TIPTON KANGAROO RAT AND NELSON'S ANTELOPE SQUIRREL RELOCATION PLAN

MARICOPA SUN SOLAR PROJECT, KERN COUNTY, CALIFORNIA

November 2014

Quad Knopf

TIPTON KANGAROO RAT AND NELSON'S ANTELOPE SQUIRREL RELOCATION PLAN
Maricopa Sun Solar Project,
Kern County, California

Prepared for:

Maricopa Sun, LLC
1396 W. Herndon Avenue #101
Fresno, California 93711
Contact Person: Jeff Roberts
Phone: 559 -436-0900
Fax: 559-436-1659

Prepared by:

Quad Knopf
5110 W. Cypress Ave.
Visalia, California 93277
(559) 733-0440

November 2014

090160

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

Maricopa Sun, LLC is in the process of developing a solar complex (Maricopa Sun Solar Complex [Project]) in southern Kern County, California (Figure 1). The project currently consists of seven Solar Sites totaling 3,798.3 acres located within southwestern Kern County, California, approximately three miles northeast of the unincorporated community of Maricopa (Figure 2; Table 1). The Project includes site preparation, grading, commercial operations, maintenance, and project decommissioning, all of which may put sensitive biological resources at risk, including the Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*) and Nelson's antelope squirrel (also known as the San Joaquin antelope squirrel) (*Ammospermophilus nelsoni*).

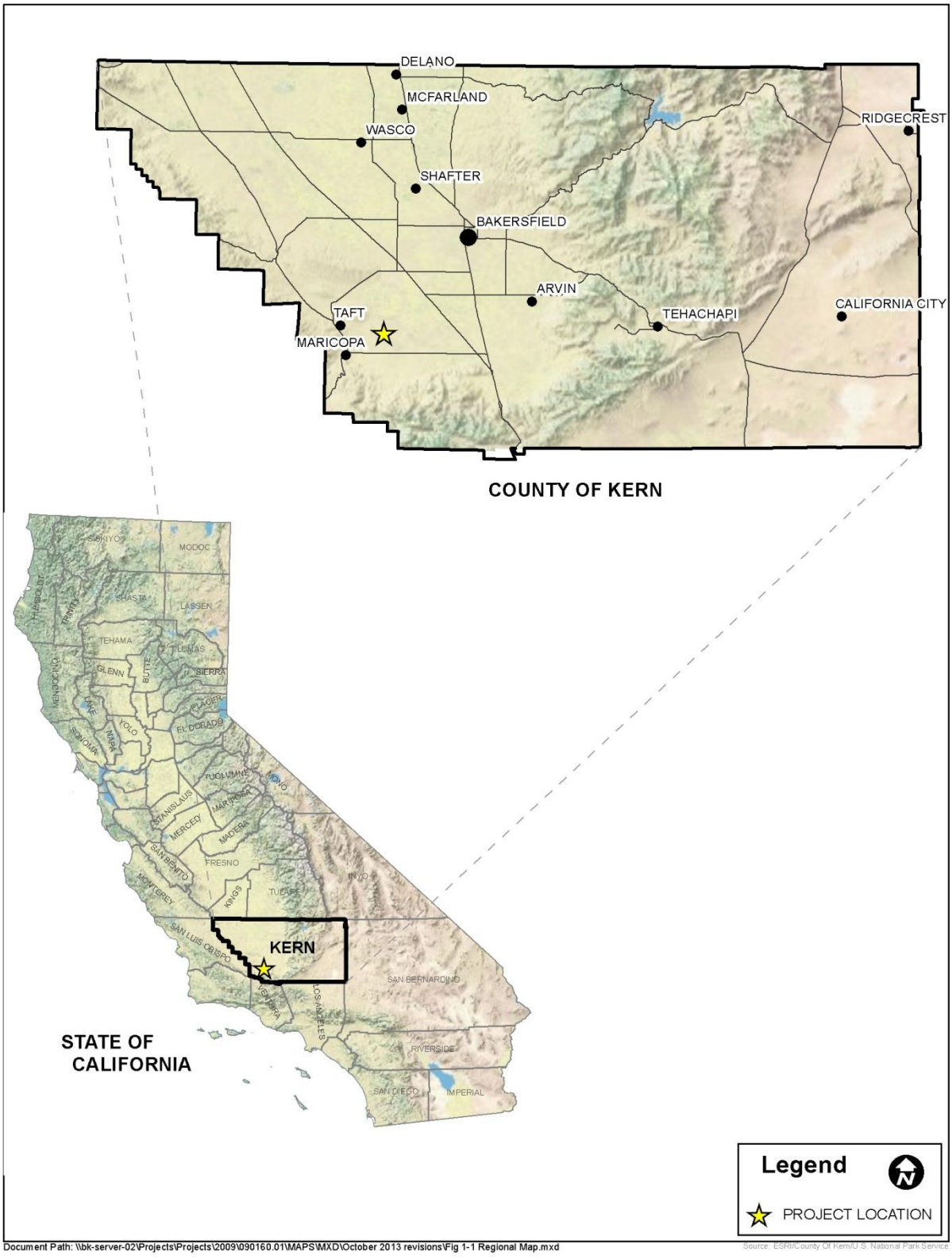
Table 1
Maricopa Sun Solar Complex: Solar Sites

