

APPENDIX A. BIOLOGICAL OPINION



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
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IN REPLY REFER TO:
08EVEN00-2012-F-0160

September 17, 2012

Teresa A. Raml, District Manager
California Desert District
Bureau of Land Management
22835 Calle San Juan de Lagos
Moreno Valley, California 92553

Tom Contreras, Forest Supervisor
Angeles National Forest
U.S. Forest Service
701 North Santa Anita Avenue
Arcadia, California 91006

Subject: Biological Opinion for the Barren Ridge Renewable Transmission Project, Los Angeles and Kern Counties, California (8-8-12-F-20) (2830-31(P) CAD000.06 CACA-048871)

Dear Ms. Raml and Mr. Contreras:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the Bureau of Land Management's (BLM) and U.S. Forest Service's (USFS) proposals to issue right-of-way grants to the City of Los Angeles Department of Water and Power (LADWP) to construct, operate, and maintain the Barren Ridge Renewable Transmission Project (BRRTP) and its effects on the federally threatened desert tortoise (*Gopherus agassizii*), in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Your April 4, 2012, request for formal and informal consultation was received on April 5, 2012.

This biological opinion is based on information which accompanied your April 4, 2012, request for consultation, including the biological assessment (Power Engineers 2012a), avian protection plan (Winkleman 2012), the final environmental impact report (LADWP et al. 2012), additional information provided by telephone and electronic (e-mail) correspondence, informal discussions between our staffs, and our files. A complete record of this consultation can be made available at the Ventura Fish and Wildlife Office.

The proposed action is not located within and will not affect critical habitat of the desert tortoise; the nearest critical habitat unit is approximately 10 miles northeast of the Barren Ridge Switching Station (59 Federal Register 5820). Consequently, we will not address effects to critical habitat of the desert tortoise in this biological opinion.

You also requested concurrence that the proposed action may affect, but is not likely to adversely affect, the endangered California condor (*Gymnogyps californianus*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), arroyo toad (*Anaxyrus californicus*), unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*),

Braunton's milkvetch (*Astragalus brauntonii*), slender-horned spineflower (*Dodecahema leptocerus*), and Nevin's barberry (*Berberis nevinii*), the threatened California red-legged frog (*Rana draytonii*), California coastal gnatcatcher (*Polioptila californica*), and its critical habitat, and candidate species San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) and yellow-billed cuckoo (*Coccyzus americanus*). In the biological assessment, you have proposed to implement measures to avoid adverse effects to these species. You have also proposed to implement additional measures to avoid adverse effects from power line construction to listed birds as described in the associated avian protection plan (APP) (Winkleman 2012). The measures in the APP are consistent with the Avian Power Line Interaction Committee's (2006) principles of avian protection.

We concur with your determination that activities associated with the construction, operation, and maintenance of the BRRTP, as described in the biological assessment (Power Engineers 2012a) and APP (Winkleman 2012), are not likely to adversely affect these species. Our concurrence is based primarily on the measures you have proposed to avoid adverse effects to these species and for the reasons summarized for each species below:

California Condor

The LADWP did not conduct surveys for California condors. We have reviewed coordinates of the birds' flight locations in the vicinity of the project through 2010 and determined that they have not appreciably altered their movements since 2009. California condors have been recorded flying primarily on the southern end of the reconductoring component of the existing transmission line just south of the Angeles National Forest and near the Castaic Power Plant. Our concurrence with your determination that the proposed project is not likely to adversely affect the California condor is based on the following: (1) California condors have not been observed foraging, roosting, or nesting within the project area, (2) LADWP will retain a qualified biological monitor during BRRTP construction; (3) LADWP will coordinate with the Service on the construction schedule and helicopter work areas to determine if any California condors are known to be in the vicinity of the project area; (4) if a California condor is observed in a helicopter construction area, LADWP will discontinue helicopter use until the birds have left the area; (5) if California condors are found roosting within 0.5 mile of the construction area, no construction activity will occur between 1 hour before sunset and 1 hour after sunrise or until the California condors leave the area; (6) if California condors are documented nesting within 1.5 miles of the construction area, construction activity will cease and work will remain suspended until the Service, BLM, and USFS complete the appropriate level of consultation; and (7) LADWP will implement measures to minimize additional threats of the proposed action on California condors including removal of microtrash and proper application of herbicides during construction, operation and maintenance activities.

Least Bell's Vireo, Southwestern Willow Flycatcher, Yellow-Billed Cuckoo, and Coastal California Gnatcatcher and Critical Habitat

Least Bell's vireos, southwestern willow flycatchers, and yellow-billed cuckoos were not identified during avian habitat assessment surveys conducted in 2008. Suitable habitat for these

species was identified during the surveys in San Francisquito, Dry, and South Portal Canyons (Power Engineers 2012a). Coastal California gnatcatchers are present in the project area and approximately 2.9 miles of the project is within Unit 13 of designated critical habitat for the coastal California gnatcatcher (72 Federal Register 72009). The closest known population of the least Bell's vireo to the project area is at Castaic Lagoon but this location is approximately 0.5 mile south of the proposed reconductoring component of the project; the proposed action is unlikely to affect the area where the birds occur. Only two recorded occurrences of yellow-billed cuckoos occur in the project vicinity, one from 1893 that has been extirpated in San Fernando, and one from 1979 in the Santa Clara River (Power Engineers 2012a). No records exist of southwestern willow flycatchers within the project area. We base our concurrence with your determination that the proposed project is not likely to adversely affect least Bell's vireos, southwestern willow flycatchers, yellow-billed cuckoos, and coastal California gnatcatchers on several factors. You have proposed to conduct project construction activities in suitable habitat for these species from November to early March, which is outside of the breeding season for all of these species. If construction must occur during the breeding season, you have proposed to survey for the presence of individuals of these species within the project area prior to the start of construction activities. If they are present, you proposed to avoid all identified territories or nests; to reduce noise levels to below 40 decibels at the edge of a nest site; enforce a no-disturbance buffer around known nests or territories; provide a qualified biological monitor for construction in occupied habitat; and implement protective measures that would avoid adverse effects of herbicides to least Bell's vireos, southwestern willow flycatchers, yellow-billed cuckoos, and coastal California gnatcatchers.

A portion of coastal California gnatcatcher critical habitat Unit 13 overlaps Segment K, a section of the existing transmission line that LADWP has proposed to reductor. In your proposed action, any vegetation or habitat that would be cleared for construction would be done within the existing right-of-way of Segment K. We concur with your determination that the proposed project is not likely to adversely affect critical habitat for the coastal California gnatcatcher based on the following: (1) habitat within the existing right-of-way is already disturbed and would not support the primary constituent elements of critical habitat for the species due to ongoing transmission maintenance activities on Segment K; (2) you would prohibit habitat disturbance outside of the existing right-of-way; (3) LADWP would implement dust control measures during construction activities on Segment K to avoid depositing excessive dust on adjacent coastal California gnatcatcher habitat; and (4) LADWP would implement protective measures to avoid adverse effects of herbicides to coastal California gnatcatcher critical habitat.

Unarmored Threespine Stickleback

We concur the proposed project is not likely to adversely affect the unarmored threespine stickleback because the species has not been detected in San Francisquito Canyon since 2005 following the Copper Fire in 2002 and heavy flooding and sedimentation in 2005. The species has been extirpated from San Francisquito Canyon and we do not expect it to occur within the project area.

Arroyo Toad and California Red-legged Frog

Our concurrence with your determination that the proposed project is not likely to adversely affect arroyo toads and California red-legged frogs is based on the following: (1) surveys for arroyo toads and California red-legged frogs have not detected either species within the proposed transmission project right-of-way; (2) you have proposed to survey for the presence of arroyo toads and California red-legged frogs within the project area prior to the start of construction activities; (3) LADWP would cease work immediately if arroyo toads or California red-legged frogs are detected and work will remain suspended until the Service, BLM and USFS complete the appropriate level of consultation; and (4) LADWP would implement protective measures that would avoid adverse effects of herbicides to arroyo toads and California red-legged frogs.

Plants

Braunton's milkvetch, slender-horned spineflower, Nevin's barberry, and San Fernando Valley spineflower were not identified in the project area or vicinity during botanical surveys conducted for this project in 2008, 2009, and 2010. Suitable habitat for Braunton's milkvetch is associated with carbonate soils derived from scattered limestone lenses, which rarely occur in that portion of the San Gabriel Mountains where the project would be located. Suitable habitat was identified for slender-horned spineflower within the right-of-way, but no occurrences are recorded within the project area. A robust population of Nevin's barberry is known to be present at LADWP's Power Plant #2 in San Francisquito Canyon. The only other known population of Nevin's barberry on the Angeles National Forest is in Lopez Canyon, which is not within the project area. Of the 20 recorded occurrence records of San Fernando Valley spineflower, 10 are near the project vicinity but none are within the project area.

We concur with your determination that the proposed project is not likely to adversely affect Braunton's milkvetch, slender-horned spineflower, Nevin's barberry, and San Fernando Valley spineflower because (1) none of the species was detected within the project area during 3 years of surveys; (2) Braunton's milkvetch's soil preference would limit the distribution and likelihood of suitable habitat to occur in the project area; (3) LADWP would conduct pre-construction surveys for these species in the project area; (4) if any individuals are identified, LADWP would flag and avoid all identified plants; and (5) LADWP would implement protective measures contained in the weed control plan (Power Engineers 2012b) to avoid adverse effects of herbicides to these species.

