

**DOCKETED**

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<b>Document Title:</b>	Attachment 1, Impact Evaluation for the Soda Mt Solar Project
<b>Description:</b>	This document contains Attachment 1, Impact Evaluation for the Soda Mt. Solar Project, to the Applicant comments on the Soda Mountain Solar Project Staff Assessment (SCH #2025080161).
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February 26, 2026  
Project No: 25-17245

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**Subject: Impacts Evaluation for the Soda Mountain Solar Project in Unincorporated San Bernadino County, California**

This report has been prepared by Rincon Consultants to provide revised impact estimates and updated compensatory mitigation ratios/acreages specific to desert tortoise (*Gopherus agassizii*), burrowing owl (*Athene cunicularia*), and impacts to water. The report has two primary purposes: 1) to summarize updated evaluations of impacts to biological and water resources within the Project boundaries of the proposed Soda Mountain Solar Project (Project) based on modifications to the project's proposed construction activity and methods and the proposed revegetation and management plan; and 2) to present proposed revisions to the mitigation ratios and/or acreages based on the updated impacts evaluation.

Rincon has prepared this report based on two primary sources of existing information: 1) vegetation community and habitat mapping prepared by SWCA (2024a) and reviewed by the California Energy Commission; and 2) information on advanced construction technology and 30 percent site design provided by ZGlobal and their Design/Build contractor. This evaluation considered the currently proposed alternative technology for solar array installation in the context of previously disclosed existing conditions, proposed mitigation measures, and proposed compensatory mitigation.

Revisions to the construction activity and methodology include implementation of advanced technology as reflected in CEC Docket TN# 261587 which would require the project to utilize advanced terrain-following solar tracker systems which would significantly reduce mass grading efforts. The Project is currently evaluating two project designs. Project A (Preferred Design) and Project B (Alternative Design). Under both options, this construction methodology would reduce permanent impacts from up to 2,074.31 acres to 246.02 acres under Project A, and from 1,987.45 acres to 213.7 acres under Project B by significantly reducing the extent of site grading. Reduced levels of grading would reduce permanent impacts to ephemeral drainages to 191.01 acres under Project A and 157.70 acres under Project B. The total acreage of temporary impacts would conversely increase, with temporary impacts resulting from ground disturbance associated with mowing and drive/crush of vegetation, maintain soil and seed bank and allowing for a quicker and more natural revegetation of the most of the project site.

Recommendations for levels of compensatory mitigation were revised based on ratios contained in the initial 2016 Record of Decision, in the context of reduction of permanent impacts, reduction in loss of functional habitat, and suggested agency guidelines based on established procedures.

## Methodology

Rincon Consultants (Rincon) conducted desktop analysis and literature review to evaluate existing biological conditions within the Project area and to assess potential impacts and mitigation strategies. This analysis relied on a comprehensive review of previously published technical documents, environmental assessments, and biological studies relevant to the Soda Mountain Solar Project. The 30 percent site design provided by ZGlobal and their Design/Build contractor was used to estimate impact footprints and assess spatial overlap with sensitive biological resources.



The following sources were used in the impacts evaluation:

- Soda Mountain Solar Project Environmental Impact Report (EIR) prepared by the Bureau of Land Management (BLM 2015),
- Record of Decision Soda Mountain Solar Project and Amendment to the California Desert Conservation Area Plan. (BLM 2016)
- CEC Docket TN #261603 Soda Mountain Solar Project Biological Resources Technical Report (Appendix D-1) (SWCA 2024a)
- CEC Docket TN #261597 Revised EIR Section 3.4 Biological Resources February 2025 (SWCA 2025a)
- CEC Docket TN #261595 Chapter 2 Project Description February 2025 (SWCA 2025b)

These primary sources were supplemented by additional technical documents that provided species specific data, hydrological data, and mitigation implementation details:

- CEC Docket TN #257930 Water Supply Assessment for the Soda Mountain Solar Project (Appendix J) (SWCA 2025c)
- CEC Docket TN# 261587 Mitigation Measure MM BIO-3 (Appendix Z) (SWCA 2025d)

## Background

### Project Description

The Soda Mountain Solar Project is located approximately 7 miles southwest of Baker, CA, directly adjacent to Interstate 15. A Record of Decision (ROD) was initially issued by the Bureau of Land Management in March 2016, however, was later rejected by the San Bernardino County supervisors.

The 2016 Project included the development of a 287 megawatts (MW) photovoltaic solar facility and associated infrastructure and facilities within 2,942-acre project boundary (Project). Surface disturbance was anticipated at 2,059 acres of which 1,767 acres would be permanently impacted.

The Project is currently evaluating two project designs. Project A (Preferred Design) and Project B (Alternative Design). Both designs include the development of a 300 MW photovoltaic solar farm and includes 300 MW battery storage. Under Project A, total impacts will be contained within 2074.31 acres, while total impacts under Project B will be limited to 1987.45 acres. Permanent impacts under Project A will be limited to approximately 246.02 acres, while permanent impacts under Project B will be limited to approximately 213.7 acres.

The project site remains within the 2016 ROD location site. The site remains located adjacent to existing roadways that provide access for construction and operations. Figure 1 and Figure 2 document Limits of Disturbance and anticipated Temporary and Permanent Disturbance.

### Existing Conditions

The existing conditions within the Project boundaries remain consistent with the 2016 Project design (BLM 2016). Vegetation within the Project boundaries consists primarily of Mojavean desert scrub and desert wash scrub habitats, with sandy soils and scattered gravel and cobble. Within the project boundary, five native vegetation communities were identified, including Creosote Bush– White Bursage Bush Scrub, Creosote Bush Scrub, Rigid Spine Flower – Hairy Desert Sunflower, Cheesebush–Sweetbush Scrub, and California Joint Fir–Longleaf Joint-fir Scrub (SWCA 2024). Two sensitive vegetative “associations” were present. Table 1 presents the mapped vegetation communities within the project



Study Area and the total acreages of each community. The Study Area also included disturbed (i.e., previous surface disruption or mechanical clearing) and developed areas (i.e., maintained dirt roads).

Desert tortoise and burrowing owl sign were observed during survey efforts conducted in May 2023. No desert tortoise were directly observed, however suitable burrows and scat was present within the Project boundary.

**Table 1 Vegetation Communities and Land Cover Types**

Vegetation Community	Global Rank*	State Rank†	Acres within Project Boundary
Creosote Bush – White Bursage Scrub Larrea tridentata – Ambrosia Dumosa Shrubland Alliance	G5	S5	2,459
Creosote Bush Scrub Larrea tridentata Shrubland Alliance	G5	S5	145
Rigid Spineflower – Hairy Desert Sunflower Chorizanthe rigida – Gerarea canescens Desert Pavement Sparsely Vegetated Alliance, (Chorizanthe rigida – Gerarea canescens Desert Pavement Association)	G4	S4 (Sensitive Association)	32
Cheesebush – Sweetbush Scrub Ambrosia salsola – Bebbia juncea Shrubland Alliance	G4	S4	8.2
California Joint Fir – Longleaf Joint-fir Ephedra californica – Ephedra trifurca Shrubland Alliance, (Ephedra californica – Ambrosia salsola Association)	G5	S4 (Sensitive Association)	1.2
Developed/Disturbed	NA	NA	25

\*Global Rank (NatureServe 2024):

- G4 = Over 100 viable occurrences worldwide/statewide and/or more than 32,000 acres
- G5 = Demonstrably secure because of its worldwide/statewide abundance

†State Rank (NatureServe 2024):

- S4 = Over 100 viable occurrences worldwide/statewide and/or more than 32,000 acres
- S5 = Demonstrably secure because of its worldwide/statewide abundance

**Table 2 Special Status Species Suitable Habitat**

Species	Suitable Habitat (Acres)	Suitable Habitat Description
desert tortoise ( <i>Gopherus agassizii</i> )	2645.4	Variety of environments from sandy flats to rocky foothills, including alluvial fans, washes and canyons. Arid land with sparse vegetation. All native vegetation communities in project area.
burrowing owl ( <i>Athene cunicularia</i> )	2645.4	Open dry annual or perennial grasslands, deserts, and scrublands characterized by low growing vegetation. All native vegetation communities in project area.

## Site Restoration and Fencing

The implementation of new technology will significantly reduce the need for site grading, thereby limiting permanent soil disturbance and preserving native topography. Temporarily disturbed areas will be restored to pre-project conditions through implementation of a Vegetation Resources Management Plan, which includes top-soil salvage, native seeding, and performance standards, including monitoring and



reporting (BIO-13). To maintain site permeability for wildlife, the project is proposing to design fencing to allow re-entry of desert tortoise and direct animals toward designated undercrossings to prevent obstruction of movement. Collectively, these proposed efforts would reduce the extent and severity of habitat disturbance, support habitat restoration, and ensure continued wildlife access through and around the facility. Measures associated with desert tortoise and burrowing owl are provided in Attachment 2.

## Restoration

Following construction activities, temporary disturbance areas will be restored in accordance with BIO-13, which requires implementation of a Vegetation Resources Management Plan. The plan will help restore temporary impacts to functional desert tortoise habitat within the project area. Desert tortoise primarily use creosote bush and white bursage for cover, which is the dominant vegetation community present in the project area, totaling 2,459 acres (Esque et al. 2021). Creosote bush is capable of resprouting following disturbance by heavy vehicles, regaining a full canopy within 5 years (Gibson et al. 2004). Reseeding shrub seedlings will also provide further mitigation to the damage caused during the minimal ground disturbance (Abella & Berry, 2016). Annuals, necessary for forage, revegetate faster, taking 1-15 years to reestablish (Abella & Berry, 2016). Previous solar projects in alluvial fans have utilized the post-construction addition of biocrust to further advance restoration of temporary disturbed areas impacted by minimal ground disturbance (Phoenix 2019). The implementation of advanced technology and BIO-13 will provide a comprehensive plan to limit the impact of ground disturbance throughout the project timeline.