Site Number	APN	Township, Range	Solar Site Parcels (acres)
Site 2-S	220-120-(18-19)	T.32S., R.25E., Sec.21	628.8
Site 3-S	220-110-08	T.32S., R.25E., Sec.23	460.4
Site 4-S	295-040-(30-31)	T.32S., R.26E., Sec.19	652.5
Site 5-S	220-170-(01-02,05,07)	T.32S., R.25E., Sec.29 & 30	797.2
Site 6-S	220-130-01	T.32S., R.25E., Sec.27	304.2
Site 7-S	220-130-(02,12)	T.32S., R.25E., Sec.25&26	471.6
Site 15-S	295-130-25	T.32S., R.27E., Sec.33	483.6
	TOTAL		**3,798.3**

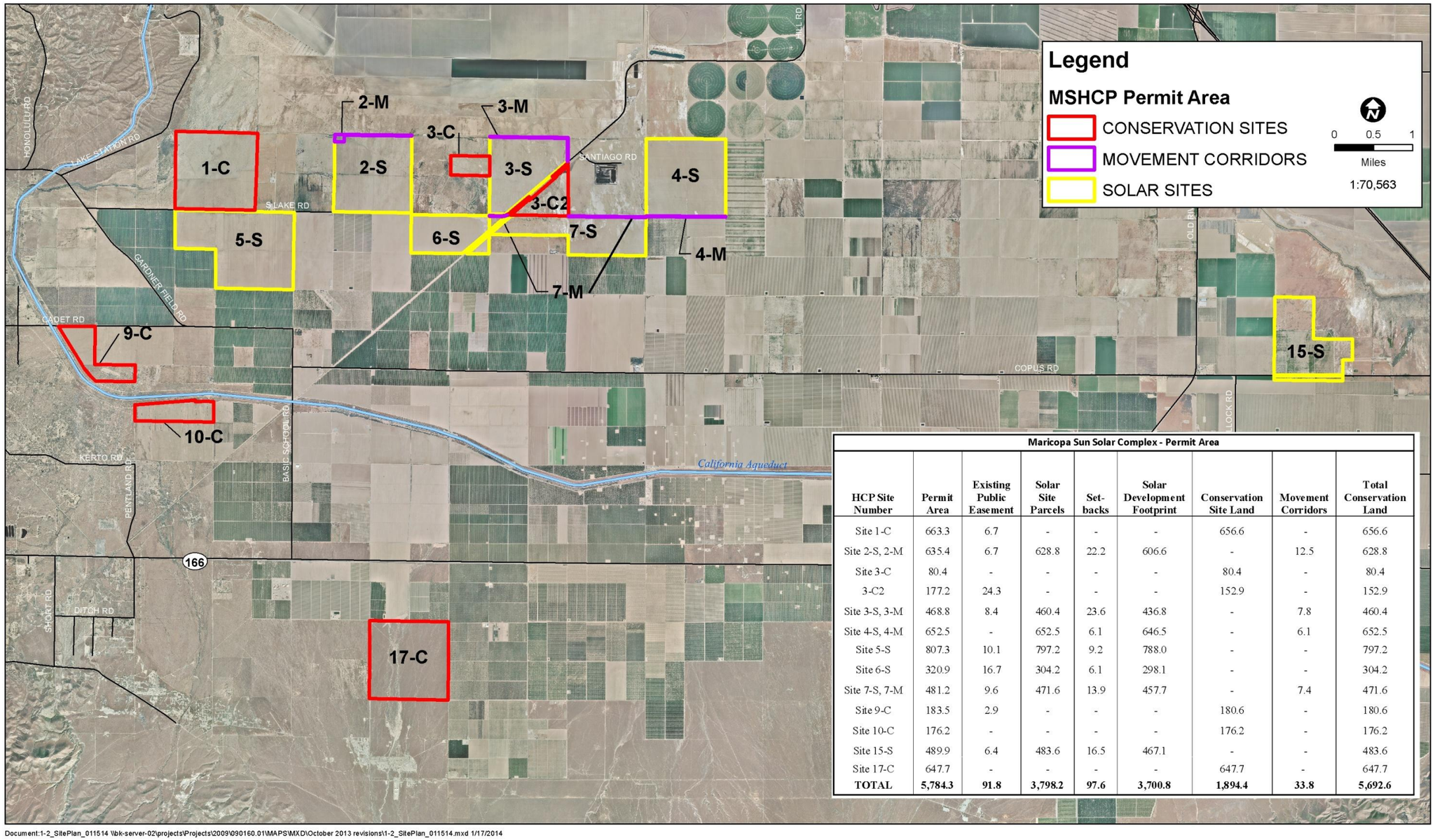
The state and federally endangered Tipton kangaroo rat and the state threatened Nelson's antelope squirrel historically occurred on some of the Solar Sites, but recent and repeated disking has eliminated these species from these areas. Some lands that are adjacent to the Solar Sites do support these species, and the potential exists for these species to become established on the Solar Sites before construction commences and after the solar facilities are in place.

Currently, there is no evidence to support a determination that lethal take of these species will occur during pre-construction and construction activities. Project minimization and avoidance measures will adequately prevent lethal take during operations and maintenance and decommissioning activities. The potential for the Tipton kangaroo rat and Nelson's antelope squirrel to be subject to take during construction will be avoided through the installation of barrier fencing placed between the sites of known occurrences on adjacent lands and on-site construction activities.

The purpose of this relocation plan is two-fold: 1) to ensure that standard avoidance and minimization measures will be implemented to avoid and reduce the impact of the Project on the Tipton kangaroo rat and Nelson's antelope squirrel; and 2) to establish standard guidelines for the trapping and relocation of the Tipton kangaroo rat and Nelson's antelope squirrel, should it become necessary.