Consultation History

Our involvement with the Barren Ridge Renewable Transmission Project began in January, 2008, during a series of early coordination meetings and phone conversations with staff from the USFS, BLM, and LADWP. On April 2, 2008, the USFS requested information from us on threatened and endangered species that may occur in the study area for the proposed transmission line. We provided the USFS and BLM with a species list dated May 1, 2008, as required under section 7(c) of the Act. In a telephone call on May 8, 2008, Chris Dellith of the Service reviewed the amphibian site assessment report for the BR RTP and gave verbal approval to

proceed with protocol surveys. In a telephone call on May 20, 2008, Ashleigh Blackford of the Service discussed the habitat assessment for desert tortoise and provided a recommended survey approach for the species. In a telephone call on June 12, 2008, Della Snyder-Velto of the Service discussed survey needs for wildlife in the proposed action area. On March 18, 2010, we met with the USFS and BLM to discuss results of the 2009 biological surveys and development of the biological assessment. On August 24, 2010, we met again with the USFS and BLM to discuss data needs for the biological assessment and avian protection plan. The BLM and USFS submitted a draft of the biological assessment to us for comment and review on July 26, 2011. We provided our comments on November 14, 2011. On January 31, 2012, the BLM and USFS submitted the biological assessment to the Service and requested formal consultation for the proposed project. We delayed initiation of formal consultation until we could meet with the USFS, BLM, and LADWP staff on March 6, 2012, and discuss the additional information we needed to resolve our concerns with how the proposed action may affect listed species. The BLM and USFS then submitted a revised final biological assessment containing that additional information to the Service on April 5, 2012. Concurrent with this submission, the BLM and USFS requested formal and informal consultation for the proposed project.

We provided a draft biological opinion to the BLM and USFS on August 27, 2012 (Service 2012a). On September 7, 2012, the BLM notified us that it, the USFS, and LADWP had a single comment on the draft biological opinion (Marsden 2012); we incorporated a response to the comment in this final biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Introduction

The Angeles National Forest proposes to issue a special use authorization for the BR RTP where it would occur on USFS-administered lands, and the BLM proposes to issue a right-of-way grant for the project on BLM-administered lands. As proposed in the biological assessment (Power Engineers 2012a), the BR RTP would be approximately 76 miles in length, extending south from the Barren Ridge Switching Station and paralleling LADWP's existing transmission line to end at the Rinaldi Substation in the City of San Fernando. The proposed project would also extend approximately 12 miles from the Castaic Power Plant to the proposed new Haskell Canyon Switching Station. The proposed BR RTP would consist of the following activities:

- (1) Construction of 60 miles of a new double-circuit 230 kilovolt (kV) transmission line from the Barren Ridge Switching Station to a new switching station located within Haskell Canyon. This construction would traverse approximately 13 miles of USFS lands, 4 miles of BLM-managed public lands, and 45 miles of private property;
- (2) Addition of approximately 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant. Approximately 4 miles would traverse USFS lands and 300 feet would traverse BLM-managed lands;

- (3) Reconductoring of 76 miles of the existing Barren Ridge-Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and Rinaldi Substation. This portion of the project would traverse approximately 13 miles of USFS lands, 4 miles of BLM-managed public lands, and 44 miles of private property;
- (4) Construction of a new switching station in Haskell Canyon; and
- (5) Expansion of the existing Barren Ridge Switching Station.

Because the proposed action is likely to adversely affect only the desert tortoise, the following paragraphs describe only the construction, operation and maintenance activities that LADWP expects to conduct within habitat of the desert tortoise.

Construction

Transmission line construction involves the following general sequence of events: surveying activities; identifying and constructing access roads; clearing right-of-way and tower sites (including construction yards and batch plants); installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing; installing ground wires and conductors; installing counterpoise (a grounding electrode system made up of buried wire); switching station tie-in; and site upkeep and site reclamation. Various phases of construction would occur at different locations throughout the construction process, requiring several contractors operating at the same time and in different locations.

LADWP proposes to use existing roads along utility corridors where possible to minimize the need to construct new access roads. In locations where existing roads could be used that are in close proximity to the proposed or existing right-of-way centerlines, LADWP would construct only new spur roads to the tower sites. The final project design would determine the specific locations and design of all new access and spur roads. In addition to roads, LADWP would need to construct several staging areas or yards for storing materials, construction equipment and vehicles, and for temporary construction offices. Staging areas would be approximately 5 acres in size, and would be located centrally or near each end of the transmission line route on previously disturbed land and would be leveled and surfaced with crushed aggregate base. LADWP would negotiate with landowners for specific locations of the staging areas.

Double- and triple-circuit towers

LADWP proposes to construct new towers for this project over approximately 60 miles, spanning from the Angeles National Forest at the proposed new Haskell Canyon Switching Station and north into the Antelope Valley and Mojave Desert to the Barren Ridge Switching Station. The proposed structures for the new transmission line would primarily be self-supporting double-circuit steel lattice towers fabricated from galvanized steel, with heights ranging from 110 to 195 feet and averaging tower-to-tower spans of 1,000 to 1,100 feet. Two new 230 kV circuits (conductors) would then be placed on these newly constructed double-

circuit transmission towers from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station. This component of the proposed action would require large, heavy construction equipment that could only be brought in by truck.

The steel lattice structures would require concrete foundations consisting of four footings (one for each leg) of steel-reinforced concrete that LADWP would cast in place. Typically, the concrete footings are between 2.5 and 5.0 feet in diameter, with an average depth of 20 feet depending on soil conditions.

In areas where there are right-of-way expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP proposes to construct three-circuit towers within the existing right-of-way to carry the existing BR-RIN circuit and the proposed two new Barren Ridge to Haskell Canyon circuits. By constructing these new 3-circuit towers within the existing right-of-way, LADWP would avoid having to acquire residential property in the unincorporated communities of Willow Springs, Elizabeth Lake, and Green Valley for the new higher-capacity transmission line.

Reconductoring

The purpose of reconductoring is to replace the cable or wire on an existing transmission line with cable or wire that has a greater electric-current-carrying capability. Reconductoring activities consist of removing the existing cable to string a pulling line, which would then be used to pull in the new conductor cable. The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of right-of-way, rehabilitation of existing access and spur roads, clearing of right-of-way, conductor installation, and cleanup). All work would remain within the existing 250-foot-wide right-of-way, with no additional right-of-way required.

Expansion of the Barren Ridge Switching Station

LADWP proposes to expand the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet (2.7 acres), for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expanded area of the station would contain electrical structures and equipment for the addition of transmission lines, a material staging area, a roadway within the station, and a drainage area. Construction activities would include conducting preconstruction surveys, site preparation and grading, installing reinforced concrete foundations, installing electrical conduits for equipment power and control, and installing structures and equipment. LADWP estimates that approximately 700 cubic yards of concrete would be delivered to the switching station site for the foundations and would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Approximately 60 construction workers would need approximately 8 months to complete the station expansion.

Weed Control Plan and use of herbicides

The LADWP proposes to implement a Weed Control Plan to prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way. LADWP proposes to use the following eight herbicides to eradicate non-native invasive plant species (invasive weeds) in the disturbance areas of the project before, during and after construction of the BR RTP: chlorsulfuron, clopyralid, dicamba, glyphosate, hexazinone, imazapyr, sulfometaron methyl, and triclopyr. Although LADWP has proposed to use eight herbicides, glyphosate would be the most commonly-used herbicide for control of annual or short-lived perennial invasive weeds. Triclopyr would be the most common herbicide used on the less-abundant long-lived perennial invasive weeds. Herbicide application techniques and rates would depend on the species of invasive weeds present and the presence of any adjacent sensitive areas (e.g., streambeds) or proximity of sensitive plant or animal species. For a more in-depth discussion of potential weed treatment by herbicide, please refer to the weed risk assessment (Power Engineers 2011). In addition, we explain the protective measures to ensure minimal impacts from herbicide use below.

The comprehensive weed control program (BIO-2 – Prevent the Spread of Invasive Weeds) describes various options that would limit or reduce impacts from invasive plants, including herbicide application, mechanical removal, biocontrol methods, prescribed burns or floods, and shading. To remove established invasive weed populations, the LADWP proposes to implement a species-specific method that may also include a combination of the above removal procedures or precise timing of specific actions. Due to typically large seed banks and the ability of some weed species to vigorously resprout following removal methods, most invasive weeds would require more than one round of treatment or a different follow-up treatment method after the initial removal occurs.

Noxious weed control measures would be species specific and herbicides would be applied only if necessary after considering alternate methods or as part of a proven eradication strategy for that weed species. The use of herbicides in the project area would comply with the U.S. Environmental Protection Agency's and the California Department of Pesticide Regulation's regulations.

LADWP has proposed to implement the following measures to minimize the adverse effects of herbicides to native and special status vegetation and wildlife. We have only included those measures relevant to the desert tortoise:

- Herbicides will be used with the least toxic surfactant available.
- Herbicides will not be applied during or within 24 hours of a 70 percent chance of a rain event.
- Herbicides will not be applied by spray equipment when wind velocities exceed 6 miles per hour. Herbicides applied by sponge or paintbrush to cut stumps will not be applied when wind speeds are greater than 15 miles per hour.
- Where herbicide control methods are used, disposal of the plant debris would follow the regulations set by the USFS/BLM. The timing of the weed control treatment will be

determined for each plant species in consultation with the USFS/BLM (on USFS/BLM lands) with the goal of controlling populations before they start producing seeds.

Avoidance and Minimization Measures

LADWP proposes to implement numerous measures, written in collaboration with USFS and BLM staff, to minimize the adverse effects of construction, operation, and maintenance on listed species. General Practices will be applied to all natural resources of the project and the entire list can be viewed in the BRRTD Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) (USFS, BLM, and LADWP 2011b). We have described the protective measures (BIOs) that are specific to the desert tortoise and various impacts from the proposed project in the following paragraphs. (We have retained the numbering used in the LADWP's document to avoid confusion.)

Avoidance and Minimization Measures to Protect Desert Tortoises

To reduce the adverse effects of the proposed action on the desert tortoise and its habitat, LADWP will ensure that the following avoidance and minimization measures are implemented. Throughout these measures, "biological monitor" refers to a BLM, USFS, or California Department of Fish and Game (CDFG) approved biologist that ensures compliance with protective measures during monitoring of construction, operation or maintenance activities. An "authorized biologist" refers to a Service-approved biologist that would be authorized to monitor any construction, operation, or maintenance activities that may result in adverse effects to the desert tortoise. The biological monitor would report to the authorized biologist.