Case studies by Valley Electrical Association in the Mojave Desert demonstrated minimal ground disturbance, followed by revegetation of shrubs and forage along with wildlife friendly fencing, leads to desert tortoise re-utilizing the habitat within solar farms (VEA 2022). The use of minimal ground disturbance methods, combined with updated restoration plans, should result in the long-term maintenance and viability of suitable desert tortoise and burrowing owl habitat within the solar array areas, significantly reduce long-term habitat degradation and support the recovery and continued use of the site by desert tortoise and burrowing owl. As such, a reduction in compensatory mitigation to offset loss of burrowing owl and desert tortoise habitat to align with the revised permanent impact acreage is appropriate.

## Fencing

Prior to construction activities, exclusion fencing will be installed to prevent all wildlife from entering the project area. As part of the construction activities wildlife friendly fencing is proposed around certain project components, with openings capable of fitting adult desert tortoises (10 inches by 7 inches). These openings are found and used by desert tortoises when they encounter fencing while traversing their habitat (Ruby et al. 1994). All wildlife friendly fencing would remain installed for the duration of the project's operation and maintenance. The presence of wildlife friendly fencing would allow for the recolonization of the site by desert tortoise and other wildlife. In other photovoltaic projects using the same process, wildlife, including desert tortoise, rattlesnake, desert kit fox, rabbits, and other species, were found to reoccupy the site after removal of exclusion fencing (Cypher et al. 2021). The proposed fencing would allow for wildlife species to reoccupy the project site during operation and maintenance.

## Installation Methods

### Advanced Technology

The Project's utilization of advanced technology would substantially reduce the extent of ground disturbance, vegetation removal and direct impacts from project development as compared to previous technology that requires more extensive grading to prepare the site for panel installation. The proposed



project would use Nextracker NX Horizon-XTR-0.75 10-inch tracker system, Nevados All Terrain Tracker system, or other similar systems under development that would limit disturbance for each pile installation to 1 square foot per pile (approximately 3 acres per every 100,000 piles). These trackers can accommodate up to 15 percent or more slope compared to typical equipment.

## Site Preparation and Installation

Site clearing and preparation will be required for pile installation to allow access for work on the solar array but at levels far less extensive and intrusive. Site preparation will include limited mowing and grubbing within the site, removal of large boulders, and spot grading to allow for equipment usage. In most instances equipment would be rolled over vegetation to minimize vegetation loss.

Installation of the Solar Array system will not change from what was described in CEC Docket TN #261595 Chapter 2 Project Description. Construction of the solar arrays would begin with the installation of array support posts, which would be driven into the soil using a pile/vibratory/rotary driving technique to a depth of approximately 6 to 12 feet. Once the support structures are in place, solar panels would be attached to the support frame. The assembled groups of solar panels would be wired together into strings through connectors on the back of the modules. Assembled panel sections would then be connected to combiner boxes located throughout the arrays that would deliver power to the inverter. Output wires from combiner boxes would be routed along an underground trench system approximately 3 to 6 feet deep and 1 to 6 feet wide, to the central inverter. Central inverters would be mounted on concrete pads or driven piles. Central inverters would be brought in by tractor-trailers through the Razor Road site entrance and delivered directly to the mounting pad sites where they are placed by mobile crane (SWCA 2025). Racking systems and modules will be installed using terrain telehandlers, trucks, trailers, UTVs. Approximately 55 acres of permanent disturbance will be attributed to the installation of the solar panels associated with the use of advanced technology. Development of permanent infrastructure (inclusive of roads, facilities and solar panel posts) on the entire project site under the specifications as discussed in CEC Docket TN# 261587, would result in permanent impacts as follows:

- Project Alternative A: 246.02 acres
- Project Alternative B: 213.7 acres .

Of the 246.02 acres for Project A, approximately 78.73 acres of permanent disturbance will be associated with the installation of solar panel posts. Alternatively, of the 213.7 acres for Project B, approximately 85.99 acres of permanent disturbance will be associated with the installation of solar panel posts.

## Impact Calculations

Use of alternative technology would reduce overall impacts. Calculations redefining total impacts are summarized below.



## Temporary and Permanent Impacts

Without implementation of advanced technology, permanent disturbance associated with grubbing and grading required to level rough and undulating areas would result in a total of 2,074 acres under Project A and a total of 1987.45 under Project B. Grubbing and grading would be required for installation of pile foundations, preparation of soils for concrete foundations for substation equipment, inverters, energy storage systems, and operation and maintenance of building. Implementation of advanced technology will reduce permanent impacts to less than 246.02 acres under Project A and 213.7 acres under Project B. Table 3 summarized revised impacts to each components utilizing advanced technology.

The cumulative permanent impacts of the terrain-following solar tracking system infrastructure within the Project area remains consistent at approximately 55 acres.

As a result, permanent impacts to suitable habitat would be reduced. Table 4 provides revised impacts to suitable habitat for desert tortoise and burrowing owl based on the update calculation of permanent impacts.

**Table 3 Revised Impacts based on Advance Technology Utilization**

Project Component	Project A		Project B	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
East Array	337.02	4.65	272.15	4.58
South Array 1	201.96	3.62	213.02	4.35
South Array 2	622.01	10.03	618.55	12.21
South Array 3	321.21	5.43	367.56	9.85
Substation	0	2.06	0	2.06
Gen-Tie Corridor <sup>1</sup>	30.47	0	30.57	0
Remaining Project Site	370.62	165.23	326.9	125.65
Terrain-Following Solar System	-55	55	-55	55
<b>Totals</b>	<b>1,828.29</b>	<b>246.02</b>	<b>1,773.75</b>	<b>213.7</b>

**Table 4 Revised Impacts to Suitable Wildlife Habitat**

Species	Temporary (acres) Project A/Project B	Permanent (acres) Project A/Project B
burrowing owl ( <i>Athene cunicularia</i> )	1,883.29/1,828.75	246.02/213.7
Desert tortoise ( <i>Gopherus agassizii</i> )	1,883.29/1,828.75	246.02/213.7

## Water Resources Impacts

Project impacts to waters of the state have herein been updated with results of the updated jurisdictional delineation (rincon 2026). Site development as originally designed, involving mass grading ff the entire project area would have resulted in roughly 10- to 12-times higher impacts of that estimated for site development under implementation of advanced technology (see Table 5).



**Table 5 Summary of Impacts to Water Resources**

	Total Temporary Impact Area  Acres	Total Permanent Impact Area  Acres	Waters of the State (RWQCB and CDFW Jurisdiction)			
			Temporary Impacts		Permanent Impacts	
			Acres	Linear Feet	Acres	Linear Feet
Project A Impacts	1,929.07	191.01	953.80	991,070.58	125.30	84,471.86
Project B Impacts	1,828.75	157.70	1,053.89	1,012,214.57	90.49	70,396.98

Notes: No Wetland or non-Wetland Waters of the U.S., under USACE jurisdiction were determined to be present in the Study Area. No Wetland Waters of the State were determined present in the Study Area.

## Conclusion

### Revised Impacts

With implementation of advanced technology, on-site grading and associated ground disturbance would be significantly reduced. Under current anticipated design, implementation of advanced technology would reduce permanent ground disturbance to 246.02 under Project A and 213.70 acres under Project B. Installation of terrain following solar panels will convert the total permanent impacts to both desert tortoise and burrowing owl to 246.02 acres and temporary impacts to 1,828.29 acres under Project A. Impacts are further reduced under Project B to 213.7 acres of permanent impacts and 1,773.75 acres of temporary impacts.

The reduction in on-site grading and associated ground disturbance reduces the direct, indirect and cumulative impacts to biological and water resources, including a reduced potential for the project to result in direct, indirect or cumulative impacts to candidate and special status species. This reduction would minimize habitat loss and fragmentation for sensitive species, including desert tortoise and burrowing owl.

### Water Resources Impacts

The reduction in on-site grading and associated ground disturbance would reduce the potential for the project to result in direct, indirect or cumulative impacts related to water quality standards, waste discharge requirements, surface and groundwater quality degradation and the alteration of onsite drainage patterns (SWCA 2025d).

Implementation of advanced technology and the reduction of grading earthwork efforts will allow ephemeral washes to maintain natural drainage patterns, minimize soil disruption and preserve hydrologic connectivity. The reduction in ground disturbance and grading efforts would reduce the overall use of water for dust control measures, reduce compaction of soils, and reduce erosion and sedimentation to downstream channels.

Low impact grading will allow natural contour reestablishment and surface stabilization to allow for the ecological function of these features. As such as low-impact grading, that avoid permanent alteration to wash morphology can warrant mitigation scaling based on actual function loss rather than raw acreage.

### Compensatory Mitigation Ratio

Reporting of project progress and the status of the mitigation measures will allow for up-to-date information on the impacts of revegetation and species repopulation efforts. The following compensatory mitigation ratios are proposed based on existing conditions, proposed mitigation measures, and anticipated post-construction conditions.



**Desert tortoise**

Both the 2015 EIR/EIS and the 2016 USFWS Biological Opinion required a 1:1 mitigation ratio for impacts to desert tortoise. Consistent with these documents, the Desert Renewable Energy Conservation Plan also specifies a 1:1 mitigation ratio outside of designated critical habitat. Due to the reduction of permanent impacts resulting from implementation of advanced technology, no change is proposed for permanent impacts. A 1:1 ratio is proposed to mitigate for permanent impacts.

