manual includes methods that are effectively used by professional desert tortoise researchers; as field protocols evolve, they will be updated with new information as it becomes available and posted on-line.

We encourage comments on this Manual; please submit problems encountered and recommendations for improvement to the USFWS (see AGENCY/ORGANIZATION CONTACT INFORMATION section above). In subsequent years, the USFWS will use your input to revise and incorporate new information and methods.

## **Literature Cited**

Desert Tortoise Council. 1994. Guidelines for handling desert tortoises during construction projects. Edward L. LaRue, Jr., editor. San Bernardino, California. Revised 1999.

U.S. Fish and Wildlife Service. 1992a. Procedures for Endangered Species Act compliance for the Mojave desert tortoise. Regions 1, 2, and 6. October 1992. 18 pages plus appendices.

U.S. Fish and Wildlife Service. 1992b. Field survey protocol for any federal action that may occur within the range of the desert tortoise. January 1992. 16 pages.

U.S. Fish and Wildlife Service. 1992c. Field survey protocol for any non-federal action that may occur within the range of the desert tortoise. January 1992. 22 pages.

## **CHAPTER 2. PROCEDURES FOR FEDERAL ENDANGERED SPECIES ACT COMPLIANCE FOR THE DESERT TORTOISE**

On August 4, 1989, the USFWS published an emergency rule listing the Mojave population of the desert tortoise as endangered (54 FR 42270). On April 2, 1990, the USFWS determined the Mojave population of the desert tortoise to be threatened (55 FR 12178). Section 9 of the ESA prohibits the "take" of any federally listed threatened or endangered species without first obtaining the necessary take exemption from the USFWS and state permits where applicable. Take is defined as: "harming, harassing, pursuing, hunting, shooting, wounding, killing, capturing, collecting, or attempting to engage in any such conduct" (Section 3(18), ESA). Harm is defined as: "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or shelter" (50 CFR § 17.3(c)). Take also includes modification of habitat that would result in harm to the desert tortoise. There are two ways to legally take a threatened or endangered species; one is through an incidental take statement in a USFWS biological opinion under section 7 of the ESA and the other is through a permit issued by the USFWS under section 10 (refer to Section 2.1.1 for more information on biological opinions and section 2.2 and Chapter 3 for section 10 permits).

For purposes of the ESA, desert tortoise habitat is defined as 1) areas with presence of desert tortoises or desert tortoise sign (*e.g.*, shells, bones, scutes, scats, sheltersites, tracks, egg shell fragments, courtship rings, drinking sites, etc.) that are likely to be part or all of a lifetime home range, 2) dispersal areas (*i.e.*, habitat corridors), or 3) areas suitable for desert tortoises as identified by the USFWS or in the most recent recovery plan for the Mojave population of the desert tortoise ([http://www.fws.gov/nevada/desert\\_tortoise/](http://www.fws.gov/nevada/desert_tortoise/)).

Pre-project surveys for the desert tortoise following the USFWS guidance in Chapter 4 are not expected to result in take and therefore do not require surveyors to first obtain a recovery permit. However, to ensure quality control and reduce the likelihood of USFWS non-concurrence with survey results, we recommend that each potential surveyor complete and sign the Desert Tortoise Authorized Biologist Request Form ([http://www.fws.gov/ventura/speciesinfo/protocols\\_guidelines/](http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/)) and submit it to USFWS and the appropriate State agency for review prior to initiating any survey. Upon receiving the survey results, if the USFWS determines that the methods implemented or qualifications of the surveyors were inadequate, the USFWS may not accept the survey results. In such cases, surveys would need to be repeated using approved methods and qualified surveyors.

### **2.1. Federal Actions**

#### **2.1.1. Consultation under Section 7 of the ESA**

Section 7(a)(1) of the ESA requires all Federal agencies, in consultation with the Secretary of the Interior (delegated to the USFWS), to utilize their authorities in furtherance of recovering federally listed species by carrying out programs for the conservation of endangered and threatened species.

Section 7(a)(2) of the ESA and implementing regulations (50 CFR § 402) require all Federal agencies to consult with the USFWS for certain actions. There are two types of consultations, informal and formal. Informal consultation with the USFWS occurs when the Federal agency determines that an action they propose to authorize, fund, or carry out “may affect” a federally endangered or threatened species or critical habitat. Through the informal consultation process, the Federal agency, in coordination with the USFWS, may develop changes to the proposed action that result in no effect to the listed species, only beneficial effects to the listed species, or may affect but is not likely to adversely affect the listed species. In the first two situations, the consultation process is documented and terminated. In the last situation, the informal consultation process is completed with the USFWS issuing a letter of concurrence.

Section 7(a) regulations of the ESA require each Federal agency to review its actions at the earliest possible time to determine whether any action they propose to authorize, fund, or carry out may adversely affect listed species or adversely modify designated critical habitat. If such a determination is made, formal consultation is required with the USFWS; please contact the USFWS to determine the type of consultation required.

Through completion of the formal section 7 process, the USFWS may issue a biological opinion to the Federal agency stating “no jeopardy/adverse modification” is expected as a result of the proposed action for listed plants and animals, and exempting incidental take of listed animals. A no jeopardy/adverse modification biological opinion concludes that the proposed action will not jeopardize the continued existence of the species or result in adverse modification of designated critical habitat. Without this exemption, the Federal agency would violate section 9 of the ESA if the proposed project were implemented and resulted in take of a listed species.

Federal actions that are nondiscretionary, entirely beneficial to the listed species, or have no adverse effects on listed species are not subject to formal consultation. All actions which require approval by the Federal action agency are considered discretionary. The “may affect” standard applies to those activities that occur in suitable habitat, or habitat considered necessary for the conservation of a listed species. It is the responsibility of the Federal action agency to determine which actions may affect threatened or endangered species or critical habitat, and to initiate consultation accordingly with the USFWS.

Once a Federal agency has determined that its action may adversely affect a listed species or critical habitat, the Federal agency should submit a written request to the USFWS for formal consultation. This request should be accompanied by a biological assessment/evaluation of the action and its impacts (Section 2.3).

The Federal agency requesting formal consultation is responsible for providing the USFWS with the best scientific and commercial data available and relevant to the consultation. The “best data” mean data that are available and/or can be obtained during consultation, and are needed for an adequate review of the effects that an action may have on listed species or critical habitat (50 CFR § 402.14(d)).

Should the Federal action agency determine that the effect to the desert tortoise is entirely beneficial, then formal consultation may not be required. In this case, the action agency may

request concurrence from the USFWS that the action is not likely to adversely affect the desert tortoise through informal consultation. Beneficial actions that are part of a larger action which has not undergone section 7 consultation cannot be considered under informal consultation if the larger action includes adverse effects to the desert tortoise (*e.g.*, construction of a pasture fence within an allotment in desert tortoise habitat which has not yet undergone section 7 consultation). In such instances, grazing within the allotment is considered to be an “interrelated” and “interdependent” action of the proposed fence. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Both interrelated and interdependent actions are considered “effects of the action” (50 CFR § 402.02).

Formal consultation results in a biological opinion issued by the USFWS to the action agency. The biological opinion makes a determination on whether or not the proposed action subject to consultation is likely to jeopardize the continued existence of the listed species or result in destruction or adverse modification of critical habitat. The finding takes into account the: 1) rangewide status of the species, 2) the environmental baseline condition of the listed species in the action area; 3) the direct, indirect, interrelated, and interdependent effects attributable to the Federal action at hand; and 4) the cumulative effects of State and private actions reasonably certain to occur in the area of the Federal action.

Biological opinions issued by the USFWS will contain the following information:

1. An assessment of the status of the species, both rangewide and within the action area.
2. An analysis of the direct and indirect effects, as well as the effects of interrelated and interdependent activities (50 CFR § 402) and cumulative effects of future non-Federal activities that are reasonably certain to occur in the action area.
3. A determination whether the action is likely or not likely to jeopardize the continued existence of the species, or will result in the destruction or adverse modification of critical habitat. Reasonable and prudent alternatives will be provided, if at all possible, if the biological opinion indicates that the proposed action is likely to jeopardize the continued existence of the species (jeopardy opinion) or result in the destruction or adverse modification of critical habitat (adverse modification opinion).
4. An incidental take statement that identifies the anticipated level of incidental take that is expected to occur and provides mandatory reasonable and prudent measures and mandatory terms and conditions for minimizing any incidental take exempted in the biological opinion. This includes monitoring and reporting requirements.
5. Conservation recommendations that, if implemented, would minimize impacts and promote the conservation of the species. Conservation recommendations are not mandatory but are intended to provide an opportunity for the agency to further

the conservation of the desert tortoise as mandated under section 7(a)(1) of the ESA.

Confusion often arises concerning the difference between reasonable and prudent alternatives and reasonable and prudent measures. “Reasonable and prudent alternatives,” part of a jeopardy or adverse modification opinion, are modifications to the proposed action that will avoid jeopardizing the continued existence of a listed species and/or destroying or adversely modifying the listed species’ critical habitat. The Federal agency decides whether or not to implement reasonable and prudent alternatives. Failure to implement these alternatives, however, can lead to a violation of section 7(a)(2), if the action at any point in time causes a listed species to become jeopardized or results in the destruction or adverse modification of critical habitat. A Federal agency must notify the USFWS of its final decision regarding implementation of reasonable and prudent alternatives. The Federal agency can apply for an ESA exemption if it determines that it cannot comply with the requirements of section 7(a)(2) after consultation with the USFWS.

“Reasonable and prudent measures,” along with terms and conditions that implement them, are mandatory elements that minimize incidental take. Reasonable and prudent measures cannot alter the basic design, location, scope, duration, or timing of the action and may involve only minor changes (50 CFR § 402.14(i)(2)). They include monitoring and reporting requirements. The Federal action agency must comply with the terms and conditions that implement the reasonable and prudent measures, which the USFWS considers necessary to minimize incidental take, to be in compliance with the ESA.

It is not possible to determine an exact point at which the continued existence of a species would be jeopardized or adverse modification of critical habitat would occur without fully analyzing proposed actions in relation to the existing environmental baseline. Therefore, the USFWS will analyze each Federal action submitted for formal consultation on a case-by-case basis.

Formal consultation is initiated on the date the Federal agency’s request is received by the USFWS if the Federal agency provides all relevant data required by 50 CFR § 402.14(c). Within 10 working days, the USFWS will acknowledge receipt of the consultation request in writing. Upon reviewing the biological assessment provided by the Federal action agency, the USFWS will advise the Federal agency if insufficient information has been provided, and request additional information needed to complete the formal consultation process.

Formal consultation concludes within 90 days after its initiation unless suspended because of insufficient information or extended in accordance with 50 CFR § 402.14(e). The USFWS may use an additional 45-day period (total of 135 days) to issue the biological opinion to the Federal agency. The USFWS is responsible for ensuring that biological opinions are prepared and delivered within 135 days of initiation of consultation. The USFWS may request an extension of the consultation period.

When the Federal agency asks to review the draft biological opinion, the above time frames continue to apply. However, no final opinion will be issued before 135 days while the agency is reviewing the draft. Once comments on the draft are received by the USFWS, the biological

opinion is finalized and delivered to the Federal agency. If comments on the draft opinion result in major changes or clarifications, a time extension can be sought by the USFWS from the Federal agency.

If relevant data are known to be available to the Federal agency or will be available as a result of ongoing or imminent studies, the USFWS may request the data and any other analyses in accordance with 50 CFR § 402.14(c) or suggest that consultation be postponed until those data or analyses are available. The USFWS has the responsibility to alert the Federal agency (and any applicant) of areas where additional data would provide a better information base from which to formulate a biological opinion. The advice from the USFWS is intended to help the Federal agency to better satisfy its duty to ensure that its proposed action is not likely to jeopardize listed species or adversely modify/destroy critical habitat.

If the Federal agency insists that consultation be completed without the requested data or analyses, the USFWS will document in the biological opinion that certain analyses or data were not provided and why the information would have been helpful in conducting the consultation. In cases where gaps occur in the data base, the USFWS will evaluate the worst-case scenario and provide the benefit of the doubt to the species concerned.

#### 2.1.2. Incidental Take under Section 7 of the ESA

In cases where the USFWS concludes through consultation procedures that an action and the resultant take of listed species is not likely to jeopardize the continued existence of the listed species, the USFWS must provide an incidental take statement that specifies the anticipated level (amount or extent) of such taking and those reasonable and prudent measures considered necessary or appropriate to minimize such impact (50 CFR § 402.14(i)). There are two types of take under the ESA, incidental and intentional. An incidental take situation would exist if an otherwise lawful activity would result in the direct loss of a individual desert tortoise, or a sheltersite with a desert tortoise inside. An example would be the unintentional crushing of a desert tortoise by heavy equipment used for the otherwise lawful purpose of constructing a house. The take of the desert tortoise would be “incidental” to construction of the house. Conversely, intentional take is the purposeful take of a listed species, such as hunting, or capturing a listed species. Because the definition of “fish and wildlife” in the ESA includes eggs, the USFWS must also consider incidental take of desert tortoise eggs in a biological opinion, if such take may occur.

In a biological opinion, the USFWS estimates the amount of incidental take for individual desert tortoises and the amount of habitat that may be modified, and provides reasonable and prudent measures and terms and conditions that minimize adverse effects to the listed species. Under section 7(o)(2) of the ESA, a biological opinion with an incidental take statement operates as an exemption to the section 9 prohibitions against take.

Incidental take may also occur when federally listed wildlife are harmed or harassed by activities within their home range. For desert tortoises, harm may include destruction or degradation of habitat components (*e.g.*, soil, vegetation) necessary for the desert tortoise’s existence.

However, habitat cannot be “taken” in the context of the ESA. Harassment may occur when a desert tortoise is moved out of the action area to avoid harm. In these situations, the USFWS recommends that the project proponent initiate a dialogue with the USFWS to discuss the likelihood of incidental take.

Any unauthorized take of desert tortoises that results from activities carried out in a manner not consistent with, or not authorized under, the provisions of section 7 of the ESA may be subject to investigation by the USFWS pursuant to section 9 of the ESA. Criminal penalties for illegal take of a threatened species include up to \$25,000 in fines and 6 months in prison. Civil penalties may also be imposed as the ESA has a provision for citizen lawsuits.

## **2.2. Non-Federal Actions**

### **2.2.1. Conservation Planning under Section 10 of the ESA**

A permit from the USFWS pursuant to section 10(a)(1)(B) of the ESA authorizes incidental take for a non-Federal entity much as a section 7 consultation does through an incidental take statement in a biological opinion for a Federal action. Individuals, corporations, non-Federal government entities, State and local governments, Tribes, and other parties can apply for an incidental take permit by submitting an application and a habitat conservation plan (HCP) to the USFWS. “Habitat conservation planning” is the term often used to refer to this process.

Section 10(a)(1)(B) of the ESA requires that the Secretary of the Interior may not issue a permit for incidental take unless the applicant submits a conservation plan. Section 3 of the ESA defines conservation as using all methods and procedures necessary to bring an endangered or threatened species to the point at which measures provided in the ESA are no longer necessary (i.e., recovery). Congress intended that the conservation planning process be used to reduce conflicts between listed species and non-Federal development, and to provide a framework that would encourage creative partnerships between the private sector and local, State, Tribal, and Federal agencies in the interests of listed species and habitat conservation. The existing laws and regulations provide for, and encourage, flexibility and ingenuity in the development of an HCP that will reduce pertinent conflicts under the ESA. The USFWS recommends maximizing efficiency of effort by developing regional HCPs which include incidental take requests from a number of entities through the appropriate local regulatory agency.

The issuance of an incidental take permit by the USFWS is contingent upon the applicant’s development of a USFWS-approved HCP for the listed species affected by the project or action. Unlisted species may be included in the process and become covered under the permit if they are listed during the term of the permit. A more detailed document, “Habitat Conservation Planning and Incidental Take Permit Processing Handbook” is available from the USFWS’s Sacramento, Albuquerque, and Denver Regional Offices, or any field office, and on the internet at: <http://www.fws.gov/endangered/hcp/hcpbktoc.pdf>.

Upon receipt of the application and HCP, the USFWS may issue an incidental take permit if it determines that the following conditions have been met:

1. The taking will be incidental to an otherwise lawful action;

2. The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of taking;
3. The applicant will ensure that adequate funding will be provided for the conservation plan and changed circumstances;
4. The applicant will provide procedures to deal with unforeseen circumstances;
5. The taking will not appreciably reduce the likelihood of the survival and recovery of the subject species in the wild;
6. The applicant will ensure that other measures required by the USFWS will be provided (e.g., Implementing Agreement); and
7. The plan will be implemented.

The third item above, regarding funding, generally requires development of an implementing agreement. This agreement is a legal document binding all implementing parties to the proposed HCP and their specific responsibilities.

Issuance of an incidental take permit by the USFWS is a Federal action requiring National Environmental Policy Act (NEPA) compliance through preparation of a categorical exclusion, an environmental assessment, or an environmental impact statement. To expedite this process, the USFWS will often delegate the development of information necessary for NEPA documentation to the applicant. Generally, if the incidental take permit will result in a significant net loss of individuals and/or habitat, an environmental impact statement likely will be required. This process often requires 2 years to complete. Conversely, if the permit will result in a net gain or insignificant net loss of individuals and/or habitat, an environmental assessment leading to a finding of no significant impact likely will be sufficient for NEPA compliance. In such a scenario, a permit could be considered for issuance within 1 year. Preparation times for HCP and NEPA documents vary according to the specific circumstances of each proposed action and are therefore difficult to predict.

When the HCP is approved by the USFWS, the section 7 consultation process is initiated on the proposed issuance of an incidental take permit to the applicant. The USFWS prepares and issues a biological opinion on the proposed Federal action to issue a Federal incidental take permit. When issued, the permit would authorize incidental take of listed, or future listed species covered under the permit, provided that the applicant institutes appropriate conservation measures for habitat maintenance, enhancement, and protection, coincident with development, which are detailed in the HCP.

The USFWS recognizes that completion of measures proposed in an HCP often takes a considerable amount of time. To provide incentives for all parties to participate in the conservation planning process, assurances exist that the terms and conditions of the incidental take permit will be available for the life of the HCP. Permits of 30 years or more duration may be appropriate to provide assurances to the private sector and non-Federal governments that long-term commitments to funding, land use restrictions, and habitat conservation will be maintained. Funding, land use restrictions, and habitat conservation are usually required to continue in perpetuity. Ensuring adequate funding for management of conserved habitat may require establishment of a trust fund.

The USFWS will evaluate all requests for incidental take permits under section 10(a)(1)(B) of the ESA. Permit applicants must submit an official application form (Form 3-200) to the appropriate Regional Director of the USFWS. ESA permits are issued in accordance with 50 CFR § 13.21.

**2.3. Recommended Format for Biological Evaluations/Biological Assessment**

The following is provided as a recommended guideline, although information should be presented in the order identified below. As projects vary in complexity, the biological evaluation/biological assessment (BE/BA) may also vary. Development of the BE/BA may not occur in the format order. Rather, as additional information becomes available during the crafting of the BE/BA, the appropriate sections will be modified. Federally funded or permitted exploratory activities that may affect listed species and occur prior to project implementation must also undergo section 7 consultation.

**Cover Page:** Name of project, location (city, county, etc.), and date.

**Table of Contents** (all pages must be numbered)

**A. Executive Summary**

1. Brief summary of project (2 or 3 sentences)
2. In tabular format, identify the species, critical habitat, status, and effects determinations. If “no effect”, include a brief paragraph for each species (these will not be addressed again.) For example:

SPECIES	LISTING STATUS	DETERMINATION
Mojave desert tortoise	Threatened	Likely to adversely affect
Mojave desert tortoise, critical habitat	Designated	Likely to adversely affect
Southwestern willow flycatcher	Endangered	Not likely to adversely affect

**B. Project Description**

**1. Location:** Describe construction boundary: mileposts, State, county, and GPS coordinates ). Include vicinity map (all maps and photographs must be first generation copies, legible and at a scale to be meaningful to the description of the activity).

**2. Definition of Action Area:** All areas affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. Include all off-site use areas (e.g., access roads, new utility lines, materials sources, waste sites, mitigation sites,

stockpiling areas, staging) and locations. A map is helpful, overlaying the entire action area with species and habitat occurrences. Please see Chapter 4 of the USFWS's section 7 handbook for a complete description and examples of the Action Area (<http://www.fws.gov/endangered/consultations/s7hndbk/s7hndbk.htm>).

### **3. Proposed Action:**

- a. Describe the anticipated steps involved in the action in their expected or logical order of implementation and include diagrams that are useful. The intent of the proposed action section is to describe what will be built, how it will be built, and when. Include description of actions for the entire action area (including interrelated and interdependent actions (see section 2.1.1)). Describe how the project will be accessed and if ongoing operations and maintenance is anticipated to occur following completion of the construction phase of the project. If the contractor proposes an alternative construction method other than that described in the BE/BA, concurrence from the Services is required.
- b. Identify Best Management Practices (BMPs), weed-control, habitat restoration, and other measures (i.e., work windows, construction techniques, avoidance) designed to minimize adverse effects in this section.
- c. Describe monitoring and reporting plans, as well as conservation bank credits or mitigation sites if applicable.

### **C. Description of the species and their habitat**

Identify each species and each critical habitat. Include the following (repeat for each listed species and listed habitat):

1. Consultation with State wildlife agency and/or Natural Heritage database;
2. Literature reviews;
3. Consultation with experts on species, as necessary;
4. Descriptions of the species and general habitat requirements;
5. Relationship of habitat in the project area to local populations;
6. Map of the project area at an appropriate scale to show vegetation types and important biological features, such as habitat for sensitive species, wetlands or unique plant assemblages;
7. Photographs keyed to locations labeled on the project map;
8. Species information in Action Area including survey protocol used, by whom, etc. Include names of surveyors and a statement of their qualifications or authorizations to conduct the survey; and
9. Identify designated or proposed critical habitat as separate listed entities. List the primary constituent elements and address the extent to which they are found in the

action area. These can be introduced in table format and elaborated in subsequent text.

**D. Environmental Baseline**

Describe the past and present effects of human actions on the species or critical habitat in the action area. Describe existing habitat conditions and species trends in detail. Use watershed analysis from the BLM or Forest Service where available, State wildlife agency, or any other available scientific or commercial databases or information. Include information on climate change (e.g., changes to the species' range, distribution, habitat, etc.).

**E. Effects of the Action:** Include a discussion of direct and indirect effects relative to the species:

1. Direct Effects - Those effects caused directly by the proposed action (include those based on sideboards). Provide the rationale for each determination;
2. Indirect Effects - Caused by or will result from the proposed action and are later in time, but are still reasonably certain to occur; and
3. Cumulative Effects - Those effects of future State or private activities, not Federal activities, that are reasonably certain to occur within the action area.

**F. Determination of Effect**

This section must include a clear statement of effect for each species. Example: "We conclude that the Fiber-Optic Line Project may affect, but will not likely adversely affect the Mojave desert tortoise because..."

**G. References and Personal Communications Cited**

*Example of Literature Cited:*

Smith, D. M. 2001. Genetic subdivision and speciation in the western North American spotted snake complex, *Thamnophis punctatus*. *Evolution* 4:29-35.

*Example of Personal Communications (must be documented):*

Leslie Brown, Research Biologist  
Smith Nature Center  
4125 Willowtree Drive  
Greenville, Oregon 85194  
January 8, 2009 telephone communication (or email, site visit, etc.)

## **CHAPTER 3. FEDERAL AND STATE AUTHORIZATIONS FOR IMPLEMENTING DESERT TORTOISE MEASURES REQUIRED UNDER SECTIONS 7 OR 10 OF THE ESA**

When a project will be implemented under the purview of a section 7 biological opinion or a section 10 permit for the Mojave population of the desert tortoise, the USFWS requires each desert tortoise survey be conducted by a desert tortoise Authorized Biologist approved by the USFWS. In addition, the appropriate State wildlife agency should be contacted for their permitting requirements. Within the States of Nevada, California, Utah, and Arizona, individuals must obtain the appropriate permits or authorizations from the respective State wildlife agency to be authorized to handle desert tortoises. Authorized individuals must comply with any section 7 biological opinion and Federal and State permits for the project. In California, CDFG must approve the all individuals involved in handling desert tortoises including Monitors and Authorized Biologists. Contact the appropriate agencies for clarification if there are questions about or conflicting conditions between a section 7 biological opinion/section 10 incidental take permit and a State permit.

As a general rule, an Authorized Biologist has a bachelors or graduate degree in biology, ecology, wildlife biology, herpetology, or related discipline with prior field experience using accepted resource agency techniques to survey for desert tortoises. The proposed Authorized Biologist shall submit to the USFWS a completed and signed “Desert Tortoise - Authorized Biologist and Monitor Responsibilities and Qualifications Form” (Qualifications Form) provided below. USFWS is developing a training and certification program for persons who want to be Authorized Biologists. Until this program is in place, Authorized Biologists will be reviewed based on the information submitted on the Qualifications Form.

Submit the Qualifications Form to the appropriate USFWS field office (See AGENCY/ORGANIZATION CONTACT INFORMATION preceding Chapter 1) **at least 30 days prior to initiation of activities**. If required, submit the Qualifications Form to the Federal action agency with whom the USFWS has consulted under section 7 of the ESA. Submit an updated Qualifications Form for each project even if you have been approved previously, unless you have been instructed otherwise by the USFWS or State wildlife agency. If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit (section 10(a)(1)(A) permit) or similar authorization may be required. The application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at <http://www.fws.gov/forms/3-200-55.pdf>. Submit the completed form to the appropriate USFWS regional office (<http://ww.fws.gov/endangered/permits/permitscontact.html>).

### **3.1. Desert Tortoise - Authorized Biologist and Monitor Responsibilities and Qualifications Form**

**AUTHORIZED BIOLOGIST** – Authorized Biologists must keep current with the latest USFWS protocols, guidelines, and regulations pertaining to the desert tortoise. Some of these are available at [http://www.fws.gov/ventura/speciesinfo/protocols\\_guidelines/](http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/).

Authorized Biologists will serve as mentors to train Desert Tortoise Monitors and should approve Monitors to conduct specific activities based on the Monitor’s demonstrated skills, knowledge and qualifications. Direct supervision is always required for field and clearance surveys; direct supervision means that the Authorized Biologist has direct voice and sight contact

with the desert Tortoise Monitor. An Authorized Biologist is responsible for the outcome of all desert tortoise related activities for which the project is approved, including errors committed by Desert Tortoise Monitors.

The Authorized Biologist 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. Authorized Biologists are approved to monitor project activities within desert tortoise habitat and are responsible for locating desert tortoises and their sign (*i.e.*, conduct field and clearance surveys). Authorized Biologists must ensure proper implementation of protective measures, and make certain that the effects of the project on the desert tortoise and its habitat are minimized in accordance with a biological opinion or incidental take permit. All incidents of noncompliance in accordance with the biological opinion or permit must be recorded and reported.

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.

**DESERT TORTOISE MONITOR** – Desert Tortoise Monitors will be approved by the Authorized Biologist(s) or USFWS (if an Authorized Biologist is not required) for a project. Desert Tortoise Monitors will assist the Authorized Biologist on project activities within desert tortoise habitat, ensure proper implementation of protective measures, and record and report desert tortoise and sign observations in accordance with approved protocol. They will report incidents of noncompliance in accordance with a biological opinion or permit, move desert tortoises from harm's way when desert tortoises enter project sites and place these animals in designated safe areas or maintain the desert tortoises in their immediate possession until an Authorized Biologist assumes care of the animal. Monitors assist Authorized Biologists during surveys and serve as apprentices to acquire experience. Monitors may not conduct field or clearance surveys or other specialized duties of the Authorized Biologist unless directly supervised by an Authorized Biologist; "directly supervised" means the Authorized Biologist has direct voice and sight contact with the Monitor.

### 3.2. DESERT TORTOISE AUTHORIZED BIOLOGIST QUALIFICATIONS FORM

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e. Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at <http://www.fws.gov/forms/3-200-55.pdf>.)

**1. Contact Information:**

<b>Name</b>	
<b>Address</b>	
<b>City, State, Zip Code</b>	
<b>Phone Number(s)</b>	
<b>Email Address</b>	

**2. Date:**

**3. Areas in which authorization is requested (check all that apply):**

- San Bernardino, Kern, Inyo and Los Angeles Counties, California (Ventura office)
- Riverside, San Diego, and Imperial Counties, California (Carlsbad office)
- Nevada     Utah     Arizona

**4. Please provide information on the project:**

<b>USFWS Biological Opinion or HCP No.</b>  <b>When Applicable</b>		<b>Date:</b>
<b>Project Name</b>		
<b>Federal Agency (If Applicable)</b>		
<b>Proponent or Contractor</b>		

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

<b>Species</b>	<b>Dates</b>	<b>State (specify) or Federal Permit Number</b>	<b>Authorized Activities</b>

6. **Education:** Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received

**7. Desert Tortoise Training.**

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Classes			
2. Field Training			
3. Translocation			
4.			

**8. Experience** – Include only those positions relevant to the requested work with desert tortoises. Distinguish between wild Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information provided in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or other contact that can verify your skills and experience in relation to your job performance.** Attach additional sheets as necessary. Please use numbers in each column; do not use “X’s” to indicate participation in the activity. If your experience is limited to **less than three desert tortoise positions**, please include additional job experience and references in the section below.

**Experience by project and activity:**

<b>Project Name:</b> <b>Job Title:</b> <b>Dates of Employment:</b>	<b>Supervisor / Project Contact Name:</b> <b>Phone:</b> <b>Email Address:</b>		<b>Conduct Clearance Surveys (Hrs/Days)</b>	<b>Excavate DT burrows (No.)</b>	<b>Locate DT No. &lt; 100mm ≥ 100mm</b>	<b>Handled for Relocation DTs (No.)</b>	<b>Excavate, and relocate DT nests (No.)</b>
1.					/		
2.					/		
3.					/		
4.					/		
5.					/		
6.					/		
7.					/		

**Experience by project and activity (continued):** Each project number should correspond with the project listed on the previous page

<b>Project Name</b> (Number should correspond to previous page)		<b>Construct Artificial Burrows (No.)</b>	<b>Monitor project equipment and activities (Hrs/Days)</b>	<b>Oversee project compliance (Hrs/Days)</b>	<b>Supervise DT field staff (Hrs/Days) and No. staff supervised</b>	<b>DT fence Installation and inspection (Hrs/Days)</b>	<b>Present DT Awareness Training (No.)</b>
1.					/		
2.					/		
3.					/		
4.					/		
5.					/		
6.					/		
7.					/		

**Summary of experience:**

Total time spent for all desert tortoise-related field activities (referenced above):

Specify total number of hours:

OR total number of 8-hour days: \_\_\_\_\_

Total number of miles/kilometers walked conducting survey transects:

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: \_\_\_\_\_

≥100 mm: \_\_\_\_\_

Additional supervisory experience other than with desert tortoise work:

Project	Hours	Staff (No.)

Additional references for individuals who have held **less than three** positions working with desert tortoise

<p><b>Project Name:</b></p> <p><b>Job Title:</b></p> <p><b>Dates of employment:</b></p>	<p><b>Supervisor / Project Contact:</b></p> <p><b>Name:</b></p> <p><b>Phone:</b></p> <p><b>Email address:</b></p>
<p><b>Project Name:</b></p> <p><b>Job Title:</b></p> <p><b>Dates of employment:</b></p>	<p><b>Supervisor / Project Contact:</b></p> <p><b>Name:</b></p> <p><b>Phone:</b></p> <p><b>Email address:</b></p>

<b>Project Name:</b>	<b>Supervisor / Project Contact:</b>
<b>Job Title:</b>	<b>Name:</b>
<b>Dates of employment:</b>	<b>Phone:</b>
	<b>Email address:</b>

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.

I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

**Signed:** \_\_\_\_\_ **Date:** \_\_\_\_\_

<b>Table 3. USFWS Desert Tortoise Pre-Project Survey Guidance</b> What is the estimated number of tortoises and associated 95% confidence interval for the action area?		
<b>INSTRUCTIONS</b> Use this tab when your transects were of unequal length. Enter the appropriate values from the survey into the yellow cells below. The number of tortoises and associated 95% confidence interval for the action area will be calculated.		
<b>N =</b>		<b>42.4</b>
<b>Lower 95%CI =</b>		<b>19.41</b>
<b>Upper 95%CI =</b>		<b>92.54</b>
Total action area (acres)		<b>3000</b>
Prob that a tort is above ground given winter rainfall (Pa from Table 2) =		<b>0.800</b>
Total length of transects walked (km) =		<b>1080</b>
Number of transects walked =		<b>108</b>
Number of tortoises found during surveys (n) =		<b>19</b>
<b><i>Transects of various lengths</i></b>		
Transect	Length (km)	Tortoises within 5m of centerline
1	10.0	0
2	10.0	0
3	10.0	0
4	10.0	0
5	10.0	2
6	10.0	0
7	10.0	0
8	10.0	0
9	10.0	0
10	10.0	2
11	10.0	0
12	10.0	0
13	10.0	2
14	10.0	1
15	10.0	1
16	10.0	1
17	10.0	1
18	10.0	0
19	10.0	0
20	10.0	0
21	10.0	2
22	10.0	0
23	10.0	0
24	10.0	0
25	10.0	0

26	10.0	0
27	10.0	0
28	10.0	0
29	10.0	0
30	10.0	0
31	10.0	0
32	10.0	0
33	10.0	0
34	10.0	0
35	10.0	0
36	10.0	1
37	10.0	0
38	10.0	0
39	10.0	0
40	10.0	1
41	10.0	0
42	10.0	0
43	10.0	0
44	10.0	0
45	10.0	0
46	10.0	0
47	10.0	1
48	10.0	0
49	10.0	1
50	10.0	0
51	10.0	0
52	10.0	0
53	10.0	0
54	10.0	0
55	10.0	0
56	10.0	0
57	10.0	0
58	10.0	0
59	10.0	0
60	10.0	0
61	10.0	0
62	10.0	0
63	10.0	0
64	10.0	0
65	10.0	0
66	10.0	0
67	10.0	0
68	10.0	0
69	10.0	0
70	10.0	0
71	10.0	0
72	10.0	0
73	10.0	0
74	10.0	0
75	10.0	0
76	10.0	0

77	10.0	0
78	10.0	0
79	10.0	0
80	10.0	0
81	10.0	0
82	10.0	0
83	10.0	1
84	10.0	0
85	10.0	0
86	10.0	0
87	10.0	1
88	10.0	0
89	10.0	0
90	10.0	0
91	10.0	0
92	10.0	0
93	10.0	0
94	10.0	0
95	10.0	0
96	10.0	0
97	10.0	0
98	10.0	0
99	10.0	0
100	10.0	0
101	10.0	1
102	10.0	0
103	10.0	0
104	10.0	0
105	10.0	0
106	10.0	0
107	10.0	0
108	10.0	0
109	5.0	0
110	5.0	0
111	5.0	0
112	5.0	0
113	5.0	0
114	5.0	0
115	5.0	0
116	5.0	0
117	5.0	0
118	5.0	0
119	5.0	0
120	5.0	0
121	5.0	0
122	5.0	0
123	5.0	1
124	5.0	0
125	5.0	0
126	5.0	0
127	5.0	0

128	5.0	0
129	3.0	0
130	3.0	0
131	3.0	0
132	3.0	0
133	3.0	0
134	3.0	0
135	3.0	0
136	3.0	0
137	3.0	0
138	3.0	0
139	3.0	0
140	3.0	0
141	3.0	0
142	3.0	0
143	3.0	1
144	3.0	0
145	3.0	0
146	3.0	0
147	3.0	0
148	3.0	0
149	3.0	0
150	3.0	0
151	3.0	0
152	3.0	0
153	3.0	0
154	3.0	0
155	3.0	0
156	3.0	0
157	3.0	0
158	3.0	0
159	3.0	0
160	3.0	0
161	3.0	0
162	3.0	0
163	3.0	0
164	3.0	0
165	3.0	0
166	3.0	0
167	3.0	0
168	3.0	0
169	3.0	0
170	3.0	0
171	3.0	0
172	3.0	0
173	3.0	0
174	3.0	0
175	3.0	0
176	3.0	0
177	3.0	0
178	3.0	0

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<b>Table 3. USFWS Desert Tortoise Pre-Project Survey Guidance</b>	
<b>What is the estimated number of tortoises and associated 95% confidence interval for the action area?</b>	
<b>INSTRUCTIONS</b> Use this tab when all your transects were of equal length. Enter the appropriate values from the survey into the yellow cells below. The number of tortoises and associated 95% confidence interval for the action area will be calculated.	
	<b>N = 42.4</b>
	<b>Lower 95%CI = 19.41</b>
	<b>Upper 95%CI = 92.52</b>
Total action area (acres)	3000
Prob that a tort is above ground given winter rainfall (Pa from Table 2) =	0.800
Total length of transects walked (L, km) =	1080
Transect length (km)	10
Number of transects walked (k) =	108
Number of tortoises found during surveys (n) =	19
<i>Transects all the same length</i>	
Number of tortoises (n <sub>i</sub> )	Number of transects on which (n <sub>i</sub> ) tortoises were
0	93
1	11
2	4
3	0
4	0
5	0
6	0
7	0
8	0
9	0

## **CHAPTER 4. PREPARING FOR ANY ACTION THAT MAY OCCUR WITHIN THE RANGE OF THE MOJAVE POPULATION OF THE DESERT TORTOISE**

### **4.1. General Information on the Ecology of the Desert Tortoise**

Most habitat for the Mojave population of the desert tortoise is below 4,500 feet (1372 meters) elevation in the creosote bush-bursage series of the Mojave desert scrub biome; dominant plants are creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Desert tortoise habitat may also include various cacti species (*Opuntia* spp.), saltbush (*Atriplex* spp.) scrub, and Joshua tree (*Yucca brevifolia*) woodlands at elevations up to approximately 5,000 feet (1524 meters). The desert tortoise is a large, herbivorous reptile. Mojave desert tortoises are typically active during the day and when annual plants are most abundant during spring and early summer. However, they can also be active following rain events and unseasonably warm periods during fall and winter. If rain events occur at night, tortoises may emerge from their burrows to drink. Female desert tortoises construct nests during the late afternoon and evening, and any desert tortoise may emerge from its burrows at night during extreme heat (see section 7.3). Desert tortoises usually spend the remainder of the year in sheltersites, escaping the extreme weather conditions of the Mojave Desert. Location and type of sheltersites vary greatly in different geographic locations (see section 4.2). For detailed information on the ecology of the Mojave desert tortoise, please see [http://www.fws.gov/nevada/desert\\_tortoise](http://www.fws.gov/nevada/desert_tortoise).