We summarized the following measures from the final biological assessment (Power Engineers 2012a) and correspondence with staff from BLM, USFS, and LADWP. During consultation, we further refined these measures through conversations with BLM, USFS, and LADWP. Additionally, to clarify where specific measures will be implemented, we will use the following definitions of "construction area" and "construction zone" throughout the remainder of this biological opinion. The construction area includes all areas that will be disturbed by construction of the transmission line; the construction zone comprises the 250 feet on either side of the transmission line to account for the access roads, spur roads, tower assembly and installation. The staging sites and concrete batch plants will not be placed within desert tortoise habitat.

- 23a. Preconstruction clearance surveys of the construction area will be conducted by authorized biologists for desert tortoises within suitable habitat. Preconstruction surveys will be conducted within 24 hours prior to construction activities. Surveys will be conducted by an authorized biologist and will provide 100 percent coverage of all areas to be disturbed during construction. All desert tortoise burrows and burrows constructed by other species that might be used by desert tortoises will be examined to assess occupancy by desert tortoises and processed in accordance with the Service's (2009) current guidelines. Construction activities north of Backus Road will be monitored by an authorized biologist. If desert tortoises are observed prior to or during construction south of Backus Road,

LADWP will assign an authorized desert tortoise biologist to implement the appropriate protective measures in that local area until the animal leaves or work activities have concluded.

- 23b. In desert tortoise habitat, vehicular traffic during construction, operations, and maintenance will be confined to existing routes of travel to and from the project site and BRRTP facilities (maintenance yards, switchyards, material sites), and cross-country vehicle and equipment use outside of project construction and facility areas will be prohibited. Where new access is required outside of existing roads (e.g., new spur roads) or the construction zone, the route will be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.
- 23c. Burrows within the construction zone (but outside the construction area) will be flagged by the authorized biologist so that the authorized biologist would be able to more easily locate them during construction; flagging will be removed at the conclusion of construction. The authorized biologist will be on-site to monitor all construction that occurs in the vicinity of flagged burrows and to watch for desert tortoises. The authorized biologist may direct the installation of fencing to exclude desert tortoises from construction areas with the concurrence of the BLM's lead biologist on public lands or the Service on non-BLM lands; where such fencing is installed, the lead BLM biologist or Service contact may determine that an authorized biologist need not remain at that specific site. All desert tortoise burrows or pallets in construction areas will be excavated by the Service-authorized biologist.
- 23d. Desert tortoises that are found above-ground during construction and need to be moved from potential harm will be placed in the shade of a shrub by the Service-authorized biologist. Any desert tortoise removed from burrows will be placed in an unoccupied burrow of approximately the same size as the one from which it was removed. The authorized biologist will move the desert tortoise to a distance that she/he considers to be safe; desert tortoises will not be moved more than 1,000 feet from the point of capture. If an existing burrow is unavailable, the authorized biologist will construct a burrow of similar size, shape, depth, and orientation as the original burrow. Desert tortoises moved during inactive periods will be monitored for at least 2 days after placement in the new burrows to ensure their safety. The authorized biologists will use their judgment and discretion to ensure that the survival of the desert tortoise is likely.
- 23e. If a desert tortoise is in a construction or maintenance area and is not moving, adjacent activities would be halted until the authorized biologist is able to move it out of harm's way. Any desert tortoises in this situation will be moved as described in measure 23d.
- 23f. Any time during construction, operation, and maintenance that a vehicle is parked, the ground around and under the vehicle will be inspected for desert tortoises before the vehicle is moved. If a desert tortoise is observed, it will be left to move on its own. If this does not occur within 15 minutes, the authorized biologist will remove and relocate the

desert tortoise out of harm's way, as described in measure 23d. Authorized biologists will follow current Service desert tortoise handling guidelines at all times.

- 23g. During construction, operation, and maintenance within potential desert tortoise habitat areas, vehicles will not exceed 20 miles per hour on access roads during periods of increased desert tortoise activity. Generally, these periods are from March 1 through October 31; however, unseasonably warm weather and rainfall at any time of the year may cause desert tortoises to increase their activity. The authorized biologist and BLM's lead biologist (on BLM lands) or Service contact (on non-BLM lands) will determine additional times when speed limits are necessary, based on conditions at the time.
- 23h. Tower foundations or other excavations that pose a potential to entrap or injure desert tortoises will be inspected three times daily until the foundation or other structure is in place. Excavations also will include an escape ramp. In response to a comment on the draft biological opinion, we have added the specifications for the escape ramps. The ramps will be wide enough and at a slope for a large desert tortoise to ascend easily. The ramp will also be constructed of materials that will allow desert tortoises adequate traction. The authorized biologist will be responsible for assisting in the design of ramps; before any excavation or foundation is left unattended, the authorized biologist will conduct a final inspection to ensure that the ramps are capable of allowing the passage of desert tortoises.
- 23i. A desert tortoise education program will be presented by an authorized biologist to all personnel who will be onsite at any time during project construction, operation, and maintenance conducted in potential desert tortoise habitat. This includes, but is not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors. This program will be presented in English and Spanish, if appropriate, and contain information concerning the biology and distribution of the desert tortoise as it is relevant to the proposed action, its legal status and occurrence in the proposed project area, the definition of "take" and associated penalties, the terms and conditions of this biological opinion, measures designed to minimize the effects of construction, operation, and maintenance, the means by which employees can facilitate protection of the desert tortoise, and reporting requirements to be implemented when desert tortoises are encountered. The name of each individual trained will be recorded on a sign-in sheet.
- 23j. A litter-control program will be implemented during construction, operation, and maintenance to reduce the attractiveness of the area to opportunistic predators such as the kit fox (*Vulpes macrotis*), coyote (*Canis latrans*), and common raven (*Corvus corax*). Trash and food items will be disposed of properly in predator-proof containers with re-sealing lids. Trash containers will be emptied, and construction waste will be removed daily from the project area and disposed of in an approved landfill. LADWP will report any observations of predation on desert tortoises in the project area to the Service; while operating on public lands, LADWP will also report this information to BLM.
- 23k. All construction and staging areas will be delimited by flagging and/or staking. In areas of potentially occupied desert tortoise habitat, construction and staging areas, , may be fenced

with approved temporary desert tortoise exclusion fencing in a manner that prevents equipment and vehicles from straying from within the marked boundary of work and staging areas into adjacent habitat. An authorized biologist will assist in determining the boundaries of the area to be fenced. When construction areas are within public lands, the authorized biologist will coordinate with BLM regarding this decision; on lands not managed by the BLM, the authorized biologist will contact the Service. All workers will be advised that equipment and vehicles must remain within the fenced work areas. Installation of the fencing and any necessary surveys will be directed or conducted by an authorized biologist. The fencing will remain in place for the duration of construction activities at a particular location and will be removed when construction activities are complete.

- 1) Temporary fencing will consist of 1-inch mesh or 1-inch horizontal by 2-inch vertical mesh (hardware, cloth or plastic) and be installed flush with the ground and extend at least 18 inches above-ground. Temporary desert tortoise-proof fencing need not be buried but will be installed to ensure no gaps exist between the fence and ground. In areas of high rodent activity where plastic mesh is used, temporary fencing may need more frequent monitoring to ensure no breaches exist. A desert tortoise authorized biologist will inspect the fencing on a weekly basis to ensure that no holes develop that could allow desert tortoises to enter the work areas. If holes are found, they will be repaired immediately.
 - 2) If a desert tortoise is found within an area that has been fenced to exclude them, activities will cease until an authorized biologist moves it out of harm's way outside of the fence, as described in measure 23d. At this time, the fencing will be inspected for holes.
- 23l. No pets or firearms, other than those of law enforcement personnel, will be permitted within the project right-of-way at any time during construction, operation, and maintenance of the project.

Because the desert tortoise and its habitat are not present on USFS-administered lands, the remainder of this biological opinion will not consider the portions of the proposed action that lie outside of the desert on USFS-administered lands any further. Consequently, the remainder of this biological opinion will analyze the effects to desert tortoises from project activities that LADWP will conduct within the habitat of the desert tortoise, which would be from the Barren Ridge Switching Station to the California Aqueduct within the proposed project area.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both

the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the range-wide condition of the desert tortoise, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the desert tortoise in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the desert tortoise; (3) the Effects of the Action, which determine the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the desert tortoise; and (4) the Cumulative Effects, which evaluate the effects of future, non-federal activities in the action area on the desert tortoise.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of the desert tortoise, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the desert tortoise in the wild.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of the desert tortoise and the role of the action area in the survival and recovery of the desert tortoise as the context for evaluation of the significance of the effects of the proposed federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

STATUS OF THE DESERT TORTOISE

Section 4(c)(2) of the Act requires the Service to conduct a status review of each listed species at least once every 5 years. The purpose of a 5-year review is to evaluate whether or not the species' status has changed since it was listed (or since the most recent 5-year review); these reviews, at the time of their completion, provide the most up-to-date information on the range-wide status of the species. For this reason, we are appending the 5-year review of the status of the desert tortoise (Appendix 1; Service 2010b) to this biological opinion and are incorporating it by reference to provide most of the information needed for this section of the biological opinion. The following paragraphs provide a summary of the relevant information in the 5-year review.

In the 5-year review, the Service discusses the status of the desert tortoise as a single distinct population segment and provides information on the Federal Register notices that resulted in its listing and the designation of critical habitat. The Service also describes the desert tortoise's ecology, life history, spatial distribution, abundance, habitats, and the threats that led to its listing (i.e., the 5-factor analysis required by section 4(a)(1) of the Endangered Species Act). In the 5-year review, the Service recommends that the status of the desert tortoise as a threatened species be maintained.

With regard to the status of the desert tortoise as a distinct population segment, the Service concluded in the 5-year review that the recovery units recognized in the original and revised recovery plans (Service 1994 and 2011e, respectively) do not qualify as distinct population segments under the Service's distinct population segment policy (61 Federal Register 4722; February 7, 1996). We reached this conclusion because individuals of the listed taxon occupy habitat that is relatively continuously distributed, exhibit genetic differentiation that is consistent with isolation-by-distance in a continuous-distribution model of gene flow, and likely vary in behavioral and physiological characteristics across the area they occupy as a result of the transitional nature of, or environmental gradations between, the described subdivisions of the Mojave and Colorado deserts.