Proposed compensatory land should be of equal or greater value. A total of approximately 246.02 acres/213.7 acres is proposed dependent on Project design selected.

**Burrowing owl**

A compensatory mitigation ratio of 1:1 is proposed to mitigate for disturbed areas that will no longer provide viable long-term habitat. A total of approximately 246.02 acres/213.7 acres is proposed dependent on Project design selected.

Sincerely,  
**Rincon Consultants, Inc.**

A handwritten signature in blue ink, appearing to read "Marlyng Gama".

Marlyng Gama  
Supervising Biologist

A handwritten signature in blue ink, appearing to read "David Daitch".

David Daitch  
Vice President

**Attachments**

- Attachment 1 Figures
- Attachment 2 Mitigation Measures

## References

- Abella, S. R., & Berry, K. H. (2016). Enhancing and restoring habitat for the desert tortoise. *Journal of Fish and Wildlife Management*, 7(1), 255–279. <https://doi.org/10.3996/052015-JFWM-049>.
- Bureau of Land Management (BLM). 2012. *Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States*. U.S. Department of the Interior.
- \_\_\_\_\_. 2015. Soda Mountain Solar Project Proposed Plan Amendment/Final Environmental Impact Statement/Environmental Impact Report. U.S. Department of the Interior. Accessed June 2025.
- \_\_\_\_\_. 2016. Record of Decision Soda Mountain Solar Project and Amendment to the California Desert Conservation Area Plan. U.S. Department of the Interior. Accessed June 2025
- \_\_\_\_\_. 2019. Gemini Solar Project Final Resource Management Plan Amendment and Environmental Impact Statement. U.S. Department of the Interior. Accessed June 2025.
- Burrowing Owl Consortium. 1993. Burrowing owl survey protocol and mitigation guidelines. California Department of Fish and Game.
- California Energy Commission (CEC). 2025. Soda Mountain Solar Project Staff Assessment CEC-700-2025-009-SA. California Energy Commission.
- Cypher, B. L., Boroski, B. B., Burton, R. K., Meade, D. E., Phillips, S. E., Leitner, P., ... & Dart, J. 2021. Photovoltaic solar farms in California: Can we have renewable electricity and our species, too. *California Fish and Wildlife*, 107, 231-248.
- Edel, Dan. 2020. Research Shows Solar Farms Improve Desert Tortoise Habitat. <https://www.intelligentliving.co/solar-farms-improve-desert-tortoise-habitat>. Accessed June 2025.
- Esque, T. C., DeFalco, L. A., Tyree, G. L., Drake, K. K., Nussear, K. E., & Wilson, J. S. 2021. Priority species lists to restore desert tortoise and pollinator habitats in Mojave Desert shrublands. *Natural Areas Journal*, 41(2), 145-158.
- Gibson, A. C., Sharifi, M. R., & Rundel, P. W. 2004. Resprout characteristics of creosote bush (*Larrea tridentata*) when subjected to repeated vehicle damage. *Journal of Arid Environments*, 57(4), 411–429.
- Google Earth. May 2025.
- Grodsky, S. M., Tanner, K. E., & Hernandez, R. R. 2020. *Desert plant response to solar energy development: Trophic interactions, rare and invasive species, and management implications* (CEC-500-2020-076). California Energy Commission. <https://www.energy.ca.gov/sites/default/files/2021-05/CEC-500-2020-076.pdf>. Accessed June 2025.
- Hernandez, R. R., Easter, S. B., Murphy-Mariscal, M. L., Maestre, F. T., Tavassoli, M., Allen, E. B., Barrows, C. W., Belnap, J., Ochoa-Hueso, R., Ravi, S., & Allen, M. F. 2014. Environmental impacts of utility-scale solar energy. *Renewable and Sustainable Energy Reviews*, 29, 766–779. <https://doi.org/10.1016/j.rser.2013.08.041>
- Lovich, J. E., & Ennen, J. R. 2011. Wildlife conservation and solar energy development in the desert Southwest, United States. *BioScience*, 61(12), 982–992. <https://doi.org/10.1525/bio.2011.61.12.8>
- Phoenix Biological Consulting. 2019. Site Restoration Plan Gemini Solar Project Clark County, Nevada. Accessed June 2025
- Rincon Consultants, Inc. Aquatic Resources Delineation: Soda Mountain Solar Project. Prepared for Soda Mountain Solar, LLC, Feb. 2026.
- Ruby, D. E., Spotila, J. R., Martin, S. K., & Kemp, S. J. 1994. Behavioral responses to barriers by desert tortoises: Implications for wildlife management. *Herpetological Monographs*, 8, 144–160. <https://www.jstor.org/stable/1467078SWCA>



Environmental Consultants (SWCA). 2024. Soda Mountain Solar Project Biological Resources Technical Report. Accessed June 2025.

\_\_\_\_\_. 2025a. Section 3.4 Biological Resources- February 2025 Revision 1. *Soda Mountain Solar Project Environmental Impact Report*. Accessed June 2025.

\_\_\_\_\_. 2025b. Chapter 2 Project Description- February 2025 Revision 1. *Soda Mountain Solar Project Environmental Impact Report* Accessed June 2025.

\_\_\_\_\_. 2025c. Appendix J - Water Supply Report - February 2025 - Revision 1. *Excerpt from Soda Mountain Solar Project Environmental Impact Report February 2025 Revision 1*. Accessed June 2025.

\_\_\_\_\_. 2025d. Appendix Z - Mitigation Measure MM BIO-3. *Excerpt from Soda Mountain Solar Project Environmental Impact Report February 2025 Revision 1*. Accessed June 2025.

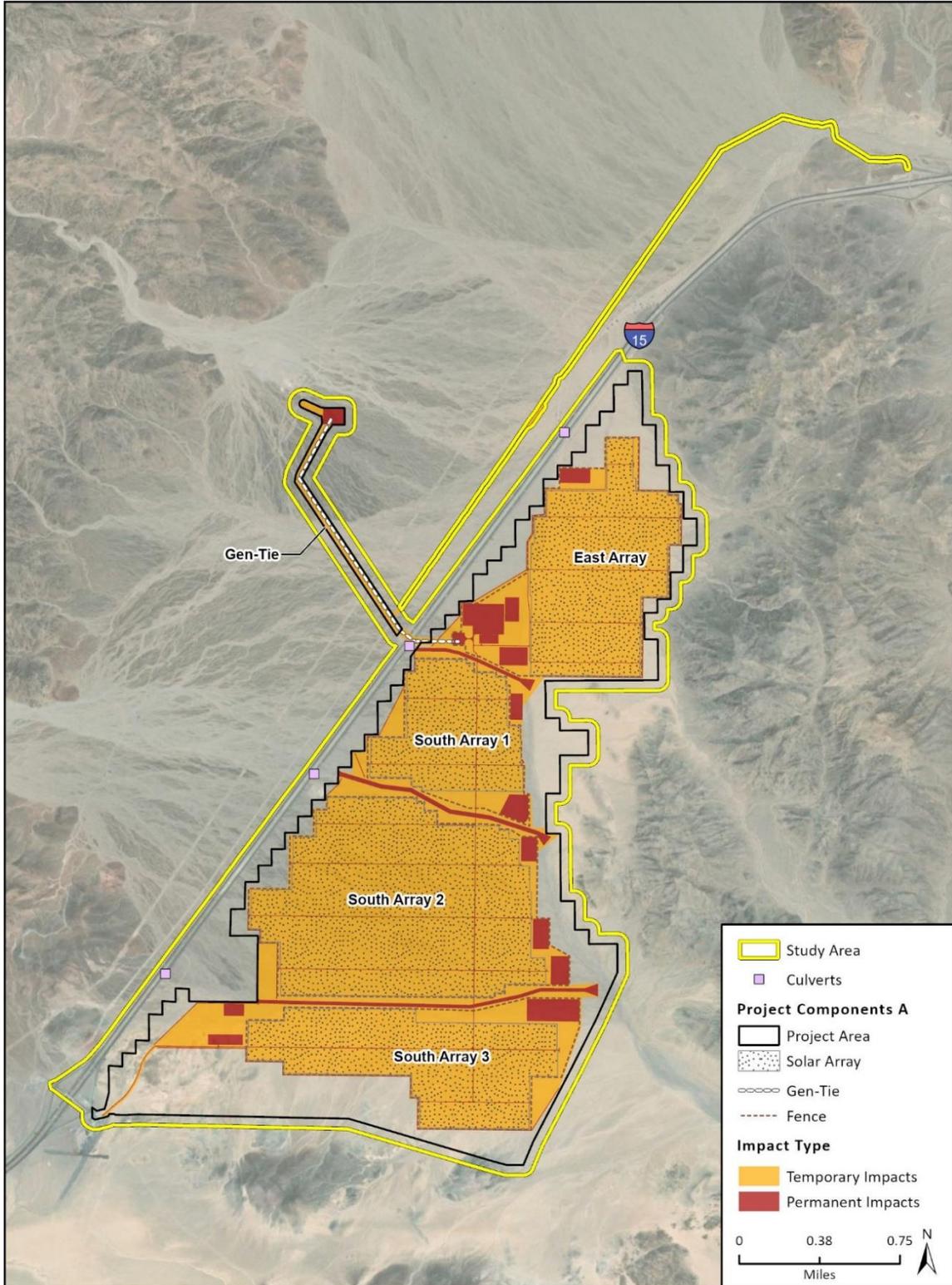
Valley Electric Association (VEA). (2022). *Community solar project: Solar power brightens the lives of VEA members*. <https://web.archive.org/web/20220901040836/https://vea.coop/projects/community-solar-project/>. Accessed June 2025.