### **4.2 Desert Tortoise Burrows**

Desert tortoises use a variety of sheltersites including soil burrows, caliche caves, lava tubes, pallets, rock caves, rodent or other animal's burrows, and shrubs or man-made structures, such as vehicles and equipment. For this Manual, the term "burrow" means any structure that could be used by a desert tortoise for shelter.

#### 4.2.1. Determining if a Desert Tortoise is Present in a Burrow

If sufficient sunlight is available, use a mirror to direct light into the opening of the burrow to locate desert tortoise sign including a desert tortoise. Alternatives to a mirror are the use of a LED flashlight, fiber-optic scope, or miniature camera. Please refer to section 7.6 for disinfecting procedures for equipment. If the terminus of the burrow or any side chambers cannot be observed, or if the light is insufficient, use a fiber-optic scope or miniature camera to inspect all areas of the burrow.

#### 4.2.2. Describing Burrows

Desert tortoises typically excavate soil burrows that are flat on the bottom and domed on top to match the profile of the desert tortoise shell (half-moon shape). The condition class of a burrow (see below) does not necessarily exclude use or occupation by a desert tortoise. When aestivating in a burrow, desert tortoises may backfill the burrow giving the appearance of the terminus. Spider webs, litter, and other debris may accumulate in burrow openings overnight, and openings may collapse during winter rains. Do not assume that a burrow is inactive if it

looks unused or collapsed. Desert tortoises may use canid or mustelid excavations, and may be found in burrows of other animals, particularly kit foxes. Burrowing owls may use desert tortoise burrows, but do not assume that burrows occupied by owls are not also occupied by desert tortoises. Juvenile desert tortoises create their own burrows, which may resemble rodent burrows, or use rodent burrows. Therefore, consider all burrows to be occupied by desert tortoises until determined otherwise.

Record basic information on the data sheet for each burrow including its class, if occupied by a desert tortoise or other animals, other sign present, GPS location, and other distinguishing information (see below). We recommend photographing burrows and submitting the photographs to the USFWS with the data sheets. Record the information electronically or use permanent black ink and high rag content, acid-free paper when recording all data.

**Condition Class:**

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 which includes collapsed burrows; definitely desert tortoise (please describe)
4. good condition; possibly desert tortoise (please describe)
5. deteriorated condition which includes collapsed burrows; possibly desert tortoise (please describe)

4.2.3. Mapping Burrows

Map desert tortoise burrows using a GPS unit with sufficient accuracy to easily navigate back to the location. Indicate the condition class of the burrow and whether it is occupied by a desert tortoise. There are several important reasons for mapping it: a) resource agencies can determine how many desert tortoises were encountered on the project compared with the number of burrows excavated, b) the information will be available for future projects in the same area, c) burrow locations may be important for organizing desert tortoise removals and determining desert tortoise hot spots versus areas where few, if any, desert tortoises are found, and d) the number and location of burrows found during initial desert tortoise surveys can be compared with the number and location of burrows found during monitoring or subsequent surveys; (i.e., the data may provide information to determine appropriate take limits based on the findings of initial surveys). Typically, the USFWS requires a report that includes the number of desert tortoises observed during the project. Some projects require that all desert tortoise sign be mapped. If an artificial burrow is used, map it accurately. If the burrow is blocked or temporarily penned (see section 7.10.3, Penning Desert Tortoises), map and mark it in the field to easily find it later.

4.2.4. Map Types

For reporting purposes, display burrow locations on maps of appropriate scale, preferably on aerial photography maps. If monitoring a linear right-of-way, number the burrows sequentially within a given portion (e.g., "B-23-2," for burrow #23 on reach 2). As an alternative, use United States Geological Survey (USGS) 7.5' topographical maps (scale 1" = 2,000'), paper or

electronic, or enlargements of them. Project maps at a scale of 1" = 100' or 1" = 200' are particularly useful when burrows are common and better resolution is necessary. The assigned numbers may be cross-referenced with data sheets, field notes, and photographs.

**4.3. Presence/absence and abundance desert tortoise survey protocol**

This protocol provides recommendations for survey methodology to determine presence/absence and abundance of desert tortoises for projects occurring within the species range on Federal and non-Federal lands, and to provide a standard method for reporting survey results. Information gathered from these procedures will: 1) help determine the appropriate level of consultation with USFWS and the appropriate State wildlife agency, 2) help determine the incidental take of desert tortoises resulting from proposed projects as defined by the ESA and California Endangered Species Act (CESA) and 3) help minimize and avoid take.

This guidance includes:

- Site Assessment
- Pre-project Field Survey Protocol for Potential Desert Tortoise Habitats
- USFWS Desert Tortoise Pre-project Survey Data Sheet

This guidance is subject to revision as new information becomes available. Before initiating the protocols described below, please check with your local USFWS and appropriate State wildlife agency to verify that you are implementing the most up-to-date methods. To ensure quality and reduce the likelihood of nonconcurrence with survey results, we recommend that the names and qualifications of the surveyors be provided to USFWS and appropriate State agency for review prior to initiating surveys.

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In Nevada:

U.S. Fish and Wildlife Service  
 Nevada Fish and Wildlife Office  
 4701 North Torrey Pines Drive  
 Las Vegas, Nevada 89130  
 (702) 515-5230

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In California:

Inyo, Kern, Los Angeles, and San Bernardino Counties:  
 U.S. Fish and Wildlife Service  
 Ventura Fish and Wildlife Office  
 2493 Portola Road, Suite B  
 Ventura, California 93003  
 (805) 644-1766

Imperial and Riverside Counties, and Joshua Tree National Park and the San Bernardino National Forest in San Bernardino Co:  
 U.S. Fish and Wildlife Service  
 Carlsbad Fish and Wildlife Office  
 6010 Hidden Valley Road  
 Carlsbad, California 92009  
 (760) 431-9440

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In Utah:

U.S. Fish and Wildlife Service  
Utah Ecological Services Field  
Office  
2369 West Orton Circle  
West Valley City, Utah 84119  
(801) 975-3330

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In Arizona:

U.S. Fish and Wildlife Service  
Arizona Fish and Wildlife  
Conservation Office -Flagstaff  
323 North Leroux Street, Suite 201  
Flagstaff, Arizona 86001  
(928) 226-0614

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**State Wildlife Agencies**

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Nevada: Department of Wildlife:

Southern Region  
4747 Vegas Drive  
Las Vegas, Nevada 89108  
(702) 486-5127

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California Department of Fish and Game (CDFG)

For Fresno, Kern, Kings, Madera, Mariposa, Merced, Monterey, San Benito, San Luis  
Obispo, Stanislaus, Tulare and Tuolumne Counties:

Central Region Headquarters Office  
1234 E. Shaw Avenue  
Fresno, California 93710  
(559) 243-4005 ext. 151

For Imperial, Inyo, Mono, Riverside and San Bernardino Counties:

Inland Deserts Regional Office  
3602 Inland Empire Boulevard, Suite C-220  
Ontario, California 91764  
(909) 484-0167

For Los Angeles, Orange, San Diego, Santa Barbara and Ventura Counties:

South Coast Regional Office  
4949 Viewridge Avenue  
San Diego, California 92123  
(858) 467-4201

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Utah Division of Wildlife Resources:

Southern Region  
1470 N Airport Road  
Cedar City, Utah 84720  
(435) 865-6100

Washington County Field Office  
344 East Sunland Drive, Suite #8  
St. George, Utah 84790  
(435) 688-1426

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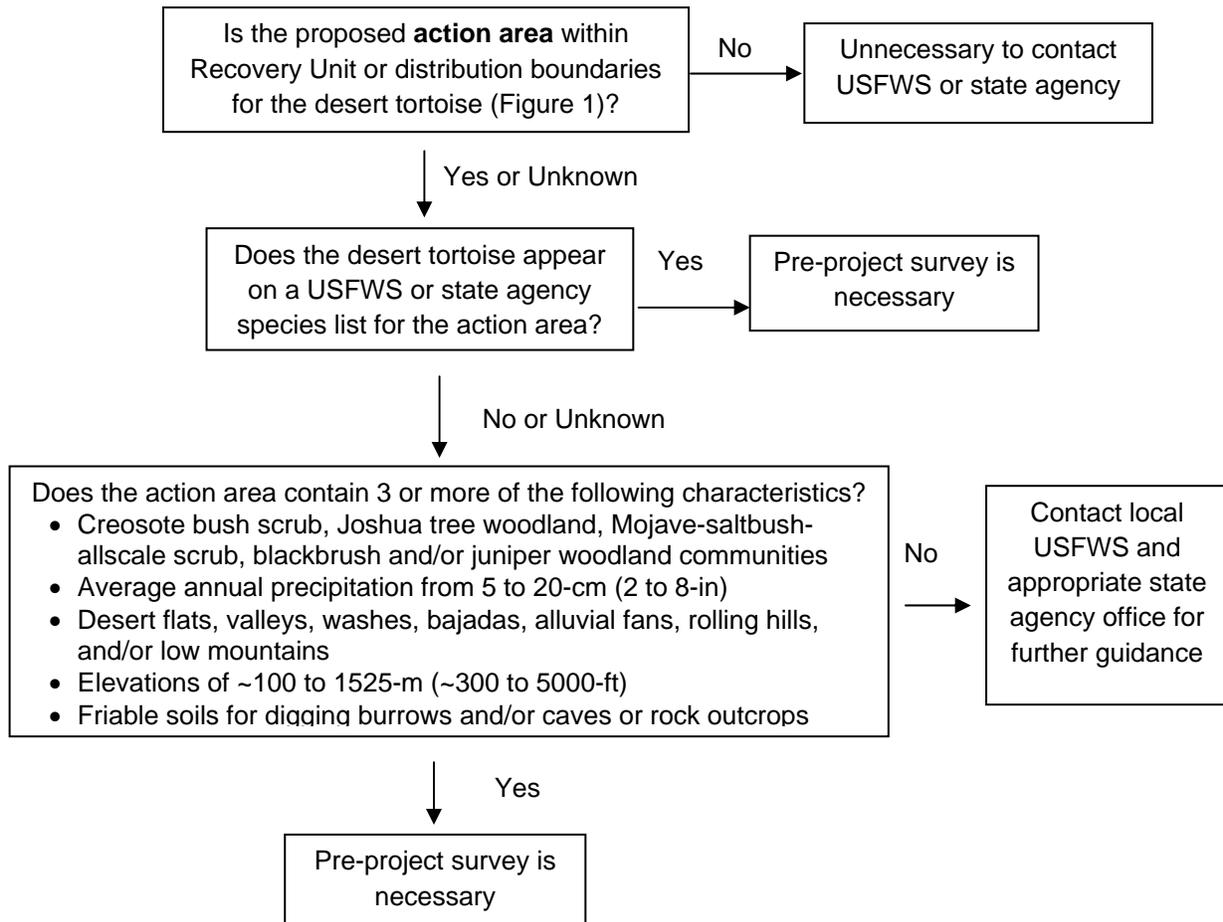
Arizona Game & Fish Department  
State Headquarters--Nongame Branch  
5000 W. Carefree Highway  
Phoenix, Arizona 85086  
(623) 236-7767

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## Site Assessment

Use the below key to assess if desert tortoises may be present within or near the action area and determine survey and consultation requirements<sup>1</sup>. The **action area** is defined by regulation as all areas to be affected directly or indirectly and not merely the immediate area involved in the action (50 CFR §402.02). The extent of the action area is not limited to the footprint of the action nor is it limited by the authority of the Federal, State, or local agency or any other entity proposing the project. The environmental baseline, the analysis of the effects of the action, and the amount or extent of incidental take are based upon the action area. If you cannot access the entire action area during your surveys for some reason (e.g., access to private property is unavailable), please note that in your survey report.



<sup>1</sup>If determined that the proposed project is not likely to adversely affect the desert tortoise and a tortoise or tortoise sign (shells, bones, scutes, limbs, burrows, pellets, scats, egg shell fragments, tracks, courtship rings, drinking sites, mineral licks, etc.) is found in the action area during implementation of the proposed project, the proposed action should *immediately* stop and then it must be determined whether further or formal consultation is necessary to comply with the ESA or CESA in California. It is recommended that the USFWS and CDFG in California be notified in writing within three days of the discovery. This short notification period will help ensure a prompt response by USFWS and CDFG to facilitate ESA and CESA compliance.

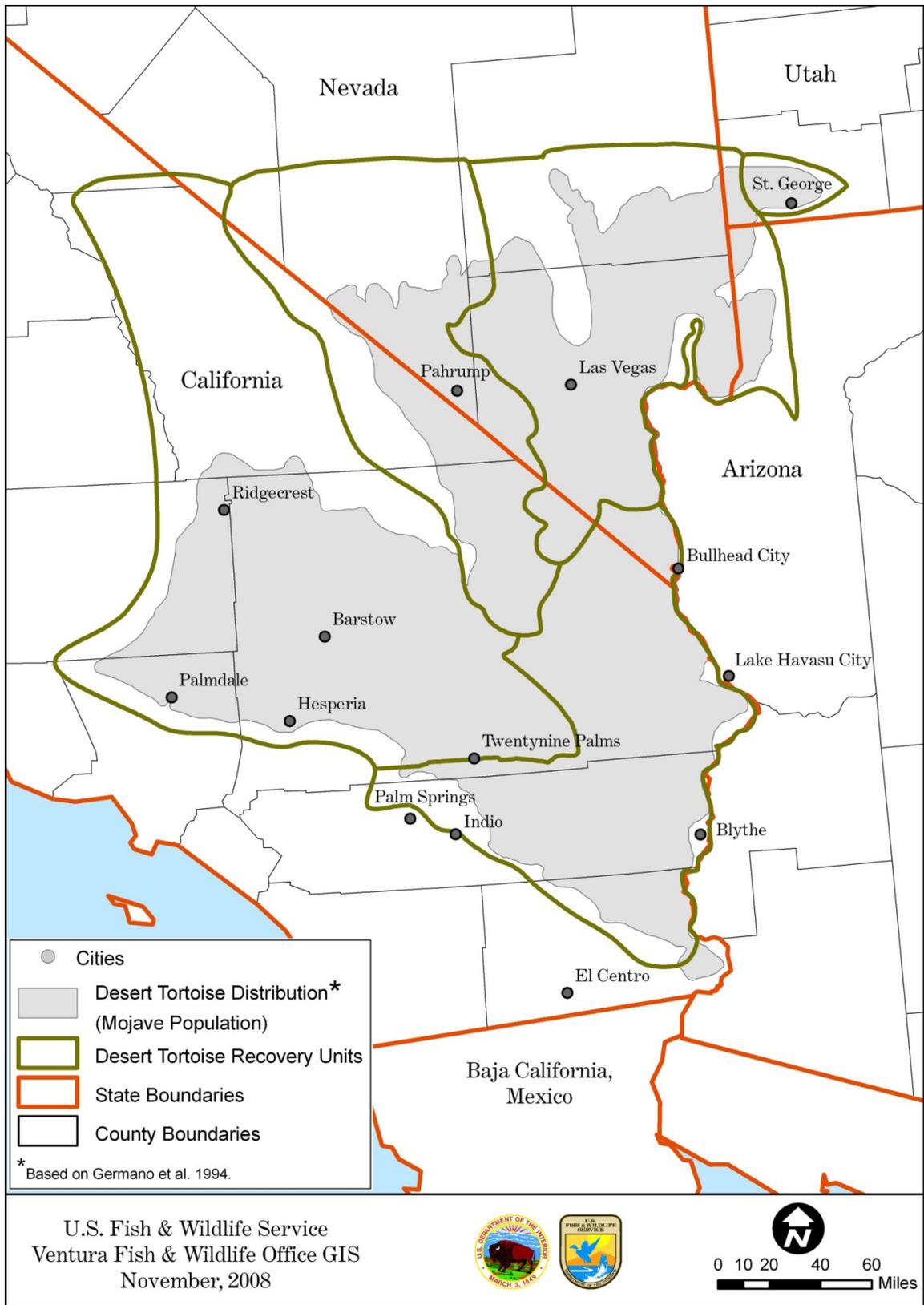


Figure 1: Known Range of the Desert Tortoise (Mojave Population)

## Pre-project Field Survey Protocol for Potential Desert Tortoise Habitats

### Objectives of survey

- Determine presence or absence of desert tortoises within the action area
- Estimate the number of desert tortoises (abundance) within the action area
- Assess the distribution of desert tortoises within the action area to inform take avoidance and minimization

The **action area** is defined by regulation as all areas to be affected directly or indirectly and not merely the immediate area involved in the action (50 CFR §402.02). The action area is not limited to the "footprint" of the action or jurisdiction. Rather, it is a biological determination of the reach of the proposed action on listed species.

### Field Methods

This protocol takes into account the fact that not all desert tortoises within the action area are seen by the surveyor. Provided is an equation which accounts for tortoises that are below ground at the time of surveys and for above-ground desert tortoises that are cryptic and may be missed.

$$\left( \begin{array}{c} \text{Estimated number of tortoises} \\ \text{within action area} \end{array} \right) = \frac{\left( \begin{array}{c} \text{Number of tortoises} \\ \text{observed above ground} \end{array} \right)}{\left( \begin{array}{c} \text{Probability that} \\ \text{a tortoise is} \\ \text{above ground (P}_a\text{)} \end{array} \right) \left( \begin{array}{c} \text{Probability of} \\ \text{detecting a tortoise,} \\ \text{if above ground (P}_d\text{)} \end{array} \right)} \left( \begin{array}{c} \text{Action area} \\ \text{Area surveyed} \end{array} \right)$$

Surveys of 100% coverage, or probabilistic sampling where appropriate, should utilize this equation to estimate the number of desert tortoises within the action area (see below; Table 1, P<sub>a</sub> and P<sub>d</sub>).

- Information to determine presence/absence *and* estimate number of desert tortoises within the action area is collected during the same survey effort. Surveyed objects include all desert tortoises that are above ground (both out of burrows and within burrows but still visible), as well as all desert tortoise sign (burrows, scats, carcasses, etc.). Record all locations of desert tortoises and sign encountered during the survey effort using the USFWS 2009 Desert Tortoise Pre-Project Survey Data Sheet (attached). Please submit a copy of the original datasheets with results of the survey to your local USFWS office.
- Surveys should be conducted during the desert tortoise's most active periods (April through May or September through October) (Nussear and Tracy 2007; Inman 2008; USFWS 2009). Surveys outside these time periods may be approved by USFWS, and CDFG in California (e.g., warm weather in March or rainfall in August stimulating increased desert tortoise activity).
- Desert tortoises utilize burrows to avoid daily and annual thermal extremes (Woodbury and Hardy 1948). Therefore, surveys should take place when air temperatures are below 40 degrees C (104 degrees F) (Zimmerman et al. 1994; Walde et al. 2003; Inman 2008). Air

temperature is measured ~5-cm from the soil surface in an area of full sun, but in the shade of the observer.

- Ten-meter (~30-ft) wide belt transects should be used during surveys. For all projects, surveys which cover the entire project area with the 10-m belt transects (100 percent coverage) are always an acceptable option. For very large action areas, probabilistic sampling may also be an option, such that the appropriate proportion of the action area is surveyed (Table 2). If probabilistic sampling is an option for the project site, each transect should be chosen either systematically or randomly ensuring that the entire action area has an equal probability of being included in the sample. Transects should be completed in a random order, oriented in a logistically convenient pattern (e.g., lines, squares, or triangles). Any sampling design other than simple systematic or random sampling must be approved by USFWS (e.g. stratification). See *Frequently Asked Questions* section for a discussion of 100 percent coverage and probabilistic sampling.
- USFWS considers the results of a pre-project survey to be valid for no more than one year. If survey results are older than one year, please contact the local USFWS office.

#### *Presence or absence of desert tortoises within the project vicinity*

- Occurrence of either live desert tortoises or desert tortoise sign (burrows, scats, and carcasses) in the action area indicates desert tortoise presence and therefore requires formal consultation with USFWS.
- If neither desert tortoises nor sign are encountered during the action area surveys and the project, or any portion of project, is  $\leq$  (less than or equal to) 0.8 km<sup>2</sup> (200 acres) or linear, three additional 10-m (~30-ft) belt transects at 200-m (~655-ft) intervals parallel to and/or encircling the project area perimeter (200-m, 400-m, and 600-m from the perimeter of the project site) should be surveyed. These transects are employed only as part of the presence/absence determination; they are not included in the estimation of desert tortoise abundance. See *Frequently Asked Questions* section below for an explanation of why additional surveys are needed.
- If neither desert tortoises nor sign are encountered during the action area surveys, as well as project perimeter surveys where appropriate, please contact your local USFWS office. Informal consultation with the USFWS may be required even though no desert tortoises or sign are found during surveys.

#### *Number of desert tortoises within the action area*

The attached Table 4.3 spreadsheet will estimate the number of adult desert tortoises (> (greater than) 160 mm MCL) within the action area using the “Number of desert tortoises within the action area” equation from above.

Enter the requested information into the Table 4.3 spreadsheet, as follows:

1. Enter the total project area.
2. Enter the appropriate value from Table 1 for the term “probability that a desert tortoise is above ground” ( $P_a$ ).
3. Enter the number of adult desert tortoises (>160-mm midline carapace length) found during the survey of the action area for the term “number of desert tortoises observed above ground” (n).

**Table 4.1.** Probability that a desert tortoise is above ground ( $P_a$ ) relative to the previous winter’s rainfall (October through March)

*Use amount of rainfall from the winter preceding the pre-project survey to determine which value of  $P_a$  is appropriate for the project*

*To find this amount of rainfall, go to the Western Regional Climate Center site:*

*<http://www.wrcc.dri.edu/summary/Climsmsca.html>; click on your location and scroll down to “monthly totals”*

Previous Winter Rain	Probability ( $P_a$ )	Variance( $P_a$ )
<40 mm (~1.5 inches)	0.64	0.08
≥40 mm (~1.5 inches)	0.80	0.05

The estimate for the term “probability of detecting a desert tortoise if above ground ( $P_d$ )” is already included in spreadsheet Table 3 ( $P_d = 0.63$ ; variance = 0.011). See *Frequently Asked Questions* section below for how  $P_a$  and  $P_d$  and their associated variances were estimated.

See *Appendix 1* for a detailed description of the method used to estimate desert tortoise abundance.

*100 percent Coverage or Probabilistic Sampling?*

100% coverage surveys are always an acceptable option, regardless of the size of the action area. For very large action areas, probabilistic sampling may be an additional option, such that the appropriate proportion of the action area is surveyed as detailed below.

**For the 2009 field season, probabilistic sampling is not an option for desert tortoise pre-project surveys in California due to the requirement of CESA to avoid, minimize, and fully mitigate (CDFG code section 2081). In addition, probabilistic sampling is not an option for desert tortoise pre-project surveys in the Upper Virgin River Recovery Unit due to its small size and its need to be intensively managed (USFWS 1994).**

**Table 4.2.** Is probabilistic sampling an appropriate option for the proposed action area?

*Is your action area smaller than the area given below for the recovery unit in which the project occurs?*

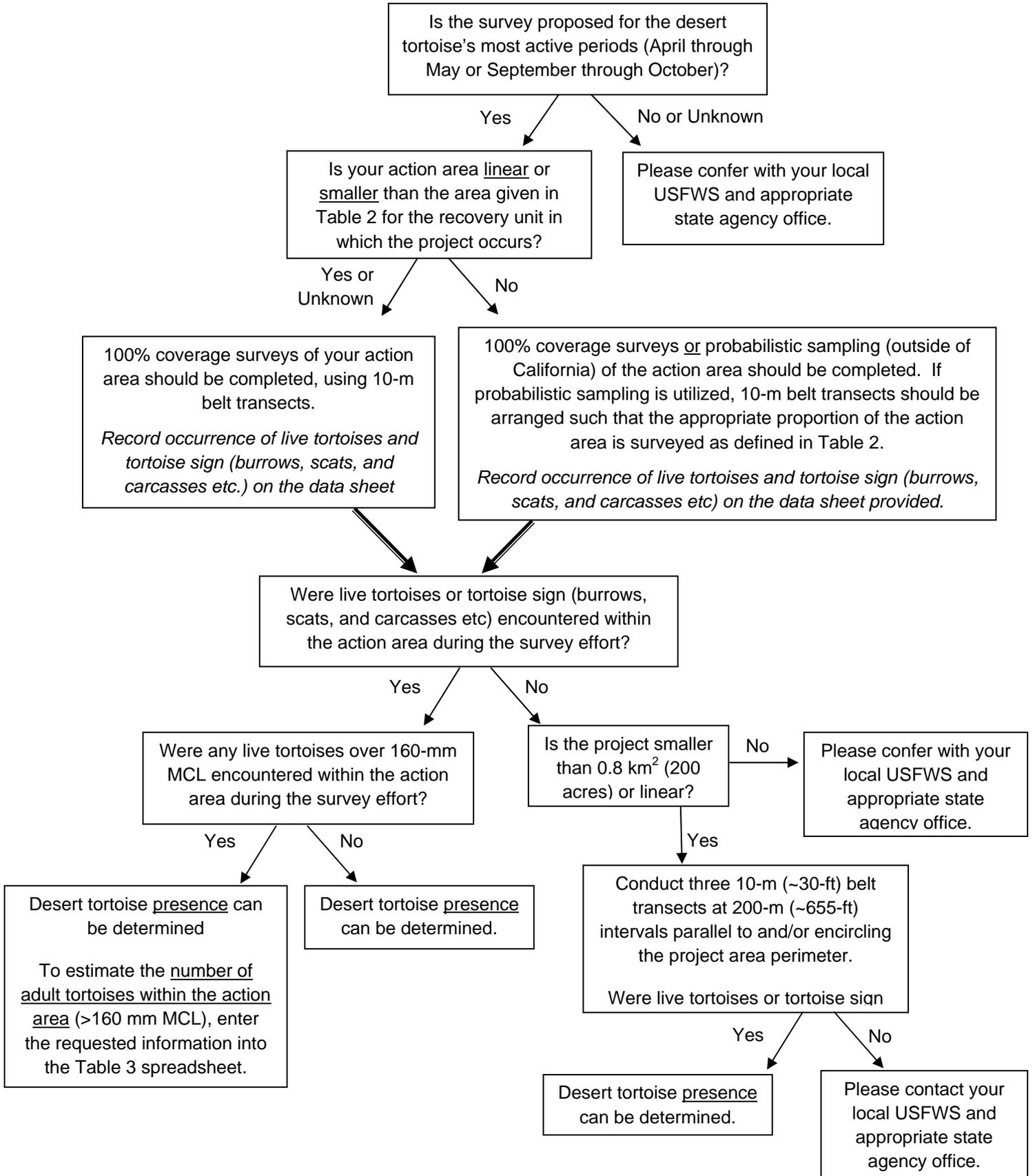
Recovery Unit	Threshold Action Area to Allow Sampling
Western Mojave	7.2 km <sup>2</sup> (1777 acres)
Eastern Mojave	10.8 km <sup>2</sup> (2676 acres)
Colorado Desert	6.4 km <sup>2</sup> (1573 acres)
Northeastern Mojave	23.3 km <sup>2</sup> (5764 acres)

*If yes: 100% coverage surveys of your action area must be completed.*

*If no, total transect lengths that must be surveyed are given below. 100% coverage surveys are also an option, regardless of the size of the project.*

Recovery Unit	Total Transect Length (km) to Sample
Western Mojave	719
Eastern Mojave	1083
Colorado Desert	637
Northeastern Mojave	2333

**Decision Tree for Pre-project Field Survey Protocol for Potential Desert Tortoise**



## **Frequently Asked Questions: Desert Tortoise Pre-project Field Survey Protocol**

### ***Why did USFWS revise the 1992 USFWS Desert Tortoise Pre-project Survey Protocol?***

Desert tortoises occur at low densities across most of the Mojave Desert (USFWS 2006). They are cryptic and spend much of their time underground in burrows (Burge 1977; Nagy and Medica 1986; Bulova 1994) and therefore not all animals within an area will be seen by even the best trained surveyors. Tortoises underground in burrows, as well as individuals hidden above ground, need to be included in estimates.

The 1992 USFWS Desert Tortoise Pre-project Survey protocol was based on a BLM protocol from the mid-1970s, which utilized the best available information at the time, but did not take into account that some tortoises will be underground and missed during the survey effort. The data collected during the extensive USFWS range-wide monitoring program (currently <7,000-km of transects each year; USFWS 2006) have allowed us to improve pre-project survey methods. Data about the proportion of tortoises underground in burrows, as well as the probability that an above-ground tortoise will be observed by the surveyor are included in the estimate of the number of tortoises within the action area ( $P_a$  and  $P_d$ ).

This protocol also addresses the potential for using probabilistic sampling when the action area is above the size limits given in Table 2. One hundred percent coverage surveys are *always* an acceptable option, regardless of the size of the action area. For very large action areas, sampling may be an additional option, such that the abundance estimates can be calculated when an appropriate proportion of the action area is surveyed. Estimates of tortoise densities within recovery units from the range-wide monitoring program have been used to calculate how many km<sup>2</sup> of a project site must be surveyed to produce a statistically robust abundance estimate (Table 4.2).

### ***What happened to the zone of influence transects recommended in the 1992 protocol?***

This revised protocol requires that the entire action area, rather than just the project footprint, be included in the survey effort. The **action area** is defined by regulation as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 CFR §402.02). The action area is therefore not limited to the footprint of the project nor is it limited by the Federal agency's authority. Rather, the action area is a biological determination of the reach of the proposed action on listed species, which must, by definition, encompass the zone of influence of the project.

### ***How did USFWS determine the values for the “probability that a tortoise is above ground”?***

The USFWS range-wide monitoring program estimated the proportion of the desert tortoise population that is visible using telemetered animals from focal areas in spring 2001-2005 (USFWS 2006). This probability is related to the previous winter's rainfall, as illustrated in

Table 4.1. The range of fall above-ground activity is similar to spring numbers, but the variability is much higher (Nussear and Tracy 2007; Inman 2008). Until more robust estimates of fall above-ground activity are available, spring estimates based on the previous winter's rainfall (October through March) are used for surveys conducted in either active period.

***How did USFWS establish the value for the “probability of detecting a tortoise, if above ground”?***

For the past 5 years, surveyors in the USFWS range-wide monitoring program have undergone training on established transects with artificial tortoises. Trained surveyors detected an average of ~63% of model tortoises that were within 5-m of either side of the transect center-line (USFWS unpublished).

***Why are only tortoises over 160-mm MCL used to estimate the number of tortoises within the action area?***

The values of  $P_a$  and  $P_d$  used in the equation to estimate the number of tortoises within the action area are based on USFWS range-wide monitoring data collected for tortoises  $\geq 160$ -mm MCL.

***What is the purpose of 100% coverage surveys versus probabilistic sampling?***

The purpose of surveying is to determine presence/absence and estimate the abundance of desert tortoises within the action area. For 100% coverage surveys, transects are placed across the entire action area; thus, the entire area for which abundance is estimated is surveyed. A probabilistic sampling approach, on the other hand, uses data from randomly or systematically placed transects to draw inferences about locations where surveys are not conducted. All locations for which abundance will be estimated *must* have an equal probability of being included in the sample.

***How were the threshold project sizes calculated for determining whether 100% coverage or probabilistic sampling is appropriate?***

The validity of probabilistic sampling requires that all locations for which abundance will be estimated have an equal probability of being included in the sample, as well as the expected sample size. Estimating the number of tortoises within the project area using probabilistic sampling is limited by the number of tortoises encountered during the survey effort. Therefore, whether or not the project area must be surveyed using 100% coverage or can be probabilistically sampled is based on the area expected to yield a survey count of 20 tortoises (Krzysik 2002). Table 4.2 uses tortoise densities and detection probabilities estimated from 2001-2005 range-wide line-distance sampling efforts for each tortoise Recovery Unit (USFWS 2006) to calculate that area of a project site that must be surveyed to produce a statistically robust estimate. If the project area is large enough to allow the option of probabilistic sampling, Table 4.2 provides the minimum transect kilometers (10-m wide) that must be surveyed.

***What if the minimum length of 10-m wide transect kilometers are completed but 20 tortoises were not found in the action area?***

If probabilistic sampling is used and < 20 tortoises are found after surveying the total transect length prescribed by Table 4.2, number of tortoises within the action area may be estimated using number found.

***Do I keep surveying if 20 tortoises are found before the minimum transect kilometers that must be surveyed are completed?***

If probabilistic sampling was used and the transects have been completed in a random order, project area surveys may be considered complete when 20 tortoises have been found or the specified number of kilometers have been sampled, whichever happens first. It is okay if more than 20 tortoises are found, this will decrease the width of the 95% confidence interval for the abundance estimate.

***Why do small and linear projects where no tortoises were found have to do additional surveys at 150-m (~500-ft) intervals parallel to the project area perimeter?***

Even though neither tortoises nor tortoise sign were found within the action area at the time of the survey, the area may be part of an animal's home range. The home range of a female desert tortoise averages around 0.15 to 0.16 km<sup>2</sup> (35 to 40 acres), about one third the size of male home ranges, which are variable and can be > 2 km<sup>2</sup> (O'Conner et al. 1994; Duda et al. 1999; Harless et al. in press). Therefore, projects that are ≤ 0.8 km<sup>2</sup> (200 acres) or linear may overlap only part of a tortoise's home range and the possibility that a resident tortoise was outside the project area at the time surveys were conducted must be addressed. In these cases, USFWS recommends three additional 10-m (~30-ft) belt transects at 200-m (~655-ft) intervals parallel to and/or encircling the project area perimeter (200-m, 400-m (~1312 ft), and 600-m (~1968 ft) from the perimeter of the project site). Record any tortoises or sign encountered during these surveys. These transects are employed only as part of the presence/absence determination; they are not included in the estimation of tortoise abundance within the project area.

***What does the 95 percent confidence interval for the number of tortoises within the action area mean?***

Confidence intervals are used to indicate the reliability of an estimate. The interval gives an estimated range of values, calculated from a set of sample data, which is likely to include an unknown population parameter (in this case, the true number of tortoises within the action area). A wider confidence interval indicates that less certainty is associated with the estimate (see Appendix 2). The Table 4.3 spreadsheet calculates the abundance and associated 95 percent confidence interval for the estimated number of tortoises within the project area (Buckland et al. 2001).

## **Acknowledgments**

The USFWS Desert Tortoise Recovery Office is grateful to the many individuals and agencies that were instrumental in development and review of this revised protocol. Specifically, we thank Jim Nichols (USGS) and Tony Krzysik (Prescott Audubon Society) for assistance with concept design; Alice Karl (independent tortoise biologist) and Andrew Thompson (USFWS) for development discussion, and Kirk Waln (USFWS) for GIS support.

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## Appendix 1. Detailed description of desert tortoise abundance and CI estimation

The estimated abundance of adult desert tortoises within the action area is given by:

$$\left( \begin{array}{c} \text{Estimated number of tortoises} \\ \text{within action area} \end{array} \right) = \frac{\left( \begin{array}{c} \text{Number of tortoises} \\ \text{observed above ground} \end{array} \right)}{\left( \begin{array}{c} \text{Probability that} \\ \text{a tortoise is} \\ \text{above ground} \end{array} \right) \left( \begin{array}{c} \text{Probability of} \\ \text{detecting a tortoise,} \\ \text{if above ground} \end{array} \right)} \left( \begin{array}{c} \text{Action area} \\ \text{Area surveyed} \end{array} \right),$$

which is equivalent to:

$$\hat{N} = \left[ \frac{(n)}{(Table2)(0.63)} \right] \left[ \frac{(A)}{(a)} \right],$$

where  $\hat{N}$  = estimated abundance within entire action area,  $n$  = number of tortoises observed above ground,  $A$  = total action area, and  $a$  = actual area surveyed (= total # km surveyed \* 0.01). For 100% coverage surveys,  $A/a = 1$ .

Table 3 uses the following equations to calculate the 95% confidence interval for the estimate of tortoise abundance within the action area (Buckland et al. 2001), assuming all replicate transect lines are the same length, 10-km.

$$\text{var}(n) = L \sum_{i=1}^k l_i \left( \frac{n_i}{l_i} - \frac{n}{L} \right)^2 / (k-1)$$

where  $\text{var}(n)$  = the spatial variation in the number of tortoises detected through the total transect length  $L$ ,  $n_i$  = the number of tortoises seen on transect  $i$ ,  $l_i$  = the length of individual transect  $i$ , and  $k$  = total number of transects walked.

Putting the sources of variability together, the variance of density is:

$$\text{var } \hat{D} = \hat{D}^2 \left[ \frac{\text{var}(n)}{n^2} + \frac{\text{var}(\hat{P}_a)}{(\hat{P}_a)^2} + \frac{\text{var}(\hat{P}_d)}{(\hat{P}_d)^2} \right]$$

Because the tortoise density sampling distribution is positively skewed, the confidence interval is calculated using a log-distribution for density and built with division and multiplication, rather than addition and subtraction from the mean as with a symmetrical interval (Buckland et al. 2001).

Thus, the 95% confidence interval for  $\hat{N}$  is:

$$\left(\hat{N} / C_N, \hat{N} \cdot C_N\right),$$

$$\text{where } C_N = \exp\left[z_{\alpha} \sqrt{\text{var}(\log_e \hat{D})}\right] \text{ and } \text{var}(\log_e \hat{D}) = \log_e \left[1 + \frac{\text{var}(\hat{D})}{\hat{D}^2}\right].$$

Given the simplifying assumptions in this protocol, the 95% confidence interval around the estimated number of tortoises within the action area will be wide (e.g., the estimate of the number of tortoises will be imprecise). While this level of imprecision would not be appropriate for recovery planning and decision making at large scales, this protocol provides estimates at local scales that most efficiently utilize the best information that is available to provide statistically defensible results.

**Appendix 2. Example**

Project location = near Beatty, NV (within the Eastern Mojave RU)

Action area = 12 km<sup>2</sup> (3,000 acres)

According to this protocol’s Site Assessment key, the proposed action is within the known range of the desert tortoise. The local USFWS and appropriate State wildlife agency offices were contacted and a species list, which includes the desert tortoise, was obtained for the action area. Therefore, pre-project survey and consultation are necessary.

The project footprint is only 10 km<sup>2</sup>, but since the project will include blasting, the reach of the proposed action on listed species extends to 12 km<sup>2</sup>. Thus, the action area (and therefore the area which needs to be surveyed for desert tortoises) is 12 km<sup>2</sup> (which is more inclusive than the 10 km<sup>2</sup> project footprint).