In the 5-year review, the Service summarizes information with regard to the desert tortoise's ecology and life history. Of key importance to assessing threats to the species and to developing and implementing a strategy for recovery is that desert tortoises are long-lived, require up to 20 years to reach sexual maturity and have low reproductive rates during a long period of reproductive potential. The number of eggs that a female desert tortoise can produce in a season is dependent on a variety of factors including environment, habitat, availability of forage and drinking water, and physiological condition. Predation seems to play an important role in clutch failure. Predation and environmental factors also affect the survival of hatchlings.

In the 5-year review, the Service also discusses various means by which researchers have attempted to determine the abundance of desert tortoises and the strengths and weaknesses of those methods. The Service provides a summary table of the results of range-wide monitoring, initiated in 2001, in the 5-year review. This ongoing sampling effort is the first comprehensive attempt to determine the densities of desert tortoises across their range. The summary table in the 5-year review provides a summary of data collected from 2001 through 2007; we summarize data from the 2008 through 2010 sampling efforts in subsequent reports (Service 2010c, 2010d). As the Service notes in the 5-year review notes, much of the difference in densities between years is due to variability in sampling; determining actual changes in densities will require many years of monitoring. Additionally, due to differences in area covered and especially to the non-representative nature of earlier sample sites, data gathered by the range-wide monitoring program cannot be reliably compared to information gathered through other means at this time.

In the 5-year review, the Service provides a brief summary of habitat use by desert tortoises; more detailed information is available in the revised recovery plan (Service 2011e). In the absence of specific and recent information on the location of habitable areas of the Mojave Desert, especially at the outer edges of this area, the 5-year review also describes and relies heavily on a quantitative, spatial habitat model for the desert tortoise north and west of the Colorado River that incorporates environmental variables such as precipitation, geology, vegetation, and slope and is based on occurrence data of desert tortoises from sources spanning more than 80 years, including data from the 2001 to 2005 range-wide monitoring surveys (Nussear et al. 2009). The model predicts the probability that desert tortoises will be present in any given location; calculations of the amount of desert tortoise habitat in the 5-year review and in this biological opinion use a threshold of 0.5 or greater predicted value for potential desert

tortoise habitat. The model does not account for anthropogenic effects to habitat and represents the potential for occupancy by desert tortoises absent these effects.

To begin integrating anthropogenic activities and the variable risk levels they bring to different parts of the Mojave and Colorado deserts, the Service completed an extensive review of the threats known to affect desert tortoises at the time of their listing and updated that information with more current findings in the 5-year review. The review follows the format of the five-factor analysis required by section 4(a)(1) of the Act. The Service described these threats as part of the process of its listing (55 Federal Register 12178; April 2, 1990), further discussed them in the original recovery plan (Service 1994), and reviewed them again in the revised recovery plan (Service 2011e).

To understand better the relationship of threats to populations of desert tortoises and the most effective manner to implement recovery actions, the Desert Tortoise Recovery Office is developing a spatial decision support system that models the interrelationships of threats to desert tortoises and how those threats affect population change. The spatial decision support system describes the numerous threats that desert tortoises face, explains how these threats interact to affect individual animals and habitat, and how these effects in turn bring about changes in populations. For example, we have long known that the construction of a transmission line can result in the death of desert tortoises and loss of habitat. We have also known that common ravens, known predators of desert tortoises, use the transmission line's pylons for nesting, roosting, and perching and that the access routes associated with transmission lines provide a vector for the introduction and spread of invasive weeds and facilitate increased human access into an area. Increased human access can accelerate illegal collection and release of desert tortoises and their deliberate maiming and killing, as well as facilitate the spread of other threats associated with human presence, such as vehicle use, garbage and dumping, and invasive plants (Service 2011e). Changes in the abundance of native plants because of invasive weeds can compromise the physiological health of desert tortoises, making them more vulnerable to drought, disease, and predation. The spatial decision support system allows us to map threats across the range of the desert tortoise and model the intensity of stresses that these multiple and combined threats place on desert tortoise populations.

The threats described in the listing rule and both recovery plans continue to affect the species. Indirect impacts to desert tortoise populations and habitat occur in accessible areas that interface with human activity. Most threats to the desert tortoise or its habitat are associated with human land uses; research since 1994 has clarified many mechanisms by which these threats act on desert tortoises. As stated earlier, increases in human access can accelerate illegal collection and release of desert tortoises and deliberate maiming and killing, as well as facilitate the spread of other threats associated with human presence, such as vehicle use, garbage and dumping, and invasive weeds.

Some of the most apparent threats to the desert tortoise are those that result in mortality and permanent habitat loss across large areas, such as urbanization and large-scale renewable energy projects, and those that fragment and degrade habitats, such as proliferation of roads and highways, OHV activity, and habitat invasion by non-native invasive plant species. However,

we remain unable to quantify how threats affect desert tortoise populations. The assessment of the original recovery plan emphasized the need for a better understanding of the implications of multiple, simultaneous threats facing desert tortoise populations and of the relative contribution of multiple threats on demographic factors (i.e., birth rate, survivorship, fecundity, and death rate; Tracy et al. 2004).

We have enclosed a map that depicts the 12 critical habitat units of the desert tortoise and the aggregate stress that multiple, synergistic threats place on desert tortoise populations (Appendix 2). The map also depicts linkages between conservation areas for the desert tortoise (which include designated critical habitat) recommended in the revised recovery plan (Service 2011e) that are based on an analysis of least-cost pathways (i.e., areas with the highest potential to support desert tortoises) between conservation areas for the desert tortoise. This map illustrates that areas under the highest level of conservation management for desert tortoises remain subjected to numerous threats and stresses. These threats and stresses continue to operate as sources of mortality and decreased reproductive success across its range; because we do not have quantitative data regarding these threats and stresses from prior to its listing, we cannot determine the extent that current conservation actions for the desert tortoise have reduced mortality or improved its reproductive success.

Since the completion of the 5-year review, the Service has issued several biological opinions that affect large areas of desert tortoise habitat because of numerous proposals to develop renewable energy within its range. (We have completed additional biological opinions for other projects that did not, either individually or in aggregate, measurably affect the status of the desert tortoise; we will not discuss these projects herein.) These biological opinions concluded that proposed solar plants were not likely to jeopardize the continued existence of the desert tortoise primarily because they were located outside of critical habitat and DWMA that contain most of the land base required for the recovery of the species. The proposed actions also included numerous measures intended to protect desert tortoises during the construction of the projects, such as translocation of affected individuals. Additionally, the Bureau and California Energy Commission, the agencies permitting these facilities, have required the project proponents to fund numerous measures, such as land acquisition and the implementation of recovery actions intended to offset the adverse effects of the proposed actions. In aggregate, these projects resulted in an overall loss of approximately 26,698 acres of habitat of the desert tortoise. Three of the solar projects (BrightSource Ivanpah, Silver State (issued prior to the 5-year review), and Desert Sunlight) constricted linkages between conservation areas that are important for the recovery of the desert tortoise. We also predicted that these projects would translocate, injure, or kill up to 1,621 desert tortoises (see table below); we concluded that most of the individuals in these totals would be juveniles. The mitigation required by the Bureau and California Energy Commission will result in the acquisition of private land within critical habitat and DWMA and funding for the implementation of various actions that are intended to promote the recovery of the desert tortoise; at this time, we cannot assess how successful these measures will be.

Table 1 summarizes information regarding the proposed solar projects that have undergone formal consultation with regard to the desert tortoise. Data are from Service (2010e [Genesis], f [Blythe]; 2011a [BrightSource Ivanpah], b [Desert Sunlight], f [Abengoa Harper Lake], g [Palen]; 2012b [Calico]; and Burroughs (2012; Nevada projects). Projects are in California, unless noted.

Table 1. The number of desert tortoises and acreage of habitat for solar projects having undergone formal consultation.

Project	Acres of Desert Tortoise Habitat	Estimated Number of Desert Tortoises Onsite	Recovery Unit
BrightSource Ivanpah	3,582	1,136	Eastern Mojave
Amargosa Farm Road - NV	4,350	4	Eastern Mojave
Calico*			Western Mojave
Abengoa Harper Lake	Primarily in abandoned agricultural fields	4	Western Mojave
Nevada Solar One - NV	400	**	Northeastern Mojave
Copper Mountain North - NV	1,400	30 **	Northeastern Mojave
Copper Mountain - NV	380	**	Northeastern Mojave
Moapa K Road Solar - NV	2,152	202	Northeastern Mojave
Genesis	1,774	8	Colorado
Blythe	6,958	30	Colorado
Palen	1,698	18	Colorado
Desert Sunlight	4,004	56	Colorado
Total	26,698	1,488***	

* The applicant has proposed changes to the proposed action; the Bureau has re-initiated formal consultation with the Service, pursuant to section 7(a)(2) of the Endangered Species Act, as part of its re-evaluation of the project (Service 2012b)

** These projects occurred under the Clark County Multi-species habitat conservation plan; we estimate that all three projects combined will affect fewer than 30 desert tortoises.

*** The methodologies for determining the number of desert tortoises present at each site may be different; consequently, although these numbers represent reasonable estimates, they are likely not directly comparable.

In addition to the biological opinions issued for solar development within the range of the desert tortoise, the Service (2012c) also issued a biological opinion to the Department of the Army for the use of additional training lands at Fort Irwin. As part of this proposed action, the Army removed approximately 650 desert tortoises from 18,197 acres of the southern area of Fort Irwin, which had been off-limits to training. The Army would also use an additional 48,629 acres that lie east of the former boundaries of Fort Irwin; much of this parcel is either too mountainous or too rocky and low in elevation to support numerous desert tortoises. We concluded that the proposed action was not likely to jeopardize the continued existence of the desert tortoise.