# **Attachment 1**

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Figures

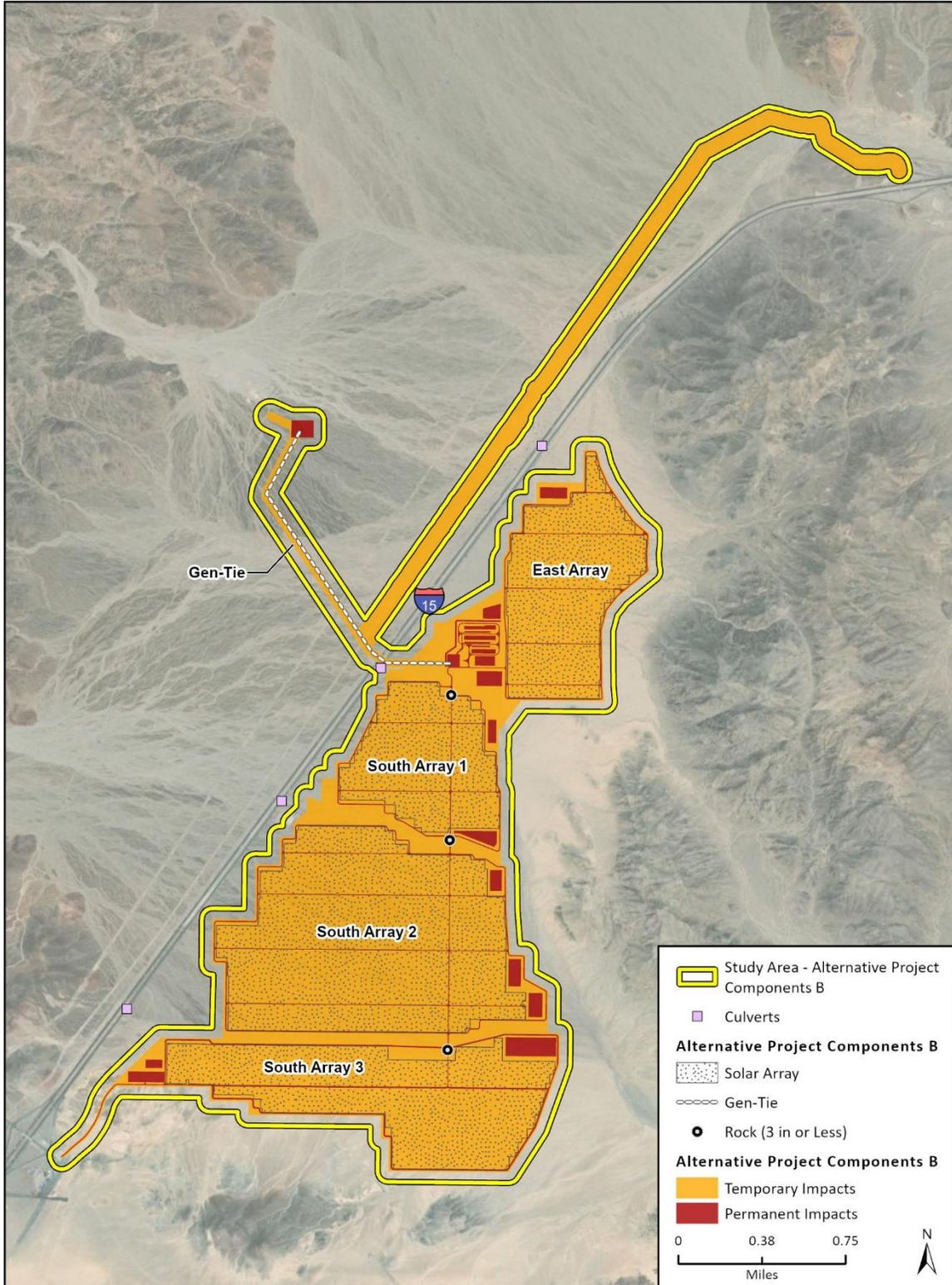
Figure 1 Project A (Preferred)



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 Fig Y Project Components A - Impacts

Figure 2 Project B (Alternative)



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 Fig Y Alternative Project Components - Impacts

# **Attachment 2**

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Mitigation Measures

## Applicable Mitigation Measures

The following measures have been pulled from the Soda Mountain Solar Project Staff Assessment (CEC 2025).

### BIO-13 Vegetation Resources Management Plan

The project owner shall develop and implement a Vegetation Resources Management Plan (VRMP). The VRMP shall be prepared in consultation with the Designated Biologist and shall include an education program (see BIO-5) to describe why topsoil, biotic crusts, specific Soda Mountain Solar Project Staff Assessment BIOLOGICAL RESOURCES 5.2-208 trees such as palo verde, and succulents are salvaged and should be avoided to the greatest extent possible during construction. The VRMP shall include all propose salvage techniques and shall be submitted to the CPM and BLM for review and approval. The VRMP shall include the following:

1. **Soil Baseline Characterization.** The VRMP shall describe the soil characteristics of temporary disturbance areas and define what constitutes a biotic crust. The soil characterization shall include:
  - a. Profile description of three representative pedons. (A pedon is the smallest three-dimensional sampling unit displaying the full range of characteristics of a particular soil and typically occupies an area ranging from about 1 to 10 square yards.)
  - b. Characterization of surface application (desert pavement or biological soil crust present).
  - c. Identification of biological soil crust organisms (cyanobacteria, mosses, lichens, liverworts).
  - d. Documentation of soil macro-invertebrates (i.e., presence of ants, termites, and other significant macro-invertebrates).
2. Provide laboratory data for bulk density; soil fertility and organic matter content including total carbon and nitrogen content, and soil compaction levels along with references to generally accepted methods for making these determinations.
3. **Topsoil Salvage.** The project owner shall salvage the top 3 inches of soil from graded areas and collect upper 0.25 inch separately for biological crust. Stockpile soil dry,  $\leq$  4 ft deep, and manage to maintain viability. Use stockpiles to grow native plants for seed production and maintain soil biota. The vegetation in place at or immediately before topsoil collection shall be healthy native vegetation with less than 15% absolute cover of exotic weed growth. Soil occupied by vegetation of high plant diversity shall be given priority over soil occupied by low-diversity native vegetation. Soil may be collected with a front loader, bulldozer, or scraper and transported to storage areas by front loader, dump truck, or scraper. The equipment transporting the soil may not travel across the stockpile more than the minimum number of times required to build the soil to its intended depth. The depth of the stockpiles shall not exceed 4 feet in the case of sandy loam or loamy sandy soils. Topsoil stockpiles shall be kept dry and covered if no vegetation is introduced. If native vegetation is grown on the stockpiles to increase seeds and soil organisms, no cover is required. Artificial watering may be provided at the project owner's option. Stockpiled topsoil shall be used to grow native plant species for the purpose of producing native seeds and building beneficial microorganisms in the soil volume. All native plant species encountered in the vegetation surveys shall be included in the growing rotation on the stockpiles. The size of the stockpile area must be sufficient for the safe propagation of cacti.
4. **Biological Soil Crust Characterization and Preservation.** Biological soil crust is defined here as a mixture of organisms that occupy and protect the surface of the soil in most desert ecosystems. The organisms often include filamentous and non-filamentous cyanobacteria, mosses, lichens, liverworts, and fungi. Biological soil crust shall be preserved by collecting the upper 0.25 inch of topsoil from areas to be graded. The project owner shall collect from specific areas known to

contain biological crust organisms or collect upper soil from the entire area to be graded. Collections shall emphasize filamentous cyanobacteria, but other cyanobacteria, mosses, lichens, and liverworts are also considered valuable contributors to biological soil crust and important in protecting against erosion and reducing weed invasion, and shall be collected as a secondary priority. Soil surface crust shall be air dried and stored dry in a shaded location in containers that allow air movement, such as loose-weave fabric bags. In no case may the stored crust be subject to wetting or direct sunlight during storage. All containers shall be clearly labeled with date and location of original collection; name and contact information of persons responsible for identifying suitable material to collect; and the persons who collected, stored, and maintained collections. Biological soil crust shall be reapplied at the time of replanting by crumbling the stored material and broadcasting it on the surface of the soil. Approximately 10% of the stored material shall be broadcast on topsoil storage areas among plants being grown for seed and soil microorganisms. When the growing cycle progresses to new planting, the soil supporting biological crust shall be collected and stored by the same methods prescribed for collections from the original soil, in clearly labeled bags or other suitable containers.

5. Succulent Transplant. The project owner shall salvage succulent plants located in areas to be dragged, rolled, or spot graded, or above mowing height. These plants shall be salvaged and transplanted into a nursery area. The Succulent Transplant portion of the Vegetation Resources Management Plan shall include, at a minimum:
  - a. The location of target plants on the project area;
  - b. Criteria for determining which individual plants are appropriate for salvage;
  - c. The proposed methods for salvage, propagation, transport, and planting;
  - d. Procedures for identifying target species during preconstruction clearance surveys;
  - e. Considerations for storing salvaged plants or pre-planting requirements; and
  - f. Suggested transplantation sites.
6. Transplanted Cacti. Succulents to be transplanted into the nursery area shall be placed in their same compass orientation as they were in their original location. The salvaged plants also shall be kept in long-term soil stockpiles, along with natives grown on the stockpiles, to keep the soil biota fresh.