According to Table 2 of the pre-project survey protocol, the project size of 12 km<sup>2</sup> is above the threshold project area to allow probabilistic sampling in the Western Mojave RU (10.8 km<sup>2</sup> threshold). Therefore, at a minimum, 1,083 km of transects must be walked. For this example, 108 10-km transects (10-m wide) were placed systematically across the project site and were completed in a random order. Surveys of 100% coverage in which 10-m wide transects were placed across the entire 12 km<sup>2</sup> action area would also have been acceptable.

Transects totaling 1,083 km were conducted and 19 adult tortoises (> 160 mm carapace length) were found (as well as tortoise sign, both of which were catalogued using the USFWS 2009 DT pre-project survey protocol data sheet). If 20 adult tortoises had been encountered before the 1,083 km of transects were completed, and transects were conducted in a random order, then surveys could have been considered complete after the 20<sup>th</sup> tortoise was catalogued.

Data collected from the 108 transects (live animals encountered <160-mm MCL)

Number of tortoises (n <sub>i</sub> )	Number of transects on which n <sub>i</sub> tortoises were seen
0	93
1	11
2	4

Using the Western Regional Climate Center website, it was determined that the Beatty area had received 97-mm (3.8 inches) of rain in the October through March preceding the survey effort, which is above the 40-mm (1.5 inches) in Table 1. Therefore, P<sub>a</sub> of 0.80 will be used in this estimation.

Thus, from

$$\hat{N} = \left[ \frac{(n)}{(Table2)(0.63)} \right] \left[ \frac{(A)}{(a)} \right], \text{ we get } \hat{N} = \left[ \frac{(19)}{(0.80)(0.63)} \right] \left[ \frac{(12 \text{ km}^2)}{(10.8 \text{ km}^2)} \right], \text{ or } \hat{N} \approx 42 \text{ tortoises}$$

$$\text{Density} = \frac{(\hat{N})}{(A)}, \text{ we get } \hat{D} = \frac{(42)}{(12 \text{ km}^2)}, \text{ or } \hat{D} \approx 3.5 \text{ tortoises/km}^2$$

To calculate the 95% confidence interval for our abundance estimate, we use:

$$\text{var}(\hat{n}) = L \sum_{i=1}^k l_i \left( \frac{n_i}{l_i} - \frac{n}{L} \right)^2 / (k-1),$$

$$\text{we get } \text{var}(\hat{19}) = 1080 \left[ (93)(10) \left( \frac{0}{10} - \frac{19}{1080} \right)^2 + (11)(10) \left( \frac{1}{10} - \frac{19}{1080} \right)^2 + (4)(10) \left( \frac{2}{10} - \frac{19}{1080} \right)^2 \right] / (108-1), \text{ or}$$

$$\text{var}(\hat{19}) = 23.88$$

And for,

$$\text{var } \hat{D} = \hat{D}^2 \left[ \frac{\text{var}(n)}{n^2} + \frac{\text{var}(\hat{P}_a)}{(\hat{P}_a)^2} + \frac{\text{var}(\hat{P}_d)}{(\hat{P}_d)^2} \right], \text{ we get } \text{var } \hat{D} = 3.5^2 \left[ \frac{23.88}{19^2} + \frac{0.05}{0.80^2} + \frac{0.011}{0.63^2} \right], \text{ or } \text{var } \hat{D} = 2.107$$

Using our log-transformation because the tortoise density sampling distribution is positively skewed,

$$\text{var}(\log_e \hat{D}) = \log_e \left[ 1 + \frac{\text{var}(\hat{D})}{\hat{D}^2} \right], \text{ we get } \text{var}(\log_e \hat{D}) = \log_e \left[ 1 + \frac{2.107}{3.5^2} \right], \text{ or } \text{var}(\log_e \hat{D}) = 0.15$$

Then,

$$C_N = \exp \left[ z_{\alpha} \sqrt{\text{var}(\log_e \hat{D})} \right], \text{ we get } C_N = \exp \left[ (1.96) \sqrt{0.15} \right], \text{ or } C_N = 2.18$$

And,

$$\left( \hat{N} / C_N, \hat{N} \cdot C_N \right), \text{ we get } ((42 / 2.18), (42 \cdot 2.18)), \text{ or } \sim (19, 92).$$

## Summary

Using the Site Assessment key, it was determined that survey and consultation were necessary for the proposed action. Thus, the pre-project field survey protocol was implemented. In this case, probabilistic sampling with equal length transects (10-km long) was used and 19 adult tortoises and tortoise sign were found during the sampling of the action area, indicating presence. Using the equations and data presented in Appendix 1 of this protocol, Table 3 estimated the actual number of tortoises within the project was estimated to be ~42, with a 95% confidence interval of ~(19, 92).

**USFWS DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Date of survey: \_\_\_\_\_ Survey biologist(s): \_\_\_\_\_  
(month, day, year)

Site description: \_\_\_\_\_  
(project name and size; general location)

County: \_\_\_\_\_ Quad: \_\_\_\_\_ Location: \_\_\_\_\_  
(UTM coordinates, lat-long, and/or TRS; map datum)

Transect #: \_\_\_\_\_ Transect length: \_\_\_\_\_ Type of survey: \_\_\_\_\_  
(acres to be surveyed; 100% coverage/probabilistic sampling)

GPS Start-point: \_\_\_\_\_ Start time: \_\_\_\_\_ am/pm  
(easting, northing, elevation in meters)

GPS End-point: \_\_\_\_\_ End time: \_\_\_\_\_ am/pm  
(easting, northing, elevation in meters)

Start Temp: \_\_\_\_\_ °C Weather: \_\_\_\_\_ End Temp: \_\_\_\_\_ °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <i>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</i>	Approx MCL >160-mm? <i>(Yes, No or Unknown)</i>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows<sup>1</sup>, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <i>(burrows, scats, carcass, etc)</i>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

<sup>1</sup> See section 4.1.2 for information on burrow condition class and photographing burrows

## **CHAPTER 5. AFTER A BIOLOGICAL OPINION OR TAKE PERMIT HAS BEEN ISSUED FOR THE DESERT TORTOISE - MOJAVE POPULATION: PRELIMINARY CONSIDERATIONS BEFORE GOING TO THE FIELD**

### **5.1. Marking and Numbering**

Typically, desert tortoises are not marked or numbered in association with most projects. If you intend to permanently mark or number desert tortoises (e.g., by notching the shell or attaching a tag), you must be authorized to do so and coordinate with the USFWS Desert Tortoise Recovery Office (DTRO) for instruction. The DTRO in coordination with other agencies assigns tortoise numbers that are used by scientists to mark desert tortoises throughout its range. You must contact the DTRO and appropriate State wildlife agency before marking desert tortoises.

### **5.2. Field Supplies and Equipment**

Prepare in advance for a variety of field situations. A list of materials needed for handling desert tortoises is provided below. Many researchers have a kit for each type of activity (e.g., tortoise handling kit, burrow excavation kit, etc.). Organize all the materials and equipment that you need to expeditiously handle desert tortoises to ensure their safety and minimize stress.

All authorized personnel (Authorized Biologists and 10(a)(1)(A) permitted biologists) must be knowledgeable on diseases, parasites, and precautions to avoid the spread of pathogens when handling desert tortoises. Upper Respiratory Tract Disease, (URTD) caused by *Mycoplasma* spp. was identified as one of the threats that contributed to the population decline and subsequent listing of the desert tortoise as threatened by the USFWS and CDFG. This and other diseases (e.g., cutaneous dyskeratosis) are present in many populations of the desert tortoise. Also present are parasitic ticks, which are potential vectors of disease to humans (Berry and Christopher 2001).

#### 5.2.1. Documents

Agency document(s) regulating the specific project may include:

- USFWS biological opinion or incidental take permit
- BLM stipulations
- USFWS Authorized Biologist or desert tortoise Monitor approval and/or
- Copy of 10(a)(1)(A) permit or other permits
- State wildlife agency permit
- State memorandum of understanding

#### 5.2.2. Basic supplies and equipment

- Hand-held GPS unit with extra batteries
- Desert Tortoise Field Manual
- Thermometer (to measure air and ground temperatures)

- Watch or clock (to record start and finish processing times)
- Hand held mirror (for viewing inside burrow)
- LED flashlight
- Water
- Project maps
- Clipboard
- Data sheets (in this Manual)
- Tortoise tapping rod (collapsible fishing pole, etc.)
- Surveyor's tape

### 5.2.3. Desert tortoise handling and marking

- Disposable latex gloves (for handling tortoise)
- Different sizes of coffee cans (or similar cylinders) and waterproof disposable plastic (for immobilizing tortoise and preventing disease transmission)
- Toothbrush, disinfected (for cleaning dirt from scute to be numbered)
- Acrylic paint or typewriter correction fluid (for making dot to number tortoise)
- Waterproof, capillary pen (for numbering the tortoise and keeping notes)
- ½-inch masking tape (to cover growth areas prior to applying epoxy)
- Epoxy, toothpicks, wooden coffee stirrer, tongue depressors (to cover the number on the scute and to apply the epoxy)
- Hand lens (for observing parasites)
- 0.175 percent sodium hypochlorite (bleach) solution (1 part household bleach to 10 parts water) in a spray bottle (for disinfecting equipment) or Nolvasan (chlorhexidine diacetate)
- Rubber/plastic container and lid (for soaking instruments in Nolvasan)
- Container for rehydrating tortoises
- New, disposable cardboard boxes or disinfected plastic containers (for holding and/or transporting tortoises)
- Plastic, ziplock bags (for holding unused latex gloves and weighing juvenile tortoises)
- Garbage bags (for disposing of used gloves, grocery bags, etc.)
- Disposable baby changing sheets
- DTRO/State wildlife agency-approved, sequential numbering scheme for marking tortoises and three-cornered files

### 5.2.4. Desert tortoise weighing and measuring

- Cloth bags to transport desert tortoises (allows air flow; should be wetted to cool desert tortoises; and must be washed and bleached before reuse)
- Cord with appropriate tensile strength (to harness and weigh the desert tortoise)
- Calipers (for measuring mid-line carapace length)
- Metal or plastic rule
- 100 gram, 1.0 kilogram, and 5.0 kilogram tubular spring scale (to weigh desert tortoises)

### 5.2.5. Desert tortoise burrow excavation and construction

- Measuring tape (for burrow dimensions)
- Compass (for burrow orientation)
- Leather or cloth gloves (to avoid animal stings and/or bites)
- Shovels (2) (for excavating burrow)
- Garden trowel (for excavating small burrows and nests)
- 4 foot x 8 foot x ¼ inch thick plywood (for artificial burrow construction)
- Hand saw (to cut plywood into appropriate size and shape)
- Surveyor's tape (for marking a burrow)

#### 5.2.6. Desert tortoise egg handling

- Felt-tipped pen (for marking eggs)
- Plastic bucket (for transporting eggs)
- Garden trowel (for excavating nest)

#### 5.2.7. Other

- Fiber-optic scope or miniature camera and clear protective covering (to avoid disease transmission)
- Pads or blanket for truck bed to cushion transported tortoise and reduce heat
- Phone number and contact person of local USFWS field office, State wildlife agency, BLM field office, etc.
- Phone number of nearest qualified veterinarian to treat injured tortoise
- Extra change of clothing, including extra shoes

### **LITERATURE CITED**

Berry, K. H. and M. M. Christopher 2001. Guidelines for the field evaluation of desert tortoise health and disease. *Journal of Wildlife Diseases*, 37(3) 427-450.

McCullough, D.L., K.D. Jones, and T.E. Olson. 1993. List of materials to be carried in the truck; list of materials to be included in the tortoise kit; tortoise excavation/removal data sheets; tortoise shell data sheet; and rough draft of a handling protocol. Materials received from McCullough Ecological Systems and Dames & Moore in response to a request for materials to be included in these Guidelines. Las Vegas, Nevada and Santa Barbara, California.

## **CHAPTER 6. CLEARANCE SURVEY PROTOCOL FOR THE DESERT TORTOISE - MOJAVE POPULATION**

### **6.1. Objectives**

- Locate as many desert tortoises as possible within the project site.
- Remove all desert tortoises encountered from the project site.
- Safely excavate, collect, and rebury desert tortoise eggs.

### **6.2. Applicability of Clearance Surveys**

For projects located in occupied desert tortoise habitat, especially those projects with a permanent or linear disturbance (e.g., pipelines, roads, transmission lines), a clearance survey may be required as part of the Terms and Conditions of a biological opinion or incidental take permit. This survey is intended to reduce the likelihood that desert tortoises are killed or injured as a result of the proposed action. Clearance survey methods may include temporarily penning desert tortoises within the area surrounding its burrow, relocating desert tortoises from the impact area, or translocating desert tortoises to a designated area outside its home range in accordance with a USFWS-approved translocation plan (Section 7.10).

### **6.3. Methodology**

- Clearance surveys require 100 percent coverage of the project area, with a focus on locating all desert tortoises above and below ground within the project area. This survey would be conducted immediately prior to surface disturbance at each site within the project area or following construction of a desert tortoise-proof fence or similar barrier encompassing the project area to ensure that tortoises cannot enter the project area.
- Clearance surveys at the project site must consist of at least 2 consecutive surveys of the site. Surveys shall involve walking transects less than or equal to 15-feet (5-meter) wide under typical conditions. In areas of dense vegetation or when conditions limit the ability of the surveyor's to locate desert tortoises, transects should be reduced in width accordingly. Clearance surveys should be conducted when desert tortoises are most active (April through May or September through October). If desert tortoises are found during the second pass, the USFWS and appropriate State wildlife agency may require a third survey. If any desert tortoises need to be translocated follow the USFWS-approved translocation plan for that project.
- After the desert tortoise exclusion fence has been installed, the fencing should be checked several times a day to ensure a tortoise has not been trapped within the fence and may be exposed to lethal temperatures. Desert tortoises often pace along new fences attempting to gain access to the other side or return to areas from which they were removed.
- All methods used for handling desert tortoises during the clearance surveys must be in accordance with this Manual. Anyone that handles desert tortoises during clearance activities must have the appropriate authorizations from USFWS and the State.
- During the clearance surveys, desert tortoises in burrows may be removed through tapping (Section 6.4) or careful excavation. Multiple visits may be necessary if desert tortoises are inaccessible in deep caves or burrows.

- During all handling procedures, desert tortoises shall be treated in a manner to ensure that they do not overheat or exhibit signs of overheating (e.g., gaping, foaming at the mouth, etc.), or are placed in a situation where they cannot maintain surface and core temperatures necessary to their well-being. Desert tortoises shall be kept shaded at all times until it is safe to release them. Ambient air temperature shall be measured in the shade, protected from wind, at a height of 2 inches (5 centimeters) above the ground surface. All clearance activities (capture, transport, release, etc.) shall occur when ambient temperatures are below 95 degrees F (35 degrees C) and not anticipated to rise above 95 degrees F (35 degrees C) before handling and processing desert tortoises are completed. Refer to section 7.4 for handling desert tortoises during hot temperatures.
- If a desert tortoise is encountered aboveground and outside the temperature limits refer to Section 7.4 or 7.5.
- The area cleared and number of desert tortoises found within that area must be reported to the local USFWS and the appropriate State wildlife agency. The report should be made in writing, either by mail or email. Notification should be received within one week.
- If a desert tortoise is encountered after clearance surveys have been completed, process the tortoise according to the methods described above.

#### **6.4. Extracting Desert Tortoises from Burrows**

Before touching a desert tortoise or using any instrument that comes into contact with a desert tortoise, implement procedures described in Section 7.6. Examine the burrow for other occupants (e.g., snakes, spiders, scorpions, wasps, Gila monsters, etc.). Firmly pound the soil at the side of the “apron” or soil mound at the entrance of the burrow 5 to 6 times with an open hand then listen for desert tortoise movement; wait 30 seconds and repeat several times if needed. Avoid disturbing or pounding the center of the apron or entrance of the burrow where desert tortoises typically dig nests and lay their eggs. If the desert tortoise is visible deep in its burrow, the observer can gently tap the carapace 3 to 4 times with a stick (Medica et al. 1986). The observer should then remove the stick and move away from the burrow entrance. If tapping is successful, the desert tortoise will emerge, usually to the burrow entrance. If desert tortoise movements are not heard within a few minutes, discontinue tapping.

If the desert tortoise is within arm’s reach, firmly grasp the gular, plastron, or posterior edge of the carapace and gently pull the tortoise towards the burrow entrance. If the desert tortoise resists to the point where moderate pulling effort is unsuccessful, stop pulling while maintaining a grip on the tortoise; resume when the tortoise relaxes. **Never use a hook or other instrument to remove a desert tortoise from a burrow or otherwise compromise the integrity of a burrow if the desert tortoise will remain in the project area.**

If the area is to be cleared of all desert tortoises, excavate the burrow as described in Section 6.5. If the tortoise is in a deep caliche cave which cannot be excavated without potentially harming the desert tortoise, record the location and contact the USFWS for instruction.

## 6.5. Excavating Burrows

According to most agency documents, desert tortoise burrows are excavated only if they occur within a proposed disturbance area. If excavating a burrow to relocate a desert tortoise, and an artificial burrow is required, it should be constructed before beginning the excavation (Section 6.7.). Biological opinions and permits typically require that such areas be flagged and that project activities be confined to those areas. As an alternative to excavation in certain circumstances, the immediate area surrounding a burrow occupied by a desert tortoise may be temporarily penned, if authorized by the USFWS and the appropriate State wildlife agency (Section 6.9.).

When required, take measurements of the burrow before excavating it. Before excavation, feel for desert tortoise eggs by gently probing the soil in front of the burrow opening (i.e., the mound) with a blunt instrument (e.g., knitting needle) or similar instrument, and along the floor of the burrow as you excavate the burrow. The purpose of probing is to locate areas of excavated soil which are less compacted and may indicate a nest. Eggs have been found up to 6 feet (1.9 meters) in front of burrow openings and up to 6 feet (1.9 meters) within the entrance of a burrow; they may also occur in the mound at the burrow opening. To avoid crushing eggs, do not scrape the shovel across the bottom of the burrow, but continue to probe the area with your fingers as you proceed. Removal of the top 10 inches (25 centimeters) of soil (or until a hard layer of soil is encountered) will typically ensure that you find any desert tortoise eggs. Be particularly careful from late April to mid-October when eggs are most likely present. If found, follow the USFWS's egg handling protocol (Section 6.6.).

Excavators should wear leather or cloth gloves during burrow excavation to avoid being bitten or stung by venomous animals. Use blunt-nosed shovels or garden trowels. The preferred method involves two individuals, each with a shovel, to excavate a burrow. Place a shovel in the burrow entrance, or garden trowel for small burrows, and slice away the ceiling with the second shovel or trowel. Remove the soil with the first shovel or trowel as excavation proceeds and repeat. Excavate the burrow slowly and carefully and stop often to see if a desert tortoise is within reach. Do not collapse the burrow ahead of the shovel or trowel inside the burrow. You should feel the shovel contact the other shovel with each stroke to avoid striking a desert tortoise. It may take several minutes or several hours to excavate a desert tortoise burrow, depending on its length and other characteristics.

Always excavate the burrow to its absolute end(s), and then excavate an additional foot-or-so (0.3 meter) of harder soil beyond the suspected end to ensure that a desert tortoise is not behind a dirt plug or mound. Search all side tunnels within the burrow for desert tortoises, especially in kit fox dens. If a desert tortoise is found, do not assume that it is alone. After removing the first desert tortoise encountered, return to the burrow and continue to excavate it looking for additional desert tortoises. After excavating the burrow, leave it collapsed so that no desert tortoise may reuse it easily.

When excavating a burrow, stop digging when a desert tortoise is encountered. If during the desert tortoise less-active period (i.e., during July - August, and November - February; in Arizona the less-active period may begin in late May or June), relocate the desert tortoise to an artificial burrow. If it is during the most-active period (i.e., when desert tortoises are most likely

above ground; March - June, and September - October), place the desert tortoise in the shade of a shrub, or depending on conditions, in an artificial burrow (Section 6.7.).

## **6.6. Nest and Egg Handling Protocol**

Desert tortoises may lay eggs during the months of May through July and usually hatch July through October. Some eggs may not hatch, or hatchlings may not emerge until the following spring. Because desert tortoise eggs are also protected by the ESA, the Authorized Biologist shall search for nests and encouraged to search prior to clearance surveys. Desert tortoise eggs shall be moved to artificial nests either in the wild or at a USFWS-approved facility. If you encounter unemerged hatchlings, contact the USFWS and appropriate State wildlife agency for instructions. Authorized Biologists must receive special training in the procedures outlined below. If you discover a nest and have not been trained, the nest shall be carefully covered with soil so as not to move the eggs then contact the USFWS and appropriate State wildlife agency for instructions.

Any nest that is found shall be carefully excavated by hand at a time of day when the air temperature 6 inches (15 centimeters) above the ground is approximately equal to the soil temperature at egg level. Immediately upon finding a nest, discontinue using large tools. The Authorized Biologist shall excavate the nest using his or her hands. Disposable rubber or latex gloves must be worn when marking and handling eggs. Before disturbance of nest contents, each egg shall be gently marked with a small dot on the top using a felt-tipped pen to establish the egg's orientation in the nest. In handling nest contents, eggs must be maintained in this orientation at all times. Because egg shells become extremely fragile in the last few weeks before hatching, special care shall be taken with eggs found from August to mid-October. Because the egg is very fragile, it may break during handling; this will be lethal to the developing tortoise inside. Broken eggs shall be buried nearby and left in the field, or the contents preserved and made available for research projects. Report broken eggs to the USFWS and appropriate State wildlife agency as required for tortoise mortalities.

The Authorized Biologist shall measure and record the depth of the nest below the soil surface, the cardinal location of the nest in relation to any adjacent shrub (i.e., north, south, east, or west side of the shrub), the species of shrub and its approximate foliage volume, and the soil type. Place approximately 1 inch (2.5 centimeters) of soil from the nest area in a bucket and carefully transfer the eggs to the bucket, maintaining egg orientation. Gently cover the eggs with soil that is free of cobbles and pebbles, to a depth equivalent to that of the original nest.

If good desert tortoise habitat is available in the general area, the eggs shall be relocated between 150 to 1,000 feet (45.7 to 305 meters) from outer boundary of the project site, unless directed differently by USFWS. Eggs and tortoises shall only be placed on lands administered by a Federal agency or on lands when a written authorization to bury the eggs or relocate the tortoises has been obtained. A nest shall be prepared with the same depth, orientation, location in relation to a specific shrub species, and in the same soil type as the original nest. The eggs shall be transferred to the new nest, maintaining their original orientation. The eggs shall be replaced so that they touch one another. Gently cover with soil from which cobbles and pebbles have been removed so that all the air spaces around the eggs are filled. Relocated nests in the wild shall be monitored by an Authorized Biologist. The monitoring program shall be developed in

consultation with the USFWS and appropriate State wildlife agency. Care must be taken to remove any scent of tortoise eggs or human activity at the nest site to minimize nest predation.

If a suitable site for a nest is not available in the wild, the eggs shall be prepared for incubation in a suitable holding facility. A small amount of soil shall be placed in a bucket and the eggs transferred to the bucket using the technique specified above, making sure that the eggs are touching one another. The bucket shall be carefully filled to the depth of the original nest, but leave the top of the soil layer 3 inches (7.6 centimeters) below the rim of the bucket so that future hatchlings cannot escape. The bucket shall be buried in soil in a safe location at a holding facility approved by the USFWS and appropriate State wildlife agency.

The Authorized Biologist shall record in detail all the procedures used in moving eggs. Personnel caring for incubating eggs at a facility shall maintain a record of where the eggs were found, method of incubation, length of time and conditions under which the eggs were incubated, observations of eggs during the incubation period, information about hatchling health and behavior, and disposition of the hatchlings.

## **6.7. Constructing Artificial Burrows**

Constructing an artificial burrow will take from 30 minutes to several hours, depending on the substrate. An artificial burrow is intended to provide replacement shelter and protection to a desert tortoise when removed from its natural burrow. The USFWS requires experience and training in burrow construction prior to being authorized to construct an artificial burrow. The information provided below including Figures 6.1 and 6.2 is a general description of the methods for constructing artificial burrows taken from Tortoise Group's adoption and care pamphlet ([www.tortoisegroup.org](http://www.tortoisegroup.org)).

Create an artificial burrow that is the same orientation and size as the burrow from which the desert tortoise was taken. The burrow for a juvenile desert tortoise should be 3 to 4 feet (0.9 to 1.2 meters) long and an adult tortoise burrow should be 5 to 6 feet (1.5 to 1.8 meters) long. Burrow construction involves digging a three-sided shelf upon which plywood will be placed to serve as the roof of the burrow. A channel is dug below the level of the shelf which approximates the width of the tortoise and functions as the actual burrow (Figure 6.1).

Determine the width and length to dig the shelf, place the plywood on the ground. Use corner stakes and twine to delineate the perimeter. Dig the burrow in a downward slant of 15 to 20 degrees below the horizontal line of the ground (Figure 6.2). Place the plywood onto the shelf. Fit the plywood snugly and then remove it. Next, dig the channel and loosen the soil along the floor of the channel to a depth of 6 inches (15.2 centimeters) to allow a tortoise to dig its way out should the plywood sag and possibly trap or pin it in the burrow. Replace the plywood and shovel dirt on top. Place rocks along the eave of the burrow roof, above the opening (Figure 6.2). Mound the dirt so that rain water will not puddle on top of the finished burrow.

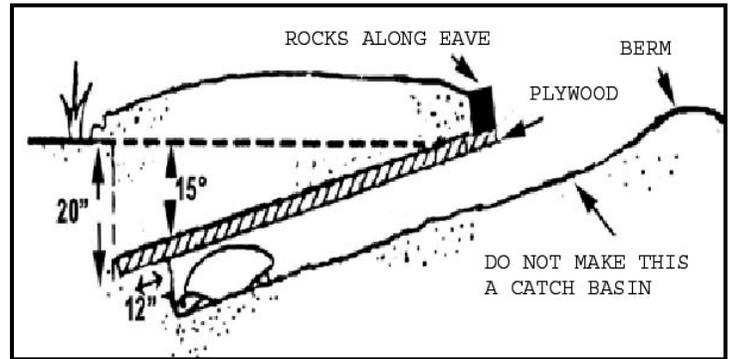
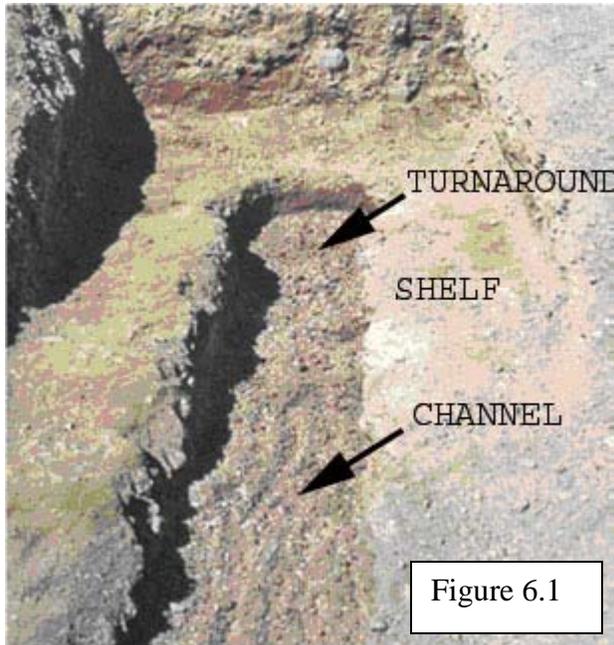


Figure 6.2

We recommend that you cover the opening of the artificial burrow with rocks or wood for 2 or 3 days to ensure that the tortoise remains within the burrow and out of harm's way, or that it resumes hibernation or aestivation.

Alternatively, the tortoise and its burrow may

be temporarily penned (Section 6.9). Providing an artificial burrow is particularly important if most of the burrows have been lost to disturbance and a desert tortoise would be unable to find an existing burrow in a reasonable amount of time. After several days, when project activities have ceased in the area (i.e., as on a pipeline or transmission line), or when you are reasonably sure that the tortoise is safely hibernating or aestivating, **it is absolutely essential that you remove the rocks from the opening of the blocked burrow or remove the pens around the tortoise and its burrow.**

## 6.8. Mapping and Finding Blocked Burrows

If you block a desert tortoise inside a burrow or temporarily pen the tortoise and its burrow according to instructions from the USFWS, you must return to that burrow and unblock it or remove the enclosure as soon as possible. Tortoises shall not be blocked in burrows during extreme high temperatures and construction activity shall be carefully monitored in the area around the blocked or penned tortoise. Accurately map the burrow with GPS so that you can find it again. Additionally, we recommend that you mark the area as a backup in case of GPS failure. For example, mark burrows with lath or ribbon placed a minimum of 100 feet (30.5 meters) from burrow. The marker should provide a cryptic message sufficient to locate the burrow (e.g., B23-2100FTS, to indicate that Burrow #23 on Reach 2 is 100 feet (30.5 meters) south of the lath (LaRue 1993)). The area must be discretely marked to avoid attracting people or ravens to the burrow.

## 6.9. Temporarily Confining Desert Tortoises

Desert tortoises found in the project area sheltering in a burrow during a period of reduced activity (e.g., winter), may be temporarily penned according to instructions from the USFWS. Tortoises shall not be penned in burrows during extreme high temperatures and construction activity shall be carefully monitored in the area around the penned tortoise. The methodology for penning desert tortoises (U.S. Department of Defense 2005) is adapted from a methodology developed by Gilbert Goodlett (EnviroPlus Consulting, Ridgecrest, California). Generally,

desert tortoises should not be penned in areas of moderate or heavy public use. Penning shall be accomplished by installing a circular fence, approximately 20 feet (6 meters) in diameter to enclose the tortoise/burrow. The pen should be constructed with durable materials (i.e., 16 gauge or heavier) suitable to resist desert environments. Fence material should consist of ½-inch hardware cloth or 1-inch horizontal by 2-inch (2.5 by 5.0 centimeters) vertical, galvanized welded wire. Pen material should be 24 inches (50 centimeters) in width. Steel T-posts or rebar (2 to 3 feet or 0.6 to 0.9 meter) should be placed every 5 to 6 feet (1.5 to 1.8 meters) to support the pen material. The pen material should extend 18 inches (45.7 centimeters) aboveground. The bottom of the enclosure shall be buried 6 to 12 inches (15 to 30 centimeters) or bent inward (towards the burrow), soil mounded along the base, and implement other measures to ensure zero ground clearance. Care shall be taken to minimize visibility of the pen by the public. An Authorized Biologist or Desert Tortoise Monitor shall check the pen at least daily and ensure that the desert tortoise is in the burrow or pen, the desert tortoise is okay, and the pen is intact. All instances of penning or issues associated with penning shall be reported to the USFWS within 3 days.

### **Literature Cited**

- LaRue, Jr., E.L. 1993. Monitoring guidelines for construction projects in desert tortoise habitat. Guidelines developed at Tierra Madre Consultants, Inc., Riverside, California.
- Medica, P.A., C.L. Lyons, and F.B. Turner. 1986. "Tapping:" A technique for capturing tortoises. *Herpetological Review* 17(1):15-16.
- U.S. Department of Defense. 2005. DARPA Grand Challenge 2005 after-action report. Defense Advanced Research Projects Agency (DARPA) Unpublished report prepared for the United States Fish and Wildlife Service, Southern Nevada Field Office. December 2005.

## **CHAPTER 7. GUIDELINES FOR HANDLING DESERT TORTOISES-MOJAVE POPULATION AND THEIR EGGS**

### **7.1. Objectives**

- Provide the reader with the most current methods for handling desert tortoises based on research and experience implementing previous handling protocols.
- Provide guidance to ensure the health and well-being of desert tortoises while allowing collection of data and necessary handling of desert tortoises.
- Ensure that diseases and parasites are not transmitted among desert tortoises.

### **7.2. Specific Considerations before Handling Desert Tortoises**

Depending on the circumstances, desert tortoises that are beneath machinery, in trenches or pipes, under pallets, or anywhere on the project site may be in danger and may need to be moved. Desert tortoises may be handled only by authorized personnel, but other project personnel may move a desert tortoise the shortest distance necessary to remove the desert tortoise from imminent danger if an Authorized Biologist is not present. The desert tortoise shall be monitored until an Authorized Biologist or USFWS is contacted for further instruction. If desert tortoises must be moved, a secure location must be available and the appropriate procedures in this Manual must be followed to ensure safe handling. If a secure location is not available, the tortoise must be held pending instruction from USFWS and the appropriate State wildlife agency. Before touching a desert tortoise, implement procedures described in Section 7.6.

### **7.3. Temperature Considerations**

Desert tortoises, particularly small ones, have been observed to be active aboveground every month of the year. However, the preferred daytime body temperature of desert tortoises is 69 degrees F to 101 degrees F (20.5 degrees C to 38 degrees C) (McGinnis and Voigt 1971). The critical maximum body temperature is between 103 degrees F and 112 degrees F (39 degrees C to 44 degrees C) (Brattstrom 1965, Naegle 1976). Berry and Turner (1984) found that juvenile desert tortoises preferred air temperatures of 63 degrees F to 66 degrees F (17 degrees C to 19 degrees C) during March, and 77 degrees F to 83 degrees F (25 degrees C to 28 degrees C) during June. Consequently, more juvenile desert tortoises were located in the morning (76.1 percent) than in the afternoon (23.9 percent). Zimmerman et al. (1994) found that air temperatures were comparable between 2 and 10 inches (5 centimeters to 25.4 centimeters) aboveground, with maximum variance of less than 3.5 degrees F (1.2 degrees C). Current information on lower temperature limits for desert tortoise activity is not well known.

Walde et al. (2003) observed that desert tortoises retreated into burrows when the air temperature reached  $91.0 \text{ degrees F} \pm 3.5 \text{ degrees F}$  ( $32.7 \text{ degrees C} \pm 1.2 \text{ degrees}$ ) and ground temperatures reached  $95 \text{ degrees F} \pm 6 \text{ degrees F}$  ( $35 \text{ degrees C} \pm 2.4 \text{ degrees}$ ); 95 percent of the desert tortoise observations aboveground occurred at air temperatures less than  $91.4 \text{ degrees F}$  ( $33 \text{ degrees C}$ ). Ground temperatures shall be measured on the ground surface in an area near the desert tortoise in full sun, with the thermometer in the shadow of the observer. Ambient air temperature shall

be measured in the shade, protected from wind, at a height of 2 inches (5 centimeters) above the ground surface.

During extreme heat, desert tortoises that shelter in relatively shallow burrows will remain in the burrow as long as the burrow temperature is lower than the temperature outside of the burrow. At night the air and surface temperatures drop faster than the temperature in the burrow. When the air and surface temperature drop below the burrow temperature, the desert tortoise may exit the burrow in an effort to lower its body temperature. Desert tortoises have been observed moving from a few feet out of the burrow to 50 feet (15 meters) or more during the night (Steve Ferrand, 2009, Nevada Biological Consulting, *in litt.*). Tortoises shall not be blocked in burrows during extreme temperatures and construction sites shall be carefully inspected during these periods for tortoises aboveground.

#### **7.4. Hot Temperatures**

Desert tortoises shall be treated in a manner to ensure that they do not overheat or exhibit signs of overheating, which include aggressive struggling by the desert tortoise, hot to the touch, frothing at the mouth, excessive salivation, or voiding its bladder. Desert tortoises shall not be placed in a situation where they cannot maintain surface and core temperatures necessary to their well-being. Desert tortoises shall be kept shaded at all times until it is safe to release them. Ground temperatures are much hotter than air temperatures thus never place a desert tortoise on unshaded ground. Removal of the upper layer of hot substrate would expose a cooler layer below.

No desert tortoise shall be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ground temperature is above 95 degrees F (35 degrees C). Temperature must be measured in the shade and protected from the wind at a height of 2 inches (5 centimeters) above the ground. No desert tortoise shall be captured if ground temperature is anticipated to exceed 95 degrees F (35 degrees C) before handling and relocation can be completed. If the ground temperature exceeds 95 degrees F (35 degrees C) during handling or processing, desert tortoises shall be kept shaded in an environment where the ambient air temperatures do not exceed 91 degrees F (32.7 degrees C) and ground temperature does not exceed 95 degrees F (35 degrees C). The desert tortoise shall not be released until ground temperature at the release site declines to below 95 degrees F (35 degrees C).

If a desert tortoise is found aboveground when these upper temperatures are exceeded and the desert tortoise must be moved from harm's way, place the desert tortoise in a clean, unused cardboard box or disinfected open plastic container, and keep it in a climate-controlled environment (e.g., air conditioned vehicle or building) until the ambient air and ground temperatures are below upper limits.

## Hyperthermic Desert Tortoises

Before touching a desert tortoise, implement procedures described in Section 7.6. If an animal begins frothing at the mouth, it is probably nearing an upper lethal body temperature and immediate action is required: a) capture, transport, and hold the desert tortoise in a climate-controlled environment, or b) if a nearby climate-controlled environment is unavailable, place the desert tortoise in an unused or open disinfected plastic container in the shade and pour cool water over the shell to a depth that ensures the nares remain above the water level. If no container is available, excavate a depression in a shaded area; place the desert tortoise in the depression and pour water over the shell. Heat-stressed desert tortoises shall not be released until they resume normal behavior. Monitor the desert tortoise after release until normal behavior resumes including sheltering.

## **7.5. Cold Temperatures**

If a desert tortoise is found aboveground during cold temperatures (i.e., ambient temperature less than 55 degrees F or 12.8 degrees C) and its burrow cannot be located nearby or will be destroyed, then capture the animal and implement the appropriate actions in Table 7.1. Before touching a desert tortoise, implement procedures described in Section 7.6. If relocating the desert tortoise to a natural burrow, ensure that the burrow is unoccupied; both a natural or artificial burrow must be of appropriate size within the average home range for that size and sex animal. If the end of the burrow cannot be seen, the burrow must be examined with a fiber-optic scope to ensure that the burrow and all side channels are unoccupied by other desert tortoises. Placing a desert tortoise in a burrow occupied by another desert tortoise may promote disease transmission and aggressive behavior between the desert tortoises.