The Service also issued a biological opinion to the Marine Corps that considered the effects of the expansion of the Marine Corps Air Ground Combat Center at Twentynine Palms (Service 2012d). We concluded that the Marine Corps' proposed action, the use of approximately 167,971 acres for training, was not likely to jeopardize the continued existence of the desert tortoise. Most of the expansion area lies within the Johnson Valley Off-way Vehicle Management Area.

The incremental effect of the larger actions (i.e., solar development, the expansions of Fort Irwin and the Marine Corps Air Ground Combat Center) on the desert tortoise is unlikely to be positive, despite the numerous conservation measures that have been (or will be) implemented as part of the actions. The acquisition of private lands as mitigation for most of these actions increases the level of protection afforded these lands; however, these acquisitions do not create new habitat and Federal, State, and privately managed lands remain subject to most of the threats and stresses we discussed previously in this section. Although land managers have been implementing measures to manage these threats, we have been unable, to date, to determine whether the measures have been successful, at least in part because of the low reproductive capacity of the desert tortoise. Therefore, the conversion of habitat into areas that are unsuitable for this species continues the trend of constricting desert tortoise

As the Service notes in the 5-year review (Service 2010b), "(t)he threats identified in the original listing rule continue to affect the (desert tortoise) today, with invasive species, wildfire, and renewable energy development coming to the forefront as important factors in habitat loss and conversion. The vast majority of threats to the desert tortoise or its habitat are associated with human land uses." Oftedal's work (2002 in Service 2010b) suggests that invasive weeds may adversely affect the physiological health of desert tortoises. Modeling with the spatial decision support system indicates that invasive species likely affect a large portion of the desert tortoise's range; see Appendix 3. Furthermore, high densities of weedy species increase the likelihood of wildfires; wildfires, in turn, destroy native species and further the spread of invasive weeds.

Global climate change is likely to affect the prospects for the long-term conservation of the desert tortoise. For example, predictions for climate change within the range of the desert tortoise suggest more frequent and/or prolonged droughts with an increase of the annual mean temperature by 3.5 to 4.0 degrees Celsius. The greatest increases will likely occur in summer (June-July-August mean increase of as much as 5 degrees Celsius [Christensen et al. 2007 in Service 2010b]). Precipitation will likely decrease by 5 to 15 percent annually in the region, with winter precipitation decreasing by up to 20 percent and summer precipitation increasing by 5 percent. Because germination of the desert tortoise's food plants is highly dependent on cool-season rains, the forage base could be reduced due to increasing temperatures and decreasing precipitation in winter. Although drought occurs routinely in the Mojave Desert, extended periods of drought have the potential to affect desert tortoises and their habitats through physiological effects to individuals (i.e., stress) and limited forage availability. To place the consequences of long-term drought in perspective, Longshore et al. (2003) demonstrated that even short-term drought could result in elevated levels of mortality of desert tortoises. Therefore, long-term drought is likely to have even greater effects, particularly given that the current fragmented nature of desert tortoise habitat (e.g., urban and agricultural development,

highways, freeways, military training areas, etc.) will make recolonization of extirpated areas difficult, if not impossible.

The Service notes in the 5-year review that the combination of the desert tortoise's late breeding age and a low reproductive rate challenges our ability to achieve recovery. When determining whether a proposed action is likely to jeopardize the continued existence of a species, we are required to consider whether the action would "reasonably be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 Code of Federal Regulations 402.02). Although the Service does not explicitly address these metrics in the 5-year review, we have used the information in that document to summarize the status of the desert tortoise with respect to its reproduction, numbers, and distribution.

Reproduction: In the 5-year review, the Service notes that desert tortoises increase their reproduction in high rainfall years; more rain provides desert tortoises with more high quality food (i.e., plants that are higher in water and protein), which, in turn, allows them to lay more eggs. Conversely, the physiological stress associated with foraging on food plants with insufficient water and nitrogen may leave desert tortoises vulnerable to disease (Ofstedal 2002 in Service 2010b), and the reproductive rate of diseased desert tortoises is likely lower than that of healthy animals. Young desert tortoises also rely upon high-quality, low-fiber plants (e.g., native forbs) with nutrient levels not found in the invasive weeds that have increased in abundance across its range (Ofstedal et al. 2002; Tracy et al. 2004). Compromised nutrition of young desert tortoises likely represents an effective reduction in reproduction by reducing the number that reaches adulthood. Consequently, although we do not have quantitative data that show a direct relationship, the abundance of weedy species within the range of the desert tortoise has the potential to negatively affect the reproduction of desert tortoises and recruitment into the adult population.

Numbers: Data from long-term study plots, which were first established in 1976, cannot be extrapolated to provide an estimate of the number of desert tortoises on a range-wide basis; however, these data indicate, "appreciable declines at the local level in many areas, which coupled with other survey results, suggest that declines may have occurred more broadly" (Service 2010b). Other sources indicate that local declines are continuing to occur. For example, surveyors found "lots of dead [desert tortoises]" in the western expansion area of Fort Irwin (Western Mojave Recovery Unit) in 2008 (Fort Irwin Research Coordination Meeting 2008). After the onset of translocation, coyotes killed 105 desert tortoises in Fort Irwin's southern translocation area (Western Mojave Recovery Unit); other canids may have been responsible for some of these deaths. Other incidences of predation were recorded throughout the range of the desert tortoise during this time (Esque et al. 2010). Esque et al. (2010) hypothesized that this high rate of predation on desert tortoises was influenced by low population levels of typical prey for coyotes due to drought conditions in previous years. Recent surveys in the Ivanpah Valley (Northeastern Mojave Recovery Unit) for a proposed solar facility detected 31 live desert tortoises and the carcasses of 25 individuals that had been dead less than 4 years (Ironwood 2011); this ratio of carcasses to live individuals over such a short period of time may indicate an abnormally high rate of mortality for a long-lived animal. In summary, the number

of desert tortoises range-wide likely decreased substantially from 1976 through 1990 (i.e., when long-term study plots were initiated through the time the desert tortoise was listed as threatened), although we cannot quantify the amount of this decrease. Additionally, more recent data collected from various sources throughout the range of the desert tortoise suggest that local declines continue to occur (e.g., Bureau et al. 2005, Esque et al. 2010).

Distribution: The desert tortoise is widely distributed across portions of four states. We do not have information on the distribution of the desert tortoise prior to the time that human activities began to affect it. Nussear et al.'s (2009) model does not account for human alterations of habitat; therefore, it likely represents the best available information regarding the distribution of the desert tortoise prior to the onset of human impacts.

Prior to 1994, desert tortoises were extirpated from large areas within their distributional limits by urban and agricultural development (e.g., the cities of Barstow, Lancaster, Las Vegas, St. George, etc.; agricultural areas south of Edwards Air Force Base and east of Barstow), military training (e.g., Fort Irwin, Leach Lake Gunnery Range), and off-road vehicle use (e.g., portions of off-road management areas managed by the Bureau and unauthorized use in areas such as east of California City). The distribution of the desert tortoise has not changed substantially since the publication of the original recovery plan in 1994 (Service 2010b) in terms of the overall extent of its range; for example, the northernmost boundary of the species' distribution has not changed substantially. Human activities have eliminated the desert tortoise from large areas from within its overall distribution since 1994. Desert tortoises have been essentially removed from the 18,197-acre southern expansion area at Fort Irwin (Service 2012c) and solar development has removed approximately 27,000 additional acres of habitat. Urban development around Las Vegas has likely been the largest contributor to habitat loss throughout the range.

The following table depicts acreages of habitat (as modeled by within various regions of the desert tortoise's range and of impervious surfaces as of 2006 (Xian et al. 2009). Impervious surfaces include paved and developed areas and other disturbed areas that have zero probability of supporting desert tortoises. These numbers do not include the acreages associated with solar development.

Regions ¹	Modeled Habitat (acres)	Impervious Surfaces within Modeled Habitat	Percent of Modeled Habitat that is now Impervious
Western Mojave	7,582,092	1,864,214	25
Colorado Desert	4,948,900	494,981	10
Northeast Mojave	7,776,934	1,173,025	15
Upper Virgin River	232,320	80,853	35
Total	20,540,246	3,613,052	18

¹The regions do not correspond to recovery unit boundaries; we used a more general separation of the range for this illustration.

On an annual basis, the Service produces a report that provides an up-to-date summary of the factors that were responsible for the listing of the species, describes other threats of which we are aware, describes the current population trend of the species, and includes comments of the year's findings. The Service's (2011d) recovery data call report describes the desert tortoise's status as 'declining,' and notes that "(a)nnual range-wide monitoring continues, but the life history of the desert tortoise makes it impossible to detect annual population increases (continued monitoring will provide estimates of moderate- to long-term population trends). Data from the monitoring program do not indicate that numbers of desert tortoises have increased since 2001. The fact that most threats appear to be continuing at generally the same levels suggests that populations are still in decline. Information remains unavailable on whether mitigation of particular threats has been successful."

In conclusion, we have used the 5-year review (Service 2010b), revised recovery plan (Service 2011e), and additional information that has become available since these publications to review the reproduction, numbers, and distribution of the desert tortoise. The reproductive capacity of the desert tortoise may be compromised to some degree by the abundance and distribution of invasive weeds across its range; the continued increase in human access across the desert likely continues to facilitate the spread of weeds and further affect the reproductive capacity of the species. Prior to its listing, the number of desert tortoises likely declined range-wide, although we cannot quantify the extent of the decline; since the time of listing, data suggest that declines have occurred in local areas throughout the range. The continued increase in human access across the desert continues to expose more desert tortoises to the potential of being killed by human activities. The distributional limits of the desert tortoise's range have not changed substantially since the issuance of the original recovery plan in 1994; however, desert tortoises have been extirpated from large areas within their range (e.g., Las Vegas, other desert cities). The species' low reproductive rate, the extended time required for young animals to reach breeding age, and the multitude of threats that continue to confront desert tortoises combine to render its recovery a substantial challenge.