Succulent transplants done during preparation of the project area shall be fully documented and serve as trials of methods to be used during plant salvage on the project area. Records shall be maintained for each transplanted specimen including species; height; number of branches or pads as appropriate; donor location by UTM coordinates; methods used to remove, transport, and store the plant; period of temporary storage; location; facility description; planting medium used for storage; and frequency of watering during storage. Records shall be kept at the time of planting at the storage area, and quarterly thereafter during storage until such time as each plant is placed in the field or dies. Transplanted individuals shall be maintained for 3 years, including removal of invasive species and irrigation (if necessary), as well as monitored for 3 years to determine the percentage of surviving plants each year and to adjust maintenance activities using an adaptive management approach

## BIO-15 Desert Tortoise Impact Avoidance, Minimization, and Mitigation Measures

The project owner shall implement the following measures to avoid, minimize and offset impacts to desert tortoise during site mobilization, construction, and operation:

1. Desert Tortoise Translocation Plan. The Designated Biologist(s) shall prepare and implement a Desert Tortoise Translocation Plan (DTTP) 30 Calendar days prior to start of Covered Activities. Covered Activities are not authorized to start until DTTP is approved in writing by the CPM in consultation with the BLM, USFWS, and CDFW. The DTTP shall follow the most current guidelines provided by USFWS and CDFW regarding desert tortoise translocation. It shall include methods of burrow excavation, nest and egg handling procedures, safe handling guidelines for capture and relocation, temperature constraints, avoiding the transmission of diseases or parasites, disease

testing, radio tagging, transportation procedures, artificial burrow construction and shelter placement along the perimeter fence line. Where guidance differs between BLM, USFWS and CDFW, the project owner shall apply the most restrictive condition and seek written direction from the CPM in coordination with the USFWS, BLM, and CDFW on how to reconcile the differences.

2. Raven Management and Reporting Plan. The Designated Biologist shall prepare and implement a Raven Management and Reporting Plan (Raven Plan) consistent with CDFW and USFWS raven management guidelines. The purpose of the Raven Plan shall be to minimize project-related predator subsidies (e.g. common ravens and coyotes) and prevent any increases in raven numbers or activity within desert tortoise habitat during construction and operation phases. The Plan shall address all project components and their potential effects on raven numbers and activity. The Raven Plan shall be reviewed and approved by CPM, in coordination with the CDFW and USFWS, prior to the start of site mobilization activities. The Raven Plan shall:
  - a. Identify all potential project activities as well as structures, components, and other features that could provide predator subsidies or attractants. This includes but is not limited to: improperly managed food waste; roadkilled animals; water storage facilities; pooled water from leaks, dust control, or wastewater; debris from brush and other vegetation clearing; as well perch or nest sites on project facilities and other infrastructure. As required by BIO-7, Item 18, all trash and food waste will be disposed of in secure, self-closing bins to prevent access by wildlife.
  - b. Describe specific management practices to avoid or minimize conditions that might increase raven numbers and predatory activities. This includes the following:
    - i. Collect and dispose of animals killed on the site or project access roads to reduce food subsidies;
    - ii. Water used for the project shall be applied to avoid puddling;
    - iii. Inactive common raven nests will be removed in accordance with USFWS guidelines. If re-nesting occurs, further measures will be coordinated with the CPM, in coordination with CDFW and USFWS; and
    - iv. Active nests will be reported to CPM, CDFW, and USFWS for consideration of egg-oiling or other authorized management measures.
  - c. The Designated Biologist and/or Biological Monitor shall oversee implementation of the Raven Plan.
  - d. The project owner shall contribute to the USFWS Regional Raven Management Program by making a one-time payment of \$105 per acre of long-term or permanent project disturbance.
3. Desert Tortoise Fencing. The project owner shall install desert tortoise exclusion fencing around the project area, laydown, staging and parking areas. Exclusion fence specifications shall be approved by the CPM and be consistent with those described in the most recent *Desert Tortoise Field Manual* or more current guidance provided by BLM, CDFW and USFWS. Fencing shall not be required to conduct work at or along the generation-tie line corridor but would be required around tower work areas and the switching station site.
4. Desert Tortoise Pre-construction Clearance Surveys. After the completion of fencing installation, the Designated Biologist(s) and/or Biological Monitor(s) shall conduct 5-meter clearance sweeps of the project area prior to site mobilization. Follow-up surveys shall also be conducted within fourteen (14) days preceding additional construction after a gap in significant construction activities of 60 calendar days or more. Surveys shall include 100 percent of the area disturbed

and a surrounding buffer of 100 feet. A map of proposed survey areas shall be provided to the CPM for review and approval, and the BLM, CDFW and USFWS, for review and comment prior to initiating the surveys. Pre-construction clearance surveys shall be completed using perpendicular survey routes within the Project Area. Pre-construction clearance surveys cannot be simultaneously combined with other clearance surveys conducted for other species while using the same personnel. Covered Activities cannot start until two (2) negative results from consecutive surveys using perpendicular survey routes for desert tortoise are documented. New clearance surveys shall be conducted if the desert tortoise fence is breached (e.g., large gaps, torn fencing, or cavities that could allow desert tortoises to enter the site) for more than 24 hours. Clearance surveys shall be conducted for all linear facilities prior to any ground disturbance. In addition, surveys shall be conducted one week prior to any ground disturbance and within 24 hours of beginning work in suitable habitat. Methods for clearance surveys and exclusion fence specifications shall be consistent with those described in the most recent *Desert Tortoise Field Manual* or more current guidance provided by CDFW and/or USFWS. Any potential burrows, sign, or tortoises shall be noted, recorded using a precision GPS device, and identified on project maps submitted to the CPM. The Biological Monitor(s) and/or Authorized Biologist(s) shall record all potential desert tortoise and burrows within the pre-construction clearance survey area, using global positioning system (GPS) technology. The Authorized Biologist(s) and/or Biological Monitor(s) shall provide the results of the pre-construction clearance survey (including all information of the USFWS Protocol data sheet) to the CPM, BLM, USFWS, and CDFW within 10 Calendar days of completing the surveys. The use of specialized equipment (e.g., fiber optics) may be necessary to thoroughly inspect all burrows in preparation for collapsing them. Twenty-four hours prior to the start of any Covered Activities, except for areas already cleared within installation of desert tortoise exclusion fencing, the DT Authorized Biologist(s) and/or Biological Monitor shall conduct a final clearance survey of Project Area. The use of specialized equipment (e.g., fiber optics) may be necessary to thoroughly inspect all burrows in preparation for collapsing them.

5. If Desert Tortoise Detected. If adult or juvenile desert tortoises or potentially active burrows are detected during the pre-clearance surveys the Designated Biologist and/or Biological Monitor(s) shall contact the CPM, CDFW, and USFWS immediately for guidance. No work shall occur within 200-feet of any potential burrow or desert tortoise pending coordination with the CPM, CDFW, and USFWS. Handling of desert tortoise shall not be allowed pending the completion of appropriate take authorization from the CEC, in coordination with CDFW, and USFWS, per Item 4.
6. Supplemental Mitigation for Desert Tortoise. If a desert tortoise is detected during the surveys, construction, or operation all work within 300 feet of the desert tortoise shall immediately stop and the observation shall be immediately reported to the Authorized Biologist(s). Covered Activities shall not resume until the Authorized Biologist(s) and/or Biological Monitor(s) has verified the desert tortoise has left the project area or an Authorized Biologist(s) approved under this COC relocates the desert tortoise as described in the Desert Tortoise Translocation Plan. The Designated Biologist shall notify CPM, BLM, USFWS, and CDFW of any desert tortoise observations within the project area within 24 hours. Notification and the written report shall include the date, location, and circumstances of the observation, the name of the Designated Biologist that relocated the individual, pictures, map and shapefiles with the location (including GPS coordinates) where the individual was moved as specified in the DTTP.
7. Excavation of Desert Tortoise Burrows. All potential desert tortoise burrows shall be investigated by fiber optic systems, excavated, and backfilled prior to construction. Only Authorized Biologist(s) and Biological Monitor(s) approved by CPM, BLM, USFWS, and CDFW are authorized to conduct burrow excavation. Excavation of burrows shall follow the methods described the USFWS Field Manual and the DTTP.

8. Desert Tortoise Translocation. The Designated Biologist shall translocate all desert tortoise to the approved translocation areas identified in the approved DTTP. The DTTP shall follow the most current guidelines provided by USFWS and CDFW regarding desert tortoise translocation. Where guidance differs between the USFWS and CDFW, verbal and/or written direction provided by CPM in consultation with the CDFW always controls. CDFW notes that the list of items below are the most common examples of the differences between CDFW and USFWS guidelines. These shall be included in the DTTP along with the most recent USFWS translocation guidelines:
  - a. Translocated tortoises are tortoises removed from the Project Area and/or have a radio transmitter attached.
  - b. The Authorized Biologist shall determine when the creation of artificial burrows is needed.
  - c. Ambient air temperature guidelines shall be followed as specified in this COC.
  - d. Tortoises <100 millimeters (mm) midline carapace length (MCL) shall be released immediately without being held, transmitted, or blood drawn for disease testing as long as the temperature requirements are met.
  - e. CDFW does not authorize the release of tortoises that test positive for disease even if it does not show outward signs of the disease. If a tortoise tests positive for disease it is the responsibility of the Permittee to locate a CDFW approved facility to place the tortoise in. Any exception to this determination will need to be approved in writing by the CDFW on a case-by-case basis.
9. Disease testing shall not be done between November 1 and May 14. If a tortoise >100 mm MCL is found between November 1 and May 14 or earlier with written approval from CDFW the tortoise shall be held in quarantine facilities and shall remain in quarantine until tested twice (once in the spring and once in the fall). If the tortoise tests negative for disease, it can be released in accordance with the approved DTTP. Blood draw samples for *Mycoplasma agassizii* and *Mycoplasma testudineum* shall determine if a tortoise is negative or positive for disease. A combination of results from blood testing and visual inspection will be used to determine the health of a tortoise. Blood draw samples will be sent to: Dr. Mary Brown, University of Florida Mycoplasma Laboratory, 2015 SW Archer Road, Room V2-234, Gainesville Florida 32608, or other facility approved by CDFW. CDFW uses enzyme-linked immune assay (ELISA) test results to determine if a tortoise is positive for disease. The ELISA tests will be used to test for exposure to herpes virus (*Mycoplasma agassizii* and *Mycoplasma testudineum*).
  - a. If a tortoise tests positive for or is suspected of disease, then the tortoise will be tested twice for disease (once in the spring after May 15 to and once in the fall). To determine results of blood testing use the most current guidelines provided by the University of Florida Mycoplasma Laboratory Department of Infectious Diseases and Pathology. The University of Florida Mycoplasma Laboratory Department of Infectious Diseases & Pathology 2013 criteria for classifying *Mycoplasma agassizii* and *Mycoplasma testudineum* is a titer 64 is positive, and a titer of 32 is suspect (retesting in 6 weeks) or most current guidelines. All sample forms shall come from the University of Florida's guidance.
  - b. The DTTP shall include a requirement that all translocated tortoises regardless of size be included in the translocation numbers and all reports.
  - c. The DTTP shall propose one recipient site. Recipient sites shall have the vegetative structure to support all life stages of desert tortoises. In addition to the USFWS Field Manual guidelines the DTTP shall also include identifying the known threats or potential causes of population decline, how potential threats have been or would be addressed,