Quad Knopf	REGIONAL LOCATION OF MARICOPA SUN SOLAR COMPLEX PROJECT AREA, KERN COUNTY, CALIFORNIA	Figure 1



Maricopa Sun Solar Complex - Permit Area

HCP Site Number	Permit Area	Existing Public Easement	Solar Site Parcels	Set-backs	Solar Development Footprint	Conservation Site Land	Movement Corridors	Total Conservation Land
Site 1-C	663.3	6.7	-	-	-	656.6	-	656.6
Site 2-S, 2-M	635.4	6.7	628.8	22.2	606.6	-	12.5	628.8
Site 3-C	80.4	-	-	-	-	80.4	-	80.4
3-C2	177.2	24.3	-	-	-	152.9	-	152.9
Site 3-S, 3-M	468.8	8.4	460.4	23.6	436.8	-	7.8	460.4
Site 4-S, 4-M	652.5	-	652.5	6.1	646.5	-	6.1	652.5
Site 5-S	807.3	10.1	797.2	9.2	788.0	-	-	797.2
Site 6-S	320.9	16.7	304.2	6.1	298.1	-	-	304.2
Site 7-S, 7-M	481.2	9.6	471.6	13.9	457.7	-	7.4	471.6
Site 9-C	183.5	2.9	-	-	-	180.6	-	180.6
Site 10-C	176.2	-	-	-	-	176.2	-	176.2
Site 15-S	489.9	6.4	483.6	16.5	467.1	-	-	483.6
Site 17-C	647.7	-	-	-	-	647.7	-	647.7
TOTAL	**5,784.3**	**91.8**	**3,798.2**	**97.6**	**3,700.8**	**1,894.4**	**33.8**	**5,692.6**

Document:1-2_SitePlan_011514 \\bk-server-02\projects\Projects\2009\090160.01\MAPS\MXD\October 2013 revisions\1-2_SitePlan_011514.mxd 1/17/2014

Quad Knopf

SITE PLAN
MARICOPA SUN SOLAR COMPLEX, KERN COUNTY, CALIFORNIA

Figure
2

2.0 METHODS

This section provides information on a relocation strategy, and methodologies that will be used to trap and relocate Tipton kangaroo rats and Nelson's antelope squirrels, should the need arise. The project activities consist of several phases, including a pre-construction phase, construction phase, operations and maintenance phase, and decommissioning phase. Specific methods that will be implemented during each phase are described below, in sections 2.1, 2.2 and 2.3. General conditions and methodologies applicable to all phases are:

1. All trapping and relocation will be conducted by a qualified biologist that holds a current federal Section 10(a)(1)(B) recovery permit issued by the United States Fish and Wildlife Service and a current California State Scientific Collecting Permit and Memorandum of Understanding (MOU) or other special permit issued by the California Department of Fish and Wildlife (CDFW);

2. Trapping will be conducted prior to planned activities at each location where the presence of sign (i.e., tracks, tail drags, dust baths, runways) indicating active kangaroo rat and/or antelope squirrel presence is determined by pre-activity surveys. Trapping will be performed for a minimum of four nights, and will continue until there are two consecutive nights of unsuccessful trapping. Modified Sherman™ live traps (Model XLKR: 13 inches x 3.5 inches x 3 inches) will be used to reduce the risk of injury (e.g., tail lacerations or excisions) to any small mammal species that may be captured. Each trap will be baited with a mixture of rolled oats, millet, and peanut butter. A wad of paper towel will be placed within traps as necessary to reduce trap-chewing behavior, which can result in injuries to the mouthparts of trapped rodents. Traps will be opened and baited prior to dusk and checked at least once a night. Traps will be checked every three hours throughout the night when cold or wet conditions prevail to ensure that no trapped rodents succumb to the elements. Checking of traps will continue after sunrise. Traps will be closed during the trapping period only after a sufficient period of time has lapsed, depending upon weather conditions, with temperatures between 10 and 32 degrees Fahrenheit. All traps will be closed prior to daytime temperatures reaching 32 degrees Fahrenheit. Captured animals will be identified to species, weighed, and their sex, age, and reproductive condition determined before being translocated or released. Data will be recorded on data sheets to include date, time, names of observers, and weather conditions with air temperature, wind, humidity, cloud cover, and moon phase information, along with specific details related to the captured animal;

3. All burrows where small mammals are captured will be inspected with a burrow scope (e.g., Peep-A-Roo^{TM}) the morning following capture. If no animals are present in the burrow, the burrow will be hand excavated by a qualified biologist. All other active small mammal burrows where no captures occur will be inspected with a burrow scope and will be hand excavated by a qualified biologist before the excluded area will be cleared for construction activities;