ENVIRONMENTAL BASELINE

Action Area

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 Code of Federal Regulations [CFR] 402.02). The BLM and LADWP defined the action area as a 500-foot-wide corridor (250 feet on each side of the route centerline) along the 230 kV transmission line route, 230 kV reconductoring line, additional double-circuit to the existing 230 kV line, and the switching station footprint (Power Engineers 2012a). The action area for the 230 kV transmission line route also included a five-mile corridor in areas that had potential to indirectly affect aquatic species or riparian habitat. Figure 1 of the biological assessment depicts the vicinity of the project area and the project components. We have included the routes that the LADWP would use to gain access to the 500-foot-wide corridor from the point where these routes would leave paved public roads to the corridor.

We have not provided information on the action area for portions of the proposed action that lie outside of the desert because the existing conditions in those areas do not affect the desert tortoise or its habitat. Consequently, the following sections provide information on the action area from the Barren Ridge Switching Station in the north to the California Aqueduct in the south.

Existing Conditions in the Action Area

We summarized the following information from the habitat assessment report prepared by Power Engineers (2009). We used the segments described by Power Engineers to provide locality information. In general, Segment A begins at the Barren Ridge Switching Station and ends northwest of the town of Mojave. Segment B extends from the southern end of Segment A south to an area of the Antelope Valley that lies between the city of Lancaster to the east and the Antelope Valley California Poppy Preserve to the west. Segment G extends from that point into the Angeles National Forest; for the purposes of this biological opinion, our analysis will stop at the California Aqueduct.

Segment A is approximately 13.2 miles long. The predominant plant community is Mojave creosote bush scrub. Several washes cross this segment. Evidence of intense sheep grazing is present throughout Segment A. The new and old State Highways 58, two 230-kV transmission lines, and a failed real estate development are located within this segment.

Segment B is approximately 26.2 miles long. The Mojave creosote scrub is the predominant plant community for the first 15 miles; pockets of Mojave mixed woody scrub, rabbitbrush scrub, and desert native grassland occur in small quantities. As this segment nears the Kern – Los Angeles county line, agricultural areas, with occasional small pockets of desert saltbrush scrub, become common. The last 2 miles of Segment B is predominantly composed of non-native annual grassland. Multiple washes and several roads cross this segment. Surveyors found evidence of over-grazing, off-highway vehicle use, and trash dumping in this segment. The 230-kV transmission lines continue through this segment.

Approximately 4 miles of Segment G lie within the desert. The desert segment of this segment is divided approximately equally between agricultural land and non-native grassland. The two 230-kV transmission lines continue through Segment G.

Status of the Desert Tortoise in the Action Area

Unless otherwise noted, we summarized the following information from the habitat assessment report prepared by Power Engineers (2009). Power Engineers conducted field surveys on lands owned by LADWP and on lands administered by the BLM and other agencies during the week of July 21 through 31, 2008. Within the action area, these surveys were conducted in Segments A and B. Most of the BLM land occurs in the northern portion of the action area; most of the southern portion of the action area is privately owned.

The primary goal of the survey was to assess habitat conditions. The Service is supportive of this approach with regard to linear projects and the desert tortoise because determining the abundance of desert tortoises in a narrow project area is problematic; desert tortoises can move in and out of the survey area between the time of the survey and construction. An additional factor to consider is that many impacts to desert tortoises can be avoided during the construction of linear projects.

Power Engineers found one desert tortoise, multiple potential burrows, and a single scat in Segment A. Segment B had one potential burrow.

In general, even the most thorough surveys do not detect all the desert tortoises that are present in an area because of their fossorial nature, cryptic coloration and behavior, and generally small size. (Even the largest desert tortoises are small, when considered in the context of the heavy equipment, observational skills of workers, and high level of activity associated with large construction projects.) Because Power Engineers did not conduct surveys according to the Service's recommended protocol, we expect that the surveyors detected even fewer desert tortoises than were likely present.

We are aware of one additional survey for desert tortoises in the vicinity of the switching station and translocation. Rincon Consultants (AECOM 2011) conducted surveys (according to the Service's 2010 protocol) and general reconnaissance of the area from the switching station, generally along the transmission line route to the southwest for approximately 2 miles. Survey work occurred from September 29 to October 3, 2010, and from April 23 to 25, 2011 and May 1 to 5, 2011.

In 2010, Rincon observed one "juvenile" desert tortoise west of State Route 14 (i.e., the same side of the freeway as the proposed BRRTP), one "adult" female, and a 165-millimeter-long male; the latter animals were located east of State Route 14 (i.e., the opposite side of the freeway from the proposed BRRTP). All four desert tortoises observed in 2011 were observed on the west side of State Route 14. All 4 animals were larger than 160 millimeters in length; at least one of these animals was a female. The sign of desert tortoises (i.e., scat, tracks, burrows, and shell remains) were present in both years.

Using the Service's 2010 protocol, AECOM (2011) estimated the density of desert tortoises in its approximately 1.99-square-kilometer project area to be 6 individuals greater than 160 millimeters in length per square kilometer. Within strata sampled during the rangewide monitoring, densities of desert tortoise ranged from 1.1 to 13.8 individuals per square kilometer (Service 2010d). The Service's density was based on individuals greater than 180 millimeters; because AECOM used a wider range of sizes, its density calculation is likely slightly greater than that calculated by the Service. Therefore, the density derived by AECOM for its study site falls midway in the range of densities among the strata sampled in 2010.

This information indicates that more desert tortoises are present, at least in the northern portion of the action area, than the LADWP detected; given that Rincon's surveys were more intense than LADWP's, we would expect more desert tortoises to be found. Regardless of these results,

because the action area for the proposed BRRTP is so small, we expect that few desert tortoises reside within it.

Despite the limitation of the surveys, the results tend to confirm what we would expect. That is, Power Engineers detected most evidence of desert tortoises north of the town of Mojave, where creosote bush scrub is the dominant plant community and disturbance is generally at lower levels. Segment B supported almost no sign; the habitat in Segment B transitions to saltbush scrub and is generally more disturbed in this area. We expect that Power Engineers did not survey in Segment G because of the predominance of private land in this area; based on our general knowledge of the region, we would not expect desert tortoises to be present here or in the southern portion of Segment B. Even where present, in the northern portion of the proposed transmission line, we expect that desert tortoises occur at low densities.

We will not attempt to estimate the number of desert tortoises present in the action area because the surveys were not conducted in a manner that would allow us to do so. Additionally, because the area to be disturbed during construction, operation, and maintenance of a linear project is so narrow, the value of surveys is greatly diminished because the survey lines would cross only a small portion of any desert tortoise's home range. Therefore, the potential of encountering desert tortoises during work activities would likely vary greatly from that of encountering them during surveys conducted years in advance of work.

Previous Consultations in the Action Area

The Service (1999) issued a biological opinion to the Federal Highway Administration for the construction of a freeway bypass of the town of Mojave. We concluded that the proposed action was not likely to jeopardize the continued existence of the desert tortoise. The rerouted freeway crosses the action area for the BRRTP northwest of the town of Mojave.

EFFECTS OF THE ACTION

Potential Injury or Mortality from Construction and Maintenance. Vehicles and workers associated with construction and maintenance activities have the potential to crush desert tortoises or burrows with desert tortoises or eggs inside. These effects would be most likely to occur during initial ground clearance of tower sites, staging areas, and new roads when desert tortoises are the most difficult to detect because of vegetation and other types of cover.

Uninformed workers could also injure or kill desert tortoises intentionally or inadvertently. They may also collect desert tortoises as pets.

Vehicles traveling along access and spur roads may strike desert tortoises and injure or kill them. Desert tortoises are most vulnerable at times of the year when they are most active and on roads that contain numerous rises, dips, and turns, which reduce the driver's ability to see and avoid them. Desert tortoises occasionally take shelter under parked vehicles; they can then be injured or killed when the vehicle is moved.

We expect that desert tortoises are more likely to be struck on access roads than on spur roads because we expect more vehicles would be using these roads at higher speeds (because the spur roads generally terminate quickly in dead ends at the towers). Upgraded existing roads may pose a greater risk to desert tortoises because their better condition would allow vehicles to move faster; conversely, desert tortoises are more difficult to detect and avoid on roads that are in poor condition. Finally, after construction, members of the public would likely begin to use the access roads; in the long term, this use would likely have the greatest effect on desert tortoises because they would not be required to implement any of the protective measures that LADWP's workers would use.

Most maintenance activities are likely to occur in already disturbed areas. Consequently, the potential for injuring or killing desert tortoises is likely somewhat less. Routine grading of the access and spur roads could also injure or kill desert tortoises, particularly if a desert tortoise has constructed a burrow in the berm alongside of the road in material that is pushed up by the grader.

Desert tortoises have entered existing utility substations in the past, either through an open gate or a damaged fence. These animals are then at risk of being injured or killed during maintenance activities.

We expect that any nests in the construction areas will be destroyed during construction. Therefore, we expect that any eggs that may be present in construction areas are likely to be destroyed. The loss of this reproductive effort is unlikely to substantially diminish the desert tortoise's ability to persist in the region because at least a portion of these nests would likely have been destroyed by predators (Bjurlin and Bissonette 2004); even without the proposed action, some eggs would not hatch. Additionally, the area to be disturbed by the proposed action on which the eggs would be laid represents a very small portion of the area where desert tortoises could nest in this region. Finally, the few desert tortoises in this area of the desert are unlikely to produce numerous nests and eggs.

LADWP and BLM have proposed numerous measures to avoid or reduce the number of desert tortoises that may be injured or killed by these activities. For example, areas where ground disturbance would occur would be fenced to preclude entry by desert tortoises. Biologists familiar with the desert tortoise would remove desert tortoises from such areas or that are otherwise in harm's way and place them in adjacent habitat. We expect that this measure would result in the removal of most desert tortoises that are greater than 160 millimeters in length; field work has demonstrated that such desert tortoises are more likely to be observed during surveys (Service 2010a). Smaller desert tortoises are more likely to be missed during clearance surveys and subsequently killed or injured by project activities.