complete physical examination and health assessments with sample collection, age/structure and sex ratios, protocol level surveys, vegetation classification and quality of habitat. The DTTP shall detail which characteristics are to be used to decide if a recipient site is similar enough to a Project Area including burrow aspects, and recovery needs such as habitat restoration and/or predator control.

- d. All tortoises >100 mm MCL removed off the Project Area shall be fitted with a transmitter and monitored for 5 years post translocation.
  - e. Recipient sites shall be a minimum of 4 miles (6.5 kilometers) away from highway/road right-of-way that does not include desert tortoise fencing.
  - f. All tortoise burrows within the Project Area shall be excavated following procedures outlined in the U. S. Fish and Wildlife Service Desert Tortoise Field Manual.
  - g. Creation of artificial burrows, as well as translocation of tortoises and eggs shall only occur on land(s) (including Bureau of Land Management), when written authorization has been obtained from the landowner prior to the start of Covered Activities. The written permission from the landowner shall be included in the DTTP and the DTTP shall not be approved by CDFW until authorization is provided in writing. If creation of artificial burrows or translocation of tortoise or eggs is proposed to take place on private lands then in addition to written approval required above, some form of protection for the land such as a conservation easement shall be in place prior to translocation occurring.
  - h. Cleaning and Disinfection Protocol. Trifectant and Rescue Ready to Use One Step Disinfectant Cleaner are the only products authorized under this ITP and its associated DTTP to be used as a disinfectant. These products are not authorized to be applied using a spray bottle or other spray methods.
    - i. Cleaning and Disinfection Protocol shall include the following:
    - ii. Remove all grossly visible debris.
    - iii. Wash the area or item with water and mild detergent.
    - iv. Thoroughly rinse the cleaned area to remove any detergent residue.
    - v. Allow the area to dry completely.
    - vi. Apply disinfectant mixture.
    - vii. Allow the full disinfectant product recommended contact time.
    - viii. Thoroughly rinse away any residual disinfectant and allow the area or item to air dry.
10. Ambient Air Temperatures. During all handling procedures, desert tortoise 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. Tortoises shall be kept shaded at all times until it is safe to release them. For the purposes of this permit, ambient air temperature shall be measured in the shade, protected from wind, at a height of 5 centimeters above the ground surface. For all Covered Activities no desert tortoise shall be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ambient air temperature is above 95° Fahrenheit (F) (35° Celsius (C)). No desert tortoise shall be captured if the ambient air temperature is anticipated to exceed 95° F (35° C) before handling or processing can be completed. If the ambient air temperature exceeds 95° F (35° C) during handling or processing, desert tortoises shall be kept shaded in an environment that does not exceed 95° F (35° C), and

not released until ambient air temperature declines to below 95°F (35°C). Desert tortoises moved during the less active season (June 1 to August 31 and November 1 to March 31) shall be monitored by the DT Authorized Biologist(s) for at least two days after placement in the new burrows to ensure their safety. During relocation, the DT Authorized Biologist(s) may hold a captured desert tortoise overnight and move them the following morning within these temperature constraints.

11. Desert Tortoise Rehydration. If a desert tortoise voids its bladder as a result of being handled, the Authorized Biologist(s) shall rehydrate the animal(s). The Authorized Biologist(s) shall rehydrate the desert tortoise at the location where the animal(s) was or were captured, or the location where the animal(s) is or will be released. The Authorized Biologist(s) shall rehydrate the desert tortoise by placing it in a tub with a clean plastic disposable liner. The Authorized Biologist(s) shall add water to the lined tub while ensuring that the water level is not higher than the lower jaw of the animal. The Authorized Biologist(s) shall rehydrate each desert tortoise individually for a minimum of 10 to 20 minutes. The DT Authorized Biologist(s) shall place the lined tub in a quiet protected area during rehydration.
12. Desert Tortoise Handling Records. The DT Authorized Biologist(s) and/or Biological Monitor(s) shall maintain a record of all desert tortoises handled. This information shall include: (1) the locations (narrative and maps) and dates of observation, including whether the individual(s) was found above ground or in a burrow; (2) ambient temperature when handled and released; (3) general condition and health of the individual(s), including injuries, state of healing, and whether the individual(s) voided its bladders; (4) identified diagnostic markings (i.e., identification numbers or marked marginal scutes); (5) location moved from and location moved to (using GPS technology), including information on any burrow (natural or artificial) utilized; (6) whether any eggs were discovered and relocated; (7) digital photographs of any desert tortoise and eggs handled; and (8) results of ongoing monitoring. The Designated Representative(s) shall provide the CPM, BLM, USFWS, and CDFW with the information listed above submitted in the quarterly reports during construction.
13. Desert Tortoise Guards. The design of desert tortoise guards shall include exit ramps, cleanouts, and temporary shelters or guards along the fence line. Guards shall be installed along the fence line of the project and designed to prevent entrapment with the proposed perimeter berms. Guard locations and design shall be provided to the CPM for approval and the BLM, USFWS, and CDFW for review and comment prior to starting Covered Activities.
14. Permanent Security Fencing with Attached Desert Tortoise Fencing. The permanent desert tortoise exclusion fencing shall be attached to the 6-foot high standard chain link security fencing. This fencing shall be installed around the array fields, operation and maintenance facilities, warehouses, substations, switchyard, and interconnection facilities and will remain in place during operations except it may be removed in places where wildlife-friendly fencing may be implemented over a portion of the facility site. The fence shall be constructed according to Chapter 8 of the USFWS Field Manual, but if any tortoises <100 mm MCL are translocated within 500 meters of the Project area, tortoise fencing shall be 16 gauge or heavier galvanized after welded wire with mesh opening of ½ inch horizontal by ½ inch vertical. The fence shall include the installation of shade structures along the outer fence perimeter placed at regular intervals. To prevent potential access at site access points, all gates would be installed with desert tortoise exclusion fencing affixed along the bottom portion of the gate structure. The fencing shall be constructed to allow desert kit fox access to the solar arrays while excluding desert tortoise. The fencing must be placed in a way to ensure that desert tortoises do not get trapped between the fence line and the perimeter berms.
15. Permanent Security Fence Maintenance Inspection. The DT Authorized Biologist(s) and/or Biological Monitor(s) shall inspect the tortoise fencing during the Covered Activities, at the end of

each workday during the construction period, monthly during O&M, and during major rainfall and high wind events within 24 hours to ensure desert tortoise is prohibited from entering the Project Area. If the fence is compromised, repairs shall be completed immediately, and clearance protocol level surveys shall be conducted as described in Section 4.

16. **Vehicle Inspection.** Workers shall inspect for desert tortoises under vehicles and equipment before the vehicles and equipment are moved. If a desert tortoise is present, the worker shall contact the DT Authorized Biologist(s) and/or Biological Monitor and wait for the tortoise to move unimpeded to a safe location or the DT Authorized Biologist(s) shall relocate the tortoise as described in the DTTP before moving vehicles and equipment.
17. **Staging Area and Parking Area.** The project owner shall enclose all staging and parking areas with desert tortoise exclusion fencing. All parked vehicles and equipment shall be inspected prior to being moved. If a desert tortoise is found within a staging or parking area the worker shall immediately contact the Authorized Biologist(s) and/or Biological Monitor. A designated biologist shall relocate the desert tortoise in accordance with the DTTP.
18. **Raven Management and Reporting Plan.** The Designated Biologist shall prepare and implement a Raven Management and Reporting Plan (Raven Plan) consistent with CDFW and USFWS raven management guidelines. The purpose of the Raven Plan shall be to minimize project-related predator subsidies (e.g. common ravens and coyotes) and prevent any increases in raven numbers or activity within desert tortoise habitat during construction and operation phases. The Plan shall address all project components and their potential effects on raven numbers and activity. The Raven Plan shall be reviewed and approved by CPM, in coordination with the CDFW and USFWS, prior to the start of site mobilization activities. The Raven Plan shall:
  - a. Identify all potential project activities as well as structures, components, and other features that could provide predator subsidies or attractants. This includes but is not limited to: improperly managed food waste; roadkilled animals; water storage facilities; pooled water from leaks, dust control, or wastewater; debris from brush and other vegetation clearing; as well perch or nest sites on project facilities and other infrastructure. As required by BIO-7, Item 18, all trash and food waste will be disposed of in secure, self-closing bins to prevent access by wildlife.
  - b. Describe specific management practices to avoid or minimize conditions that might increase raven numbers and predatory activities. This includes the following:
    - i. Collect and dispose of animals killed on the site or project access roads to reduce food subsidies;
    - ii. Water used for the project shall be applied to avoid puddling;
    - iii. Inactive common raven nests will be removed in accordance with USFWS guidelines. If re-nesting occurs, further measures will be coordinated with the CPM, in coordination with CDFW and USFWS; and
    - iv. Active nests will be reported to CPM, CDFW, and USFWS for consideration of egg-oiling or other authorized management measures.
  - c. The Designated Biologist and/or Biological Monitor shall oversee implementation of the Raven Plan.
  - d. The project owner shall contribute to the USFWS Regional Raven Management Program by making a one-time payment of \$105 per acre of long-term or permanent project disturbance. Based on this calculation the Permittee shall provide a one-time payment at \$105.00/acre for 1543.46 acres at \$162,063.30 to the REAT account established with NFWF's Raven Management Plan fund. A minimum of 15 days prior to the start of

Covered Activities these funds shall be provided to NFWF using appropriate deposit document and proof of paying this fee shall be provided to the CPM and CDFW within 24 hours after the funds have been provided to NFWF.