4. Permanent disturbance to an area will require translocations of animals to other areas. All translocated animals will be moved a minimum of 1,600 feet (approx. 500 meters) from

their points of capture, and will be released into established Conservation Sites. To minimize stress and ensure survival, relocated Tipton kangaroo rats will be "soft-released" as described below (Section 2.1). Nelson's antelope squirrels will be "hard-released" directly to a relocation site (Section 2.2);

5. If disturbance to an area is temporary, it may be feasible to release animals at the point of capture. If disturbance to an area will persist for fewer than ten days, animals will be held in captivity for the duration of the disturbance and then hard-released at the point of capture as described below (Section 2.2); and

6. A biological monitor will be present during all project-related activities that may result in take of covered species. Monitoring reports will be prepared to comply with CDFW standards.

2.1 Pre-construction and Construction Phase

Neither of the rodent species (Tipton kangaroo rat and Nelson's antelope squirrel) has been documented to currently exist on the Solar Sites, which have been repeatedly disturbed by disking. The possibility exists that either species may be present in certain areas or become established prior to the beginning of construction. Pre-construction surveys for both rodent species will be conducted prior to the start of any construction activities on and within 500 feet of all solar sites to determine locations of small mammal burrows with sign of either rodent species (i.e., tracks, tail drags, dust baths, runways). Barrier fencing will be established between the construction areas and existing rodent populations on adjacent lands to reduce impacts from construction on these species. The distance between barrier fencing and small mammal burrows will be a minimum of 30 feet so as to avoid the inadvertent collapse or degradation of any unseen, subsurface burrow systems. Barrier fencing will consist of a solid fence buried six inches below grade and extending a minimum of 30 inches above grade. The fencing material will have a smooth finish to prevent rodents from climbing over the fence. The fence will not fully enclose rodent populations, but will extend perpendicular to the disturbance area to a minimum of 500 feet beyond the range of the population.

If any small mammal burrows found to be active with rodents are identified to occur within the disturbance footprint, small mammal trapping will be conducted and all burrows will be inspected and hand excavated following the methodologies described above. All captured Tipton kangaroo rats will be translocated to one of the Project's designated Conservation Sites (Figure 2) and soft-released. Captured Nelson's antelope squirrels will be translocated to one of the Project's Conservation Sites and directly hard-released as described below.

The soft-release method will involve a small enclosure, approximately 10 feet by 10 feet, in the selected Conservation Site. The enclosure will consist of ¼-inch hardware cloth that will be buried 6 inches below grade, extend 2 feet above grade, and have an enclosed top. Four artificial burrows will be installed within each enclosure. Artificial burrows will be constructed of 2-inch PVC pipe fashioned into a "T" shape and will be placed below grade under 3 to 10 inches of topsoil. The artificial burrow will be approximately 2 feet long on a side. Each translocated Tipton kangaroo rat will be released into an artificial burrow contained within the enclosure.

Only a single animal will be released into each enclosure. Supplemental feeding is believed to be crucial to the success of translocated animals; therefore, each translocated animal will be provided with supplemental food to increase survival and minimize the negative effects of the translocation. Kangaroo rat activity within the enclosure will be monitored and supplemental food provided on a weekly basis until the animal has escaped from the enclosure of its own accord, at which point translocation will be considered complete.

2.2 Operation and Maintenance Phase

It is anticipated that Tipton kangaroo rats and Nelson's antelope squirrels will become established on the Solar Sites during the operation and maintenance phase. The rapidity and degree of colonization, and the abundance of animals present at any particular site or at any given area within a site will depend upon a variety of factors, including proximity to a source population, the degree that suitable habitat develops, the presence of predators, seasonal and annual weather conditions, and other factors. Because Tipton kangaroo rats and Nelson's antelope squirrel could become present at any time on the sites, pre-construction surveys will be conducted prior to any maintenance activities that consist of ground disturbance. If any small mammal burrows active with rodents are identified within the disturbance area, small mammal trapping will be conducted and all burrows will be inspected and hand excavated as described above. All other small mammal burrows in the vicinity of the disturbance area with the potential to contain rodents will be inspected and hand excavated to prevent accidental collapse during maintenance activities. Small mammal burrows active with rodents existing outside of the disturbance area will be protected by the installation of barrier exclusion fencing, as described above.