All workers would be presented information on the potential presence of desert tortoises and on the measures that are being undertaken in their habitat to reduce the likelihood that work activities injure or kill individuals. LADWP would limit vehicle speeds to 20 miles per hour during periods of increased desert tortoise activity to increase the likelihood that workers will see desert tortoises that may be in the road. At this speed, workers may see larger desert tortoises

but smaller animals, being less visible, will be at greater risk of being struck by vehicles; even larger desert tortoises are not visible at turns and rises in the road. Workers will also be instructed to check under parked vehicles and, if a desert tortoise is present, to either wait until it has left of its own accord or to summon an authorized biologist to move the animal from harm's way.

Because of these reasons, we anticipate few, if any, desert tortoises will be injured or killed by construction and maintenance activities. Our primary reasons for reaching this conclusion are that the action area seems to support few desert tortoises and BLM and LADWP have proposed to undertake numerous measures to avoid or reduce the number of individuals that are injured or killed.

As described in the Environmental Baseline section of this biological opinion, the proposed expansion area of the Barren Ridge Switching Station would occupy approximately 2.7 acres in a roughly rectangular configuration. Because of the numerous variables involved, we cannot determine how many desert tortoises are likely to be moved from harm's way, injured, or killed from that and other small work areas (tower footprints and right-of-way corridors), and roads over the life of the proposed transmission line. These variables include, but are not limited to, the number of desert tortoises in the area, whether desert tortoises are active when work occurs, whether desert tortoises will attempt to cross roads or enter work areas when workers are present, and the fate of desert tortoises that encounter workers (i.e., these animals could be avoided, moved from harm's way, injured, or killed). These uncertainties are particularly pronounced with linear projects and when small areas, such as the footprints of towers, are to be disturbed because these linear and small areas likely constitute a small portion of any desert tortoise's range and the likelihood of encountering the animal in that particular area at a given time is low.

Capture and Relocation of Desert Tortoises. We cannot determine precisely how many desert tortoises within the project area will be relocated. According to the biological assessment and the results of focused surveys, surveyors found one desert tortoise within the Barren Ridge Switching Station proposed expansion area. However, other desert tortoises may have not been detected during the surveys or may move into work areas prior to project implementation; additionally, eggs laid onsite may have hatched since the time of the surveys. Based on survey results, we expect few, if any, desert tortoises or eggs will require relocating. Additionally, for the reasons discussed above, we are not attempting to estimate the number of desert tortoises that may occur in the linear features of the proposed action. However, as stated above, the likelihood of encountering an animal in any particular area at any given time is low and moving any desert tortoises found the relatively short distances proposed by LADWP is highly unlikely to result in measurable biological effects. These short-distance movements would likely expose the desert tortoise that is moved to other desert tortoises and habitat with which it is already familiar, because of the size of their home territories.

Some potential exists that capturing desert tortoises may cause elevated levels of stress that may render these animals more susceptible to disease. Because the project proponent will use experienced biologists approved by the Service and approved handling techniques, collected desert tortoises are unlikely to suffer substantially elevated stress levels. Information from a

translocation project at Fort Irwin indicates that translocation of desert tortoises in that study did not cause a measurable physiological stress response (Averill-Murray 2011, Drake et al 2012). Because the desert tortoises at Fort Irwin were moved longer distances than the animals under consideration in this biological opinion, we expect that they will not experience stress as a result of being moved from harm's way.

Relocated desert tortoises occasionally try to return to their original capture site and thus spend relatively greater amounts of time above ground. This behavior may expose them to elevated risks of predation and exposure to temperature extremes that they would otherwise avoid. In such cases, relocation could result in injury to or mortality of desert tortoises. We anticipate this effect to be minor since few animals are likely to be relocated and, if so, they would not be moved out of their home range.

The relocation of any desert tortoise from the project area into surrounding habitat has the potential to disrupt the behavior and social structure of resident animals. Such disruption may impair their breeding, feeding, and sheltering by elevating the frequency and intensity of aggressive interactions between individuals. We anticipate that, overall, such an effect is likely to be minor and few resident animals are likely to be affected because, due to the relatively small size and the linear structure of the proposed project, the home ranges of the desert tortoises onsite most likely overlap with those of animals offsite; therefore, interactions between those individuals would be affected minimally. Additionally, Walde et al. (2008) found that the differences in reproduction among translocated, resident, and control desert tortoises were "not likely to be statistically significant" in a study of 132 female desert tortoises at Fort Irwin; because the Ft. Irwin translocation involved movement of desert tortoises much greater distances than they would be moved for this project, we anticipate that any differences in reproduction that may be caused by moving desert tortoises would be less pronounced in this situation.

Effects Due to Habitat Loss. The proposed project would result in disturbance along approximately 53.4 miles of transmission line within the desert (i.e., 13.2 miles along Segment A, 26.2 miles of Segment B, and 4 miles in Segment G (Power Engineers 2012a). Of this amount, approximately 30 miles occur within the area most likely to be occupied by desert tortoises (Segment A and the northernmost 17 miles of Segment B [from the northern end of Segment B to Backus Road]). Approximately 2.7 acres of habitat would be permanently lost at the site of the proposed expansion area at the Barren Ridge Switching Station. This loss of habitat would not measurably adversely affect the desert tortoise because of the proposed action's location on the edge of the range of the species in an area that supports a low density of individuals. Also, this represents a small proportion of habitat available within the Western Mojave Recovery Unit and is not considered essential for the recovery of the species, as noted in the recovery plan (Service 2011e) and the final rule designating critical habitat for the desert tortoise (59 Federal Register 5820).

Introduction of Non-native Plant Species. Construction and maintenance activities have the potential to introduce invasive non-native plant species, which could degrade the habitat quality for the desert tortoise through increasing the risk of fire and subsequent loss of habitat; these species can also displace native annual plants that are an essential component of the

development's diet. However, implementation of the proposed measures in the Weed Control Plan would remove non-native seed sources, wash vehicles and equipment prior to commencing work in off-road areas, and implement weed removal efforts for an extended timeframe after construction and should greatly reduce the potential for the introduction and spread of non-native plant species.

Herbicide Use. LADWP would use herbicides during construction and maintenance of the proposed project. Desert tortoises may be exposed directly through spraying or indirectly through ingesting treated vegetation or runoff. The potential for these effects would be reduced by ensuring that application of herbicides is in compliance with all state and Federal laws and regulations under the prescription of a pest control advisor and implemented by a licensed qualified applicator. As proposed in the Weed Control Plan, herbicides will not be applied during or within 72 hours of a predicted rain event nor applied when wind velocities exceed 6 miles per hour. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by BLM. The least toxic surfactants will be used in the formulation of any herbicide used on the project. These measures should reduce exposure of desert tortoises to herbicides.

Because we have little information of the effects of herbicide on desert tortoises, we cannot assess the consequences if desert tortoises are exposed, either by being directly sprayed or by ingesting chemicals on food or in water. To some extent, desert tortoises may have a limited opportunity to feed on contaminated plant material because the plants would die soon after being sprayed; desert tortoises may find the dying plants unattractive as food. They may also avoid foraging on some non-native species. Overall, based on the limited amount of herbicide that is likely to be sprayed (i.e., a function of the label requirements) and the low number of desert tortoises in or near the action area, we expect that few desert tortoises are likely to encounter these chemicals.

Increase Subsidies for Predators. Common ravens are attracted to human activity in the desert. Securing trash will likely eliminate it as a source of food for common ravens and other predators, thereby reducing the attractiveness of the area to these predators. We expect that common ravens are still likely to frequent the proposed facilities because it would offer perching, roosting, and possibly nesting sites. Consequently, the proposed project has the potential to attract common ravens to some degree and lead to further predation on desert tortoises in the vicinity. Because LADWP proposes to implement a litter control program that would secure and dispose of trash and food items in predator-proof containers, and to notify the Service if evidence of predation of desert tortoises by common ravens is detected, common raven use of the new facilities and predation on desert tortoises should be minimized.

Climate Change. The construction and maintenance of the Barren Ridge Renewable Transmission Project is unlikely to have a discernible effect on desert tortoises with regard to climate change. Construction of the transmission line would likely result in increased localized emissions of greenhouse gases; however, the amount of greenhouse gas emitted and the short duration of the emissions would be minor in comparison with releases of greenhouse gases regionally. Emissions associated with maintenance would likely be minimal. Additionally, the

effects on the desert tortoise of any emissions from the proposed project would be indistinguishable from those resulting from other sources.

Effects on Recovery of the Desert Tortoise. The proposed action is located in an area that the Service does not consider important to the long-term conservation of the desert tortoise, either as a key area to maintain a population of desert tortoises or as a linkage between such areas. Consequently, implementation of the proposed action will not measurably affect recovery of the desert tortoise.

Summary of the Impacts of the Proposed Action on the Desert Tortoise. LADWP will implement numerous measures to avoid, minimize, and reduce the adverse effects on the desert tortoise of the proposed action. Additionally, the proposed project footprint and action area support few desert tortoises. We expect that most desert tortoises encountered during work activities would be moved relatively short distances out of harm's way. Because LADWP will implement a variety of measures to reduce stress to these animals and because the animals will be released within or close to their home range, we do not anticipate that injury or mortality will result from the handling and relocation of these animals. Because of the potential for new and upgraded access roads associated with the proposed transmission line, desert tortoises are more likely to be killed or injured during operation and maintenance of the transmission line than during construction; at least some portion of injuries and deaths would likely result from public use of these roads.

Areas disturbed by the proposed Barren Ridge Switching Station expansion and new access and spur roads would no longer support reproduction of desert tortoises. Because the affected area represents a small portion of the area available to desert tortoises for nesting in the region, the loss of habitat will not have a measurable effect on the reproductive capacity of desert tortoises in the area. Any desert tortoises that are moved from the site of the proposed project would likely continue to reproduce in adjacent habitat. Construction of the Barren Ridge Switching Station and other ground-disturbing activities are likely to destroy few, if any, eggs or injure or kill few, if any, smaller desert tortoises, because we expect few eggs and desert tortoises to occur in the construction area. Consequently, we anticipate that the proposed action will not appreciably diminish the reproductive capacity of the species.