19. Erosion Control Materials. To minimize the risk of ensnaring and strangling desert tortoise and other wildlife, the project owner shall not use erosion control materials containing synthetic (e.g., plastic or nylon) monofilament netting. Geotextiles, fiber rolls, and other erosion control measures shall be made of loose-weave mesh, such as jute, coconut (coir) fiber, or other products without welded weaves. The project owner shall use erosion control materials composed entirely of natural-fiber biodegradable materials. Plastic "photodegradable" erosion control materials shall not be used.
20. Full-Time Monitoring. An Authorized Biologist(s) and/or Biological Monitor(s) shall be present during all project activities that occur outside a permanent fenced area during the construction period. The Authorized Biologist(s) and/or Biological Monitor(s) shall conduct compliance inspections a minimum of three times a day (once during the onset of the day's work, once mid-day, and once at the conclusion of that day's work) during construction within the fenced area. The Authorized Biologist(s) and/or Biological Monitor(s) shall conduct compliance inspections to: minimize incidental take of the desert tortoise; prevent unlawful take of species; check for compliance with all measures of this COC; check all exclusion zones; and ensure that signs, stakes, and fencing are intact, and that project activities are only occurring in the project area. The Designated Representative or Authorized Biologist shall prepare daily written observation and inspection records summarizing oversight activities and compliance inspections, observations of desert tortoise and their sign, survey results, and monitoring activities required by this COC. During the operations and maintenance period of the project, an Authorized Biologist(s) shall be on-site to address any compliance-related issues.
21. Monitoring During Operation and Maintenance. Once all construction is complete any work being performed outside the exclusionary fencing shall have an Authorized Biologist(s) and/or Biological Monitor(s) on-site to monitor any ground-disturbing activities such as fence or berm repairs and during perimeter fence inspections for the term of this COC.
22. Desert Tortoise Injury. If a desert tortoise is injured as a result of project-related activities, the DT Authorized Biologist shall immediately take it to a CPM and CDFW approved wildlife rehabilitation or veterinary facility. The [project owner shall identify the facility before commencing site mobilization and shall bear any costs associated with the care or treatment of such injured desert tortoise. The project owner shall notify CPM, BLM, USFWS, and CDFW of the injury immediately by telephone and e-mail followed by a written incident report within 48 hours. The notification shall include the name of the facility where the animal was taken.
23. Reporting. A report documenting survey results, including surveyor name(s), date(s) of survey, location (with maps), weather conditions, and any observations or detections of desert tortoise or their sign will be prepared and submitted to the CPM, CDFW, and USFWS. In addition, a monitoring report that includes the location, description, and duration of the activities, any observations or detections of desert tortoise found during the surveys or project activities, and any relocation efforts will be provided during monthly and annual compliance reporting.
24. CNDDDB Observations. The Authorized Biologist shall submit all observations of desert tortoises to CDFW's California Natural Diversity Database (CNDDDB) within 60 calendar days of the observation and the Authorized Biologist shall include copies of the submitted forms with the next Quarterly Compliance Report.

## BIO-20 Burrowing Owl Impact Avoidance, Minimization, and Mitigation Measures

The project owner shall implement the following measures to avoid, minimize and offset impacts to breeding and foraging burrowing owls during site mobilization, construction, operation, and decommissioning:

1. Burrowing Owl Mortality Reduction Plan. The project owner shall submit a Burrowing Owl Mortality Reduction Plan prepared by the Designated Biologist(s) for review and approval to the CPM, and CDFW for review and comment, prior to beginning any project activities including site mobilization, surveying, fencing, or ground disturbance. Burrow exclusion, burrow excavation, artificial burrow construction, and other relocation activities shall not proceed until this plan has been approved in writing by the CPM in coordination with the CDFW. The Burrowing Owl Mortality Reduction Plan shall include, but not be limited to detailed description of survey methodology; detailed burrow exclusion and excavation methods; project activities that may be performed within burrowing owl avoidance buffers; identification of a wildlife rehabilitation center or veterinary facility capable of and willing to treat injured burrowing owl or care for at-risk burrowing owl, burrowing owl eggs, and/or burrowing owl chicks; and procedure for collection and storage of burrowing owl carcasses. Only CPM approved Designated Biologist(s), or personnel following directions from and under the supervision of the Designated Biologist(s), are authorized to handle and transport injured burrowing owl for treatment or impacted burrowing owl eggs for salvage. All other burrowing owl handling is prohibited. Once the Burrowing Owl Mortality Reduction Plan is approved in writing by the CPM, it shall be used for the duration of the project unless updated by request of the CPM to reflect best available science, or to update mitigation and conservation strategies. If any updates are required, the CPM will contact the project owner to discuss potential updates. Any proposed changes to the Burrowing Owl Mortality Reduction Plan shall be submitted, in writing, to the CPM for review and approval and the CDFW for review and comment in writing prior to the implementation of any proposed modifications.
2. Burrowing Owl Burrow Replacement Plan. The project owner shall replace each known burrowing owl burrow (as defined below under 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. The project owner shall submit a Burrowing Owl Burrow Replacement Plan prepared by an approved Designated Biologist(s) to the CPM. Implementation of the Burrowing Owl Burrow Replacement Plan shall not proceed until this plan has been approved in writing by the CPM in coordination with the CDFW. The Burrowing Owl 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 to natal burrows); artificial burrow installation methods; long-term artificial burrow protection and maintenance methods; and timing of BUOW burrow installation/construction. Once the burrowing owl Burrow Replacement Plan is approved in writing by the CPM, it shall be used for the duration of the project unless it is updated by the CPM to reflect best available science, or to update mitigation and conservation strategies in which case the CPM will contact the project owner to discuss needed updates. If any updates are required, the CPM will contact the project owner to discuss potential updates. Any proposed changes to the Burrowing Owl Mortality Reduction Plan shall be submitted, in writing, to the CPM for review and approval and the CDFW for review and concurrence in writing prior to the implementation of any proposed modifications.
3. Burrowing Owl Pre-Construction Nesting Surveys and Reporting. The Designated Biologist with support from Biological Monitor(s) shall conduct preconstruction surveys for burrowing owls to identify potential, known, and/or nesting burrowing owl burrows. A potential burrowing owl

burrow is any subterranean hole three inches or larger for which no evidence is present to conclude that the burrow is being used or any past use by a burrowing owl; a known burrowing owl burrow is a burrow that shows evidence the burrow is being used, known to have been used, or past use by a burrowing owl, or an "atypical" burrow (e.g., a pipe, culvert, buckled concrete, etc.) showing signs of occupancy (e.g. burrowing owl presence, whitewash, pellets, prey remains, etc.); and a nesting burrowing owl burrow is used for nesting (e.g. known burrowing owl burrow indications of the presence of eggs, chicks, dependent young, and/or brooding or egg incubation). The survey area shall include the project disturbance area and surrounding 300- meter survey buffer, as accessible. If surveys detect burrowing owls within 1,600 feet of proposed construction activities, based on four consecutive 24-hour periods of monitoring with infrared camera, the Designated Biologist shall provide to the CPM documentation indicating that non-disturbance buffer fencing has been installed no less than 10 days prior to the start of any project-related site disturbance activities. The documentation shall include information as specified in Items 4 and 5, or as otherwise requested by the CPM.