Captured Tipton kangaroo rats and Nelson's antelope squirrels will be held in captivity until the maintenance repairs are finished, or for a maximum of ten days. If maintenance activities will exceed ten days, captured rodents will be hard-released (not released into an enclosure) at existing or artificial burrows located on site, but at a distance of at least 500 meters from their point of capture. If existing burrows suitable for kangaroo rats or antelope squirrels are not available, artificial burrows will be installed, as described above. For activities that are less than ten days in length, rodents will be hard-released back to the area from which they were trapped. Existing burrows will be used whenever possible, but if the released rodent does not voluntarily enter an offered existing burrow, then artificial burrows will be installed at a rate of four burrows for each animal released. Artificial burrows will be constructed of 2-inch PVC pipe into a "T" shape, and will be placed under 3 to 10 inches of topsoil. No enclosure will be constructed and no supplemental food need be provided.

2.3 Decommissioning Phase

Tipton kangaroo rats and Nelson's antelope squirrels could become established on the Solar Sites during the operation and maintenance phase and so, may be present during decommissioning of the solar facilities. The rapidity and degree of colonization, and the abundance of animals present at any particular site or at any given area within a site will depend upon a variety of factors including proximity to a source population, the degree that suitable habitat develops, the presence of predators, seasonal and annual weather conditions, and other factors. The number of

rodents present may dramatically fluctuate in any given year in response to weather conditions and stochastic events. The risk of take of Tipton kangaroo rats and Nelson's antelope squirrels during the decommissioning phase would depend upon their abundance and distribution on any particular site and the care with which removal of the solar facilities are conducted.

Pre-construction surveys will be conducted to determine the distribution and relative abundance of Tipton kangaroo rats and Nelson's antelope squirrels on a site prior to the implementation of decommissioning activities. These surveys will consist of locating, counting, and mapping the presence of small mammal burrows. Trapping will be conducted to verify species presence.

Decommissioning activities within areas that are occupied by Tipton kangaroo rats and/or Nelson's antelope squirrels will be conducted in a manner that will prevent mortalities and minimize other impacts to the species. For smaller areas that are inhabited by rodents, trapping, removal, and keeping rodents in captivity, followed by hard-release back to the point of capture into existing or artificial burrows will result in adequate protection. However, for larger areas that are inhabited by rodents, a more rigorous approach to protection would be necessary. In these larger areas, decommissioning activities will be "progressive", to ensure that rodents can be removed from the work area prior to solar removal activities occurring. Areas no larger than one acre in size will be fenced with barrier fencing installed to a minimum depth of 6 inches below grade. Small mammal trapping will be conducted as described above to remove all rodents within the fenced area. All captured rodents will be kept in captivity in a controlled environment until decommissioning activities within the area have been completed. All burrows that will be impacted by the removal of the solar facilities will be inspected and hand excavated as previously described. After the decommissioning activities are completed within the fenced area, the barrier fencing will be removed and the rodents will be hard-released into remaining burrows or into artificial burrows.

3.0 CONCLUSION

Because the Tipton kangaroo rat and Nelson's antelope squirrel currently only utilize the Solar Development Footprint as potential foraging habitat, no lethal take of these species is anticipated during the solar construction phase. Nonetheless, pre-construction surveys will be conducted to verify absence prior to construction. Tipton kangaroo rat and Nelson's antelope squirrel could become established on some or all the project sites during the operations and maintenance phase, and thus be at risk of take during the operations and maintenance and decommissioning phases of the project. Conducting pre-construction surveys, trapping and removing animals from construction areas, and releasing trapped animals at the point of capture or to designated Conservation Site will reduce adverse effects of the project on these species.