**Table 7.1. Actions to implement for desert tortoises in harm’s way or adjacent to project areas during cold temperatures.**

CIRCUMSTANCE	ACTIONS		
	Find natural, unoccupied burrow; block tortoise inside	Construct artificial burrow; block tortoise inside	Construct pen around tortoise and burrow (Section 6.9)
<b>Desert tortoise above ground:</b>			
Desert tortoise in harm’s way, not in burrow	<b>X</b>	<b>X</b>	
Desert tortoise and burrow in harm’s way	<b>X</b>	<b>X</b>	
Desert tortoise in harm’s way, nearby burrow not in harm’s way			<b>X</b>
Desert tortoise adjacent to project, burrow in harm’s way	<b>X</b>	<b>X</b>	
Desert tortoise adjacent to project, no burrow	<b>X</b>	<b>X</b>	
Desert tortoise and burrow adjacent to project, not in harm’s way			<b>X</b>
<b>Desert tortoise in burrow:</b>			
Desert tortoise in harm’s way	<b>X</b>	<b>X</b>	
Desert tortoise adjacent to project			<b>X</b>

**7.6. Procedures to Avoid Transmission of Diseases or Parasites**

At all times, handle a desert tortoise as if it has a contagious disease or parasites, and in such a way to avoid transmitting disease or parasites from one desert tortoise to another. Much of the following information was developed by Berry and Christopher 2001.

During handling each desert tortoise, wear a new pair of disposable latex or rubber gloves (i.e., one pair of gloves, per desert tortoise, per encounter). If a glove is torn while handling a desert tortoise, which is likely when its toenail scrapes the glove, put on a new glove over the old one. Used gloves and disposable supplies (e.g., surveyors tape or flagging, etc.) must be placed in a plastic trash bag and disposed of offsite.

All tools that contact desert tortoises shall be disinfected in accordance with procedures described in Section 7.6.2.

**7.6.1. Disinfecting Clothing**

Do not allow a desert tortoise to contact clothing. If it does, change clothes before handling another desert tortoise. Contaminated clothes must be washed before worn again while handling desert tortoises. Keep a change of clothes on-hand and change clothes, including shoes, before leaving the site for another geographical location (e.g., another valley or mountain range would

be considered a separate location). As an alternative, wear disposable jumpsuits or gowns and disposable paper or plastic shoe covers. Use disposable paper or plastic sheeting to place under the desert tortoise or on the lap of field workers; disposable baby changing sheets may prove useful.

### 7.6.2. Disinfecting Tools and Equipment

All equipment and work surfaces after contact with each desert tortoise, any equipment (e.g., scales, calipers, ruler, etc.) that comes in contact with a desert tortoise, including poles used to probe burrows or tap desert tortoises from burrows (Medica et al. 1986), must be disinfected. Disinfecting solutions shall be either 0.175 percent sodium hypochlorite (bleach) (Wendland et al. 2009) or *Nolvasan* (prepared according to the manufacturer's instructions). A 0.175 percent sodium hypochlorite bleach is a 1:10 dilution of 5 percent household bleach to water. Before disinfecting, first remove any organic debris (e.g., dirt, feces, etc.) by rinsing the area with water or brushing off the area with paper towels or a scrub brush. If using a bleach solution, the equipment and work surface shall be saturated with the solution and allowed to air dry. If using a *Nolvasan* solution, the equipment and work surface shall be submersed in the solution (bath) for a minimum of 10 minutes before being used on another animal. Equipment baths shall be changed regularly according to the label instructions. Measures should be taken to avoid transmission of pathogens between burrows when using a fiber-optic scope which may include covering the scope with a disposable plastic cover.

Between study sites, equipment, particularly buckets will be scrubbed using a dish soap and bleach solution. After rinsing, the bleach solution will be sprayed on the equipment and allowed to air dry. This will minimize the chance of cross-contamination between study sites.

Only metal or plastic rulers may be used; never use a wooden ruler, which is too porous and cannot be properly disinfected. If permitted to notch desert tortoises, files must be disinfected after each use.

Thoroughly clean field vehicles inside and out at a car wash before moving to another geographical location.

## **7.7. Capturing Desert Tortoises**

When encountering a desert tortoise outside its burrow, approach the animal slowly (e.g., if the desert tortoise is 15 feet (4.5 meters) away, pace your approach with pauses to contact the desert tortoise in 30 seconds). Put on a clean, unused pair of latex or rubber gloves and grasp the desert tortoise at its bridge (connection between the carapace and plastron) with both hands, holding it firmly with its plastron parallel to, and facing the ground. Slowly lift the desert tortoise to your waist height and slowly and smoothly walk to where the desert tortoise will be placed (e.g., remove from harm's way).

If a desert tortoise is collected at or near sunset and intended to be released the same day, hold the desert tortoise overnight in a clean, unused cardboard box or open disinfected plastic container, and release it the next morning at or near the capture site. Monitor the desert tortoise until it resumes normal behavior.

## 7.8. Processing Desert Tortoises

Before touching a desert tortoise, implement procedures described in Section 7.6. A desert tortoise shall only be processed (i.e., weighed, measured, or sexed) if authorized in a biological opinion or permit. An experienced biologist should be able to process a desert tortoise in 5 to 10 minutes. **Do not process a desert tortoise if the ambient temperature exceeds 95 degrees F (35 degrees C)** (Section 6.3 or 7.4.) or if there is a chance that a second desert tortoise could be in harm's way and requires timely action while processing the first one.

Inspect a desert tortoise and record data on size, sex, distinctive features, indications of health and disease (e.g., ectoparasites, shell lesions, signs of osteoporosis or osteomalacia, injuries, evidence of URTD, etc.). Ensure that the desert tortoise is maintained in a horizontal position at all times.

### 7.8.1. Measuring and Sexing

If authorized and required, measure the midline carapace length (MCL) of the desert tortoise from the nuchal to pygal scutes using calipers, which provide the most accurate measurement. Measurements should be taken in millimeters (mm). Before touching a desert tortoise, implement procedures described in Section 7.6.

The sex of desert tortoises less than 180 mm MCL cannot be accurately determined based on external characteristics. Generally, the following male characteristics differentiate them from females: a) concave plastron; b) longer, more curved gulars; c) larger, well-developed chin glands; d) longer, broader, more conical tail; and e) shorter, thicker toenails. Pay particular attention to the gular projection and the shape of the plastron, which are the two best features for differentiating the sexes. For very large desert tortoises, feel the concave (male) or flattened (female) plastron or see it by holding the desert tortoise at eye level without turning the desert tortoise on its back. When in doubt, record all other information and mark "sex unknown" on the data sheet.

### 7.8.2. Weighing

Handle desert tortoises carefully. Mishandling may result in injury or cause the tortoise to void its bladder. Before touching a desert tortoise, implement procedures described in Section 7.6. If using a digital scale, immobilize the desert tortoise as described in Section 7.8.3. If using a spring scale, place the desert tortoise inside a harness made of clean, unused cord that will avoid the spread of pathogens. It will also minimize gross contamination to the desert tortoise and to field equipment from urination or defecation. The harness shall consist of a double loop with one loop crossing the plastron posterior to the forelimbs and the other anterior to the hind limbs. As the Authorized Biologist slowly begins to raise the tortoise, the tortoise shall remain positioned horizontally and care shall be taken to ensure that the tortoise does slip out of the harness or fall. Using the harness allows the Authorized Biologist to observe any stressful behavior exhibited by the desert tortoise (e.g., flailing of legs) and act quickly to correct this situation. Suspend the harness from the scale, ensuring the desert tortoise is securely and safely positioned, a few inches above sand or soil substrate. Keep weighing time to a minimum; and

take every precaution to prevent the desert tortoise from falling or voiding. Once the desert tortoise has been weighed, dispose of the harness.

The following spring scale sizes are recommended: a) 0 to 100 gram scale with a 1.0 gram precision for small desert tortoises; b) 1 kilogram scale with a 10 gram precision for moderate-sized desert tortoises; and c) 5 kilogram scale with a 50 gram precision for large desert tortoises. It is best to use the smallest scale that will accommodate the weight of a desert tortoise. Occasionally a desert tortoise will weigh more than 5 kilograms; in this case you may use two 5-kilogram scales simultaneously on the harness and add the weights. Keep scales clean and calibrated.

Experts recommend weighing a desert tortoise immediately after capture. This provides a true weight. Should the desert tortoise void its bladder, weigh it afterwards to determine how much fluid has been lost. Another reason for weighing a desert tortoise is to determine if it is underweight for its size. Low weight may be the result of disease, drought conditions, recent egg-laying, or other factors.

### 7.8.3. Restricting Mobility

*Using cylinders* - Before touching a desert tortoise, implement procedures described in Section 7.6. A desert tortoise may be placed on the top of a cylindrical holding stand such as a coffee can or other large can to facilitate processing. The stand should be large enough to support the desert tortoise and small enough to prevent any waving appendages from touching the stand, and tall enough to prevent desert tortoise from touching a solid surface below. Given that desert tortoises come in all sizes, a range of stand sizes will be needed. Note that coffee cans and other types of stands come in several sizes and can be "nested" in one another for ease of transport thereby accommodating different-sized desert tortoises. Freedom to move its appendages may encourage a desert tortoise to extend its head, which allows observation of the eyes, nares, chin glands, and beak where most signs of URTD are observed. The stand must be disinfected before using it with another desert tortoise, or place waterproof plastic on top of the stand prior to each use, then position the desert tortoise on top of the plastic, and discard the plastic afterwards.

### 7.8.4. Assessing Desert Tortoise Health

A section 7 biological opinion or section 10 permit may require a health assessment for encountered desert tortoises. Before initiating this assessment, contact the appropriate USFWS office to determine the information to be included in the health assessment. This will determine the qualifications needed by the person conducting the health assessment. You will need the approval of the person conducting the health assessment from the USFWS.

### 7.8.5. Marking Desert Tortoises

You must contact the DTRO and appropriate State wildlife agency before marking desert tortoises. Before touching a desert tortoise, implement procedures described in Section 7.6. If authorized, first restrict movement of the desert tortoise (Section 7.8.3.). Next, use a clean, disinfected toothbrush to remove dirt from the left fourth costal scute, where the desert tortoise will be marked. If this scute is damaged, use the right fourth costal scute. Next, place a small

dot (i.e., no larger than 1/4 inch (0.64 centimeter) in diameter) of correction fluid (i.e., white out) or acrylic paint on the scute. The number is likely to last longer if placed on a rough, off-centered surface where shell-wear is less common, which is one reason only the fourth costal scutes are used for marking. Once the spot is dry, write the identifying mark on the spot using a waterproof, permanent black ink pen. Some biologists recommend using a capillary type technical pen (e.g., fine-tip Sharpie).

Allow the number to dry before applying 5-minute epoxy. Mix the epoxy on a file card or piece of paper, then transfer the mixed epoxy to the dot on the shell using a toothpick, wooden coffee stirrer, or tongue depressor. Wait several seconds until the epoxy starts to thicken but is still liquid enough to spread over the numbered spot with ease. Cover the paint spot overlapping its edges just enough to seal the paint. **Never allow the epoxy to spill over onto the growth area, which occurs at the border between two scutes.** Anticipate this when applying the paint so there will be space for the epoxy to overlap the paint without entering the seams. It may be helpful to cover the margins of the scute with 1/2-inch wide masking tape before applying the epoxy, to ensure that the epoxy does not touch the growth area, especially on smaller desert tortoises. Record the identifying mark on the data sheet. Dispose of used materials appropriately after use on each desert tortoise.

#### 7.8.6. Photographing Desert Tortoises

Before touching a desert tortoise for photographing, implement procedures described in Section 7.6. If permitted, photograph processed desert tortoises as follows: a) dorsal view of the carapace; b) the numbered scute; and c) frontal view of the desert tortoise's face and forelegs. Photograph any recent or previously healed injuries or unusual anomalies. Unless specifically required, do not photograph the plastron which would require unnecessary handling and risk to the tortoise. It is important that each object fills 80 to 90 percent of the frame and that the object be clearly focused. Digital photographs are preferred. Two types of labels are recommended: a) hold a small card adjacent to the desert tortoise so that the above information is clearly visible on the photograph without blocking the part of the desert tortoise being photographed; or, b) attach a 1/2 inch x 1/2 inch, adhesive label to the desert tortoise to allow for closer, more detailed photographs of the subject. Dispose of label appropriately following use on each desert tortoise.

Keep a log of the photographs in your field notes (e.g., "photo number 453, carapace of desert tortoise 4"). You must be familiar with the features of the camera. Label photographs with the following information: date, biologist's name, project name, desert tortoise number, UTM or lat/long, county, and state.

Supplies and equipment:

- 3 inch x 5 inch file cards (for identifying photographs)
- 1/2 inch x 1/2 inch labels or other stickers (to attach to desert tortoise to identify photograph)
- Camera

## **7.9. Desert Tortoise Urination and Hydration**

Desert tortoises may void their bladder: 1) when first encountered, picked up, or carried; 2) the longer you handle them; and (3) during drought conditions, which is also when water availability is at its lowest. Since desert tortoises store water in their bladders, any loss of this fluid may result in death (Averill-Murray 2002). Discourage bladder voiding by gently and slowly moving the desert tortoise. If the tortoise does void, record on the data sheet the quantity, color, and viscosity of the urine. If the desert tortoise has already been weighed, weigh it again to estimate the amount of lost fluid. Avoid all unnecessary actions that may result in stress to the animal.

If the desert tortoise urinates, it should be rehydrated. To rehydrate, soak the desert tortoise at the release location in a tub with a clean unused plastic disposable liner for a minimum of 10 to 20 minutes in a quiet protected area. Water level shall not be higher than the lower jaw of the animal; the water temperature should be tepid. Desert tortoises must be soaked individually. Weigh the desert tortoise before and after placing in water. Even if desert tortoises do not drink, they can absorb water through their cloaca. Weighing the desert tortoise before and after placing it in water will determine if the tortoise took in water (James Jarchow, veterinarian, pers. comm.).

On warm days, transport the desert tortoise in the shade. Remember to roll up your sleeves and wear protective clothing to avoid transmitting disease or parasites to other desert tortoises that may come in contact with your clothing. When handling is complete, remove and properly dispose of your gloves and protective clothing.

## **7.10. Moving and Releasing Desert Tortoises**

In this Manual, relocating desert tortoises is defined as moving them from harm's way but allowing them to remain within their home ranges. To relocate, move the desert tortoise the distance directed in the permit or biological opinion once the desert tortoise has been processed. The minimum distance from the edge of the project footprint that a desert tortoise can be relocated will be determined by its age and sex (different home range sizes), the presence or absence of desert tortoise-proof fencing around the perimeter of the project footprint, and the duration of the project activity. Desert tortoises may attempt to return to their point of capture. A desert tortoise should not be placed on private land without the written permission of the landowner.

In this Manual, translocating desert tortoises is defined as moving them from harm's way to a location outside their home range (e.g., more than 1,000 feet (305 meters)). Translocating tortoises should only occur when authorized by the permitting agencies and in accordance with an approved, project-specific translocation plan. Translocation not only affects the desert tortoise being moved but also may impact resident desert tortoises in the translocation area. The effectiveness of translocation of desert tortoises as a conservation or recovery tool has not been proven. Until its effectiveness is determined, it should be implemented only on an experimental basis and in close coordination with the USFWS and State wildlife agency.

For temperature considerations, refer to Section 7.3. To discourage urination or if the tortoise voided during handling, refer to Section 7.9.

After processing is completed, release the desert tortoise as soon as possible while considering its well-being. Desert tortoises shall be released individually and not in groups. The biological opinion or permit may require that desert tortoises be removed from the project site and placed in the shade of a shrub, in a natural unoccupied burrow, or in an artificial burrow. Desert tortoises shall be released at a safe location as near to the point of capture as possible. If a desert tortoise is found aboveground, release it aboveground if environmental conditions are suitable (Sections 7.4 and 7.5), or hold it until conditions are suitable, then release it. When releasing the desert tortoise, slowly lower the animal to the ground, release it, and slowly walk away. Following release, monitor the desert tortoise until it exhibits and maintains normal behavior. Further, we recommend that desert tortoises **not** be put into existing burrows to avoid exposing the desert tortoise to diseases.

If a desert tortoise and its burrow are not in harm's way but adjacent to project activities, as an alternative to moving, construct a temporary restraining pen around the desert tortoise and its burrow to protect it during project activities (See Section 6.9.).

#### 7.10.1. Temporarily Holding Desert Tortoises

There may be a situation where a desert tortoise needs to be removed from the field, held overnight or longer, and then released at its point of capture. While held, each desert tortoise shall remain in a clean, unused or disinfected container that is covered or closed. Newspaper placed in the bottom will absorb any urine that is voided. The box shall be ventilated in such a way that a desert tortoise's leg or head cannot be caught in the ventilation hole. Never put more than one desert tortoise in a container, and avoid placing anything in a container occupied by a tortoise that previously came in contact with another tortoise without following disinfection procedures (Section 7.6.).

#### 7.10.2. Transporting by Vehicle

Do not allow desert tortoises to roam freely in the vehicle. Do not transport desert tortoises in shopping or grocery bags or other containers less sturdy than a new cardboard box. Discard the box immediately after use to ensure that it is not used for another desert tortoise.

Never place desert tortoises over the catalytic converter or other area in a vehicle that becomes hot. Pad truck beds or floorboards and travel at speeds that minimize vibrations or shifting of the box. Never leave a desert tortoise unattended in a vehicle. During summer months, transport desert tortoises in an air-conditioned vehicle, placing them in a covered, unused cardboard box while maintaining the vehicle interior temperature between 75 degrees F and 80 degrees F (23.9 degrees C and 26.7 degrees C). If a desert tortoise is captured during the winter, maintain the desert tortoise at its current body temperature, which will be less stressful to it than much warmer temperatures, and may allow it to remain in a physiological state of brumation. When transporting an adult female desert tortoise, assume it may be gravid (i.e., April through July) and take special care to avoid jolting and jostling to ensure that the eggs are not ruptured which may result in her death from egg yolk peritonitis.

### **7.11. Injured or Dead Desert Tortoises**

If an injured desert tortoise is encountered that may have been the result of project activities, follow the instructions of the biological opinion/permit, which typically requires immediate transport to a qualified veterinarian. Contact the USFWS and appropriate State wildlife agency. Document the injury with photographs and a written description of the injury; circumstances and probable cause; and recommendations to avoid future injuries. Submit this information to the USFWS and other appropriate agencies.

If a dying or dead desert tortoise is encountered, you may not salvage or collect it unless authorized to so under a biological opinion, section 10 permit, or under 50 *Code of Federal Regulations* 17.31.

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### Personal Communication

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## CHAPTER 8. DESERT TORTOISE EXCLUSION FENCE

### RECOMMENDED SPECIFICATIONS FOR DESERT TORTOISE EXCLUSION FENCING

These specifications were developed to standardize fence materials and construction procedures to confine tortoises or exclude them from harmful situations, primarily roads and highways. Prior to commencing any field work, all field workers should comply with all stipulations and measures developed by the jurisdictional land manager and the U.S. Fish and Wildlife Service for conducting such activities in desert tortoise habitat, which will include, at a minimum, completing a desert tortoise education program.

#### Fence Construction

##### Materials

Fences should be constructed with durable materials (*i.e.*, 16 gauge or heavier) suitable to resist desert environments, alkaline and acidic soils, wind, and erosion. Fence material should consist of 1-inch horizontal by 2-inch vertical, galvanized welded wire, 36 inches in width. Other materials include: Hog rings, steel T-posts, and smooth or barbed livestock wire. Hog rings should be used to attach the fence material to existing strand fence. Steel T-posts (5 to 6-foot) are used for new fence construction. If fence is constructed within the range of bighorn sheep, 6-foot T-posts should be used (see New Fence Construction below). Standard smooth livestock wire fencing should be used for new fence construction, on which tortoise-proof fencing would be attached.

##### Retrofitting Existing Livestock Fence

**Option 1 (see enclosed drawing).** Fence material should be buried a minimum of 12 inches below the ground surface, leaving 22-24 inches above ground. A trench should be dug or a cut made with a blade on heavy equipment to allow 12 inches of fence to be buried below the natural level of the ground. The top end of the tortoise fence should be secured to the livestock wire with hog rings at 12 to 18-inch intervals. Distances between T-posts should not exceed 10 feet, unless the tortoise fence is being attached to an existing right-of-way fence that has larger interspaces between posts. The fence must be perpendicular to the ground surface, or slightly angled away from the road, towards the side encountered by tortoises. After the fence has been installed and secured to the top wire and T-posts, excavated soil will be replaced and compacted to minimize soil erosion.

**Option 2 (see enclosed drawing).** In situations where burying the fence is not practical because of rocky or undigable substrate, the fence material should be bent at a 90E angle to produce a lower section approximately 14 inches wide which will be placed parallel to, and in direct

contact with, the ground surface; the remaining 22-inch wide upper section should be placed vertically against the existing fence, perpendicular to the ground and attached to the existing fence with hog rings at 12 to 18-inch intervals. The lower section in contact with the ground should be placed within the enclosure in the direction of potential tortoise encounters and level with the ground surface. Soil and cobble (approximately 2 to 4 inches in diameter; can use larger rocks where soil is shallow) should be placed on top of the lower section of fence material on the ground covering it with up to 4 inches of material, leaving a minimum of 18 inches of open space between the cobble surface and the top of the tortoise-proof fence. Care should be taken to ensure that the fence material parallel to the ground surface is adequately covered and is flush with the ground surface.

### New Fence Construction

Options 1 or 2 should be followed except in areas that require special construction and engineering such as wash-out sections (see below). T-posts should be driven approximately

24 inches below the ground surface spaced approximately 10 feet apart. Livestock wire should be stretched between the T-posts, 18 to 24 inches above the ground to match the top edge of the fence material; desert tortoise-proof fencing should be attached to this wire with hog rings placed at 12 to 18-inch intervals. Smooth (barb-less) livestock wire should be used except where grazing occurs.

If fence is constructed within the range of bighorn sheep, two smooth-strand wires are required at the top of the T-post, approximately 4 inches apart, to make the wire(s) more visible to sheep. A 20 to 24-inch gap must exist between the top of the fence material and the lowest smooth-strand wire at the top of the T-post. The lower of the top two smooth-strand wires must be at least 43 inches above the ground surface.

(72-inch T-posts: 24 inches below ground + 18 inches of tortoise fence above ground + 20 to 24-inch gap to lower top wire + 4 inches to upper top wire = 66 to 70 inches).

### **Inspection of Desert Tortoise Barriers**

The risk level for a desert tortoise encountering a breach in the fence is greatest in the spring and fall, particularly around the time of precipitation including the period during which precipitation occurs and at least several days afterward. All desert tortoise fences and cattleguards should be inspected on a regular basis sufficient to maintain an effective barrier to tortoise movement.

Inspections should be documented in writing and include any observations of entrapped animals; repairs needed including bent T-posts, leaning or non-perpendicular fencing, cuts, breaks, and gaps; cattleguards without escape paths for tortoises or needed maintenance; tortoises and tortoise burrows including carcasses; and recommendations for supplies and equipment needed to complete repairs and maintenance.

All fence and cattleguard inventories should be inspected at least twice per year. However, during the first 2 to 3 years all inspections will be conducted quarterly at a minimum, to identify and document breaches, and problem areas such as wash-outs, vandalism, and cattleguards that fill-in with soil or gravel. GPS coordinates and mileages from existing highway markers should be recorded in order to pinpoint problem locations and build a database of problem locations that may require more frequent checking. Following 2 to 3 years of initial inspection, subsequent inspections should focus on known problem areas which will be inspected more frequently than twice per year. In addition to semi-annual inspections, problem areas prone to wash-outs should be inspected following precipitation that produces potentially fence-damaging water flow. A database of problem areas will be established whereby checking fences in such areas can be done efficiently.

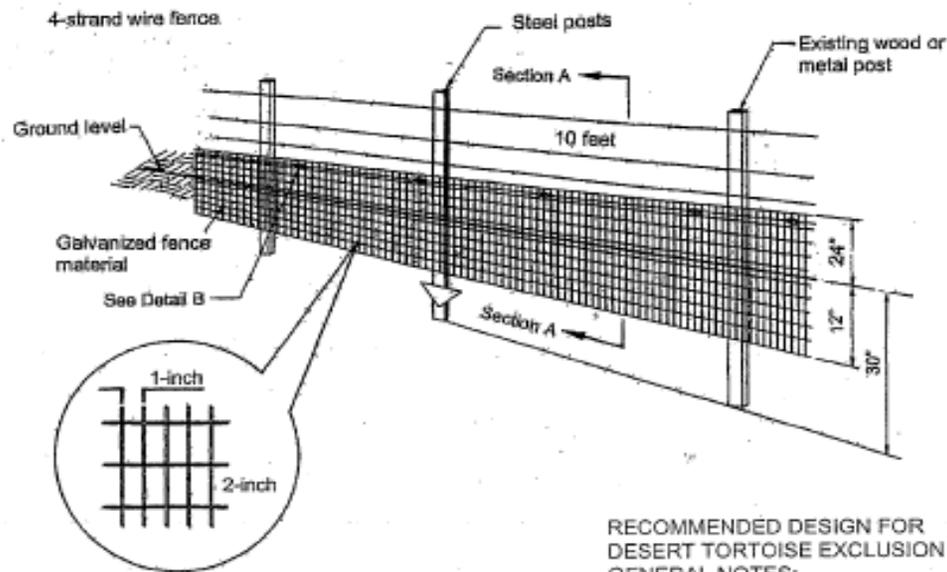
### **Repair and Maintenance of Desert Tortoise Barriers**

Repairs of fence wash-outs: (1) realign the fence out of the wash if possible to avoid the problem area, or (2) re-construct tortoise-proof fencing using techniques that will ensure that an effective desert tortoise barrier is established that will not require frequent repairs and maintenance.

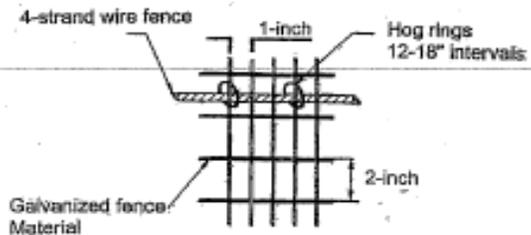
Gaps and breaks will require either: (a) repairs to the existing fence in place, with similar diameter and composition of original material, (b) replacement of the damaged section to the nearest T-post, with new fence material that original fence standards, (c) burying fence, and/or (d) restoring zero ground clearance by filling in gaps or holes under the fence and replacing cobble over fence constructed under Option 2. Tortoise-proof fencing should be constructed and maintained at cattleguards to ensure that a desert tortoise barrier exists at all times.

All fence damage should be repaired in a timely manner to ensure that tortoises do not travel through damaged sections. Similarly, cattleguards will be cleaned out of deposited material underneath them in a timely manner. In addition to periodic inspections, debris should be removed that accumulates along the fence. All cattleguards that serve as tortoise barriers should be installed and maintained to ensure that any tortoise that falls underneath has a path of escape without crossing the intended barrier.

DESERT TORTOISE EXCLUSION FENCE (2005)



DETAIL A

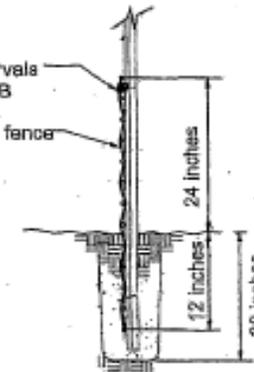


DETAIL B

4-strand wire fence

Hog rings  
12-18" intervals  
See Detail B

Galvanized fence  
Material



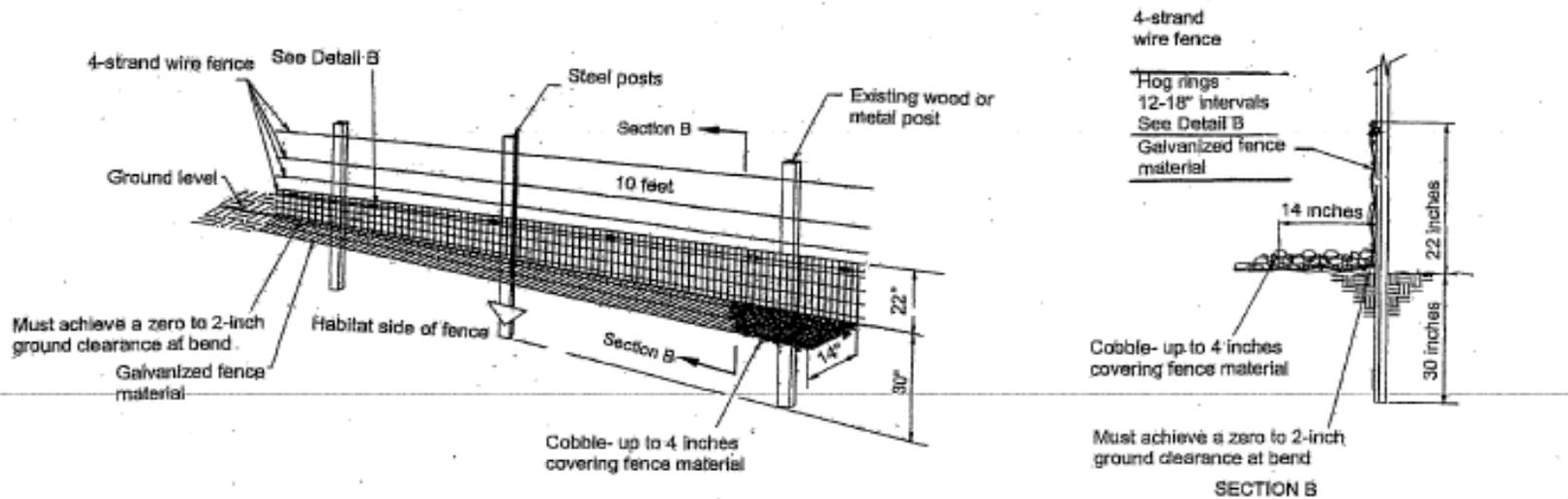
SECTION A

RECOMMENDED DESIGN FOR  
DESERT TORTOISE EXCLUSION FENCE  
GENERAL NOTES:

1. Ensure that fence posts and materials conform to the standards approved by the U.S. Fish and Wildlife Service.
2. Ensure that the height above ground level is no less than 18 inches and no higher than 24 inches.
3. Ensure that the depth of fence material below ground level is about 12 inches but no less than 6 inches. (See SECTION A above)
4. Install additional steel posts when span between existing fence posts exceed 10 feet.
5. Attach fence material to existing fence or wire using hog rings at 12-inch intervals.
6. Fasten fence material to posts with 3 tie wires with a wire near the top, bottom, and center of the fence material.
7. Backfill trenches with excavated material and compact the material.
8. Attach fence material to all gates. Ensure that clearance at base of gate achieves zero ground clearance.
9. Substitute smooth wire for barbed wire if additional support wires are necessary.
10. The number and placement of support wires may be modified to allow sheep and deer to pass safely.
11. Erosion at the edge of the fence material where the fence crosses washes may occur and requires appropriate and timely monitoring and repair.
12. Tie the fence into existing culverts and cattleguards when determined necessary to allow desert tortoise passage underneath roadways.

**FOR BEDROCK OR CALICHE SUBSTRATE**

1. Use this fence design (see below) only for that portion of the fence where fence material cannot be placed 6 inches below existing ground level due to presence of bedrock, large rocks or caliche substrate.
2. Ensure that the fence height above ground level is no less than 22 inches.
3. Ensure that there is a zero to 2-inch ground clearance at the bend.
4. Ensure that the bent portion of the fence is lying on the ground and pointed in the direction of desert tortoise habitat.
5. Cover the portion of the fence that is flush with the ground with cobble (rocks placed on top of the fence material to a vertical thickness up to 4 inches).
6. When substrate no longer is composed of bedrock or caliche, install fence using design shown above.



ATTACHMENT 4

Letter of Credit Form

**ATTACHMENT 4**

**[Financial institution letterhead]**

IRREVOCABLE STANDBY LETTER OF CREDIT  
NO. **[number issued by financial institution]**

---

Issue Date: **[date]**

Beneficiary:

California Department of Fish and Wildlife  
Habitat Conservation Planning Branch  
960 Riverside Parkway, Suite 90  
West Sacramento, CA 95605  
Attn: HCPB Mitigation Funds

Amount: U.S. \$**[dollar number]** **[(dollar amount)]**

Expiry: **[Date]** at our counters

Dear Sirs:

1. At the request and on the instruction of our customer, **[name of applicant]** ("Applicant"), we, **[name of financial institution]** ("Issuer"), hereby establish in favor of the beneficiary, the California Department of Fish and Wildlife ("CDFW"), this irrevocable standby letter of credit ("Credit") in the principal sum of U.S. \$**[dollar number]** **[(dollar amount)]** ("Principal Sum").
2. We are informed this Credit is and has been established for the benefit of CDFW pursuant to the terms of the incidental take permit for the **[name of project]** issued by CDFW to the Applicant on **[date]** (No. **[number]**) ("Permit").
3. We are further informed that pursuant to the Permit, the Applicant has agreed to complete certain mitigation requirements in the Permit ("Mitigation Requirements").
4. We are finally informed that this Credit is intended by CDFW and the Applicant to serve as a security device for the performance by the Applicant of the Mitigation Requirements.
5. CDFW shall be entitled to draw upon this Credit only by presentation of a duly executed Certificate for Drawing ("Certificate") in the same form as Attachment A,

which is attached hereto, at our office located at [***name and address of financial institution***].

6. The Certificate shall be completed and signed by an Authorized Representative of CDFW as defined in paragraph 12 below. Presentation by CDFW of a completed Certificate may be made in person or by registered mail, return receipt requested, or by overnight courier.
7. Upon presentation of a duly executed Certificate as above provided, payment shall be made to CDFW, or to the account of CDFW, in immediately available funds, as CDFW shall specify.
8. If a demand for payment does not conform to the terms and conditions of this Credit, we shall give CDFW prompt notice that the demand for payment was not effected in accordance with the terms and conditions of this Credit, state the reasons therefore, and await further instruction.
9. Upon being notified that the demand for payment was not effected in conformity with the Credit, CDFW may correct any such non-conforming demand for payment under the terms and conditions stated herein.
10. All drawings under this Credit shall be paid with our funds. Each drawing honored by us hereunder shall reduce, *pro tanto*, the Principal Sum. By paying to CDFW an amount demanded in accordance herewith, we make no representations as to the correctness of the amount demanded.
11. This Credit will be cancelled upon receipt by us of Certificate of Cancellation, which: (i) shall be in the form of Attachment B, which is attached hereto, and (ii) shall be completed and signed by an Authorized Representative of CDFW, as defined in paragraph 12 below.
12. An Authorized Representative shall mean the Director of CDFW; the General Counsel of CDFW; a Regional Manager of CDFW; or the Branch Manager of CDFW's Habitat Conservation Planning Branch.
13. This Credit shall be automatically extended without amendment for additional periods of one year from the present or any future expiration date hereof, unless at least sixty (60) days prior to any such date, we notify CDFW in writing by registered mail, return receipt requested, or by overnight courier that we elect not to consider this Credit extended for any such period.
14. Communications with respect to this Credit shall be in writing and addressed to us at [***name and address of financial institution***], specifically referring upon such writing to this credit by number. The address for notices with respect to this Credit shall be: (i) for CDFW: Department of Fish and Wildlife, Habitat Conservation Planning Branch, 960 Riverside Parkway, Suite 90, West

Sacramento, CA 95605, Attn: HCPB Mitigation Funds; and (ii) for the Applicant:  
**[name and address of applicant]**.

15. This Credit may not be transferred.
16. This Credit is subject to the International Standby Practices 1998 ("ISP 98"). As to matters not covered by the ISP 98 and to the extent not inconsistent with the ISP 98, this credit shall be governed by and construed in accordance with the laws of the State of California.
17. This Credit shall, if not canceled, expire on **[expiration date]**, or any extended expiration date.
18. We hereby agree with CDFW that documents presented in compliance with the terms of this Credit will be duly honored upon presentation, as specified herein.
19. This Credit sets forth in full the terms of our undertaking. Such undertaking shall not in any way be modified, amended or amplified by reference to any document or instrument referred to herein or in which this Credit is referred to or to which this Credit relates and any such reference shall not be deemed to incorporate herein by reference any document or instrument.

**[Name of financial institution]**

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Telephone: \_\_\_\_\_

ATTACHMENT A

CERTIFICATE FOR DRAWING

**[CDFW Letterhead]**

**[Date]**

**[Name and address of financial institution]**

Re: Irrevocable Standby Letter of Credit No. **[number issued by financial institution]**

The undersigned, a duly Authorized Representative of the California Department of Fish and Wildlife ("CDFW"), as defined in paragraph 12 in the above-referenced standby letter of credit ("Credit"), hereby certifies to the Issuer that:

1. **[Insert one of the following statements:** "In the opinion of CDFW, the Applicant has failed to complete the Mitigation Requirements referenced in paragraph 3 of the Credit." **or** "As set forth in paragraph 13, the Issuer has informed CDFW that the Credit will not be extended and the Applicant has not provided CDFW with an equivalent security approved by CDFW to replace the Credit."]
2. The undersigned is authorized under the terms of the Credit to present this Certificate as the sole means of demanding payment on the Credit.
3. CDFW is therefore making a drawing under the Credit in amount of U.S. \$ \_\_\_\_\_.
4. The amount demanded does not exceed the Principal Sum of the Credit.

Therefore, CDFW has executed and delivered this Certificate as of this \_\_\_\_ day of **[month]**, **[year]**.

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

**[Insert one of the following:** "Director" **or** "General Counsel" **or** "Regional Manager, [Name of Regional Office]" **or** "Branch Manager, Habitat Conservation Planning Branch"]

ATTACHMENT B

CERTIFICATE FOR CANCELLATION

[*CDFW Letterhead*]

[*Date*]

[*Name and address of financial institution*]

Re: Irrevocable Standby Letter of Credit No. [*number issued by financial institution*]

The undersigned, a duly Authorized Representative of the California Department of Fish and Wildlife (“CDFW”), as defined in the paragraph 12 in the above-referenced Irrevocable Standby Letter of Credit (“Credit”), hereby certifies to the Issuer that:

1. [*Insert one of the following statements:* “The Applicant has presented documentary evidence of full compliance with the Mitigation Requirements referenced in paragraph 3 of the Credit.” **or** “The Applicant has provided CDFW with an equivalent security approved by CDFW to replace the Credit.”]
2. CDFW therefore requests the cancellation of the Credit.

Therefore, CDFW has executed and delivered this Certificate for Cancellation as of this \_\_\_\_ day of [*month*], [*year*].