4. Burrow Map. The Designated Biologist(s) shall provide a Keyhole Markup Language (KMZ) map and GIS shapefiles to the CPM of all burrowing owl burrows found during the surveys conducted during the surveys required under Item 3 requirements (Burrowing Owl Pre-Construction Surveys and Reporting). The map shall show the details and locations of all burrowing owl sightings and potential, known, and nesting burrowing owl burrows as defined in the Burrowing Owl Burrow Avoidance section. The map shall include an outline of the project area, and any distinct work area(s) surveyed within the project area, title, north arrow, scale bar, and legend. If an active burrow is confirmed during the surveys the project owner shall notify the CPM and CDFW within 48 hours. In coordination with the Designated Biologist(s), CPM and CDFW, a 1,600-foot line of sight disturbance-free buffer shall be established and demarcated by fencing or flagging and placed on project maps. This buffer may be adjusted as determined by a qualified avian biologist in coordination with the CPM and CDFW. Nest locations shall be mapped using GPS technology and provided the CPM.
5. BUOW Burrow Avoidance. The Designated Biologist, shall establish nodisturbance buffer zones around potential, known and nesting burrowing owl burrows according to the following guidelines:
  - a. If a potential burrowing owl burrow (any subterranean hole three inches or larger for which no evidence is present to conclude that the burrow is being used or any past use by a burrowing owl) is discovered, the Designated Biologist shall establish a minimum 50-foot no-disturbance buffer around the burrow.
  - b. If a known burrowing owl burrow (a burrow that is known to have been used or shows evidence of current or past use) or an "atypical" burrow (e.g., a pipe, culvert, buckled concrete, etc.) showing signs of occupancy (e.g. burrowing owl presence, whitewash, pellets, prey remains, etc.) is discovered, the Designated Biologist(s) shall establish a minimum nodisturbance buffer of at least 100 feet around the burrow. A nodisturbance buffer of at least 1,600 feet shall be established around known burrowing owl burrows currently occupied by burrowing owl during the nesting season (typically February 1 to August 31 in this area). Nest buffer reductions are described below.
  - c. If a nesting burrowing owl burrow (e.g. known burrowing owl burrow with indications of the presence of eggs, chicks, dependent young, and/or brooding or egg incubation) is discovered within or immediately adjacent to the project area, the project owner and/or Designated Biologist shall notify the CPM and CDFW immediately through email. 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 burrowing owl burrows currently occupied by burrowing owl during the nesting season (February 1

to August 31). If burrowing owl burrows cannot be avoided as described above, then the project owner shall follow Item 6 (Burrowing Owl Burrow Blockage), Item 7 (Burrowing Owl Burrow Excavation), and Item 1 (Burrowing Owl Mortality Reduction Plan), as appropriate. If the approved Designated Biologist determines burrowing owl are visibly stressed by project activities or by workers in the vicinity after these no-disturbance buffers the Designated Biologist shall immediately increase the non-disturbance buffer to a distance where the visible stress is no longer observed. The increased no-disturbance buffers will be reviewed and approved by the CPM, in coordination with CDFW, based on their behavioral observations of the affected burrowing owl. The buffers prescribed above shall not be reduced or otherwise modified without prior written approval from the CPM, in coordination with the CDFW. If the approved Designated Biologist(s) determines that specific project activities are not likely to affect the burrowing owl using known or nesting burrowing owl burrows due to the nature of the specific project activities, or due to objects or topography that might reduce potential noise disturbance and obstruct view of the project activities from the nest, then the CPM approved Designated Biologist(s) may email a written request to the CPM to reduce the buffer distance with documented observational data (Buffer Reduction Request). The CPM 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. The CPM may request additional and ongoing biological monitoring prior to approving a Buffer Reduction Request.

6. **BUOW Burrow Blockage.** If the CPM has approved the blockage of a known burrowing owl burrow, the Designated Biologist shall block rather than destroy any unoccupied known burrowing owl burrow located within the buffer distances limits prescribed in Item 5 (Burrowing Owl Burrow Avoidance), but outside the discrete work area(s) within the project area(s) where ground and vegetation disturbing project activities will be performed. Burrows (including burrows in natural substrate and in under man-made structures) may be blocked only immediately after the CPM-approved Designated Biologist(s) has conducted four consecutive 24-hour periods of monitoring with infrared camera and determined that burrowing owl is not currently present. 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 approved Designated Biologist(s) and/or Biological Monitor(s) at least once every 48 hours while the blockage is in place to ensure that the exclusion material is still intact. If burrowing owl regains access to the burrow, the project owner or Designated Biologist shall contact the CPM immediately and obtain written guidance regarding how to proceed. All blocked burrows shall be unblocked within 48 hours of completion of construction activities within the prescribed buffer distance.
7. **Burrowing Owl Burrow Excavation.** The approved Designated Biologist(s), and/or Biological Monitor under direct supervision of the approved Designated Biologist(s), shall excavate known or potential burrows that exhibit signs of current or past burrowing owl use or characteristics suggestive of a burrowing owl burrow (including burrows in natural substrate and in/under man-made structures) that cannot be avoided per guidance in Item 5 (Burrowing Owl Burrow Avoidance), that are within the project area. Burrows to be destroyed shall be fully excavated, filled with dirt, and compacted to ensure that burrowing owl cannot reenter or use the burrow during the period that project activities occur in the project area.
  - a. Excavation of known burrowing owl burrows shall only occur after the approved Designated Biologist(s) has determined that burrowing owl is not currently present after 4 consecutive 24-hour periods of monitoring with infrared cameras. If the excavation process reveals evidence of current use by burrowing owl, then burrow excavation shall cease immediately, and camera monitoring as described above shall be conducted or resumed as applicable. burrowing owl burrows shall be carefully excavated with hand

- tools, or by mechanical means if a specific methodology is approved in writing by the CPM, until it is clear no individuals of burrowing owl are inside.
- b. Potential burrowing owl burrows without any signs of burrowing owl use or characteristics suggesting it is a burrowing owl burrow may be excavated under the direct supervision of the approved Designated Biologist(s) without prior camera monitoring.
  - c. Nesting burrowing owl 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 then only after written concurrence from the CPM. An established burrowing owl burrow no-disturbance buffer may be removed once the burrow is collapsed and the burrowing owl (s) is/are no longer using the burrow.
8. Burrowing Owl Injury. If a burrowing owl is injured or found dead within the vicinity of the project area, project owner shall notify the CPM of the injury or mortality to the burrowing owl immediately by email. The Designated Biologist(s) shall follow the Burrowing Owl Mortality Reduction Plan to either immediately transport injured individuals to a CPM-approved wildlife rehabilitation center or veterinary facility or follow approved collection and storage procedures for deceased animals. The project owner shall bear any cost associated with care and recovery of any injured burrowing owl adults, nestling(s) or egg(s) and hacking (controlled release of captive reared young).
  9. Burrowing Owl Observations and Notification. All workers shall be trained to identify burrowing owl and shall inform the approved Designated Biologist(s) if a burrowing owl is seen within or near the project area during implementation of any project activity. All work in the vicinity of the burrowing owl which could harm the individual, shall cease until the individual moves from the project area of its own accord or the approved Designated Biologist(s) passively encourages the individual to move out of harm's way, in compliance with the timing and methods identified in the CPM-approved Burrowing Owl Mortality Reduction Plan.
  10. Operation Activities Designated Biologist On-site. The approved Designated Biologist(s) shall be onsite during all ground and vegetation disturbing activities. The approved Designated Biologist(s) shall be on-site during all non-emergency ground and vegetation disturbing project activities performed at night. The approved Designated Biologist(s) shall ensure that the minimum amount of lighting is used to complete the activities and that lighting is directed away from active burrows to the maximum extent feasible.
  11. Vehicle Parking (Site Mobilization, Construction and Operation). During site mobilization, construction, operation, and maintenance activities or while implementing burrowing owl take minimization measures, the project owner shall not allow vehicles to park on top of known or potential burrowing owl burrows. Vehicles left overnight shall not be located within 50 feet of known burrowing owl burrows. Workers shall inspect for burrowing owl under vehicles and equipment every time the vehicles and equipment are moved. If a burrowing owl is present, the worker shall wait for the burrowing owl to move unimpeded to a safe location. Alternatively, the approved Designated Biologist(s) shall be contacted to passively encourage the burrowing owl to move away from the vehicle or equipment, in compliance with the timing and methods identified in the Burrowing Owl Mortality Reduction Plan.
  12. Pipes and Materials Inspection (Site Mobilization, Construction, Operation). The project owner shall ensure that all pipes or similar materials stockpiled or replaced in the project area are capped or otherwise enclosed at the ends to prevent entry by burrowing owl. The project owner shall ensure that any permanent pipes or similar materials or structures are left open where burrowing owl or other species may enter them and become trapped. The approved Designated Biologist(s) or Biological Monitor(s) shall thoroughly inspect all such materials for burrowing owl,

before they are moved, buried, or capped. If a burrowing owl is discovered inside such material, that section of material shall not be moved until the animal has escaped of its own accord. Alternatively, the approved Designated Biologist may passively encourage the burrowing owl to move away from the pipes, culverts, or similar structures, in compliance with the timing and methods identified in the Burrowing Owl Mortality Reduction Plan.

13. Ground and Vegetation Disturbing (Site Mobilization, Construction, and Operation). Burrowing Owl Pre-Construction Surveys and Reporting (Item 3) shall be implemented within 30 calendar days prior to commencing ground or vegetation disturbing activities during operation in each distinct work area(s) within the project area. If the approved Designated Biologist(s) identifies any potential, known, or nesting burrowing owl burrows, the burrow(s) shall be monitored following the Burrowing Owl Burrow Blockage (Item 6) and Burrowing Owl Burrow Excavation (Item 7) as applicable, unless avoided per the Burrowing Owl Burrow Avoidance requirements (Item 5).
14. Burrowing Owl Observations (Operation). During operational activities within the project area, all workers shall inform the approved Designated Biologist if a burrowing owl is observed within or near the project area. All work in the vicinity of the burrowing owl, which could injure or kill the animal, shall cease immediately until the burrowing owl moves from the project area of its own accord or the approved Designated Biologist(s) passively encourages the individual to move out of harm's way, in compliance with the timing and methods identified in the approved Burrowing Owl Mortality Reduction Plan.
15. Burrowing Owl Injury (Operation). If a burrowing owl is injured or found dead within the vicinity of the project area, the project owner shall notify the CPM of the injury or mortality to the burrowing owl immediately. The approved Designated Biologist shall follow the approved Burrowing Owl Mortality Reduction Plan to either immediately transport injured individuals to a CDFW approved wildlife rehabilitation center or veterinary facility or follow approved collection and storage procedures for deceased animals. The project owner shall bear any cost associated with care and recovery of any injured burrowing owl adults, nestling(s) or egg(s) and hacking (controlled release of captive reared young).