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

\_\_\_\_\_  
[*Insert one of the following:* “Director” **or** “General Counsel” **or** “Regional Manager, [*Name of Regional Office*]” **or** “Branch Manager, Habitat Conservation Planning Branch”]

ATTACHMENT 5

Mitigation Payment Transmittal Form

State of California - Department of Fish and Wildlife  
**MITIGATION PAYMENT TRANSMITTAL FORM**  
 DFW 1057 (NEW 07/28/17)

**Project Applicant Instructions:** Please fill out and attach this form to payment. For conservation banks, also attach the Bill(s) of Sale for credits sold. One form may be used for multiple transactions, **BUT YOU MUST USE A SEPARATE FORM FOR EACH CHECK YOU TRANSMIT.** Make sure to include Project Name, Project Tracking Number, and ASB Mitigation Tracking Number (if available) on the attached payment type.

<p><b>1. DATE:</b> _____</p> <p><b>TO:</b> _____                  Regional Manager</p> <p>_____</p> <p>Region Office Address</p>	<p><b>2. FROM:</b> _____                  Name</p> <p>_____</p> <p>Mailing Address</p> <p>_____</p> <p>City, State, Zip</p> <p>_____</p> <p>Telephone Number/FAX Number</p>
<p><b>3. RE:</b> _____                  Project Name as appears on permit/agreement</p>	

**4. AGREEMENT/ACCOUNT INFORMATION:** (check the applicable type)

2081 Permit   
  Conservation Bank   
  2835 NCCP   
  1802 Agreement   
  1600 Agreement   
  Other \_\_\_\_\_

\_\_\_\_\_

Project Tracking Number

**5. PAYMENT TYPE** (One check per form only): The following funds are being remitted in connection with the above referenced project:

Check information:

Total \$ \_\_\_\_\_ Check No. \_\_\_\_\_

Account No. \_\_\_\_\_ Bank Routing No. \_\_\_\_\_

a. Endowment: for Long-Term Management                      Subtotal \$ \_\_\_\_\_

b. Habitat Enhancement    Subtotal \$ \_\_\_\_\_

c. Security:

1. Cash Refundable Security Deposit                      Subtotal \$ \_\_\_\_\_

2. Letter of Credit    Subtotal \$ \_\_\_\_\_

1. Financial Institution: \_\_\_\_\_

2. Letter of Credit Number: \_\_\_\_\_

3. Date of Expiration: \_\_\_\_\_

<b>ACCOUNTING OFFICE USE ONLY</b>	
Description	FI\$Cal Coding
Speedchart (Project, Program, Reference, Fund)	
Reporting Structure	
Category	
Date Established: _____ By: _____	

ATTACHMENT 6

Amended and Restated ITP with Track Changes



**California Department of Fish and Wildlife**  
**Central Region**  
**1234 EAST SHAW AVENUE**  
**FRESNO, CALIFORNIA 93710**  
 California Endangered Species Act  
 Incidental Take Permit No. 2081-2024-038-04

**Aratina 2 Solar Project**  
**Major Amendment No. 1**

**I. Authority:**

This California Endangered Species Act (CESA) incidental take permit (ITP) is issued by the California Department of Fish and Wildlife (CDFW) pursuant to Fish and Game Code section 2081, subdivisions (b) and (c), and California Code of Regulations, title 14, section 783.0 et seq. CESA prohibits the take<sup>1</sup> of any species of wildlife designated by the California Fish and Game Commission as an endangered, threatened, or candidate species.<sup>2</sup> However, CDFW may authorize the take of any such species by permit pursuant to the conditions set forth in Fish and Game Code section 2081, subdivisions (b) and (c). (See Cal. Code Regs., tit. 14, § 783.4).

**Permittee:** 45MG 8me LLC

**Principal Officer:** Venkatesh Inti, Chief Development Officer  
 vinti@avantus.com  
 (430) 329-7154

**Contact Person:** Wendy Greene, Director, Permit Compliance  
 (209) 914-3553  
 wgreene@avantus.com

**Mailing Address:** Avantus  
 655 West Broadway, Suite 1550  
 San Diego, California 92101

**II. Amended ITP<sup>3</sup> Background:**

On November 18, 2025, CDFW issued ~~the~~ ITP No. 2081-2024-038-04 to 45MG 8me LLC, authorizing take of desert tortoise (*Gopherus agassizii*), Mohave ground squirrel (*Xerospermophilus mohavensis*), and western burrowing owl (*Athene cunicularia hypugaea*) (Covered Species) for the Aratina 2 Solar Project in Kern County, California (Project). The Project as described in the ITP as

<sup>1</sup>Pursuant to Fish and Game Code section 86, “‘take’ means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” (See also *Environmental Protection Information Center v. California Department of Forestry and Fire Protection* (2008) 44 Cal.4th 459, 507 [for purposes of incidental take permitting under Fish and Game Code section 2081, subdivision (b), “‘take’ ... means to catch, capture or kill”].)

<sup>2</sup>The definition of an endangered, threatened, and candidate species for purposes of CESA are found in Fish and Game Code sections 2062, 2067, and 2068, respectively.

<sup>3</sup>When this incidental take permit and attachments refer to the “ITP”, it means the “Amended ITP” unless the context dictates otherwise.

issued by CDFW included construction, operation, and maintenance of a 530-megawatt photovoltaic solar power-generating facility and up to 113 MW of battery energy storage. In issuing the ITP, CDFW found, among other things, that compliance with the Conditions of Approval of the ITP would fully mitigate impacts to the Covered Species and would not jeopardize the continued existence of the Covered Species.

Take of western Joshua tree (*Yucca brevifolia*) for the Project was previously authorized through emergency regulations adopted under Fish and Game Code section 2084 and CCR Title 14, § 749.10. Projects authorized for WJT take are limited *solely* to the take of the individuals identified in the Project census. However, the emergency regulations ~~does~~ do not include take authorization for newly germinated or clonal western Joshua tree individuals. On November 4<sup>th</sup>, 2025, CDFW received an amendment request from the Permittee requesting to add all western Joshua tree (~~*Yucca brevifolia*~~) (including seedbank, dead, newly germinated, and/or resprouted individuals) as a Covered Species to the ITP. On December 19<sup>th</sup>, 2025, Permittee requested to add Crotch's bumble bee (*Bombus crotchii*) as a Covered Species to the ITP.

CDFW now reissues this ITP (the Amended ITP). The Amended ITP includes all of the operative provisions as of the reissue date of this Amended ITP. Attachment 6 to this Amended ITP shows the specific red-line changes made to the ITP as a result of this major amendment (Amendment No. 1).

### III. Effective Date and Expiration Date of this ITP:

This ITP is effective as of the date signed by CDFW below. Unless renewed by CDFW, this ITP and its authorization to take the Covered Species shall expire on **December 31, 2061**.

Notwithstanding the expiration date on the take authorization provided by this ITP, Permittee's obligations pursuant to this ITP do not end until CDFW accepts as complete as required by Condition of Approval Final Mitigation Report of this ITP.

### IV. Project Location:

The Aratina 2 Solar Project (Project) is generally located within an unincorporated area in the southeastern corner of Kern County, south and west of the unincorporated community of Boron (See FIGURE 1, Regional Vicinity). The Project is located on the Boron and Lehman Ridge USGS 1:24000 quadrangles within Township 10N and 11N, Range 8W and 7W –Sections 2,33,34, and 45.

### V. Project Description:

The Project includes the construction, operation, and maintenance of a photovoltaic (PV) solar facility and associated infrastructure to generate up to 530 megawatts (MW) of renewable electrical energy and up to 113 MW of battery energy storage. The Project consists of three assessor's parcels totaling approximately 1,059 acres of privately-owned land. Electrical collector lines will be utilized to connect remote portions of the photovoltaic field to the Project substation. The "Project Area" is defined as

the sum of total potential area could be utilized to develop the photovoltaic energy facility, gen-tie lines, and collector lines (FIGURE 2).

The Project would be supported by an up to 230-kilovolt (kV) gen-tie overhead electrical transmission line originating from one or more on-site substations, running east through the Edwards Air Force Base (AFB) utility corridor and terminating at the Kramer Substation in San Bernadino County. The Project's permanent facilities would include service roads, PV panels supported on solar trackers, a power collection system, communication cables, overhead transmission lines, electrical switchyards, substations, a battery energy storage system (BESS), stormwater retention basins, weather stations, and operations and maintenance facilities including water storage and security fence.

Construction equipment that may be used during Project activities includes earthwork scrapers, excavators, dozers, water trucks, paddlewheels, haul vehicles, graders, and other similar heavy equipment. Construction traffic would access the Project from Gephart Road, Borax Road, Boron Avenue, and/or 20 Mule Team Road. Due to the size of the Project, parking for all employee vehicles could be accommodated on-site if a shuttle service is not provided. Construction worker parking areas would be located within the Project site.

Initial construction is expected to occur between 6:00 am and 5:00 pm, Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Nighttime construction activities may include all activities described above associated with construction, with the exception of the use of pneumatic tools for driving solar foundation support posts, the use of any auger drill rigs, and scrapers. Nighttime construction activities may also include refueling equipment, staging material for the following day's construction activities, quality assurance/control, security patrols, and commissioning. All nightwork to occur outside the exclusion fencing will be coordinated in advance with written approval by CDFW.

Construction materials and supplies would be delivered by truck. All construction materials and supplies would be stored on-site at the Project site and within proximity to the area where work would be undertaken. For work along the gen-tie routes, staging/laydown areas within the affected easements or rights-of-way will be available during the construction phase and off-site lands will not be affected. Truck deliveries would normally occur during daylight hours. However, there would be offloading and/or transporting on weekends and during evening hours.

Construction of the Project will occur over approximately 18 months. Operation and maintenance (O&M) is anticipated to continue for over 35 years after construction is complete. Project activities are presented below as initial construction and ongoing O&M following construction.

### Construction

Construction of the Project includes the following activities:

- Geotechnical Drilling. Subsurface drilling for soil borings, excavation of test pits, and field resistivity testing will be conducted as needed prior to construction to inform final design specifications. Test pits excavations will be 2 feet wide by 7 feet long by 8 feet deep. Approximately 15 gallons of subsurface material will be collected and the test pits immediately backfilled with native soil.
- Site Preparation, Grading, and Earthwork. The Project site will be cleared and graded as needed to allow for the installation of the solar arrays, energy storage facility, related infrastructure, access driveways, and temporary construction staging areas. Earthmoving activities will be limited to the construction of the internal access roads, solar panel arrays, substations, BESS, water storage tank and any associated water treatment systems, gentle lines, and for storm water protection or storage (detention) facilities. Water trucks will be used for dust suppression, soil compaction, and grading. Stabilized construction entrances and exits will also be installed at the project entrance driveways to ensure that potential for tracking of sediment onto adjacent public roadways is minimized.
- Site Access, Security, and Security Fencing. The perimeter of each the Project site will be enclosed within a chain link security fence measuring up to 8 feet in height (from finished grade). Additionally, security measures such as barbed wire, controlled access points, security and instruction alarms, security camera systems, sensor lights, and/or security guard vehicle patrols to deter trespassing and/or unauthorized activities will be included. Low voltage fencing, as a security measure, will not be used.

No improvements to existing off-site roadways will be required to provide construction (or permanent) access to the Project site. Controlled access gates will be maintained at the main entrances to each of the Project site. Project access would be provided to off-site emergency response teams (i.e., fire department) that would respond in the event of an “after-hours” emergency. Enclosure gates would be manually operated with a key provided in an identified key box location.

For each of the Project site, interior roadway alignments will be finalized once placement of the solar panels is determined.

- Panel Installation. The Project will use PV panels or modules [including but not limited to concentrated photovoltaic technology (CPV) or bi-facial technology, which have similar rectangular shapes, sizes and thickness] on mounting frameworks to convert sunlight directly into electricity. The solar array fields would be arranged in groups called “blocks” with inverter stations generally located centrally within the blocks. Blocks would produce direct electrical current (DC), which is converted to alternating electrical current (AC) at the inverter stations.

Maximum panel height will be 20 feet, depending on the mounting system used and County building codes. Foundations for mounting structures will be installed up to 10 feet deep, depending on the structure, soil conditions, and wind loads, and may be encased in concrete or utilize small concrete footings.

- Battery Energy Storage System. The Project Area will include one BESS, located at or near a substation/switchyard (on-site or shared) and/or at the inverter stations. The BESS will be up to 113 MW-AC in capacity and encompass up to 25 acres in total area. The BESS modules are approximately 40 feet in length by 8 feet in width by 8 feet in height and will be housed on pad- or post-mounted, stackable metal structures, but may also be housed in a dedicated building. The maximum height of a dedicated structure will not exceed 25 feet.
- Output from the inverter stations will be transferred via electrical conduits and electrical conductor wires to up to three substation(s) or switchyard(s) (collectively referred to as a “substation”). The Project will build up to three substations. Each substation may contain several components, including auxiliary power transformers, distribution cabinets, revenue metering systems, microwave transmission towers, and voltage switch gear. Each substation would occupy an area of approximately 200 feet by 200 feet, secured separately by an additional chain-link fence, and sited to locate along the perimeter of the Project.

Substations will generally include a small control building (roughly 500 square feet) standing approximately 10 feet tall constructed of either prefabricated concrete or steel housing with rooms for the voltage switch gear and the metering equipment, a room for the station supply transformer, and a separate control technology room in which the main computer, the intrusion detection system, and the main distribution equipment are housed. Components of this building (e.g., control technology room and intrusion detection system) may alternatively be located at the O&M facilities.

- Operations and Maintenance Facilities. O&M buildings of approximately 40 feet by 80 feet in size, and approximately 15 feet in height, with associated on-site parking (unpaved) will be constructed. The O&M buildings may be co-located with the substations and would be steel framed, with metal siding and roof panels. The O&M buildings will include an office, repair building/parts storage room(s), a control room, restroom, and septic tank and leach field system. Any designated O&M building on the plans not built will be developed with solar panels.
- Collection, Inverter, and Transformer Systems. PV energy will be delivered via cables to inverter stations, which will be located generally near the center of each block. Inverter

stations will be comprised of one or more inverter modules with a rated power of up to 5 MW each, a unit transformer, and voltage switch gear. The unit transformer and voltage switch gear will be housed in steel enclosures, while the inverter module(s) will be housed in cabinets. The inverter station may lie within an enclosed or canopied metal structure, on a skid or concrete mounted pad. Additionally, motion-sensitive cameras may be installed within the solar fields in proximity to the inverters for purposes of security.

- Gen-Tie Transmission Line. Power generated by the Project would be delivered from the on-site substations to the existing Kramer Substation by up to 230kV overhead electrical transmission lines. A combination of monopoles, dead end structures, and h-frames will be used for the transmission line, with concrete foundations at each structure of up to 18 feet in depth. Fiber cable/communication line will be installed within a 6-inch trench within the access road that runs parallel with the transmission line. The trench will be mechanically excavated and backfilled with native material, per design specifications. Construction of the 6.5-mile gen-tie line will occur throughout an existing 150-foot wide Edwards Air Force Base utility corridor.
- Meteorological Station. A solar meteorological station, approximately 10 feet by 2 feet in size, will be located on the Project site and will include solar energy (irradiance) meters, in addition to an air temperature sensor and wind anemometer. The maximum height of this equipment would be up to 20 feet.

Project Site Lighting. Night lighting will be installed at the access gates, substations, O&M buildings, and inverters to allow for access and emergency maintenance. Night lighting would provide O&M personnel with illumination for both normal and emergency operating conditions. The minimum illumination needed to ensure worker safety and security on-site would be provided. All night lighting installed would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent areas.

- Water Storage Tanks. Each phase would have up to two above-ground water storage tanks with a total capacity of up to 50,000 gallons. These tanks may be placed near the O&M buildings. Each tank may be up to 30 feet in diameter.
- Stormwater Retention Basins. Up to 30 earthen stormwater retention basins of varying shapes and sizes will be installed as part of the Project, as determined by final engineering requirements. However, slopes will be 3:1 or flatter, constructed from the excavated basin material and will be compacted and covered with an erosion control blanket. Basins will collect stormwater runoff and will typically be placed between the perimeter road and the security fence and excavated to support a 1-foot (above ground surface) maximum water surface elevation. All stormwater retention basin berms will be tested and verified by the geotechnical consultant.

### Operations and Maintenance

Ongoing operations and maintenance activities following construction of the Project includes the following:

- Facility Maintenance. Facility maintenance may include minor ground disturbing activities and/or the replacement or repair of inverters, wiring, PV modules, or other Project infrastructure. Road repair will occur including the placement or replacement of gravel, erosion repair, and reconstruction of Arizona crossings. Up to 20 full-time O&M personnel may work at the site at a given time, driving pick-up trucks or operating specialized maintenance equipment. Routine line patrols and insulator washing, pole and tower repair or replacement, insulator replacement, cross arm replacement, anchor and guy replacement, restringing corridors, and road maintenance may occur along the transmission line.
- Solar Panel Washing. PV module washing will be required up to four times per year and is expected to take 10 days per washing activity. The activity will use up to five staff and will use approximately four acre-feet of water per year. Water will come from an on-site water well or will be trucked in from an offsite water source. This water may also be used to wash equipment or other non-sanitary uses.
- Monitoring Electricity Generation. Personnel will be visiting the site and driving along established access roads for diagnostics testing and site inspection.
- Providing Site Security. Security guard vehicle patrols will occur on a regular basis.
- Vegetation Maintenance. Vegetation maintenance will occur as needed and will include the use of string trimmers, mowing, hand pulling of weeds, and herbicide use.
- Hazardous Materials Management. The following materials are expected to be used during operations and maintenance of the Project: insulating oil, lubricating oil, various solvents and detergents, and gasoline or diesel fuels. Hazardous wastes will be managed, handled, stored, and transported in accordance with applicable local and State regulations. Spill prevention and containment for construction and operation of the Project will adhere to the Environmental Protection Agency's guidance on Spill Prevention Control and Countermeasures.

### **VI. Covered Species Subject to Take Authorization Provided by this ITP:**

This ITP covers the following species:

<u>Name</u>	<u>CESA Status</u> <sup>4</sup>
1. Desert tortoise ( <i>Gopherus agassizii</i> )	Endangered <sup>5</sup>
2. Mohave ground squirrel ( <i>Xeromorphophilus mohavensis</i> )	Threatened <sup>6</sup>
3. Western burrowing owl ( <i>Athene cunicularia hypugaea</i> )	Candidate <sup>7</sup>
4. <u>Crotch's bumble bee (<i>Bombus crotchii</i>);</u>	Candidate <sup>8,7</sup>
5. <u>Western Joshua tree (<i>Yucca brevifolia</i>)</u>	Candidate <sup>9,7</sup>

These species and only these species are the “Covered Species” for the purposes of this ITP.

**VII. Impacts of the Taking on Covered Species:**

Project activities and their resulting impacts are expected to result in the incidental take of individuals of the Covered Species, including the associated seedbank of western Joshua tree. The initial construction and O&M activities described above expected to result in incidental take of individuals of the Covered Species include clearing, grubbing, and grading; removing vegetation; leveling (cut/fill); backfilling and compacting of soil; pouring concrete; operating motorized heavy equipment; drilling, pile driving, and/or vibrating piles or posts; construction and use of temporary staging and storage areas; grading of new access and perimeter roads; trenching and excavation; building of O&M buildings, substations, BESS, inverters, and transformers; installing solar panel support and mount systems; installing gen-tie and collector lines and poles; transporting construction materials and other Project-related traffic; operating vehicles and equipment during O&M; repairing or replacing cables, piles, fencing, or other infrastructure; managing vegetation; washing solar panels; and other Project-related activities described in the Project Description section of this ITP (Covered Activities).

Incidental take of individuals of the Covered Species in the form of mortality (“kill”) may occur as a result of Covered Activities such as vehicle/equipment strikes due to increased Project-related traffic for site preparation and hauling of materials and spoils resulting of the loss of individuals including young, overwintering queens, fledglings, or eggs due to abandonment or destruction of burrows/nests/hibernaculum during grubbing, grading, ~~activities~~ or construction that occur in close proximity to burrows/nests during the Covered Species reproductive/nesting season; crushing, suffocation, or burying of individuals or disturbance to seedbank by heavy equipment, soil, or

<sup>4</sup> Under CESA, a species may be on the list of endangered species, the list of threatened species, or the list of candidate species.

<sup>5</sup>See Cal. Code Regs. tit. 14 § 670.5, subd. (a)(4)(E).

<sup>6</sup> See *Id.*, subd. (b)(6)(A).

<sup>7</sup>The species status may change following the decision of the Fish and Game Commission to designate the species as threatened or endangered but if there is such a designation, the species will remain a Covered Species.

~~<sup>8</sup>The species status may change following the decision of the Fish and Game Commission to designate the species as threatened or endangered but if there is such a designation, the species will remain a Covered Species.~~

~~<sup>9</sup>The species status may change following the decision of the Fish and Game Commission to designate the species as threatened or endangered but if there is such a designation, the species will remain a Covered Species.~~

materials; collapse or excavation of burrows; entombment of individuals or seedbank during earthwork; nest burrow collapse associated with vehicle or equipment parking or storage, vegetation removal, grading, excavating; entrapment and desiccation within trenches, open pipes, and uncovered excavations; removal and disposal of individual trees, seedlings, or seedbank; crushing or damaging germinating seeds or emergent seedlings by heavy equipment or the storage of soil or materials; creating fugitive dust that may hinder photosynthesis; and noise and ground vibration that could cause individuals to leave or flush from burrows at inappropriate times increasing stress, overheating, and exposure to predation and subsequent loss of eggs, young, or fledglings due to nest abandonment.

Incidental take of individuals of the Covered Species may also occur from the Covered Activities in the form of pursue, catch, capture, or attempt to do so with entrapment of fallen individuals into trenches or excavations, with corralling by installation of temporary species exclusion fencing, with live trapping and capture and relocation, when eggs or individuals are salvaged after parental nest abandonment has occurred, or implementation of other take minimization measures required by this ITP, or with burrow excavation, and with relocation or translocation of Covered Species. Direct impacts to Covered Species individuals collected from the Project site may also occur as part of an approved captive breeding, translocation, and research effort conducted in collaboration with CDFW. These direct impact activities may reduce the viability of eggs and/or survival of Covered Species or affect migrating individuals. These direct impacts may also affect the fitness of young raised near the Project due to reduced or disrupted foraging opportunities that reduce the ability of parents to acquire food for their dependent young. Ground-disturbing activities may result in a temporary reduction of prey species or vegetative forage for Covered Species and have impacts on nesting success and successful raising of young.

Indirect impacts to the Covered Species from the Covered Activities include noise and vibration, fugitive dust, and increased human activity. Noise and vibration could cause physiological and/or behavioral disruptions that may interfere with breeding and foraging, result in nest abandonment, and a loss of fitness in dependent young resulting from interruptions to brooding and/or feeding schedules, due to impaired or interrupted foraging and nesting opportunities and because forage acquired further away from the nest is more energetically expensive for parents or worker bumble bees acquiring food for ~~their~~ dependent young.

The areas where authorized take of the Covered Species is expected to occur include the solar arrays, inverters, substations, collector lines, access road systems, BESS, gen-tie poles, and all constructed facilities within the solar array areas, the collector line corridors, and the generation tie-line corridors (collectively, the Project Area).

Incidental take of the Covered Species is expected throughout the entire 1,059-acre Project Area, all of which will be a permanent loss of habitat for the Covered Species.; In addition to habitat impacts, Sspecifically; for Crotch's bumble bee (CBB), up to two active nests following minimization efforts,

~~and no more than 30 individuals outside of the nest, are contemplated to be taken the allowable take limits over the duration of this ITP. Specifically for western Joshua tree (WJT), take of removal of more than 50 individuals over the duration of this ITP may require relocation or translocation. all of which will be a permanent loss of habitat for the Covered Species.~~ Impacts of the authorized taking also include adverse impacts to the Covered Species related to temporal losses, increased habitat fragmentation and edge effects, and the Project's incremental contribution to cumulative impacts (indirect impacts). Short-term and long-term indirect impacts include: stress resulting from noise and vibrations; increased exposure or stress from disorientation; stress resulting from capture, and relocation; introduction or spread of invasive species resulting in lower nutritional value for Covered Species; long-term effects due to increased pollution, displacement from preferred habitat, increased competition for food and space, and increased vulnerability to predation and disease; on-going O&M-related noise and lighting; fugitive dust; changes in drainage patterns that favor different vegetative growth; loss of burrowing habitat used for shelter and reproduction; ~~and~~ competition between displaced individuals into unsuitable areas or areas at carrying capacity interfering with denning, foraging, and reproduction; ~~mortality of Covered Species obligate pollinating Yucca moth (*Tegeticula synthetica*) during its dormancy within the soil or in its flight phase leading to compromised sexual recruitment of new individual Covered Species in the Project Area vicinity; suppressed activity of the Yucca moth due to artificial lighting at night during construction or during the long-term operation of the facility; mortality or disruption to the behavior of seed dispersing rodents leading to compromised germination success; loss of nurse plants compromising seedling emergence and survival; elimination or reduction of photosynthesis and evapotranspiration efficiency due to accumulated fugitive dust from Covered Activities; destruction of macro- and micro-vegetation elements; introduction and invasion of non-native plant species due to disturbance of habitat conditions that leads to invasive species outcompeting native annual plant community establishment; invasive species colonization resulting in increased anthropogenic wildfire risk with increased frequency and intensity for adjacent habitat; increased erosion associated impacts to individuals located near widened roadways or hardscapes due to concentrated runoff; compacting of soils resulting in decreased seedling survival and infiltration rates; stress or damage to individuals; long-term effects due to loss of suitable habitat and decline of the local population; severe soil impacts such as leaving subsoil on the surface and disturbance to stabilized soil crusts and biotic components leading to reduced germination due to loss of organic material and soil nutrients, and moisture retention.~~

~~In addition, the Project has the option to participate in the Mohave ground squirrel captive propagation, translocation, and research conducted by the Mohave Ground Squirrel Conservation Council (MGS CC). While a Mohave ground squirrel receiver site have already been approved for the Project, participation in the research will allow Mohave ground squirrel trapped from the Project site to be translocated to an alternative receiver site determined by the MGS CC.~~

### **VIII. Incidental Take Authorization of Covered Species:**

This ITP authorizes incidental take of the Covered Species and only the Covered Species. With respect

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 No. 2081-2024-038-04  
 45MG 8ME LLC;  
 ARATINA 2 SOLAR PROJECT

to incidental take of the Covered Species, CDFW authorizes the Permittee, its employees, contractors, and agents to take Covered Species incidentally in carrying out the Covered Activities, subject to the limitations described in this section and the Conditions of Approval identified below. This ITP does not authorize take of Covered Species from activities outside the scope of the Covered Activities, take of Covered Species outside of the Project Area, take of Covered Species resulting from violation of this ITP, or intentional take of Covered Species except for capture and relocation of Covered Species as authorized by this ITP.

**IX. Conditions of Approval:**

Unless specified otherwise, the following measures apply to all Covered Activities within the Project Area, including areas used for vehicular ingress and egress, staging and parking, and noise and vibration generating activities that may/will cause take. CDFW’s issuance of this ITP and Permittee’s authorization to take the Covered Species are subject to Permittee’s compliance with and implementation of the following Conditions of Approval:

1. **Legal Compliance:** Permittee shall comply with all applicable federal, ~~s~~State, and local laws in existence on the effective date of this ITP or adopted thereafter.
2. **CEQA Compliance:** Permittee shall implement and adhere to the mitigation measures related to the Covered Species in the Biological Resources section of the Environmental Impact Report (SCH No.: 2021020513 certified by Kern County on 10/12/2021 as lead agency for the Project pursuant to the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.).
3. **LSA Agreement Compliance:** Permittee shall implement and adhere to the mitigation measures and conditions related to the Covered Species in the Lake and Streambed Alteration Agreement (LSAA) (Notification No. EPIMS-KER-53288-R4 for the Project executed by CDFW pursuant to Fish and Game Code section 1600 et seq.).
4. **ITP Time Frame Compliance:** Permittee shall fully implement and adhere to the conditions of this ITP within the time frames set forth below and as set forth in the Mitigation Monitoring and Reporting Program (MMRP), which is included as ATTACHMENT 1 to this ITP.

**5. General Provisions:**

**5.1. Designated Representative.** Before starting Covered Activities, Permittee shall designate a representative (Designated Representative) responsible for communications with CDFW and overseeing compliance with this ITP. Permittee shall notify CDFW in writing before starting Covered Activities of the Designated Representative’s name, business address, and contact information, and shall notify CDFW in writing if a substitute

Designated Representative is selected or identified at any time during the term of this ITP.

- 5.2. Designated Biologist(s) and Designated Monitor(s).** Permittee shall submit to CDFW in writing the name, qualifications, business address, and contact information of the Designated Biologist(s) and Biological Designated Monitor(s) using the Biologist Resume Form (ATTACHMENT 2) or another format containing the same information for CDFW review and written approval before starting Covered Activities. The Designated Monitor(s) may assist the Designated Biologist(s) in compliance monitoring under the direct supervision of the Designated Biologist(s).

Permittee shall ensure that the Designated Biologist(s) are knowledgeable and experienced in the biology, natural history, life cycle, flowering period, types of reproduction and associated components such as the pollinating Yucca moth, seed caching rodents, and rhizomal growth, trapping, handling, and relocating or other exclusion techniques, as permitted, and the excavation of burrows, as applicable to each of the Covered Species. Permittee shall ensure that the Designated Monitor(s) are knowledgeable and experienced in the biology, natural history, and construction monitoring of the Covered Species. ~~Designated Biologists for CBB shall have completed the Bumble Bee Atlas training on Ecology and Conservation of Bumble Bees and Survey Protocol and Species Identification for California, and experience surveying, collecting, and identifying bumble bees in California.~~ The Designated Biologist(s) and Designated Monitor(s) shall be responsible for monitoring Covered Activities to help minimize and fully mitigate or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain CDFW approval of the Designated Biologist(s) and Designated Monitor(s) in writing before starting Covered Activities and shall also obtain approval in advance, in writing, if the Designated Biologist(s) or Designated Monitor(s) must be changed.

- 5.3. Designated Biologist(s) and Designated Monitor(s) Authority.** To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist(s) or Designated Monitor(s) shall immediately stop any activity that does not comply with this ITP and/or order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species. Permittee shall provide unfettered access to the Project Area and otherwise facilitate the Designated Biologist(s) and Designated Monitor(s) in the performance of their duties. If the Designated Biologist(s) or Designated Monitor(s) is/are unable to comply with the ITP, then they shall notify the CDFW Representative immediately. Permittee shall not enter into any agreement or contract of any kind, including but not limited to non-disclosure agreements and confidentiality agreements, with its contractors and/or the Designated Biologist(s) or Designated Monitor(s) that prohibit or impede open communication with CDFW, including but not limited to

providing CDFW staff with the results of any surveys, reports, or studies or notifying CDFW of any non-compliance or take. Failure to notify CDFW of any non-compliance or take or injury of a Covered Species as a result of such agreement or contract may result in CDFW taking actions to prevent or remedy a violation of this ITP.

- 5.4. Education Program.** Permittee shall conduct an education program for all persons employed or otherwise working in the Project Area before starting Covered Activities. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status pursuant to CESA including legal protection, recovery efforts, penalties for violations, and Project-specific protective measures described in this ITP.

Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Project Area. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Project Area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be repeated at least once annually for long-term and/or permanent employees that will be conducting work in the Project Area.

- 5.5. Construction Monitoring Documentation.** The Designated Biologist(s) and Designated Monitor(s) shall maintain construction-monitoring documentation on-site in either hard copy or digital format throughout the construction period, which shall include a copy of this ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring documentation is available for review at the Project Area upon request by CDFW.

- 5.6. Trash Abatement.** Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in animal-proof containers and removed, ideally at daily intervals but at least once a week, to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs.

- 5.7. Dust Control.** Permittee shall reduce fugitive dust by prohibiting ground disturbing Covered Activities when wind speed exceeds 25 miles per hour and limiting vehicle speeds on unpaved roads to 20 miles per hour. Permittee shall implement dust control measures during Covered Activities to facilitate visibility for monitoring of the Covered

Species by the Designated Biologist. Permittee shall keep the amount of water used to the minimum amount needed and shall not allow water to form puddles. Dust palliatives or other chemical soil stabilizers shall not be used during construction, ~~and~~ O&M, ~~or decommissioning~~ activities without specific prior written approval by CDFW.

- 5.8. Erosion Control Materials.** Permittee shall prohibit use of erosion control materials potentially harmful to Covered Species and other wildlife, such as monofilament netting, photodegradable mesh (erosion control matting) or similar material, in potential Covered Species' habitat. Permittee shall only deploy erosion control mats, blankets, or coir rolls that consist of natural-fiber, biodegradable materials. Rock used for road improvement or other purposes shall be no greater than 4 inches in diameter unless the interstitial spaces are filled with 2-inch or smaller diameter rock to establish a passable surface for adult and juvenile desert tortoise.
- 5.9. Delineation of Property Boundaries.** Before starting Covered Activities, Permittee shall clearly delineate the boundaries of the Project Area with fencing, stakes, or flags. Permittee shall restrict all Covered Activities to within the fenced, staked, or flagged areas. Permittee shall maintain all fencing, stakes, and flags until the completion of Covered Activities in the Project Area and remove and properly dispose of any temporary delineation materials upon completion of activities in the Project Area.
- 5.10. Delineation of Habitat.** Permittee shall clearly delineate habitat of the Covered Species within the Project Area with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize the disturbance of Covered Species' habitat. All delineation materials shall be removed and disposed of properly upon completion of activities in the Project Area.
- 5.11. Project Access.** Project-related personnel shall access the Project Area using existing routes, or routes identified in the Project Description and shall not cross Covered Species' habitat outside of or en route to the Project Area. Permittee shall restrict Project-related vehicle traffic to established roads, staging, and parking areas. Permittee shall ensure that vehicle speeds do not exceed 20 miles per hour to avoid Covered Species on or traversing the roads. If Permittee determines construction of routes for travel are necessary outside of the Project Area, the Designated Representative shall contact CDFW for written approval before carrying out such an activity. CDFW may require an amendment to this ITP, among other reasons, if additional take of Covered Species will occur as a result of the Project modification.
- 5.12. Staging Areas.** Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project Area using, to the extent possible, previously disturbed areas. Additionally, Permittee shall

not use or cross Covered Species' habitat outside of the marked Project Area unless provided for as described in Condition of Approval Project Access of this ITP.

- 5.13. Hazardous Waste.** Permittee shall immediately stop and, pursuant to pertinent State and federal statutes and regulations, arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the Project Area and shall properly contain and dispose of any unused or leftover hazardous products off-site.

Permittee shall ensure that all fueling, or maintenance of vehicles or equipment shall occur within established O&M buildings or designated staging areas and shall not occur within 200 feet of Covered Species burrows, unless approved in advance and in writing by CDFW.

- 5.14. CDFW Access.** Permittee shall provide CDFW staff with reasonable access to the Project and mitigation lands under Permittee control, and shall otherwise fully cooperate with CDFW efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.
- 5.15. Refuse Removal.** Upon completion of Covered Activities, Permittee shall remove from the Project Area and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.
- 5.16. Lighting.** All temporary and permanent outdoor lighting shall be aimed at the ground, shielded to prevent light from shining skyward, of minimum wattage necessary for safety and activity, and of motion-sensor type to prevent continuous nighttime lighting.

— **Herbicide Use.** ~~Permittee~~ Permittee shall limit herbicide use to treat and control invasive plant species only and shall only apply herbicide after hand or mechanical efforts have been ineffective. Permittee shall ensure that all application of herbicide is done by a licensed applicator in accordance with all applicable federal, State, and local laws and regulations. Herbicide sprays shall be used only when wind speeds are less than 10 miles per hour and all sprays shall contain a dye to prevent overspray. If herbicides must be used, Permittee shall consult with CDFW and obtain written approval from CDFW before using any herbicides. Further, Permittee shall follow Condition of Approval Additional Pesticide Application Measures for CBB as applicable.

- ~~**5.17. Permittee shall avoid spraying herbicides on plants that are in bloom to minimize direct or indirect contact with CBB. These plants may serve as obligatory resources that a CBB**~~

~~individual or colony is reliant upon. Instead, the Permittee shall target other vegetive phases when the chemicals are most effective as recommended by the manufacturer. Pesticides shall be applied directly to the targeted pest or site, and always according to the label. Appropriate weather conditions and other applications of best management practices, as well as label precautions, shall always be followed.~~

**5.18. Dogs.** Permittee shall prohibit domestic and working dogs from the Project Area and site access routes during Covered Activities, except those in the possession of authorized security personnel or federal, State, or local law enforcement officials.

**5.19. Wildfire Avoidance.** Permittee or Permittee’s contractors shall minimize the potential for human-caused wildfires by carrying water or fire extinguishers and shovels in all Project-related vehicles and heavy equipment. The use of shields, protective mats, or use of other fire preventative methods shall be used during grinding and welding to minimize the potential for fire. Personnel shall be trained regarding the fire hazard for wildlife as part of the worker education program described in Condition of Approval Education Program above.

**5.20. Permanent Security Fencing Plan.** Permittee shall submit a Permanent Security Fencing Plan for CDFW review and written approval before starting Covered Activities, to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) below.

The Permanent Security Fencing Plan shall include, but not be limited to the fencing materials, design, installation methods, installation locations, post-construction augmentation plans, and on-going maintenance plans. Permanent security fencing around the solar panel “blocks” and the Project Area as a whole (excluding the O&M building and substation), shall be modified to allow for small animal permeability following the construction phase by leaving a 4 to 6-inch gap from the ground to the bottom of the fence, or other design approved by CDFW. Permittee shall ensure vegetation, debris, and materials do not block fence impacting permeability.

**5.21. On-Site Drainage Basin Entrapment Prevention.** Permittee shall ensure that final design of the on-site stormwater drainage basins have adequate elements to ensure that Covered Species can escape should one inadvertently enter the basin or elements designed to preclude entry. Permittee shall submit a Basin Design Plan with elements necessary for Covered Species escape and/or entry prevention for review and approval by CDFW prior to implementation of Covered Activities related to basin construction and/or installation.

## **6. Monitoring, Notification and Reporting Provisions:**

- 6.1. Notification Before Commencement and Pre-Construction Survey(s).** The Designated Representative shall notify CDFW before starting Covered Activities. The Notification shall include the applicable pre-construction surveys and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.
- 6.2. Lapse in Continuity of Work Activities.** Should an unplanned or planned lapse of Covered Activities occur for more than 30 calendar days, a new Notification Before Commencement and Pre-Construction Survey shall be performed and submitted per Condition of Approval Notification Before Commencement and Pre-Construction Survey above.
- 6.3. Notification of Non-Compliance.** The Designated Representative or Designated Biologist(s) shall immediately notify CDFW if the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP and/or the MMRP. The Designated Representative shall follow up within 24 hours with a written report to CDFW describing, in detail, any non-compliance with this ITP and suggested measures to remedy the situation.
- 6.4. Compliance Monitoring.** The Designated Biologist(s) shall be on-site daily, for the duration of the day, when Covered Activities occur during the entire initial construction period and on site daily, for the duration of the day, when ~~vegetation- or ground-~~vegetation-disturbing ~~Covered Activities~~activities occur during the O&M phase, ~~unless~~ Allowances for reduced compliance monitoring frequencies, specific for desert tortoise (DT), may be considered when temporary exclusion fencing has been installed and properly maintained, in accordance with Conditions of Approval DT Temporary Exclusion Fencing Plan and DT Temporary Exclusion Fencing Installation, Augmentation, and Removal ~~below~~. Allowance requests shall be submitted to CDFW for review and written approval.

~~Ground- and v~~Vegetation- and ground-disturbing activities include any action that modifies the existing ground or vegetated surface. Examples include the use of string trimmers, mowing, application of herbicide, washing of solar panels, trenching, grading, etc. Operation of vehicles on established roads that have been properly maintained is not considered a ~~vegetation- or ground-~~vegetation-disturbing activity. The Designated Biologist(s) or Designated Monitor(s) shall otherwise be on-site during the construction period a minimum of once every 14 days during periods of inactivity and after clearing, grubbing, and grading are completed. The Designated Biologist(s) shall conduct compliance inspections to: (1) minimize incidental take of the Covered Species; (2) prevent unlawful take of species; (3) check for compliance with all measures of this ITP; (4) check all exclusion zones; (5) ensure that signs, stakes, and fencing are intact,

and that Covered Activities are only occurring in the Project Area; (6) maintain an on-going account of the number of acres that are permanently disturbed by the Project; and (7) document the Covered Activities that occurred.

The Designated Representative, Designated Biologist(s), or Designated Monitor(s) shall prepare daily written observation and inspection records summarizing oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by this ITP.

**6.4.6.5. Quarterly Compliance Report (Construction Phase).** The Designated Representative or Designated Biologist(s) shall compile the observation and inspection records identified in Condition of Approval Compliance Monitoring into a Quarterly Compliance Report (QCR) during the initial construction period and into an Annual Status Report (Condition of Approval Annual Status Report (Construction Phase and O&M Phase)) during the O&M phase and submit it to CDFW along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Quarterly Compliance Reports shall be submitted via e-mail to CDFW's Regional Representative, Regional Office, and Headquarters CESA Program no later than the 15<sup>th</sup> day of the month following the reporting period. At the time of this ITP's approval, the Regional Representative is Jim Vang ([Jim.Vang@wildlife.ca.gov](mailto:Jim.Vang@wildlife.ca.gov)), the Regional Office e-mail is [RRR.R4@wildlife.ca.gov](mailto:RRR.R4@wildlife.ca.gov), and the Headquarters CESA Program e-mail is [CESA@wildlife.ca.gov](mailto:CESA@wildlife.ca.gov). CDFW may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If CDFW determines the reporting schedule must be changed, CDFW will notify Permittee in writing of the new reporting schedule.

**6.5.6.6. Annual Status Report (Construction Phase and O&M Phase).** Permittee shall provide CDFW with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of this ITP and continuing until CDFW accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all QCRs for that year (Condition of Approval Quarterly Compliance Report (Construction Phase)); (2) a record of the Education Program training sessions provided over the reporting year (Condition of Approval Education Program); (3) a general description of the status of the Project Area and Covered Activities, including actual or projected completion dates, if known; (4) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; (5) a summary of findings from all pre-construction surveys conducted, including but not limited to, the number of times a Covered Species, ~~or~~ their burrow, or nest was encountered, locations, if avoidance was achieved, and if not, what measures were implemented; (6) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (7) all available

information about Project-related incidental take of the Covered Species including running take totals for Crotch's bumble bee nests and individuals and western Joshua tree individuals; (8) a written and mapped accounting of the number of acres subject to both temporary and permanent disturbance, both for the prior calendar year, and a total since ITP issuance; and (9) information about other Project impacts on the Covered Species. The ASR shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.

**6.6.6.7. CNDDDB Observations.** The Designated Biologist(s) shall submit all observations of Covered Species to CDFW's California Natural Diversity Database (CNDDDB) within a minimum of 60 calendar days of the observation. The Designated Biologist(s) shall include copies of the submitted forms with the next QCR or ASR, whichever is submitted first relative to the observation.

**6.7.6.8. Construction Phase Conditions of Approval Evaluation Report.** No later than 45 days after completion of all initial construction activities for the solar site and gen-tie line, Permittee shall provide CDFW with a Conditions of Approval Evaluation Report. The Designated Biologist shall prepare the Conditions of Approval Evaluation Report which shall include, at a minimum: (1) a summary of all QCRs and all ASRs; (2) beginning and ending dates of covered activities for the construction phase; (3) a copy of the table in the MMRP with notes showing when each of the construction phase conditions were implemented and an assessment of the effectiveness of each of this ITP's Conditions of Approval associated with the construction of the Project in minimizing and mitigating Project impacts on Covered Species; (4) recommendations on how the conditions might be changed to more effectively minimize take and mitigate the impact of future projects on Covered Species; and (5) any other pertinent information. The Initial Construction Phase Conditions of Approval Evaluation Report shall be submitted via e-mail to the entities identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.

**6.8.6.9. Final Mitigation Report.** No later than 45 calendar days after completion of all mitigation measures, Permittee shall provide CDFW with a Final Mitigation Report. The Designated Biologist(s) shall prepare the Final Mitigation Report which shall include, at a minimum: (1) a summary of all QCRs and ASRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more

effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information. The Final Mitigation Report shall be submitted via e-mail the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.

**6.9.6.10. As-Built Development Plans.** No later than 45 calendar days after completion of all initial construction activities, Permittee shall submit as-built development plans. The as-built plan sheets shall delineate and quantify the extent of permanent Project features, including roads, utilities and all other facilities and features associated with the Project. The as-built plans shall include an estimate of the permanent disturbance during construction by highlighting the estimated disturbance areas on the as-built plan sheets. The plan scale shall be 1":250' (one inch to 250 feet) or smaller. As-built plans shall be derived from survey data acquired after initial Project construction has been completed and shall be verified by the Designated Biologist(s). The as-built plans shall be submitted in electronic format (e-mail or other available document repository/share site) to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.

**6.10.6.11. Notification of Take or Injury.** Permittee shall immediately notify the Designated Biologist(s) if a Covered Species is taken or injured by a Project-related activity, or if a Covered Species is otherwise found dead or injured within the vicinity of the Project. The Designated Biologist(s) or Designated Representative shall provide initial notification to CDFW via email to the Regional Office at [RRR.R4@wildlife.ca.gov](mailto:RRR.R4@wildlife.ca.gov). The initial notification to CDFW shall include information regarding the location, species, number of animals taken or injured, and the ITP Number. Following initial notification, Permittee shall send CDFW a written report within two calendar days. The report shall include the date and time of the finding or incident, location of the animal or carcass, and if possible, provide a photograph, explanation as to cause of take or injury, and any other pertinent information. The written report shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.

**6.11.6.12. Notification of Non-Compliance.** The Designated Representative or Designated Biologist(s) shall immediately notify CDFW if the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP. The Designated Representative shall follow up within 24 hours with a written report to CDFW describing, in detail, any non-compliance with this ITP and suggested measures to remedy the situation.

**7. Take Minimization Measures:** The following requirements are intended to ensure the minimization of incidental take of Covered Species in the Project Area during Covered Activities. Permittee shall implement and adhere to the following conditions to minimize take of Covered Species:

**7.1. Designated Biologist(s) On Site.** The Designated Biologist(s) shall be on site during all activities that may result in the take of Covered Species and in accordance with Condition of Approval Compliance Monitoring.

**7.2. Work Hours.** Permittee shall conduct all Covered Activities during daylight hours (sunrise to sunset) except for the following activities as necessary: (1) planned and unplanned maintenance and quality assurance/control activities, repair and replacement, wiring, testing, and commissioning that must occur after dark to ensure PV arrays are not energized; (2) unanticipated emergencies (in accordance with Section 21060.3 of the Public Resources Code), including forced outages and non-routine maintenance or repair requiring immediate attention; (3) security patrols; (4) refueling equipment and staging material for the following day's construction activities, and (5) concrete pouring.

Permittee shall ensure: (1) that any vehicle traffic necessary during nighttime hours associated with these activities are conducted with caution to minimize impacts to Covered Species; (2) the speed limit during allowable night work is reduced to 10 mph for non-emergency activities; and (3) that CDFW is notified as soon as possible and no later than 24 hours after commencement of any emergency nighttime activities.

**7.3. Delineation of Ingress and Egress Routes.** Permittee shall flag or otherwise clearly mark all access roads in the field from the paved road and vehicle operation shall be limited to these designated ingress and egress routes.

**7.4. Vehicle Parking.** Permittee shall not allow vehicles to park on top of Covered Species burrows, nest burrows, or nests, except within designated staging areas for which burrows ~~have been excavated~~ per Conditions of Approval DT Burrow Excavation, MGS Live Trapping, Burrow Excavation, and Relocation, and/or BUOW Burrow Excavation and allowable nests have been removed/excavated per Condition of Approval CBB Nest Impact Minimization. Vehicles left overnight shall be located outside the applicable avoidance buffers as defined in Conditions of Approval DT Burrow Avoidance, MGS Burrow Avoidance, and BUOW Burrow Avoidance, CBB Nest Avoidance, and/or CBB Nest Impact Minimization ~~Pre-Activity Clearance Survey, and Identification of CBB Nests~~.

**7.5. Vehicle Equipment Inspection.** Workers shall inspect for Covered Species, including nests, under vehicles and equipment every time before the vehicles and equipment are moved. If a Covered Species or Covered Species nest is present, the worker shall notify

the Designated Biologist(s) and wait for the Covered Species to move unimpeded to a safe location ~~or~~ ~~Alternatively~~, the Designated Biologist(s) shall move the Covered Species out of harm's way ~~outside~~ in compliance with the approved Covered Species Mortality Reduction and Relocation Plans required in Conditions of Approval DT Mortality Reduction and Relocation Plan, MGS Mortality Reduction and Relocation Plan, and BUOW Mortality Reduction Plan, and CBB Mortality Reduction and Relocation Plan. ~~Should a CBB or burrowing owl (BUOW) Covered Species-nest be discovered, the Designated Biologist(s) shall follow all applicable Conditions of Approval and applicable CDFW-approved Mortality Reduction and Relocation Plan.~~

**7.6. Pipe and Materials Inspection.** Workers shall thoroughly inspect all construction pipe, culverts, or other similar structures with a diameter of one inch or greater that are stored for one or more overnight periods for the Covered Species before the structure is subsequently moved, buried, or capped. If during inspection, a Covered Species is discovered inside a pipe, culvert, or similar structure, workers shall notify the Designated Biologist(s) and wait for the Covered Species to move unimpeded to a safe location before moving and utilizing the structure. Alternatively, the Designated Biologist(s) shall move the Covered Species out of harm's way in compliance with the approved Covered Species Mortality Reduction and Relocation Plans required in Conditions of Approval DT Mortality Reduction and Relocation Plan, MGS Mortality Reduction and Relocation Plan, and BUOW Mortality Reduction Plan, and CBB Mortality Reduction and Relocation Plan. ~~Should a CBB or BUOW Covered Species-nest be discovered, the Designated Biologist(s) shall follow all applicable Conditions of Approval and applicable CDFW-approved Mortality Reduction and Relocation Plan.~~

**7.7. Geotechnical Investigation.** In areas where temporary exclusion fencing has not been installed (Conditions of Approval DT Temporary Exclusion Fencing Plan and DT Temporary Exclusion Fencing Installation, Augmentation, and Removal), the Designated Biologist shall survey geotechnical investigation access routes and geotechnical drilling areas, as well as a 50-foot buffer, and flag any potential Covered Species burrows before the geotechnical drilling may proceed. If an access route does not have burrows within 50 feet, then the Designated Biologist shall guide the equipment operator to the geotechnical drilling area at a walking pace. The Designated Biologist shall remain on site at all times while drilling work is done and shall guide the operator from the geotechnical drilling areas when exiting. However, if burrows are found within the area to be disturbed during either access to or at the geotechnical drilling areas, temporary exclusion fencing shall be installed and burrows shall be excavated in accordance with Conditions of Approval DT Mortality Reduction and Relocation Plan, DT Burrow Avoidance, DT Burrow Excavation, MGS Mortality Reduction and Relocation Plan, MGS Live Trapping, Burrow Excavation, and Relocation, BUOW Mortality Reduction Plan, BUOW Artificial Burrow Replacement Plan, BUOW Burrow Blockage, and BUOW Burrow

Excavation. ~~Active~~ a CBB ~~Crotch's bumble bee~~ CBB-nest(s) or WJT ~~western Joshua tree~~ individuals (beyond the previously authorized take through emergency regulations adopted under Fish and Game Code section 2084 and CCR Title 14, § 749.10) are found within the area to be disturbed during either access to or at the geotechnical drilling areas, CBB nests shall be avoided per Condition of Approval CBB Nest Avoidance or impacted in accordance with Condition of Approval CBB Nest Impact Minimization and WJT individuals shall be avoided per Condition of Approval WJT Buffer or impacted in accordance with Condition of Approval WJT Relocation, Seed Salvage, and Topsoil Salvage. If both an auger drill system and a self-casing rotary wash wire-line drill system are used, both shall be on drill trucks so that if a change in drill systems is needed, it will not require an additional exit and entrance through Covered Species habitat.

- 7.8. Excavation Inspection.** The Designated Biologist(s) or Designated Monitor(s) shall inspect all trenches, open holes, sumps, and other excavations within the Project Area at the beginning and end of each day for trapped animals. All trenches, holes, sumps, and other excavations with sidewalls steeper than a 1:1 (45 degree) slope shall be covered when workers or equipment are not actively working in the excavation, which includes cessation of work overnight, or shall have an escape ramp of earth or a non-slip material with a less than 1:1 (45 degree) slope. To prevent inadvertent entrapment of the Covered Species, the Designated Biologist(s) or Designated Monitor(s) shall oversee the covering of all such excavations with barrier material (such as hardware cloth) at the close of each working day such that animals are unable to dig or squeeze under the barrier and become entrapped. The outer two feet of excavation cover shall conform to solid ground so that gaps do not occur between the cover and the ground and shall be secured with soil staples or similar means to prevent gaps. Each morning, the end of each day (including weekends and any other non-workdays), and immediately before trenches, holes, sumps, or other excavations are back filled, the Designated Biologist(s) or Designated Monitor(s) shall thoroughly inspect them for Covered Species. The Designated Biologist(s) or Designated Monitor(s) shall also thoroughly inspect any trenches, holes, sumps, or other excavations that are covered long term at the beginning of each working day to ensure inadvertent entrapment has not occurred and shall make any necessary repairs to the cover. If any worker discovers a Covered Species has become trapped, Permittee shall cease all Covered Activities in the vicinity and notify the Designated Biologist(s) immediately. Project workers and the Designated Biologist(s) shall allow the Covered Species to escape unimpeded if possible before Covered Activities are allowed to continue. Alternatively, the Designated Biologist(s) shall move the Covered Species out of harm's way in compliance with the approved Covered Species Mortality Reduction and Relocation Plans required in Conditions of Approval DT Mortality Reduction and Relocation Plan, MGS Mortality Reduction and Relocation Plan, and BUOW Mortality Reduction Plan, and CBB Mortality Reduction and Relocation Plan. Should a CBB or BUOW ~~Covered Species~~-nest be discovered, the Designated Biologist(s)

shall follow all applicable Conditions of Approval and applicable CDFW-approved Mortality Reduction and Relocation Plan.

For the operations and maintenance of the stormwater retention basins Permittee shall ensure that final design of the on-site stormwater retention basins have adequate elements to ensure that Covered Species can escape should one inadvertently enter. Permittee shall submit a Stormwater Basin Design Plan (Condition of Approval On-Site Drainage Basin Entrapment Prevention) with elements necessary for Covered Species escape and/or entry prevention for the stormwater retention basins for review and approval by CDFW prior to implementation of Covered Activities related to basin construction and installation. Permittee shall ensure that stormwater retention basins' wildlife escape and prevention materials, as applicable, are maintained in effective condition. Maintenance inspections of these features shall be conducted as appropriate. Should any failures be discovered, Permittee shall make necessary repairs immediately to ensure that Covered Species can escape or are prevented from entry. If permanent repairs cannot be immediately completed (within 24 hours) then temporary repairs shall be put in place until the permanent repair can be reasonably completed. Inspection of temporary repairs shall be completed daily to ensure effectiveness of wildlife escape and/or entry exclusion until the permanent repair can be completed.

- 7.9. Covered Species Observations and Notification.** All workers shall inform the Designated Biologist(s) if ~~the a~~ Covered Species is seen within or near the Project Area during implementation of any Covered Activity. All Covered Activities in the vicinity of ~~the~~ Covered Species, which could take or injure ~~the a~~ Covered Species or Covered Species nest, shall cease until the Covered Species moves from the Project Area of its own accord or the Designated Biologist(s) moves the Covered Species out of harm's way in compliance with the approved Covered Species Mortality Reduction and Relocation Plans required in Conditions of Approval DT Mortality Reduction and Relocation Plan, MGS Mortality Reduction and Relocation Plan, and BUOW Mortality Reduction Plan, and CBB Mortality Reduction and Relocation Plan. Should a CBB or BUOW Covered Species nest be observed, the Designated Biologist(s) shall follow all applicable Conditions of Approval and applicable CDFW-approved Mortality Reduction and Relocation Plan.

Permittee shall notify CDFW within 24 hours of discovery of a Covered Species or Covered Species nest within the Project Area via e-mail to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above. The notification shall include the name of the Covered Species, the name of the individual who discovered the species, a map showing where the Covered Species was found, and photographs if possible.

**7.10. Rodenticides, Pesticides, and Insecticides.** Permittee shall not use rodenticides, pesticides, and/or insecticides in the Project Area without prior written permission from CDFW. Permittee shall not use any second-generation anticoagulant rodenticide (brodifacoum, bromadiolone, difethialone, and difenacoum) in the Project Area. Permittee shall not use any first-generation anticoagulant rodenticide (diphacinone, chlorophacinone, and warfarin) in the Project Area without prior written permission from CDFW. If pesticides must be used, Permittee shall consult with CDFW and obtain written approval from CDFW before using any pesticides.

***Desert Tortoise (DT) Specific Take Minimization Measures:***

**7.11. DT Mortality Reduction and Relocation Plan.** Permittee shall submit a DT Mortality Reduction and Relocation Plan, prepared by the Designated Biologist(s), for CDFW review and written approval prior to the start of Covered Activities. The relocation plan shall include at a minimum: (1) avoidance and minimization measures including the option to work within the established protective buffer of a burrow; (2) the proposed capture methods and handling methods; (3) implementation timing; (4) burrow excavation methods ~~(Condition of Approval DT Burrow Excavation)~~; (5) measures to be taken when a nest is encountered; (6) release methods (i.e., soft release, hard release, or some other method); (7) artificial burrow design and installation methods; (8) a map and legal description of the proposed receiver site(s) and proposed permanent conservation mechanism; (9) a comparison of the proposed receiver sites and the source site's soil, plant communities, and topography to demonstrate that the receiver site is suitable; (10) a description of the existing DT (pre-Project) status on the proposed receiver site (including density and distribution); (11) a proposed one-year monitoring plan of the receiver site; and (12) identification of a wildlife rehabilitation center or veterinary facility where injured animals will be cared for.

Once the DT Mortality Reduction and Relocation Plan is approved by CDFW, it may be used for all DT relocation activities for the duration of this ITP unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittees to discuss needed updates. Any proposed changes to the CDFW-approved DT Mortality Reduction and Relocation Plan shall be submitted for CDFW review and written approval ~~a minimum of 30 calendar days before~~ prior to implementation of any proposed modifications. The DT Mortality Reduction and Relocation Plan shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) ~~above~~.

**7.12. Raven Management Plan.** Permittee shall prepare a Project-specific Raven Management Plan to minimize the potential for ravens to occupy the Project Area and for raven predation on DT. The Raven Management Plan shall address both the construction and

O&M phase and shall include at a minimum: (1) baseline survey and results; (2) a plan for reduction of food, water, sheltering and nesting sites; (3) an evaluation of effectiveness and adaptive management strategies; and (4) an education and outreach program. The Raven Management Plan shall be submitted for CDFW review and written approval before starting Covered Activities. The Raven Management Plan shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.

**7.11.7.13.** Pre-Construction Surveys for DT. No more than 30 days prior to conducting vegetation or ground-disturbing activities (~~including vegetation modification~~) associated with initial construction or O&M activities, the Designated Biologist(s) shall perform pre-construction surveys for DT and shall remain onsite daily until the construction period ends or temporary exclusion fencing has been installed to preclude DT from entering the Project Area (Conditions of Approval DT Temporary Exclusion Fencing Plan and DT Temporary Exclusion Fencing Installation, Augmentation, and Removal) and subsequent clearance surveys have been completed (Condition of Approval DT Clearance Surveys). These surveys shall cover the Project Area and an additional 50-foot buffer zone. The Designated Biologist(s) shall flag all potential DT burrows within the Project Area to alert biological and work crews to their presence.

Permittee shall provide the pre-construction survey results and a burrow map in a written report via email to CDFW's Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) within 30 calendar days of having performed the survey. The pre-construction survey report shall include, but not be limited to, methodology, date and time of survey, results, discussion, and map of the locations of each potential DT burrow.

**7.12.7.14.** DT Burrow Avoidance. The Designated Biologist(s) shall establish a no-disturbance buffer of 50 feet or greater around suspected or known to be occupied DT burrows in the Project Area. If the 50-foot no-disturbance buffer cannot be established, an approved reduced buffer shall be imposed according to the CDFW--approved DT Mortality Reduction and Relocation Plan. If an approved buffer reduction cannot be established, temporary exclusion fencing installation, live trapping, relocation, and burrow excavation shall occur in accordance with the CDFW-approved DT Mortality Reduction and Relocation Plan and DT Temporary Exclusion Fencing Plan.

**7.13.7.15.** DT Temporary Exclusion Fencing Plan. Permittee shall submit a Temporary Exclusion Fencing Plan to CDFW for review and written approval prior to the installation of any temporary exclusion fencing and permanent security fencing. The Temporary Exclusion Fencing Plan shall include, but not be limited to, the fencing materials, designs

of all temporary fencing, installation methods, installation locations, and removal timing and methods. Temporary exclusion fencing may be designed and installed in conjunction with the design and installation of permanent security fencing. If the temporary exclusion fencing is combined with the permanent security fencing, temporary fencing shall be removed or modified (e.g., knuckled under to allow a gap from the ground to the bottom of the fence of at least 5 inches) in areas identified as post-construction-permeable in the Permanent Security Fencing Plan (Condition of Approval Permanent Security Fencing Plan). Removal of, or modifications to, the temporary exclusion fencing shall be initiated immediately upon completion of all initial construction Covered Activities within the fenced area to minimize habitat fragmentation and diminished connectivity caused by fencing. The DT Temporary Exclusion Fencing Plan shall be submitted for CDFW review and written approval before starting Covered Activities to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase).

**7.14.7.16. DT Temporary Exclusion Fencing Installation, Augmentation, and Removal.**

Permittee shall install temporary exclusion fencing around the perimeter of the Project Area immediately following surveys to flag all potential DT burrows in accordance with Condition of Approval Pre-Construction Surveys for DT above and immediately prior to commencing DT burrow excavation in accordance with Condition of Approval DT Burrow Excavation below. Temporary exclusion fencing may also be installed and removed in a sequential manner along a collector line corridor, for example, to minimize fragmentation of habitat. The Designated Biologist(s) shall accompany the temporary exclusion fence crews conducting installation, repair, augmentation, and/or removal to ensure that DT are not killed or injured during these activities. The Designated Biologist(s) shall ensure all burrow entrances are avoided (i.e., not covered) by fencing material during fence installation. The Designated Biologist(s) shall ensure the temporary exclusion fencing is sufficiently supported to maintain its integrity under all conditions such as wind and heavy rain for the duration of the Covered Activities in the Project Area. The Designated Biologist(s) or Designated Monitor(s) shall check the temporary exclusion fence daily for fence-walking or pacing DT and shall maintain/repair the fence when necessary. Temporary exclusion fencing shall be removed or augmented to allow permeability in select areas, as approved in the Permanent Security Fencing Plan (Condition of Approval Permanent Security Fencing Plan), immediately upon completion of initial construction Covered Activities within the Project Area.

**7.15.7.17. DT Clearance Surveys.** After the installation of the temporary exclusion fencing (Conditions of Approval DT Temporary Exclusion Fencing Plan and DT Temporary Exclusion Fencing Installation, Augmentation, and Removal) and prior to any ground disturbance within the fenced areas, the Designated Biologist(s) shall examine the area within the fence for DT and DT burrows. The survey shall provide 100 percent coverage

of the area within the temporarily excluded area and the area immediately outside of the temporarily excluded area. The use of specialized equipment (e.g., fiber optics) may be necessary to thoroughly inspect all burrows. The Designated Biologist(s), using the methods described in the United State Fish and Wildlife Service's *Desert Tortoise Field Manual* (ATTACHMENT 3) shall capture, collect measurement and identification data, permanently mark, and relocate any DT found within the fenced area in accordance with the CDFW-approved DT Mortality Reduction and Relocation Plan.

**7.16.7.18. DT Burrow Excavation.** All potential DT burrows identified during pre-construction surveys (Condition of Approval Pre-Construction Surveys for DT) and clearance surveys (Condition of Approval DT Clearance Surveys), shall be fully excavated by hand under the direct supervision of the Designated Biologist(s) in accordance with the CDFW-approved DT Mortality Reduction and Relocation Plan.

**7.17.7.19. DT Relocation.** The Designated Biologist(s) shall relocate any DT found within the Project Area that cannot be avoided. Relocation methods shall be in accordance with the CDFW-approved DT Mortality Reduction and Relocation Plan and all relocation recipient sites shall be areas under permanent conservation for DT. If a DT is found above ground, it shall be released above ground in the shade. Any DT removed from a burrow shall be relocated to an unoccupied burrow of similar size. If no such burrows are available for relocating, an artificial burrow shall be constructed that is approximately the same size, depth, and orientation as the original burrow. Protocols found in the *Desert Tortoise Field Manual* (ATTACHMENT 3) shall be followed for the construction of artificial burrows. The location of all DT burrows, DT individuals, and CDFW-approved receiver sites shall be recorded using Global Positioning System (GPS) technology. All potential or known DT burrows present within the temporary exclusion fence will be collapsed after establishing that they are not currently occupied by DT, to prevent re-occupancy. DT burrows within the gen-tie corridor or access routes shall be left intact if ground-disturbing activities can avoid the burrows.

**7.18.7.20. DT Handling Procedures.** The Designated Biologist(s) shall follow handling procedures described in the *Guidelines for Handling Desert Tortoises – Mojave Population and their Eggs*, contained in the *Desert Tortoise Field Manual* (ATTACHMENT 3).

**7.19.7.21. DT Monitoring.** The Designated Biologist(s) shall monitor any DT that are relocated just outside of the temporary exclusion fencing, three (3) times daily for two (2) weeks, along the entire length of the fence to prevent mortality due to exhaustion from “fence walking” or pacing. If temperatures are anticipated to reach 109 degrees Fahrenheit or greater, the Designated Biologist(s) shall survey the entire length of all temporary exclusion fence one hour before reaching said temperature to prevent mortality due to

overexposure. If the Designated Biologist(s) encounters DT fence walking during temperatures of 109 degrees Fahrenheit or greater, the Designated Biologist(s) shall move the DT to an alternate location in accordance with the CDFW-approved DT Mortality Reduction and Relocation Plan.

**7.20.7.22. DT Handling Records.** The Designated Biologist(s) shall maintain a record of all DT handled and include the record in QCRs and ASRs (Conditions of Approval Quarterly Compliance Report (Construction Phase) and Annual Status Report (Construction Phase and O&M Phase)). This information shall include for each DT: (1) the locations (narrative and maps) and dates of observation; (2) general condition and health, including injuries, state of healing and whether DT voided their bladders; (3) location moved from and location moved to (using GPS technology); (4) diagnostic markings (i.e., identification numbers or marked lateral scutes); and, (5) ambient temperature when handled and released; and (6) digital photograph of each handled DT as described below. DT moved from within the Project Area shall be marked for future identification. An identification number using the acrylic paint/epoxy covering technique shall be placed on the fourth left costal scute as described in the *Guidelines for Handling Desert Tortoises – Mojave Population and their Eggs* contained in the *Desert Tortoise Field Manual* (ATTACHMENT 3). Digital photographs of the carapace, plastron and fourth costal scute shall be taken. Notching of scutes shall not occur.

**7.21.7.23. DT Injury or Mortality.** If a DT is injured as a result of Project-related activities, the Designated Biologist(s) shall immediately take it to the CDFW approved wildlife rehabilitation or veterinary facility identified in the CDFW-approved DT Mortality Reduction and Relocation Plan. Permittee shall bear any costs associated with the care or treatment of such injured DT. The Permittee shall notify CDFW of the injury to the DT according to Condition of Approval Notification of Take or Injury. Notification shall include the name of the facility where the animal was taken. If a DT is found deceased, the Designated Biologist(s) shall immediately collect, bag, and freeze the carcass and consult with CDFW to determine if submittal of the carcass to a laboratory is warranted.

***Mohave Ground Squirrel (MGS) Specific Take Minimization Measures:***

**7.24. MGS Mortality Reduction and Relocation Plan.** Permittee shall submit a MGS Mortality Reduction and Relocation Plan, prepared by the Designated Biologist(s), for CDFW review and written approval prior to the start of Covered Activities. The MGS Mortality Reduction and Relocation Plan shall include, ~~but not be limited to~~ at a minimum: (1) avoidance and minimization measures including the option to work within an established protective buffer of a burrow; (2) trapping methodology ~~(Condition of Approval MGS Live Trapping, Burrow Excavation, and Relocation below)~~; (3) implementation timing; (4) burrow identification and excavation methods ~~(Condition of Approval MGS Live Trapping, Burrow Excavation, and Relocation below)~~; (5) measures to be taken when

dependent young are encountered; (6) release methods (i.e., soft release, hard release, or some other method); (7) artificial burrow design and installation methods; (8) a map and legal description of the proposed receiver site(s) and proposed permanent conservation mechanism ~~map and legal description of the proposed receiver sites~~; (9) a comparison of the proposed receiver sites and the source site's soil, plant communities, and topography to demonstrate that the receiver site is suitable; (10) a description of existing MGS (pre-Project) status on the proposed receiver site (including density and distribution); (11) a proposed one-year monitoring plan of the receiver site; and (12) identification of a wildlife rehabilitation center or veterinary facility where injured animals will be cared for. The MGS Mortality Reduction and Relocation Plan shall restrict MGS relocation to only after young of the year are observed above ground and during the main activity period for the species (April 1 to September 1). Permittee may request a 7-day extension to the relocation period if daytime temperatures (sunrise to sunset) are predicted by the National Weather Service to remain within the temperature criterion of 68 – 86 degrees Fahrenheit with no prediction of inclement weather (e.g., a predicted 40 percent or greater chance of precipitation). Subsequent 7-day extensions (through no later than November 1) may be requested and approved by CDFW so long as weather conditions are predicted by the National Weather Service to remain within the above temperature criterion. The relocation extension request(s) shall be approved in advance and in writing by CDFW (email will suffice).

Once the MGS Mortality Reduction and Relocation Plan is approved by CDFW, it may be used for all MGS mortality reduction and relocation activities for the duration of this ITP unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittees to discuss needed updates. Any proposed changes to the MGS Mortality Reduction and Relocation Plan shall be submitted for CDFW review and written approval prior to implementation of any proposed modifications. The MGS Mortality Reduction and Relocation Plan shall be submitted via e-mail for CDFW review and written approval before starting Covered Activities to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) ~~above~~.

**7.22.7.25.** Pre-Construction Surveys for MGS. No more than 30 calendar days prior to conducting vegetation- or ground-disturbing Covered Activities ~~(including vegetation modification)~~ the Designated Biologist(s) shall perform pre-construction surveys for MGS in the Project Area. These surveys shall cover the entirety of the Project Area including an additional 50-foot buffer zone. All known or suspected MGS burrows within the Project Area shall be flagged to alert biological and work crews to their presence. Suspected MGS burrows are any burrow of sufficient size to allow an adult or juvenile MGS to enter.

Permittee shall provide the pre-construction survey results and a burrow map in a written report via email to CDFW's Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above within 30 calendar days of having performed the survey. The pre-construction survey report shall include, but not be limited to, methodology, date and time of survey, results, discussion, and map of the locations of each potential MGS burrow and potential MGS burrows to be excavated (Condition of Approval MGS Live Trapping, Burrow Excavation, and Relocation).

**7.26.** MGS Burrow Avoidance. During all vegetation- or ground-disturbing activities (~~including vegetation modification~~) associated with initial construction or O&M activities, any burrows present within the Project Area that are suspected or known to be occupied by MGS and that cannot be avoided by a 50-foot avoidance buffer, shall be live trapped by the Designated Biologist(s) in accordance with the CDFW-approved MGS Mortality Reduction and Relocation Plan. The Designated Biologist(s) shall relocate any captured MGS to the CDFW-approved receiver site in accordance with the CDFW-approved MGS Mortality Reduction and Relocation Plan.

~~7.23.~~**7.27.** MGS Live Trapping, Burrow Excavation, and Relocation. Burrows suspected or known to be occupied by MGS that cannot be avoided shall be live trapped, fully excavated by hand, or both. After the installation of the DT temporary exclusion fence (Conditions of Approval DT Temporary Exclusion Fencing Plan and DT Temporary Exclusion Fencing Installation, Augmentation, and Removal) and prior to any ground disturbance within the fenced areas, burrows shall be fully excavated by hand under the direct supervision of the Designated Biologist(s) in accordance with the with the CDFW-approved MGS Mortality Reduction and Relocation Plan. The Designated Biologist(s) shall relocate any MGS found within the Project Area that cannot be avoided. Relocation methods shall be in accordance with the CDFW-approved MGS Mortality Reduction and Relocation Plan and relocation sites shall be areas under permanent conservation for MGS. Any dormant, lactating female, or dependent juvenile MGS encountered shall be collected by the Designated Biologist(s) and relocated to an artificial burrow installed at the CDFW-approved receiver site.

~~7.24.~~**7.28.** MGS Handling Records. The Designated Biologist(s) shall maintain a record of all MGS handled and include the record in QCRs and ASRs (Conditions of Approval Quarterly Compliance Report (Construction Phase) and Annual Status Report (Construction Phase and O&M Phase)). This information shall include for each MGS: (1) the location (narrative and maps) and date of observation; (2) general condition and health, including injuries and state of healing; (3) location moved from and location moved to (using GPS

technology); (4) diagnostic markings where applicable; (5) ambient temperature when handled and released; and (6) digital photograph of each MGS handled.

**7.25.7.29. MGS Injury or Mortality.** If a MGS is injured as a result of Project-related activities, the Designated Biologist(s) shall immediately take it to the CDFW approved wildlife rehabilitation or veterinary facility identified in the CDFW-approved MGS Mortality Reduction and Relocation Plan. Permittee shall bear any costs associated with the care or treatment of such injured MGS. The Permittee shall notify CDFW of the injury to the MGS according to Condition of Approval Notification of Take or Injury. Notification shall include the name of the facility where the animal was taken. If a MGS is found deceased, the Designated Biologist(s) shall immediately collect, bag, and freeze the carcass and consult with CDFW to determine if submittal of the carcass to a laboratory is warranted.

***Western Burrowing Owl (BUOW) Specific Take Minimization Measures:***

**7.26.7.30. BUOW Mortality Reduction Plan.** Permittee shall submit a BUOW Mortality Reduction Plan, prepared by the Designated Biologist(s), to CDFW for written approval before starting Covered Activities. Burrow exclusion and burrow excavation shall not proceed until this plan has been approved in writing by CDFW. The BUOW Mortality Reduction Plan shall include, ~~but not be limited to at a minimum:~~ (1) detailed description of survey methodology; detailed burrow exclusion and excavation methods; (2) proposed Covered Activities that may be performed within BUOW avoidance buffers; (3) identification of a wildlife rehabilitation center or veterinary facility capable of and willing to treat injured BUOW or care for at-risk BUOW, BUOW eggs, and/or BUOW chicks; and (4) procedure for collection and storage of BUOW carcasses. Only CDFW-approved Designated Biologists, or personnel following directions from and under the supervision of the Designated Biologist(s), are authorized to handle and transport injured BUOW for treatment or impacted BUOW eggs for salvage. All other BUOW handling or capture is prohibited.

Once the BUOW Mortality Reduction Plan is approved in writing by CDFW, it shall be used for the duration of this ITP unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittee to discuss needed updates. Any proposed changes to the BUOW Mortality Reduction Plan shall be submitted, ~~in writing,~~ to CDFW for review and written and approved in writing prior to ~~the implementation of any proposed modifications.~~ The BUOW Mortality Reduction ~~and Relocation~~ Plan shall be submitted via e-mail for CDFW review and written approval before starting Covered Activities to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) ~~above.~~

**7.27.7.31. BUOW Artificial Burrow Replacement Plan.** Permittee shall replace each known BUOW burrow (as defined in Condition of Approval BUOW Burrow Avoidance) that

cannot be avoided within the Project Area with an artificial burrow to compensate for the loss of important shelter used by BUOW for protection, reproduction, and escape from predators. Permittee shall submit a BUOW Artificial Burrow Replacement Plan prepared by an approved Designated Biologist to CDFW no more than 120 calendar days after starting Covered Activities. The BUOW Burrow Replacement Plan shall include, but not be limited to: a discussion and map of potential artificial burrow replacement locations; description of the replacement burrow design and dimensions (e.g., depth and width of burrow, width of burrow entrance, orientation of burrow entrance, number and placement of entrances); artificial burrow installation methods; long-term artificial burrow maintenance methods; and timing of BUOW burrow installation/construction.

Once the BUOW Artificial Burrow Replacement Plan is approved in writing by CDFW, it shall be used for the duration of this ITP unless CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittee to discuss needed updates. Any proposed changes to the BUOW Artificial Burrow Replacement Plan shall be submitted, in writing, to CDFW and approved by CDFW in writing prior to the implementation of any proposed modifications.-

**7.28.7.32.** BUOW Pre-Construction Surveys and Reporting. The Designated Biologist(s) shall conduct surveys of all subterranean holes three inches or larger to identify BUOW burrows and flag and map all known, and/or nesting BUOW burrows (as defined in Condition of Approval BUOW Burrow Avoidance) within 30 calendar days prior to beginning Covered Activities in the Project Area. Surveys shall include the Project Area and 500 feet (where feasible) beyond the limits of the Project Area, unless otherwise approved in advance in writing by CDFW. If the Designated Biologist(s) identifies any known, or nesting BUOW burrows, the burrow(s) shall be monitored following Conditions of Approval BUOW Burrow Blockage and BUOW Burrow Excavation, unless avoided per Condition of Approval BUOW Burrow Avoidance. Permittee shall provide the pre-construction survey results with a Burrow Map (see Condition of Approval Burrow Map) in a written report to CDFW's Regional Representative prior to starting BUOW Exclusion Activities in the Project Area. The report shall include, but not be limited to, methodology, survey date, and apparent status of each burrow (known, or nesting).

**7.29.7.33.** Burrow Map. The Designated Biologist shall provide a KMZ map to CDFW of all known and/or nesting BUOW burrows found during the surveys performed per Condition of Approval BUOW Pre-Construction Surveys and Reporting. The map shall show details and locations of all BUOW sightings and known and nesting BUOW burrows as defined in Condition of Approval BUOW Burrow Avoidance. The map shall include an outline of the Project Area, title, north arrow, scale bar, and legend.

**7.30.7.34.** BUOW Burrow Avoidance. The Permittee shall establish no-disturbance buffer zones around known and nesting BUOW burrows according to the following guidelines:

- If a known BUOW burrow (a burrow that shows evidence the burrow is being used, known to have been used, or past use by a BUOW) or an "atypical" burrow (e.g., a pipe, culvert, buckled concrete, etc.) showing signs of occupancy (e.g. BUOW presence, whitewash, pellets, prey remains, etc.) is discovered, the Permittee shall establish a minimum no-disturbance buffer of at least 100 feet around the burrow. A no-disturbance buffer of at least 1,600 feet shall be established around known BUOW burrows currently occupied by BUOW during the nesting season (typically February 1 to August 31 in this area).
- If a nesting BUOW burrow used for nesting (e.g. known BUOW burrow indications of the presence of an adult pair, mating behaviors, eggs, chicks, dependent young, and/or brooding or egg incubation) is discovered within or immediately adjacent to the Project Area, the Permittee shall notify CDFW's Regional Representative immediately via e-mail. A no-disturbance buffer of at least 1,600 feet shall be established around the nest burrow. A no-disturbance buffer of at least 1,600 feet shall be established around known BUOW burrows currently occupied by BUOW during the nesting season (February 1 to August 31).

If BUOW burrows cannot be avoided as described above, then the Permittee shall follow Conditions of Approval BUOW Burrow Blockage, BUOW Burrow Excavation, and BUOW Mortality Reduction Plan as appropriate. If BUOW are visibly stressed by the Covered Activities or workers in the vicinity after these no-disturbance buffers are established, all work in the vicinity shall immediately cease and increased no-disturbance buffers will be determined by the Designated Biologist(s) based on their behavioral observations of the affected BUOW.

The buffers prescribed above shall not be reduced or otherwise modified without prior written CDFW approval. If the Designated Biologist determines that specific Covered Activities are not likely to affect the BUOW using known or nesting BUOW burrows due to the nature of the specific Covered Activities and/or due to objects or topography that might reduce potential noise disturbance and obstruct view of the Covered Activities from the nest, then the Designated Biologist may email a written request to CDFW to reduce the buffer distance with documented observational data (Buffer Reduction Request). CDFW will review each Buffer Reduction Request on a case-by-case basis and provide a determination in response to each Buffer Reduction Request in writing. CDFW may request additional and/or ongoing biological monitoring prior to approving a Buffer Reduction Request.

**7.31-7.35. BUOW Burrow Blockage.** Where CDFW has approved a buffer reduction, the Permittee may block rather than destroy any known BUOW burrow located within the buffer distances prescribed by Condition of Approval BUOW Burrow Avoidance within the Project Area where ground- and vegetation-disturbing ~~Covered A~~ activities will be performed. Burrows (including burrows in natural substrate and in/under man-made

structures) may be blocked only immediately after the Designated Biologist(s) has conducted four consecutive 24-hour periods of monitoring with wildlife cameras and determined that BUOW is not currently present. The camera types used for camera monitoring should be chosen at the discretion of the approved BUOW Designated Biologist and shall have daytime and nighttime recording/photo-capture capabilities. Burrow blockage shall be done in a manner that prevents burrowing animals from digging back into the burrow. All blocked burrows shall be monitored by the Designated Biologist or Designated Monitor at least once a week to ensure that the exclusion material is still intact. If BUOW regain access to the burrow, the Permittee shall contact CDFW immediately and obtain written guidance regarding how to proceed. All blocked burrows shall be unblocked within 48 hours of completion of Construction Covered Activities within the prescribed buffer distance.

**7.32-7.36. BUOW Burrow Excavation.** The Designated Biologist, or Designated Monitor under direct supervision of the Designated Biologist, shall excavate known burrows that exhibit signs of current or past BUOW use or characteristics suggestive of a BUOW burrow (including burrows in natural substrate and in/under man-made structures) that cannot be avoided per Condition of Approval BUOW Burrow Avoidance -that are within the Project Area. Burrows to be destroyed shall be fully excavated, filled with dirt, and compacted to ensure that BUOW cannot reenter or use the burrow during the period that Covered Activities occur in the Project Area ~~or discreet Work Area(s)~~. If an individual BUOW does not vacate a burrow within a reasonable timeframe, Permittee shall consult with CDFW for written guidance before proceeding with burrow excavation. An established BUOW burrow no-disturbance buffer may be removed once the burrow is collapsed and BUOW are no longer using the burrow.

- Excavation of known BUOW burrows shall only occur after the Designated Biologist has determined that BUOW is not currently present after four consecutive 24-hour periods of wildlife camera monitoring. The camera types used for camera monitoring should be chosen at the discretion of the approved BUOW Designated Biologist(s) and shall have daytime and nighttime recording/photo-capture capabilities. If the excavation process reveals evidence of current use by BUOW, then burrow excavation shall cease immediately, and camera monitoring as described above shall be conducted/resumed. BUOW burrows shall be carefully excavated with hand tools, or by mechanical means if a specific methodology is approved in writing by CDFW, until it is clear no individuals of BUOW are inside.
- BUOW burrows used for nesting shall not be excavated until biological and camera monitoring confirm that the chicks have fledged and are no longer dependent on the nest and/or the parents and then only after written concurrence from CDFW.

**7.37. BUOW Injury.** If any BUOW life stage (including eggs/nest abandonment) is found injured within the vicinity of the Project Area, the Designated Biologist(s) shall

immediately take it to a CDFW-approved wildlife rehabilitation or veterinary facility, or handle in accordance with the CDFW-approved BUOW Mortality Reduction Plan. Permittee shall identify the facility before starting Covered Activities and include the facility contact information in the BUOW Mortality Reduction Plan. Permittee shall bear any costs associated with the care or treatment of such injured BUOW. The Permittee shall notify CDFW of the injury to the BUOW immediately by e-mail followed by a written incident report as described in Condition of Approval Notification of Take or Injury. If a BUOW is found deceased, the Designated Biologist(s) shall immediately collect, bag, and freeze the carcass and consult with CDFW to determine if submittal of the carcass to a laboratory is warranted or follow any approved storage or transport methods in the CDFW-approved BUOW Mortality Reduction Plan as applicable.

**Crotch's Bumble Bee (CBB) Specific Take Minimization Measures:**

**7.38. CBB Mortality Reduction and Relocation Plan.** The Designated Biologist(s) shall prepare a CBB Mortality Reduction and Relocation Plan and submit it to CDFW via e-mail for review and written approval to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) **a minimum of 30 days prior to starting Covered Activities prior to beginning within 30 days of Amendment 1 issuance of this ITP.** ~~CBB Specific Take Minimization Measures 7.40-7.45.~~ The CBB Mortality Reduction and Relocation Plan shall include, ~~but not be limited to~~ a minimum: (1) ~~a discussion and map of the portions of the Project Area where CBB may occur; detailed survey;~~ handling and bee identification methods; (2) measures to minimize impacts to foraging bees during vegetation removal; ~~methods to characterize habitat types; methods to identify active nesting and overwintering habitat including during CBB surveys;~~ (3) measures to minimize impacts to overwintering bees during overwintering habitat removal; (4) measures to minimize direct impacts to active nests; (5) methods for nest excavation/removal following minimization; (6) identification of suitable relocation areas for relocation of queens should one be detected during overwintering habitat removal; and (7) methods to relocate an overwintering queen should one be detected. ~~;~~ ~~and (8) nest protection and avoidance plan for nests in exceedance of the two allowable nests. and required frequency and duration of compliance monitoring according to the Compliance Monitoring Condition of Approval.~~ ~~Covered Activities may not proceed until the CBB Mortality Reduction and Relocation Plan has been approved in writing by CDFW. Designated Monitor(s) are prohibited from capturing and handling CBB unless specifically approved in writing by CDFW and under the direct supervision of the Designated Biologist(s).~~

Once the CBB Mortality Reduction and Relocation Plan is approved in writing by CDFW, it shall be used for the duration of this ITP unless and until there has been cumulative take of two CBB nests and/or cumulative take of 30 CBB individuals, or unless CDFW

determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittee to discuss needed updates-. In the event that either two CBB nests or 1530 CBB individuals have been taken over the duration of this ITP, CDFW shall be notified within 5 business days of either take number being reached (take notification), and a revised CBB Mortality Reduction and Relocation Plan must be provided to CDFW within 30 calendar days of the take notification, specifically to update and improve the protection and avoidance plan. No additional take of CBB may occur until the updated CBB Mortality Reduction and Relocation Plan is approved by CDFW. ~~CDFW determines that updates are needed to reflect best available science and/or to update mitigation and conservation strategies in which case CDFW will contact the Permittee to discuss needed update~~Any other proposed changes to the CDFW-approved CBB Mortality Reduction and Relocation Plan shall be submitted ~~in writing to~~ for CDFW and ~~approved by CDFW in written approval in~~ prior to implementation of any proposed ~~CBB Mortality Reduction and Relocation Plan~~ modifications. The CBB Mortality Reduction and Relocation Plan shall be submitted via e-mail to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase).~~The CBB Mortality Reduction and Relocation Plan shall be submitted via e-mail for CDFW review and written approval before starting Covered Activities to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.~~

**7.39. CBB Survey Plan.** If Covered Activities are proposed to occur during the CBB active period (approximately February 1 through October 31; including es-queen flight season, colony active period, and gyne flight season), the Designated Biologist(s) shall prepare a CBB Survey Plan and submit it to CDFW for review and approval ~~a minimum of 30 days prior to starting Covered Activities, including staging areas beginning CBB Specific Take Minimization Measures 7.40-7.45~~ within 30 days of Amendment 1 issuance of this ITP. The CBB Survey Plan shall describe methods that will be implemented to survey for above ground bees, consistent and as feasible with CDFW's Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species (June 6, 2023). The CBB Survey Plan shall identify when the surveys are planned to take place (i.e., season and how much time between surveys), types of habitat to be surveyed for (i.e., foraging, nesting, and/or overwintering), survey method(s), justification for timing and method of survey design (e.g., elevation, climatic conditions, previous year's precipitation, average ambient temperature, species active periods, etc.), and the capture and identification protocol(s). If photographs will be used as vouchers, the CBB Survey Plan must identify the person(s) who will provide positive identification. Decontamination protocols shall be specified before and after bumble bee sampling within the Project Area ~~work area~~, to reduce the likelihood of disease transmission, utilizing methods effective against diseases, such as *Varimorpha bombi* (formerly

Nosema). All sampling equipment (e.g., nets, vials, other sampling materials, boots) shall be sterilized for 10 minutes following the bleach method in the 2023 Survey Considerations or with UV light (direct sunlight), by placing the equipment in direct sunlight for a minimum of two days.

**7.40.** Additional Pesticide Application Measures for CBB. If any pesticides are to be used in the Project Area, Permittee shall follow the pesticide best management practices described by Xerces Society’s 2018 *Guidance to Protect Habitat from Pesticide Contamination*, ~~Guidance to Protect Habitat from Pesticide Contamination~~, the California Department of Pesticide Regulation’s *California’s Managed Pollinator Protection Plan – MP3 (2018)* ~~California’s Managed Pollinator Protection Plan~~, and the University of California’s Division of Agriculture and Natural Resources Statewide Integrated Pest Management Program’s *Best management practices to protect bees from pesticides* ~~Best Management Practices to Protect Bees from Pesticides~~. Permittee shall not use any ~~second generation anticoagulant rodenticide (e.g., brodifacoum, bromadiolone, difethialone, and difenacoum) or neonicotinoid pesticides on the Project Area. Permittee shall not use any first-generation anticoagulant rodenticide (e.g., diphacinone, chlorophacinone, and warfarin) on the Project Area without prior written permission from CDFW.~~ Permittee shall avoid using pesticides marked with the US Environmental Protection Agency’s bee hazard icon. Permittee shall preferentially use chemicals that are rated green/III in UC IPM Bee Precaution Database and ~~Permittee shall use the least toxic products at the least concentrated application possible. Permittee shall not use neonicotinoid pesticides or mixtures with fungicides and adjuvants, like those that contain alkylphenol ethoxylates, or soil fumigants, which penetrate the soil and can poison ground nesting bees. Permittee shall not apply pesticides to suspected or confirmed CBB nests or until a Designated Biologist approved for CBB has performed pre-application surveys and confirmed CBB are not present, each morning before pesticides are applied within 50 feet of a potential CBB nest~~ habitat. A Designated Biologist approved for CBB shall continue to monitor for potential CBB activity during all pesticide application activities. Pesticide application shall cease if CBB are observed within 50 feet of the application area.

**7.41.** Seasonal Limitations for Protection of CBB. If feasible, Permittee shall avoid initial ~~vegetation clearing and ground disturbance to potential CBB and their habitat during the CBB active period (approximately February 1 through October 31). If feasible, native or non-native flowering vegetation removal shall occur prior to bloom and before the CBB active period. If Covered Activities cannot be avoided during this time and vegetation needs to be removed while in bloom, the Designated Biologist(s) approved for CBB shall perform pre-construction activity surveys according to the Condition of Approval CBB Pre-Construction Activity Clearance Survey-Condition of Approval.~~ Clearance Survey-Condition of Approval. If foraging CBB are

found in areas designated for vegetation removal, the Designated Biologist(s) shall search for potential nests according to the Condition of Approval Identification of CBB Nesting Condition of Approval.

**7.42. CBB Pre-Construction Activity Clearance Survey.** If Covered Activities are proposed to occur during the CBB active period (approximately February 1 through October 31), no more than 14 days prior to starting Covered Activities beginning CBB Specific Take Minimization Measures 7.40-7.45 vegetation- or ground-disturbing activities, the Designated Biologist(s) approved for CBB shall survey at the Project Area ~~work area~~ and a 50-foot buffer around the Project Area ~~work area~~ as described in the CDFW-approved CBB Survey Plan. The Designated Biologist(s) approved for CBB shall repeat the surveys if there has been a break in Covered Activities ~~by~~ of more than 30 days. The Permittee shall provide survey results and Project Area mapping to CDFW prior to starting Covered Activities beginning vegetation- or ground disturbing activities ~~CBB Specific Take Minimization Measures 7.40-7.45~~. The survey results shall include a description of vegetation communities and floral resources identified in each Project ~~work~~ Area, maps of known or ~~potentially~~ suspected nesting sites, any CBB observations, and measures that will be implemented to avoid or minimize direct impacts to CBB, CBB nests, or CBB habitat resources, if observed within or adjacent to a Project Area ~~work area~~ as per in accordance with the CDFW-approved CBB Mortality Reduction and Relocation Plan.

**7.43. Identification of CBB Nests.** During CBB ~~Pre-Construction activity~~ ~~Clearance~~ ~~Survey(s)~~, the Designated Biologist(s) or approved Designated Monitor(s) approved for CBB shall identify and map all potential CBB nesting habitat, including rodent burrows, dry cavities in rock walls or rock piles, and ~~under~~ bunch grasses locations}, and flag potential nests that are accessible, according to the Condition of Approval CBB Nest Avoidance Condition of Approval. For purposes of this ITP, "accessible" is defined as within the right-of-way ~~ROW~~ and of a steepness that allows for safe investigation by the Designated Biologist(s). If Covered Activities ~~may~~ will occur while nests may be occupied (approximately February 1 to August 30, depending on seasonal conditions), the Designated Biologist(s) approved for CBB shall further investigate all accessible potential nesting habitat for occupancy according to the CDFW-approved CBB Mortality Reduction and Relocation Plan. ~~All active nests shall be avoided, according to the CBB Nest Avoidance Condition of Approval.~~

**7.44. CBB Nest Avoidance.** If at any time during the duration of this ITP there has been cumulative take of two CBB nests, CDFW shall be notified within 5 business days of the take number being reached. No additional take of CBB nests may occur until the updated CBB Mortality Reduction and Relocation Plan is approved by CDFW. ~~If Beyond the two allowable nests authorized for take under this ITP, if an additional active CBB nest is found during pre-construction activity surveys or at any time during Covered Activities before a revised CBB Mortality Reduction and Relocation Plan is approved by CDFW, the~~

Permittee shall delineate a minimum 50-foot no-disturbance buffer around the nest. Covered Activities shall not begin or resume within the buffer area until the nest has senesced (becomes inactive or is no longer in use), as determined by the Designated Biologist(s) approved for CBB, in consultation with CDFW or until a revised CBB Mortality Reduction and Relocation Plan is approved by CDFW. The Permittee shall report observation of all active CBB nests to CDFW within 24 hours of finding the nest according to the Condition of Approval Covered Species Observations and Notification-Condition of Approval. To determine whether a nest has senesced, the Designated Biologist(s) approved for CBB shall observe the nest for three consecutive days, for a minimum of one hour per day. Observation shall occur at least one hour after sunrise and at least two hours before sunset on a warm sunny day (65-90 degrees Fahrenheit), with wind less than eight miles per hour. The nest may be deemed senesced if no activity is noted within the observation period. The buffer area shall be clearly marked in the field using signs, stakes or posts with highly visible rope, or high visibility fencing. The Permittee shall contact CDFW immediately if a nest is discovered during ongoing work, to discuss measures that either have been, or will be implemented to avoid and minimize take of nesting bees.

7.45. CBB Nest Impact Minimization. For impacts to the two nests authorized for take by this ITP, impacts to the nests shall be minimized (e.g. delay timing of removal, reduced buffers, etc.) before take (i.e. removal/excavation) of the nests can occur in accordance with the CDFW-approved CBB Mortality Reduction and Relocation Plan. Impacts to all other active nests may only occur ~~shall be fully avoided,~~ according to the Condition of Approval CBB Nest Avoidance.

7.46. CBB Carcass Salvage. A total of 30 CBB individuals are authorized for take by this ITP. If a CBB is killed or otherwise found deceased during Project activities, Permittee shall contact CDFW to determine the fate of the carcass. As feasible, the carcass shall be salvaged, photographed, and placed in a labeled, clean plastic, resealable bag or vial and placed in a freezer. The label shall include a unique identifier (collection number), species name, time and date of collection, collection location, GPS location (including datum and horizontal error in feet), circumstances surrounding death (e.g. freezer may have been too cold; hot day and extreme shifts in temperature from ambient air to cooler may have contributed), collector name and contact information (phone number or email), and ITP tracking number. If deemed necessary by CDFW, the Permittee shall deliver the carcass (on dry ice if possible) to the following address:

CDFW Wildlife Genetics Research Unit (Wildlife Health Lab)  
Attention: Michael Buchalski  
1415 North Market Boulevard, Suite 9  
Sacramento, California 93834

Incidental Take Permit – Major Amendment No. 21  
No. 2081-2024-038-04  
45MG 8ME LLC;  
ARATINA 2 SOLAR PROJECT

**Western Joshua Tree (WJT) Specific Take Minimization Measures:**

~~7.47. Pre-Construction ConstructionActivity Surveys for WJT. No more than 3 months prior to conducting Covered Activities, tThe Designated Biologist(s) shall perform pre-construction constructionactivity-surveys for WJT prior to initiating any vegetation- or ground disturbing Covered Activitiesactivities beginning after the first rain event that followings the initial WJT removal previously authorized through emergency regulations adopted under Fish and Game Code section 2084 and CCR Title 14, § 749.10. These surveys shall cover the access routes (both existing and new), the specific Project AreaProject site(s), and an additional 50-foot buffer zone. The Designated Biologist(s) shall confirm any previously identified WJT individuals as well as identify on a map any newly identified WJT individuals (i.e. germinated stem from seed, trunk, or rhizome resprout) within the Project Area of the Covered Species.~~

~~Permittee shall provide the pre-construction survey results-report in a written report via email to CDFW’s Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) within 30 days of having performed the survey. The pre-construction survey report shall include, but not be limited to, methodology, date and time of survey, results, discussion, and a map of the locations of all Covered Speciespreviously and newly identified WJT., both previously identified and newly identified individuals of the Covered Species.~~

~~—— WJT Relocation. Permittee shall relocate WJT individuals from the Project Site. Permittee shall implement and adhere to the methods, measures, and conditions identified in the Western Joshua Tree Relocation Guidelines and Protocols (Attachment 7). This Permit authorizes Permittee to undertake all activities necessary to remove the WJT individuals to be relocated, transport them off the Project Site, and transplant them at the receiver site consistent with the WJT Relocation Guidelines.~~

~~—— Seed Salvage. Permittee shall prepare a Seed Salvage Plan for CDFW review and written approval prior to implementation of any Covered Activities that could impact any sexually mature Covered Species (evidence of current or past flowering). The Seed Salvage Plan shall include, but not be limited to, methods of seed/fruit collection from the Covered Species, and the locations (including a map) where salvaged fruits/seeds will be deposited in the soil (e.g. planted). Permittee shall salvage seeds and fruit from the current season’s production and shall also salvage any seeds and fruit remaining from previous seasons. The Seed Salvage Plan shall be submitted via e-mail at least 14 days before starting Covered Activities to the Regional Representative and Regional Office identified in Condition of Approval Quarterly Compliance Report (Construction Phase) above.~~

~~7.48. Topsoil Salvage. When a WJT is removed, Permittee shall ensure topsoil is salvaged and deposited in an area on-site where WJT will be avoided. If needed, topsoil stockpiles will~~

~~be covered with coarse aggregate for protection from wind and water erosion. Identification of New Stem or Trunk WJT Buffer. Once the initial WJT removal activities (removed under Fish and Game Code section 2084 and CCR Title 14, § 749.10) associated with Project construction have concluded, if pre-construction Pre-Activity Surveys have identified a new WJT individually germinated stem from seed or a trunk or rhizome resprout within the Project Area, Permittee shall implement a 50-foot avoidance buffer for each individual WJT or submit a written request a buffer reduction request to CDFW. The Buffer Reduction request must include the following for each individual or group of individuals: mapped locations, color photographs, and physical description with size in centimeters or meters as appropriate (seed, plant parts, new sprout, trunk/rhizome re-sprout, etc.). If the individual(s) will be impacted, the Buffer Reduction request must include a description and proposed timing of impact (excavation, trimming, herbicide spray, etc.) along with a cumulative number of previously impacted WJT (not including those authorized under the above referenced emergency regulations) under this ITP.~~

~~**7.33.7.49.** WJT Relocation, Seed Salvage, and Topsoil Salvage. When the cumulative number of impacted WJT (seed, plant parts, new sprout, trunk, or rhizome re-sprout) exceeds 50 individuals over the duration of this ITP, Permittee shall initiate consultation with CDFW in writing shall coordinate with CDFW regarding the potential need for relocation, seed salvage, and/or topsoil salvage. CDFW may require the preparation of a WJT Mortality Reduction Plan, in which case shall include at a minimum detailing: (1) impact minimization measures;; (2) relocation methods in accordance with the Western Joshua Tree Relocation Guidelines and Protocols (Attachment 7) or other updated prevailing CDFW-approved guidance;; (3) methods of seed or fruit collection;; (4) methods of topsoil salvage;; and and(5) a map and legal description of the proposed receiver site(s) for WJT individual(s) and/or topsoil and proposed permanent conservation mechanism. locations to receive the WJT individual(s) and/or topsoil. Take of any more than 50 WJT individuals over the duration of this ITP is prohibited until CDFW prepares a written response to the consultation request.~~

**8. Habitat Management Land Acquisition:** CDFW has determined that permanent protection and perpetual management of compensatory habitat is necessary and required pursuant to CESA to fully mitigate Project-related impacts of the taking on the Covered Species that will result from implementation of the Covered Activities. This determination is based on factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and CDFW’s estimate of the protected acreage required to provide for adequate compensation.

Compensatory mitigation for Project impacts occurred on a portion of what is commonly known as Onyx Ranch. Onyx Ranch encompasses 215,000 acres of BLM-administered lands in the Mojave Desert and adjacent mountainous areas in eastern Kern County (FIGURE 3). This land is comprised

of eight pastures of a former grazing lease within the BLM's Rudnick Common Allotment #05008 and lease authorization #0403872. Permittee purchased the grazing lease to permanently retire grazing on the entire 215,000 acres. Within these 215,000 acres, 82,275 acres are protected by federal Wilderness and California Desert National Conservation Lands System designations (Conservation Area). In addition to serving as Project-level mitigation for this Project, the 82,275-acre Conservation Area is intended to serve as project-level mitigation to count toward fulfillment of compensatory mitigation obligations required for four other solar development projects: Eland ITP 2081-2020-013-04, Bellefield ITP 2081-2021-037-04, Eland 2 (formerly known as Kudu) ITP 2081-2022-001-04, and Aratina 1 ITP 2081-2020-022-04.

Permittee's compensatory mitigation obligation for this ITP was satisfied through: (1) the previously purchased and retired grazing lease and the concurrent allocation of the forage to wildlife use pursuant to BLM's Instruction Memorandum No. 2008-204 and (2) funding for a portion of the enhancement, monitoring, and long-term management of 3,177 acres of the Onyx Ranch 82,275-acre Conservation Area. CDFW has determined that acreage at Onyx Ranch in its current state and through the enhancement of the functional quality of the habitat as a result of the retirement of grazing and the funding and implementation of certain long-term management actions is sufficient to fully mitigate impacts of this Project.

Permittee deposited a \$6,041,302.62 endowment to the National Fish and Wildlife Foundation on January 27, 2025, to meet the funding requirement for the 3,177-acre portion of Onyx Ranch referenced above, which encompassed the obligation for both Aratina 1 Solar (4,128 acres; 2081-2020-022-04) and Aratina 2 Solar (3,177 acres) Projects.

The financial security (Surety Bond) that was previously held by CDFW in the amount of \$6,041,302.62 was cancelled and returned to the issuing insurance company on January 27, 2025. The cancellation was received by the insurance company on February 3, 2025.

#### **X. Amendment:**

This ITP may be amended as provided by California Code of Regulations, title 14, section 783.6, subdivision (c), and other applicable law. This ITP may be amended without the concurrence of the Permittee as required by law, including if CDFW determines that continued implementation of the Project as authorized under this ITP would jeopardize the continued existence of the Covered Species or where Project changes or changed biological conditions necessitate an ITP amendment to ensure that all Project-related impacts of the taking to the Covered Species are minimized and fully mitigated.

Permittee may request a extension of this ITP provided that the request is received 60 days prior to the expiration of the ITP, a fee to amend for renewal of this ITP is received, and all of the Conditions of Approval required in this ITP are met. To request the extension, Permittee shall submit a written application to the Regional Manager at least 60 days prior to the expiration date of this ITP and

include with the request a payment of the amendment fee identified on CDFW's website at the time the request is submitted (Fish & G. Code, § 2081.2, subd. (e)(1)). CDFW shall process the renewal request in accordance with California Code Regulations, title 14, section 783.6, subdivisions (b)(1-3), or the applicable provisions of the Fish and Game Code in existence at that time. Permittee must also submit with the request their certification in writing that all statements, information, and environmental conditions included in the original application remain current and correct, unless previously changed or corrected. If the information is no longer current or correct, the applicant must provide the corrected information. The Director will renew the ITP if the application meets the standards in California Code Regulations, title 14, section 783.4. If the Permittee submits the application for renewal at least 60 days prior to the expiration date of the ITP and provides all requested items, Permittee may continue the activities authorized by the expired permit until the Director has acted on such a person's application for renewal (see Cal. Code Regs., tit. 14, § 783.6, subdivision (b)(1-3)).

#### **XI. Stop-Work Order:**

If CDFW determines the Permittee has violated any term or condition of this ITP or has engaged in unlawful take, CDFW may issue Permittee a written stop-work order instructing the Permittee to suspend any Covered Activity for an initial period of up to 30 calendar days or risk suspension or revocation of this ITP. CDFW can issue a stop-work order to prevent or remedy a violation of this ITP, including but not limited to the failure to comply with reporting or monitoring obligations, or to prevent the unauthorized take of any CESA endangered, threatened, or candidate species, regardless of whether that species is a Covered Species under this ITP. Permittee shall stop work immediately as directed by CDFW upon receipt of any such stop-work order. Upon written notice to Permittee, CDFW may extend any stop-work order issued to Permittee for a period not to exceed 30 additional days.

If Permittee fails to remedy the violation or to comply with a stop-work order, CDFW may proceed with suspension and revocation of this ITP. Suspension and revocation of this ITP shall be governed by California Code of Regulations, title 14, section 783.7, and any other applicable law. Neither the Designated Biologist nor CDFW shall be liable for any costs incurred in complying with stop-work orders.

#### **XII. Compliance with Other Laws:**

This ITP sets forth CDFW's requirements for the Permittee to implement the Project pursuant to CESA. This ITP does not necessarily create an entitlement to proceed with the Project. Permittee is responsible for complying with all other applicable federal, state, and local law.

#### **XIII. Notices:**

Written notices, reports and other communications relating to this ITP shall be delivered to CDFW by email or registered first class mail at the following address, or at addresses CDFW may subsequently provide the Permittee. Notices, reports, and other communications shall reference the Project name,

Incidental Take Permit – [Major Amendment No. 21](#)  
No. 2081-2024-038-04  
45MG 8ME LLC;  
ARATINA 2 SOLAR PROJECT

Permittee, and ITP Number (2081-2024-038-04) in a cover letter and on any other associated documents.

Original cover with attachment(s) to:

Julie A. Vance, Regional Manager  
California Department of Fish and Wildlife  
1234 East Shaw Avenue, Fresno, California 93710  
Telephone (559) 243-4005  
[RRR.R4@wildlife.ca.gov](mailto:RRR.R4@wildlife.ca.gov)

and a copy to:

Habitat Conservation Planning Branch  
California Department of Fish and Wildlife  
Attention: CESA Permitting Program  
Post Office Box 944209  
Sacramento, California 94244-2090  
[CESA@wildlife.ca.gov](mailto:CESA@wildlife.ca.gov)

Incidental Take Permit – Major Amendment No. 21  
No. 2081-2024-038-04  
45MG 8ME LLC;  
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Unless Permittee is notified otherwise, CDFW's Regional Representative for purposes of addressing issues that arise during implementation of this ITP is:

Jim Vang  
California Department of Fish and Wildlife  
1234 East Shaw Avenue  
Fresno, California 93710  
Telephone (559) 580-3203  
[Jim.Vang@wildlife.ca.gov](mailto:Jim.Vang@wildlife.ca.gov)

**XIV. Compliance with the California Environmental Quality Act:**

CDFW's issuance of this ITP is subject to CEQA. CDFW is a responsible agency pursuant to CEQA with respect to this ITP because of prior environmental review of the Project by the lead agency, Kern County. (See generally Pub. Resources Code, §§ 21067, 21069.) The lead agency's prior environmental review of the Project is set forth in Aratina Solar Farm Project EIR, (SCH No.: 2021020513) dated August 2021 that the Kern County certified for Aratina Solar Farm Project on 10/12/2021. At the time the lead agency certified the EIR and approved the Project it also adopted various mitigation measures for the Covered Species as conditions of Project approval.

This ITP, along with CDFW's related CEQA findings, which are available as a separate document, provide evidence of CDFW's consideration of the lead agency's EIR for the Project and the environmental effects related to issuance of this ITP (CEQA Guidelines, § 15096, subd. (f)). CDFW finds that issuance of this ITP will not result in any previously undisclosed potentially significant effects on the environment or a substantial increase in the severity of any potentially significant environmental effects previously disclosed by the lead agency. Furthermore, to the extent the potential for such effects exists, CDFW finds adherence to and implementation of the Conditions of Project Approval adopted by the lead agency, and that adherence to and implementation of the Conditions of Approval imposed by CDFW through the issuance of this ITP, will avoid or reduce to below a level of significance any such potential effects. CDFW consequently finds that issuance of this ITP will not result in any significant, adverse impacts on the environment.

**XV. Findings Pursuant to CESA:**

These findings are intended to document CDFW's compliance with the specific findings requirements set forth in CESA and related regulations. (Fish & G. Code § 2081, subs. (b)-(c); Cal. Code Regs., tit. 14, §§ 783.4, subds, (a)-(b), 783.5, subd. (c)(2).)

CDFW finds based on substantial evidence in the ITP application, Aratina Solar Farm Project, the results of consultations, and the administrative record of proceedings, that issuance of this ITP complies and is consistent with the criteria governing the issuance of ITPs pursuant to CESA:

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45MG 8ME LLC;  
ARATINA 2 SOLAR PROJECT

- (1) Take of Covered Species as defined in this ITP will be incidental to the otherwise lawful activities covered under this ITP;
- (2) Impacts of the taking on Covered Species will be minimized and fully mitigated through the implementation of measures required by this ITP and as described in the MMRP. Measures include: (1) permanent retirement of grazing on a 215,000-acre portion of Onyx Ranch, of which 82,275 acres is within a Conservation Area protected by Federal Wilderness and California Desert National Conservation Lands System designations; (2) funding for the installation and maintenance of perimeter fencing and a perpetual endowment to fund vertical mulching, installation of vehicle barriers, and species and vegetation monitoring on 7,305 acres of Onyx Ranch; (3) establishment of avoidance zones; (4) worker education; and (5) Quarterly Compliance Reports. CDFW evaluated factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and CDFW's estimate of the acreage required to provide for adequate compensation. Based on this evaluation, CDFW determined that the permanent retirement of grazing on the 215,000-acre Onyx Ranch coupled with implementation of management actions to achieve additional ecological lift for the Covered Species, along with the minimization, monitoring, reporting, and funding requirements of this ITP minimizes and fully mitigates the impacts of the taking caused by the Project;
- (3) The take avoidance and mitigation measures required pursuant to the conditions of this ITP and its attachments are roughly proportional in extent to the impacts of the taking authorized by this ITP;
- (4) The measures required by this ITP maintain Permittee's objectives to the greatest extent possible;
- (5) All required measures are capable of successful implementation;
- (6) This ITP is consistent with any regulations adopted pursuant to Fish and Game Code sections 2112 and 2114;
- (7) Permittee has ensured adequate funding to implement the measures required by this ITP as well as for monitoring compliance with, and the effectiveness of, those measures for the Project; and
- (8) Issuance of this ITP will not jeopardize the continued existence of the Covered Species based on the best scientific and other information reasonably available, and this finding includes consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (1) known population trends; (2) known threats to the species; and (3) reasonably foreseeable impacts on the species from other related projects

and activities. Moreover, CDFW’s finding is based, in part, on CDFW’s express authority to amend the terms and conditions of this ITP without concurrence of the Permittee as necessary to avoid jeopardy and as required by law.

**XVI. Attachments:**

FIGURE 1	Project Vicinity
FIGURE 2	Project Area
FIGURE 3	Map of Onyx Ranch
ATTACHMENT 1	Mitigation Monitoring and Reporting Program
ATTACHMENT 2	Biologist Resume Form
ATTACHMENT 3	U.S. Fish and Wildlife Service’s <i>Desert Tortoise Field Manual</i>
ATTACHMENT 4	Letter of Credit Form
ATTACHMENT 5	Mitigation Payment Transmittal Form
<u>ATTACHMENT 6</u>	<u>Amended and Restated with Track Changes</u>
<u>ATTACHMENT 7</u>	<u>Western Joshua Tree Relocation Guidelines and Protocols</u>

**ISSUED BY THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE ON \_\_\_\_\_**

\_\_\_\_\_  
Julie A. Vance, Regional Manager  
Central Region

## ATTACHMENT 7

### Western Joshua Tree Relocation Guidelines and Protocols



# Western Joshua Tree Relocation Guidelines and Protocols

August 2025



State of California  
Natural Resources Agency  
Department of Fish and Wildlife

Western Joshua Tree Relocation Guidelines and Protocols  
California Department of Fish and Wildlife  
August 2025

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## Introduction

Salvage and relocation of western Joshua trees can be an important part of saving the species from the threat of extinction. The Western Joshua Tree Conservation Act (WJTCA) requires permittees to minimize (and avoid) impacts to the maximum extent practicable and specifically calls out relocation as a minimization action. Relocation is deemed a method to minimize impacts to the western Joshua tree populations, rather than a substitution for mitigation through payment of fees. The WJTCA also states that the California Department of Fish and Wildlife (CDFW) may require relocation.

The operative word under the WJTCA is “may.” CDFW will determine, on a case-by-case basis, whether relocation will be required under a WJTCA incidental take permit (ITP) during the permit application review process. If relocation is required, CDFW will also determine how many western Joshua trees will need to be relocated. If the permittee believes relocation of WJT is wholly impracticable or that the number of trees to be relocated is impracticable, the permittee should discuss their limitations with CDFW staff to find alternative solutions.

CDFW acknowledges there are both costs and practical difficulties associated with relocation. The most significant obstacle to relocation can be the availability of sites to receive the relocated western Joshua trees. To avoid having relocation become a de facto mitigation measure, rather than a minimization measure as contemplated by the WJTCA, CDFW will not require relocation if it would necessitate the permittee acquiring land for that purpose. The availability of relocation sites is anticipated to increase over time, as CDFW works with federal, state, and local agencies, as well as its partners in the non-profit community, regulated community and the public, and as conservation land for western Joshua tree is acquired or restored through expenditures from the Western Joshua Tree Conservation Fund. As the availability of relocation sites increases, the instances in which relocation will be required may increase. Until such time, these Guidelines will take an incremental approach to relocation with the hope of increasing relocation over time to better facilitate conservation of the species.

The Guidelines section of this document discusses the circumstances in which CDFW may include permit conditions requiring relocation of one or more western Joshua trees as a minimization measure and how permittees may engage with that process.

Western Joshua Tree Relocation Guidelines and Protocols  
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The Protocol section of this document provides a summary of best practices for relocating western Joshua trees and increasing the survival rate of relocated (salvage) western Joshua trees. Information on post-relocation maintenance, monitoring, and reporting is also provided.

This document is a “living” document and will be updated as needed based on the best scientific information available and lessons learned from implementation.

## Western Joshua Tree Conservation Act Relocation Provisions

Section 1927.3, subdivision (a) of the California Fish and Game Code gives CDFW authority to issue ITPs pursuant to the WJTCA so long as certain conditions are satisfied. Among other conditions, Section 1927.3, subdivision (a)(2) requires that a permittee “avoids and minimizes impacts to, and the taking of, the western Joshua tree to the maximum extent practicable.” Section 1927.3, subdivision (a)(2) expressly authorizes CDFW to include minimization measures in a WJTCA ITP, which may include the requirement to relocate one or more western Joshua trees. Importantly, this subdivision and Section 1927.3, subdivision (a)(4)(A), provide CDFW the discretion to require relocation as a minimization measure. The WJTCA does not mandate relocation as a condition in all WJTCA ITPs.

Pursuant to Section 1927.3, subdivision (a)(4)(A), where relocation is required as a minimization measure, permittees must implement reasonable measures required by CDFW to facilitate the successful relocation and survival of salvage trees. According to the WJTCA, the relocation measures shall include but are not limited to the following conditions:

1. Salvage trees are placed in locations and with proper orientation to improve their chances of survival.
2. Salvage trees are relocated at a time that maximizes their chances of survival, when feasible.
3. A desert native plant specialist be onsite to oversee relocation.

In addition, section 1927.3, subdivision (a)(4)(B) states that CDFW may limit relocation requirements to certain size classes of trees.

Pursuant to Section 1927.3, subdivision (g)(1), the permittee shall bear responsibility for implementing measures to assist the survival of western Joshua trees relocated pursuant to a WJTCA ITP condition. Thus, the text of the WJTCA

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itself imposes the obligation for a permittee to be legally and financially responsible for implementing relocation conditions as well as any other minimization measures required in a WJTCA ITP. The permittee may, however, contract with the landowner of the relocation site(s) to conduct the post-relocation maintenance and monitoring activities required under its WJTCA ITP, when available as an option.

Subdivision (g)(2) of that section further states, “[u]nless specifically required by written agreement, a landowner that agrees in writing to allow western Joshua trees to be relocated onto land it owns shall not be liable for the continued survival of the western Joshua trees, shall not be required to manage or maintain the translocated western Joshua trees, and shall not be required to change existing land use practices, provided that the land use practices do not result in the taking, possession, sale, or further translocation of the western Joshua trees.” While landowners accepting salvage trees are not responsible for maintaining the trees or otherwise ensuring the trees’ continued survival, it is important to note that salvage trees receive the full protection afforded to all western Joshua trees pursuant to the WJTCA and CESA and that import, export, take, possession, purchase, and sale of salvage trees or any part or product thereof, is prohibited, except as authorized pursuant to the WJTCA or CESA.

The WJTCA requires CDFW, by December 31, 2024, to prepare a Western Joshua Tree Conservation Plan for review and approval by the Fish and Game Commission that incorporates, among other provisions, protocols for the successful relocation of western Joshua trees. The “Protocol” section of this document must be included as an appendix to the Conservation Plan. To create greater transparency, and to increase information and planning certainty for project proponents, CDFW has elected to also include the “Guidelines” section of this document as an appendix to the Conservation Plan. As such, these guidelines and protocols will be incorporated by reference into the Western Joshua Tree Conservation Plan, even though the Conservation Plan itself is not a regulatory document and does not govern permit conditions to require relocation.

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## Definitions

The following definitions are used in this document:

Bare root relocation – method for relocating a living western Joshua tree by excavating around the root ball of the tree to dislodge the tree from the ground. Any relocation method other than tree spade relocation (defined below) is considered bare root relocation for the purposes of this document.

Containerize – to place a salvage tree into a container, such as a plastic pot or tree box, for temporary storage.

Project site – the area(s) where project activities are expected to occur (e.g., access, staging, construction, etc.)

Recipient site – a salvage tree's (defined below) final planting location.

Relocation – the removal of a living western Joshua tree from the ground and transplantation back into the ground at another location (referred to as a recipient site).

Relocation site – an area with one or several recipient sites.

Retained tree – a living western Joshua tree that is located within the project site that is being or has been avoided or, minimally impacted by the project and will not be relocated.

Root ball – a mass of soil that contains concentrated roots growing from the base of the stem of a western Joshua tree.

Salvage tree – a living western Joshua tree that is being, or has been, relocated. Each western Joshua tree stem or trunk arising from the ground shall be considered an individual tree, regardless of its proximity to any other western Joshua tree stem or trunk.

Size Class A – a western Joshua tree that is less than one meter in height.

Size Class B – a western Joshua tree that is one meter or greater, but less than five meters in height.

Size Class C – a western Joshua tree that is five meters or greater in height.

Tree spade – a specialized piece of heavy equipment that consists of hydraulically controlled spade blades that can encapsulate the root ball of a salvage tree, as well as adjacent soil.

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Tree spade relocation – method for relocating a living western Joshua tree by using a tree spade to dig, transport, and replant a western Joshua tree and its root ball.

## Best Available Science on Relocation

There are many accounts of successful western Joshua tree relocation (i.e., stable or increasing signs of tree health without any supplemental care after a period of maintenance), but little scientific research has been done to compare the relative success rates for different relocation techniques. Rather, most relocation efforts that monitor salvage western Joshua tree survivorship evaluate only one method of relocation (i.e., using hand tools for small trees and/or excavators or tree spade for large trees) (Wagner 2018, Balogh 2019, City of Palmdale 2024). The best available scientific information on how to achieve success when relocating western Joshua trees therefore comes from the experience of experts working in the field of restoration and Joshua tree relocation. In Bainbridge (2007), the author offers advice on relocating Joshua trees and other salvaged succulents, such as cacti and shrubs, based on their expertise and knowledge. The National Park Service (NPS) (Goodwin 2024) and a tree transplanting expert (Reynolds 2024) also provided CDFW with information relevant to the development of this document.

In addition, CDFW reviewed the results of known relocation projects. Bainbridge (2007) states that “Joshua trees often transplant well but require intensive aftercare and irrigation[.]” Bainbridge suggests that relocation is best done with machinery, but hand tools can also be used. Front loaders, excavators, and hydraulic tree spades are useful. Tree spades work best in silty or sandy soils but using them is difficult in rocky soils. Salvaged trees can be placed in containers or immediately replanted but should be protected as much as possible from drying winds, heat, and sun. Bainbridge (2007) also mentions that yucca, such as western Joshua trees, seem to survive better if replanted in the same orientation they grew. Overall, Bainbridge (2007) shows the survival rates for salvage trees can be improved if the relocation work is timed carefully, the trees are handled gently, and there is good aftercare and irrigation in a holding facility or at the recipient site. Goodwin (2024) and Reynolds (2024) suggest that minimizing disturbance to the root ball and adequate care after trees have been relocated are the most important factors for successful relocation. Tree spade relocation of western Joshua tree minimizes impacts to roots and can have a success rate of greater than 90% with sufficient aftercare (City of Palmdale 2024,

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(Goodwin 2024, Reynolds 2024). Bare root relocation of western Joshua tree causes more damage to roots and is reported to have a success rate of approximately 50-90% even with sufficient aftercare, based on preliminary findings of a monitoring period of 1-3 years (Goodwin 2024, Reynolds 2024). Beyond the initial 3-year monitoring period, however, success rates can decline (Graver 2024). This document describes additional methods that can be used to aid long-term survival and improve chances of reproduction events. However, there is no foolproof method that guarantees relocation success, and some mortality is always expected to result. Therefore, relocation is considered a method to minimize impacts to western Joshua tree populations, rather than a substitution for mitigation through the payment of fees.

The size and growth pattern of a western Joshua tree may also present additional challenges. Small trees, especially those salvaged through the bare root method, experience higher rates of mortality even with sufficient aftercare (Goodwin 2024). And, though it may be possible to relocate western Joshua trees over 7 meters in height, tree spades may be unable to sufficiently encapsulate the root ball for trees of this size (Reynolds 2024). These trees may also be difficult to stabilize to withstand high wind speeds after being relocated. Dense, clonal reproduction can also affect relocation success. Separating smaller trees from larger, parent trees that are connected through rhizomes below ground can result in higher mortality rates for those smaller trees (Goodwin 2024, Graver 2024).

## Guidelines

The WJTCA requires that a permittee “avoids and minimizes impacts to, and the taking of, the western Joshua tree to the maximum extent practicable.” As such, CDFW may require relocation of one or more western Joshua trees as a WJTCA ITP minimization measure. CDFW will determine whether relocation will be required under an WJTCA ITP during the permit application review process, including evaluation of the site and proposed activities.

As explained in more detail below, this will involve a two-step process. First, CDFW will determine whether relocation will be required for a project and notify the permittee of its decision. If the permittee believes relocation is wholly impracticable, it may provide CDFW with information to support its contention. After considering the permittee’s information, CDFW will make a final determination as to whether relocation is required. Second, if the permittee does not provide CDFW with such information or if CDFW ultimately determines

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that some relocation is practicable, CDFW will inform the permittee of the number of western Joshua trees, by size class, that it must relocate. If the permittee believes it is impracticable to relocate that total number of trees, it may provide CDFW with information to support its contention. CDFW will meet with the permittee as needed to discuss and then make a final determination as to how many trees must be relocated.

### When Will a Project Need to Relocate Western Joshua Trees?

In step one of this process, CDFW will make its initial determination as to whether relocation will be required. CDFW will not require relocation for any project that:

- Will lethally take fewer than 75 western Joshua trees; and
- Will impact less than 10 acres of western Joshua tree habitat.

An applicant may not divide its project into multiple project applications for the purpose of avoiding these requirements. If CDFW determines that an applicant has done so, CDFW may consider the applications collectively for purposes of determining whether the project meets the 75 tree or 10-acre threshold to require relocation.

For projects that will lethally take 75 or more western Joshua trees or impact 10 or more acres of western Joshua tree habitat, CDFW will consider the following additional factors in determining whether relocation will be required:

- CDFW is more likely to require relocation if the project is within predicted climate refugia for western Joshua tree.
- CDFW is less likely to require relocation or may require a lower number of trees to be salvaged if, for example:
  - The project is able to avoid lethal take of western Joshua trees.
  - The project can implement other minimization measures, such as only trimming western Joshua trees in lieu of removing them.
  - The project proponent allows existing land to be a receiver site for salvaged trees from other projects.

Once CDFW has made its determination that relocation will be required for a project, it will notify the permittee in writing of its decision. Upon receipt of notice that relocation will be required, the permittee may elect to submit information to demonstrate that relocating any western Joshua trees is wholly impracticable. CDFW will evaluate the information provided, meet with the permittee as

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needed, and make a final determination as to whether relocation will be required.

Whether relocation is wholly impracticable will be determined by CDFW on a case-by-case basis in consideration of several factors including whether one of the following limitations exists:

1. Legal Impossibility: A statutory or regulatory limitation to relocating western Joshua trees exists such that compliance with the relocation requirement is legally impossible or would necessarily result in fundamental changes to the project that make it impossible to fulfill the project's objectives. For example, a requirement to relocate trees may be legally impossible if compliance with the relocation requirement would clearly cause the project proponent to violate another permit issued for the project.
2. Technical or Technological Obstacle Impossibility: A significant technical or technological limitation to relocating western Joshua trees exists such that compliance with the relocation requirement is impossible. For example, a requirement to relocate western Joshua trees may be very difficult or impossible if the grade of the project site's landscape precludes use of heavy equipment to access trees.
3. Lack of Availability of Relocation Sites: If the permittee can demonstrate that relocation on site is impossible, that it does not own land suitable to be used as a relocation site, and that it has been unable—after a reasonable, good-faith search completed by the permittee—to locate a suitable relocation site without purchasing land, relocation will not be required. However, if CDFW is able to identify a suitable site, relocation may still be required.

## How Many Western Joshua Trees Will a Project Have to Relocate?

When CDFW makes a final determination that relocation of western Joshua trees will be required as a minimization measure, CDFW shall provide the permittee with a second written notice that includes the number of trees, by size class, that must be relocated for the Project.

The number of western Joshua trees that will need to be relocated will be based upon the following three factors: (1) the number of living trees that will be

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lethally taken as confirmed by the approved census and project activities; and (2) the size classes of the trees that will be lethally taken.

The number of trees to be relocated will be based on the expected rate of relocation success for each method used (bare root<sup>1</sup> or tree spade<sup>2</sup>).

	Bare Root Relocation	Tree Spade Relocation
Size Class A (<1 m)	18%	9%
Size Class B (≥1m and <5)	12%	6%
Size Class C (≥5m)	6%	3%

**Table 1. Western Joshua Tree Relocation Percentages**

Based on the percentages above the “[WJT Salvage Requirement Calculator spreadsheet](#)” is used to help determine the number of trees likely required to be relocated based on the number of trees that will be lethally taken. The WJT Salvage Requirement Calculator can also be used to determine the number of trees per relocation method, should a combination of both tree spade and bare root be used.

Once CDFW has made its determination of the number of western Joshua trees that must be relocated for a project, it will notify the permittee in writing of its decision. Upon receipt of the notice, the permittee may elect to submit information to demonstrate that relocating that number of western Joshua trees is impracticable or that the permittee will undertake other significant avoidance and minimization measures sufficient to justify a reduction in the number of trees to be relocated. Along with this information, the permittee shall include its alternative proposed number of trees to relocate, by size class.

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<sup>1</sup> When conducted in accordance with this document, the expected success rate of bare root relocation is between 50 and 90 percent (Goodwin, J. 2024. Joshua Tree National Park. Discussion with J. Goodwin, Vegetation Branch Manager. *in.*; Reynolds, D. 2024. The Landscape Center. Discussion with D. Reynolds, Project Manger/ISA Certified Arborist. *in.*).

<sup>2</sup> When conducted in accordance with this document, the expected success rate of tree spade relocation is greater than 90 percent (Goodwin, J. 2024. Joshua Tree National Park. Discussion with J. Goodwin, Vegetation Branch Manager. *in.*; Reynolds, D. 2024. The Landscape Center. Discussion with D. Reynolds, Project Manger/ISA Certified Arborist. *in.*; City of Palmdale. 2024. Report of the City of Palmdale Joshua tree preservation program.).

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CDFW will evaluate the information provided by the permittee. If CDFW agrees with the permittee's alternative proposal, it will notify the permittee in writing. If CDFW disagrees with the permittee's alternative proposal, CDFW will schedule a meeting with the permittee to discuss possible resolutions. Following the meeting, CDFW will make a final written determination as to how many western Joshua trees of each size class the permittee will be required to relocate.

Whether relocating the number of trees identified is impracticable will be determined by CDFW on a case-by-case basis in consideration of several factors including whether one of the following limitations exists:

1. Legal Impracticability: A statutory or regulatory limitation to relocating western Joshua trees exists such that relocating the required number of trees would necessarily result in changes to the project that make it significantly more difficult to fulfill the project's objectives. For example, a requirement to relocate a particular number of trees may be legally impracticable if it would require the permittee to seek changes to another permit issued for the project.
2. Technical or Technological Impracticability: A significant technical or technological limitation to relocating western Joshua trees exists such that relocating the required number of trees is. For example, a requirement to relocate mature western Joshua trees may be very difficult if the relocation site is not located sufficiently close to the project site or if the grade of the landscape precludes the use of heavy equipment for some of the trees to be relocated.

CDFW will also consider the extent to which the project is able to avoid take of western Joshua trees and/or the presence of other minimization measures, such as making land available as a relocation site or trimming western Joshua trees in lieu of removing them. The greater the avoidance and other minimization measures the permittee will undertake, the more appropriate a reduction in the number of trees to relocate will be.

CDFW recommends that permittees identify contingency trees that could be relocated if a problem arises with the primary trees targeted for relocation in the Relocation Plan. For example, if tree spade relocation is proposed, additional trees may be needed for relocation as a contingency in case the tree spade relocation method is impractical due to rocky terrain or other issues.

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## Relocation Sites

The permittee should identify one or more relocation sites in the proposed Relocation Plan it submits to CDFW for approval. The permittee should first evaluate if salvage trees can be relocated on the project site and if any project design or phasing modifications can be made to accommodate salvage trees on site.

If salvage trees cannot be relocated on the project site, the permittee must propose one or more off-site relocation sites that can accept trees designated for relocation. If available, permittees should prioritize off-site relocation sites that have been degraded by impacts (e.g., fire, restoration areas). Relocation sites located within local preserves, parks, land trusts, and conservancies should also be considered. Relocation of salvage trees must be conducted in compliance with all applicable federal, state, and local laws.

Efforts should be made to relocate each salvage tree as close to its original location as is possible. Relocation sites that do not meet the criteria listed below may be approved by CDFW on a case-by-case basis. Criteria for selecting off-site relocation sites include:

- In a natural vegetation community that supports western Joshua trees;
- Prioritize locations within 16 kilometers of the salvage tree's original location, but no more than 50 kilometers from the salvage tree's original location; and
- Within 200 meters of the salvage tree's original elevation.

This document does not provide guidance regarding how to implement or support the assisted migration of western Joshua tree. At this time there is insufficient research published on the geographic boundaries of genetically distinct populations and/or climate adaptive traits within populations that may be suited for long distance (2.5 kilometers or greater from occupied habitat) assisted migration to expand western Joshua's tree's range or assisted geneflow to enhance a population's ability to adapt to climate change impacts. Opportunities for short distance (less than 2.5 kilometers from occupied habitat) assisted migration of western Joshua tree may be approved on a case-by-case basis. Assisted migration, assisted geneflow, and/or boundaries of genetically distinct populations may be discussed in future amendments to this document.

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## Relocation Plan

Where relocation is required, a Relocation Plan must be prepared by the permittee and approved by CDFW prior to the issuance of an WJTCA ITP. The Relocation Plan may combine bare root and tree spade relocation methods and must include the following information:

- The contact information and qualifications of the desert native plant specialist(s) overseeing relocation;
- The date range when trees will be relocated. If salvage trees will be temporarily stored in containers, the plan must indicate when the trees will be replanted;
- The landowner's name, location name, and address or APN for each relocation site property;
- If salvage trees will be relocated outside of the project site, written confirmation from the owner of each relocation site granting the permittee permission to relocate salvage trees to the relocation site property, granting access to implement any maintenance and monitoring measures, and authorizing CDFW staff to access the property to conduct compliance inspections with appropriate advance notification;
- The unique identifier, size class, planned and contingency relocation methods, current and recipient site GPS coordinates (latitude/longitude in decimal degrees), overall health, description of any pest/human damage, and photo for each tree to be relocated (see the [census instructions](#) for submitting photographs);
- If utilizing multiple relocation sites, the permittee must document the relocation site where each tree will be relocated using the unique identifier and recipient site coordinates;
- The number of contingency trees be identified for relocation including the information described for each additional contingency tree; and
- Any other pertinent information regarding relocation operations.

Each permittee may, but is not required to, use [CDFW's Relocation Plan template](#) and [spreadsheet](#), so long as the permittee's proposed Relocation Plan contains all the required information set forth above. Any questions regarding the development of the Relocation Plan should be discussed with CDFW staff prior to submittal to avoid project delays.

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## Protocols

### Pre-Relocation

#### Selecting Trees for Relocation

Western Joshua trees that are in good health should be prioritized for relocation. Indications that a tree is in good health include where 60% or more of the tree's branches are living; minimal pest damage (no or few bore holes and/or less than 25% periderm [bark] stripping); recent signs of unrestricted hard growth; recent signs of flowering events, and/or strong vigor. Where a tree is greater than 7 meters in height, its size may limit its ability to be successfully relocated. Therefore, healthy salvage trees between 5-7 meters in height should be prioritized within Size Class C.

#### Siting

Trees identified for relocation should be clearly flagged or marked with a unique identifier and the recipient site should be identified before tree removal begins. Preferred and contingency methods for each relocation should also be identified (e.g., bare root relocation versus tree spade relocation) in advance. Each recipient site should be compatible with the corresponding salvage tree's relocation method (see Tree Spade Relocation under Digging/Tree Removal section below). The recipient site location should also be recorded using a Global Positioning System (GPS) unit and marked with pin flags or wood stakes that are clearly labeled with the unique identifier of the corresponding salvage tree. The permittee should identify a recipient site for each salvage tree that is: accessible for relocation and irrigation equipment, such as water trucks or trailers; provides or enhances connectivity corridors; mimics the density of the surrounding WJT population; and is located at least 4.5 meters from the nearest relocated western Joshua tree and 15 meters from a previously existing western Joshua tree. If possible, recipient site locations should be chosen at random and be spatially balanced throughout the relocation site. Geographic Information System (GIS) tools can assist with this process.

#### Timing

When feasible, western Joshua trees should be relocated at a time that maximizes their chance of survival. (Fish & G. Code, § 1927.3, subd. (a)(4)(A)(ii).) The optimal time to relocate trees occurs in the fall when heat/drought stress is

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low, and roots have adequate time to reestablish before the onset of hot, dry summer conditions. For bare root relocation, winter is a suboptimal but acceptable time to relocate trees but provides less time for roots to re-establish and may result in lower rates of survival. For tree spade relocation, there is a wider range of suboptimal but acceptable times to relocate trees because this method results in less root exposure and potential water loss through evapotranspiration as compared to bare root relocation. Relocating when trees are exposed to hot conditions for an extended period, should be avoided.

Bare Root Relocations

Winter	Spring	Summer	Fall
OK	Avoid	Avoid	Preferred

Tree Spade Relocations

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
OK	OK	OK	OK	Avoid	Avoid	Avoid	OK	OK	Prefer	Prefer	Prefer

Pre-Relocation Watering

In preparing for relocation, both the salvage trees and the recipient sites should be watered 24-48 hours in advance. An earthen berm 4-6 inches in height should be created around the trees and recipient sites to create water basins that ensure water saturates the soil around the root ball and recipient site. For bare root relocations, the perimeter of the berm should be no less than 24 inches from the base of the trunk. For tree spade relocations, the size of the berm should be slightly wider than the width of the tree spade to be used on that individual. The water basins should be filled with water to just below the top of the berm twice and allowed to fully drain between fillings. Root stimulant additives such as vitamin B1 and rooting hormone may assist in root regeneration but are not required. Root stimulant additives should be utilized according to product label recommendations.

Orientation

Prior to relocation, using a compass set to the correct declination, mark the north side of the tree identified for relocation with a water-based tree marking paint or other CDFW-approved means in a place that will not be impacted or obscured during relocation operations (e.g., a small paint mark on the trunk 12 inches above ground level or ribbon tape tied to one of the branches on the north side of the tree). When setting a salvage tree in a recipient site, best efforts

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should be made to place the tree in its original orientation; however, this may be not be possible based on the terrain of the recipient site.

### Other Pre-Relocation Precautions

- Relocation operations should adhere to the American National Standards Institute Z133 Safety Requirements for Arboricultural Operations.
- Permittees should obtain all information necessary to avoid existing underground infrastructure at salvage and recipient sites prior to relocation (see [Underground Service Alert of Southern California \(DigAlert\)](#)).
- To prevent the spread of invasive species and pathogens, digging equipment should be clean and free from dirt and debris and sanitized with a 10% bleach solution prior to arriving at the site where trees will be salvaged.
- Depending on the method used, tree limbs may need to be trimmed to facilitate relocation. Limbs should only be trimmed as necessary to facilitate relocation.

## Relocation

### Digging/Tree Removal

If trees are in close proximity to each other (less than 18 inches apart at the bases of their trunks), all efforts should be attempted to relocate the trees together to avoid separation of trees that are connected through rhizomes below ground.

Bare root removal by hand – Relocations using only hand tools should only be done for trees that are less than 1 meter in height. The root ball and surrounding soil should be salvaged in a way that keeps the root ball as intact as possible. This can be accomplished by excavating a circular trench 10-12 inches deep, 1-2 feet from the base of the trunk. Once the trench is complete, hand tools should be used to undercut the root ball and sever the roots below. Only apply as much lateral pressure to the tree as necessary to expose roots for severing with hand tools. The cut surfaces on roots should be kept small to minimize root dieback and exposure to soil-borne pathogens.

Bare root removal by (non-tree spade) heavy equipment/excavator – As with bare root removal by hand, the root ball and surrounding soil should be

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salvaged in a way that keeps the root ball as intact as possible. There are different ways to accomplish this using an excavator, depending on the tree's size, soil conditions, and other factors. For trees that are less than 1 meter in height, an excavator with a bucket attachment at least 24 inches in width can be used to extract the tree and root ball in one scooping motion. The equipment operator should minimize incidental damage to the aboveground portion of the tree to the greatest extent possible. Root balls should be handled with care when they are unloaded from the bucket. For trees that are 1 meter or greater in height, a trench 18-24 inches deep should be excavated 2 feet from the base of the trunk. If the soil around the root ball stays intact and does not show signs of fracturing, the tree should be firmly rigged to the rounded exterior of the bucket using nylon straps at least 4 inches in width (Figure 1). Additional cloth padding may be placed around the straps to prevent damage to the periderm. Straps should be rigged at multiple points along the main trunk of the tree to prevent excessive swinging once freed from the soil. Once firmly rigged, the root ball should be undercut using hand tools as safely as possible until all or most of the roots are severed. Snapping roots should be minimized, as much as possible.

If the soil around the root ball does not hold together and shows signs of fracturing and instability when excavating the trench, as is common in sandy soils, the excavator should be used to undercut the root ball as much as possible without causing the tree to fall freely to the ground.

The tree should then be rigged to the bucket attachment using the methods described above and gentle but increasing lateral pressure should be applied to the tree to dislodge the root ball and lay the tree down. Once the tree is resting on the ground, the straps may need to be adjusted in order for the tree to be picked up by the excavator.

Trees removed from the ground using the bare root method should be replanted or containerized within 24 hours of removal.

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Figure 1 – Bare Root Removal: Removing soil around the root ball of a salvage tree using hand tools (left). Salvage tree being removed from the ground by an excavator (right). (Photo credit: National Park Service)

Tree spade relocation – Tree spades come in different sizes based on the width of the soil surface that they can encapsulate (Figure 2). Tree spades can be used to relocate trees of most sizes. However, they are not recommended for trees over 7 meters in height due to stabilization issues during high-speed wind events after relocation.

The following steps must be carried out sequentially, in a timely manner, and thoughtfully. Each western Joshua tree and corresponding recipient site should be evaluated for tree spade acceptability prior to digging. The desert native plant specialist should evaluate soil conditions to assess whether large rocks or boulders may prevent tree spade blades from fully encapsulating the root ball. This may be apparent by scanning the surface of the surrounding area or reviewing existing soil maps (see “Shallow Excavation Ratings” on NRCS Web Soil Survey: <https://websoilsurvey.nrcs.usda.gov/app>). Tree limbs may be trimmed only where necessary to allow the tree spade blades to fully close around the tree. The tree spade size should be selected to ensure the blades do not come within 18 inches of the base of the trunk at ground level. Recipient sites should be dug immediately before, or no more than 4 hours prior to, tree extraction to prevent the soil from drying out and collapsing. Excavated recipient site dirt should be used to backfill the tree removal site where available. Open pits

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should be flagged with stakes and high-visibility ribbon tape and temporary fencing should be installed around any unattended open pits to prevent people or animals from falling in.



Figure 2. A salvage tree being removed from the ground using a tree spade (Photo credit: National Park Service).

### Transporting Trees

If salvage trees are not going to be transported to recipient sites by hand or by the equipment used to extract the tree (e.g., by truck or trailer), precautions must be taken to avoid damage to the tree and root ball. Root balls should be loosely wrapped in burlap and kept moist during transport. Salvage trees should be supported at all times and not dropped or thrown. Salvage trees should be securely transported upright or at a slight angle. Salvage trees may touch other salvage trees during transport, but they should not be stacked or otherwise fully supported by other salvage trees. Salvage trees should be positioned in transport vehicles in a way that minimizes branch entanglement.

### Planting Methods

Bare root relocations - The width of each recipient site hole should be approximately 12 inches greater than the width of the root ball. Root balls should

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fit snugly within their recipient holes to avoid stabilization issues. The depth of recipient sites holes should be 2-4 inches less than the height of the root ball to account for settling. If recipient site holes are dug too deep, they should be backfilled and compacted by foot or using hand tools. Salvage trees should be placed as close to their original orientation as the terrain will allow. Salvage trees should be supported when lowered into holes. Holes should be simultaneously backfilled with soil and water to eliminate air pockets and voids. Soil should be lightly compacted by foot or using hand tools.

Tree spade relocations - The salvage trees should be placed as close to their original orientation as the terrain will allow. If needed, soil should be backfilled and lightly compacted by foot or using hand tools to meet the grade of the surrounding soil surface.

### Storage

If salvage trees need to be stored for later replanting, in-ground storage is preferred over containerizing. In-ground storage procedures should follow the pre-relocation water berm, planting, post-relocation water berm, and stabilization methods described herein. Salvage trees stored in-ground should be flagged for avoidance and/or fenced off.

If in-ground storage is not possible, each salvage tree should be placed in a container that is at least twice the size of the unrestricted root ball and includes drainage holes. The containers should be sanitized with a 10% bleach solution. The container should be filled using soil from the removal site if the salvage tree is being stored for less than 6 months or with a soil mix ratio of 100 parts organic potting soil to 160 parts coarse perlite to 200 parts washed concrete sand to 1 part "13-13-13" fertilizer (Goodwin 2024) if the salvage tree is being stored for longer than 6 months. The bottom one third of the container should be filled with soil mixture before placing the root ball into the container. Once the root ball is placed into the container, the remaining volume of the container should be filled with soil and water simultaneously to eliminate air pockets and voids. Salvage trees should not be stored in containers for longer than 2 years unless approved by CDFW. Containerized salvage trees should be stored either upright or at a slight angle to improve drainage and prevent root rot. If weather forecasts predict wind gusts over 60 mph, containerized trees should be closely grouped and tied together 24 hours in advance for added stability. If containerized salvage trees are pushed over, they should be promptly righted and stabilized using the methods described below for the duration of the

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storage period. Containerized salvage trees should be maintained and monitored following the methods described below. If trees show signs of drought stress, watering frequency may need to be increased. Containerized soil should always be allowed to thoroughly dry out before rewatering. Containerizing a salvage tree that has been removed from the ground using the tree spade method in a container would eliminate the benefits from this relocation method; therefore, salvage trees removed from the ground using the tree spade method should always be stored in the ground.

### Post-Relocation

#### Water Basins

An earthen berm at least 4 inches in height should be created around each salvage tree following relocation. The top of the berm should be level. For bare root relocations, the perimeter of the berm should be no less than 24 inches from the base of the trunk. For tree spade relocations, the perimeter of the berm should be the width of the tree spade.

#### Stabilization

Stabilization material should be installed for salvage trees that are greater than 3 meters in height and for trees that are less than 3 meters in height with a tree height to canopy width ratio that exceeds 2:1. For example, a 2-meter-tall tree with a canopy width greater than 1 meter should have stabilization material installed. Non-abrasive guying materials, such as Arbor Ties, should be attached to three equidistant lateral ground-point anchors outside of the water basin. Guys should be taut but allow for some movement so they do not cause friction in light to moderate wind conditions.

#### Identification

Each salvage tree should be clearly flagged with tape ribbon or a metal tree tag, and labeled with a unique identifier (e.g., #1, #2, #3) and the relocation date (or the date when first removed from the ground for containerized salvage trees) in the following format: MM/DD/YYYY. Each tree tag should be loosely secured to the main trunk of the tree, rather than nailed directly into hard growth, and should be visible from the south. Each western Joshua tree stem or trunk arising from the ground shall be considered an individual tree requiring

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flagging, regardless of its proximity to any other western Joshua tree stem or trunk.

### Recordation

A GPS unit should be used to record the location of each salvage tree's recipient site. The relocation method (bare root – hand, bare root – excavator, or tree spade) should also be recorded, along with a color photo of each tree taken from the south of the tree facing north. The picture should include the entire tree.

### Maintenance and Monitoring

Where relocation is required under a WJTCA ITP, it is the permittee's responsibility to ensure the maintenance and monitoring measures set forth below are implemented and as required in the permittee's WJTCA ITP. Relocation is considered successful when the health of a salvaged western Joshua tree is stable or improving without any supplemental care after the post-relocation maintenance period.

### Site Visits

Site visits should be conducted by a technician with relevant experience in assessing the signs of western Joshua tree health to determine maintenance needs for relocated trees according to the following schedule:

#### Year 1

- Months 0-3, once every two weeks.
- Months 4-12, once per month.

#### Year 2

- Months 13-24, every other month.

#### Year 3

- Months 25-36, every other month only for trees showing signs of declining health. At the end of the 3-year maintenance period, all trees should receive a final site visit and be assessed according to the Completion Report section below.

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During site visits, technicians should assess and record maintenance needs for each salvage tree. They should also have a site map showing the locations of all salvage trees, a GPS device to confirm salvage tree locations, and notes and photos from previous visits, and they should be prepared to address maintenance needs during site visit or shortly thereafter.

## Watering

During the months of May to September, salvage trees should only be watered during site visits if the total rainfall (or snowfall equivalent) for the region within which the recipient site is located is less than 0.4 inches within the previous 7 days. During the months of October to April, salvage trees should only be watered during site visits if the total rainfall (or snowfall equivalent) for the region within which the recipient site is located is less than 0.3 inches within the previous 7 days. Regional precipitation models may be used in determining rainfall amounts; however, rain gauges within, or adjacent to, relocation sites provide the best indicator of precipitation totals. Water basins should be filled to the top of the berm, but not allowed to overtop the berm. A technician with relevant experience in assessing the signs of western Joshua tree health is not needed to water salvaged trees.

## Tree Health

Tree health should be assessed by a technician and recorded for each salvage tree during site visits. Tree health should consider signs of new leaf growth, branch loss, signs of flowering/fruitletting, signs of pest/human-caused damage, leaf discoloration, restricted hard growth, overall vigor, and other indicators worth noting. If salvage trees are showing signs of increasing health after two years of maintenance, they do not need to be visited during the third year (see reporting requirements below), except for the final site visit.

## Invasive Plant Removal

Invasive plants should be controlled and removed within the water basin. Removal should occur before invasive plant seeds reach maturity. Invasive plants should be removed through mechanical methods and hand pulling or with hand tools, rather than by chemical means, and appropriately disposed of. In removing invasive plants, care should be taken to not damage salvage tree roots. A list of common invasive plant species can be found on the California

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Invasive Plant Council Invasive Plant Inventory (Cal IPC Inventory) website at: <https://www.cal-ipc.org/plants/inventory/>. Native plants should be retained where possible.

## Maintenance of Berms, Stabilization Supports, and Identification Markers

During site visits, berms should be checked for height and any breaks that would allow water to escape from the water basin. Stabilization supports should be checked for damage and tightness. If relocated trees are showing signs of leaning, stabilization supports should be added or adjusted. Identification markers should also be checked for intactness, legibility, and maintenance needs.

## Completion Activities

During the final site visit at the end of the 3-year maintenance period, berms, stabilization supports, and identification markers must be removed from the relocation site.

## Reporting

Where relocation is required under a WJTCA ITP, it is the permittee's responsibility to ensure the reporting measures set forth below are implemented. Where relocation is voluntary, CDFW requests that the permittee provides the same reporting information to CDFW to better inform updates to these guidelines and relocation protocols.

## Post-Relocation Reporting

When a WJTCA ITP requires relocation of western Joshua trees, the permittee must submit a post-relocation report to CDFW no more than 30 days after relocations are completed. The post-relocation report should include the following:

- The date range when relocation operations occurred; and
- For each salvage tree:
  - The unique identifier and recipient site coordinates;
  - The final recipient site, including GPS coordinates (latitude/longitude in decimal degrees);

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- The relocation method used;
- The height and diameter of the post-relocation water basin constructed;
- Any stabilization supports installed;
- Any major damage, including any necessary limb trimming, that occurred during relocation;
- Any deviation from the tree's original orientation;
- Any root stimulant additives used in pre- or post-relocation irrigations; and
- A photo of the tree facing north, with the unique identifier in each file name.

## Maintenance Reports

When a WJTCA ITP requires relocation of western Joshua trees, the permittee must submit annual reports detailing the 1-year and 2-year maintenance periods, as appropriate, to CDFW. Maintenance reports should include the following information:

- The date(s) when site visit(s) occurred;
- The contact information and relevant experience of the technician(s) performing tree assessments; and
- Information for each salvage tree regarding the following:
  - The unique identifier and recipient site coordinates;
  - Whether the tree is alive or dead;
  - Dates of supplemental waterings;
  - Identity and estimated number of invasive plants observed/controlled and the methods used;
  - Any signs of pest/human damage;
  - Any signs of declining tree health;
  - Any maintenance conducted to repair, replace, add, or adjust berm, stabilization supports, and/or identification markers;
  - A photo of the tree facing north, with the unique identifier in each file name; and
  - At the end of the 2-year period, the reasons for discontinuing maintenance on trees showing stable or increasing health, such as new leaf growth, flowering/fruitletting, good leaf color, no signs of pest/human damage, and/or unrestricted hard growth.

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## Completion Report

A completion report must be submitted to CDFW no more than 30 days after the end of the 3-year maintenance period. The completion report must contain the following:

- The date when the final site visit occurred;
- The date when berm/stabilization materials/identification markers were removed;
- The contact information and qualifications of the technician(s) performing the final assessment; and
- Information for each salvage tree regarding the following:
  - Whether the tree is alive or dead;
  - Any damage that occurred during or after relocation;
  - Any signs of declining health;
  - Any signs of pest damage; and
  - A photo of the tree facing north, after berm, stabilization materials, and identification markers are removed, with the tree's unique identifier in each file name; and
  - Any recommendations that may help to improve tree relocation methods.

## Literature

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