Implementation of the proposed action would not appreciably reduce the number of desert tortoises in the Western Mojave Recovery Unit. One desert tortoise was detected during surveys within the proposed expansion area of the Barren Ridge Switching Station. Although additional desert tortoises were detected during surveys of the site of a proposed solar project near the northern end of the BRRTP, the action area supports few desert tortoises. Because so few desert tortoises are likely to be affected by the proposed project and LADWP will implement measures to protect them during construction, operation, and maintenance of the transmission line, we do not expect a measurable change in the number of individuals within the recovery unit as a result of the proposed action. We acknowledge that public use of the new access roads would likely cause an ongoing loss of desert tortoises; such loss would not compromise the integrity of the Western Mojave Recovery Unit but could prevent the number of desert tortoises in this particular area of the desert from increasing.

The long-term disturbance associated with the proposed action (i.e., expansion of the Barren Ridge Switching Station, new access roads, tower sites) would not measurably alter the distribution of the desert tortoise. We have reached this conclusion because these facilities would result in the loss of a small amount of habitat along the route of the proposed action; the areas surrounding these project features would continue to support habitat of the desert tortoise.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. Any future projects on land managed by the BLM would undergo consultation, pursuant to section 7(a)(2) of the Act; consequently, we do not consider such actions in this analysis. We are not aware of any non-Federal actions that are reasonably certain to occur on private lands in the action area.

CONCLUSION

After reviewing the current status of the species, the environmental baseline for the action area, effects of the proposed action, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the desert tortoise. Our conclusion is based on the following:

Direct effects to the desert tortoise from the proposed project would be minimal, primarily because the proposed transmission line crosses an area that supports few desert tortoises. Additionally, the measures proposed by BLM and LADWP to monitor activities and protect desert tortoises are likely to reduce the number of individuals injured and killed during construction, operation, and maintenance of the transmission line. The measures LADWP has proposed to avoid toxic effects of herbicide treatments to desert tortoises should minimize their exposure; the measures proposed to prevent the spread of invasive weeds should reduce the overall potential for the proposed action to cause indirect adverse effects to habitat of the desert tortoise. The project, as proposed, is not expected to result in an appreciable reduction in the reproduction, numbers, or distribution of the desert tortoise or to affect its recovery.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened wildlife species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is

defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be undertaken by the BLM or LADWP, as appropriate, for the exemption in section 7(o)(2) to apply. If the BLM or LADWP fails to implement the terms and conditions, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of the incidental take, the BLM or LADWP must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Expansion of the Barren Ridge Switching Station

We anticipate that all desert tortoises within the proposed 2.7-acre expansion area of the Barren Ridge Switching Station will be taken during its construction. We anticipate that desert tortoises within this area are most likely to be captured and relocated to nearby suitable habitat; however, the potential exists that desert tortoises may be killed or injured during implementation of the proposed action. Based on the results of surveys conducted on the site and analysis in this biological opinion, we expect that few desert tortoises are likely to be captured, injured, or killed.

As we discussed in this biological opinion, moving desert tortoises from harm's way during construction of the switching station is unlikely to kill or injure these individuals; it is a protective measure that removes the animal from danger. For this reason, we are not establishing any threshold for re-initiation of formal consultation for this form of take.

We cannot precisely estimate the number of desert tortoises that are likely to be injured or killed during construction of the switching station because of all the variables that we have discussed previously in this biological opinion. Consequently, we will use the terms and conditions of this biological opinion to establish appropriate thresholds for re-initiation of consultation, based on our knowledge of the proposed action, the density of desert tortoises in the area, and our best professional judgment.

Construction of the Transmission Line

Based on the results of surveys conducted in the action area and the analysis contained in this biological opinion, we anticipate that few desert tortoises will be taken during construction of the proposed transmission line. We anticipate that desert tortoises within the construction area and on access roads are most likely to be captured and relocated to nearby suitable habitat; however, the potential exists that desert tortoises may be killed or injured during implementation of the proposed action.

As we discussed with regard to construction of the switching station, moving tortoises from harm's way is a protective measure that removes the animals from danger, and we are not establishing any threshold for re-initiation of formal consultation for this form of take.

We cannot precisely estimate the numbers of desert tortoises that are likely to be injured or killed during construction of the transmission line because of the variables we have discussed previously in this biological opinion. Consequently, we will use the terms and conditions of this biological opinion to establish appropriate thresholds for re-initiation of consultation, based on our knowledge of the proposed action, the density of desert tortoises in the area, and our best professional judgment.

Operation and Maintenance of the Transmission Line and Barren Ridge Switching Station

Based on the results of surveys conducted in the action area and the analysis contained in this biological opinion, we anticipate that a few desert tortoises are likely to be taken during operation and maintenance of the transmission line and Barren Ridge Switching Station. We cannot reasonably estimate the numbers of desert tortoises that may enter areas when and where operation and maintenance of the transmission line and Barren Ridge Switching Station are occurring.

As we discussed with regard to construction of the switching station and transmission line, we are not establishing any threshold for re-initiation of formal consultation for take associated with moving tortoises from harm's way. For take associated with desert tortoises that are likely to be injured or killed during operation and maintenance of the transmission line and Barren Ridge Switching Station, we will use the terms and conditions of this biological opinion to establish appropriate thresholds for re-initiation of consultation, based on our knowledge of the proposed action, the density of desert tortoises in the area, and our best professional judgment.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of desert tortoises during the implementation of the proposed action:

1. The BLM or LADWP must ensure that the level of incidental take anticipated in this biological opinion for the desert tortoise is commensurate with the analysis contained herein.
2. The BLM or LADWP must monitor and report the level of incidental take of desert tortoises to the Service following project activities.

Our evaluation of the proposed action includes consideration of the protective measures proposed by the BLM and LADWP in the biological assessment and re-iterated in the Description of the Proposed Action section of this biological opinion. Consequently, any changes in these protective measures may constitute a modification of the proposed action that causes an effect to the desert tortoise that was not considered in the biological opinion and require re-initiation of consultation, pursuant to the implementing regulations of the section 7(a)(2) of the Act (50 CFR 402.16).

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the BLM or LADWP must comply with terms and conditions, which implement the reasonable and prudent measures described above and outline reporting and monitoring requirements. Terms and conditions are non-discretionary.

The following term and condition implements reasonable and prudent measure 1:

To ensure that the proposed protective measures are effective and are being properly implemented, the BLM or LADWP must contact the Service immediately if it becomes aware that a desert tortoise has been killed or injured by project activities (i.e., during construction, operation, or maintenance). At that time, the BLM or LADWP must review the circumstances surrounding the incident with the Service to determine whether the proposed protective measures are effective and being properly implemented or whether additional protective measures are required. Project activities may continue pending the outcome of the review, provided that the proposed protective measures and any appropriate terms and conditions of this biological opinion have been and continue to be fully implemented.

The following term and condition implements reasonable and prudent measure 2:

The BLM must re-initiate formal consultation, pursuant to the implementing regulations for section 7(a)(2) of the Act at 50 CFR 402.16, with the Service if

- a. four desert tortoises are injured or killed during the construction of the Barren Ridge Switching Station and the Barren Ridge Transmission Line; or
- b. two desert tortoises are killed or injured in any calendar year as a result of operation and maintenance of the Barren Ridge Switching Station and the Barren Ridge Transmission Line. This incidental take statement does not apply to desert tortoises that may be injured or killed as a result of public use of the access roads.

REPORTING REQUIREMENTS

Pursuant to 50 CFR 402.14(i)(3), the BLM or LADWP must report the progress of the action and its impact on the species to the Service as specified in this incidental take statement. Within 60 days of the completion of the proposed action, the BLM or LADWP must provide a report to the Service that provides details on the effects of the action on the desert tortoise. Because operation and maintenance are ongoing activities, the BLM or LADWP must also provide an annual report by January 31 of each year. Specifically, the report must include information on any instances when desert tortoises were killed, injured, or handled, the circumstances of such incidents, and any actions undertaken to prevent similar instances from re-occurring. We request that the BLM or LADWP provide us with any recommendations that would facilitate the implementation of the protective measures while maintaining protection of the desert tortoise. We also request that the BLM or LADWP provide us with the names of any monitors who assisted the authorized

biologist and an evaluation of the experience they gained on the project. The qualifications form on our website (http://www.fws.gov/ventura/sppinfo/protocols/deserttortoise_monitor-qualifications-statement.pdf), filled out for this project, along with any appropriate narrative would provide an appropriate level of information. This information would provide us with additional reference material in the event these individuals are submitted as potential authorized biologists for future projects.

DISPOSITION OF DEAD OR INJURED SPECIMENS

Within 3 days of locating any dead or injured desert tortoises, you must notify the Ventura Fish and Wildlife Office by telephone (805 644-1766) and by facsimile (805 644-3958) or electronic mail. The report must include the date, time, location of the carcass, a photograph, cause of death, if known, and any other pertinent information.

We will advise you on the appropriate means of disposing of the carcass when you contact us. We may advise you to provide it to a laboratory for analysis. Until we provide information on the disposition of the carcass, you must handle it such that the biological material is preserved in the best possible state for later analysis. If possible, the BLM or LADWP should keep the carcass on ice or refrigerated (not frozen) until we provide further direction.

The BLM or LADWP must take injured desert tortoises to a qualified veterinarian for treatment. If any injured desert tortoises survive, the BLM or LADWP must contact us regarding their final disposition.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

We have no conservation recommendations with regard to the proposed action at this time.

REINITIATION NOTICE

This concludes formal consultation on the BLM's proposed issuance of a right-of-way grant to LADWP for the Barren Ridge Renewable Transmission Project. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or

extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) will have lapsed and any further take would be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending reinitiation.

If you have any questions regarding this biological opinion, please contact Della Snyder-Velto of my staff at (626) 574-5254.

Sincerely,

A handwritten signature in blue ink, appearing to read "Stephen P. Henry".

Diane K. Noda
Field Supervisor

acting

Appendices

1 - Mojave population of the desert tortoise (*Gopherus agassizii*). 5-year review: summary and evaluation. Available on disk or hard copy by request or at http://ecos.fws.gov/docs/five_year_review/doc3572.DT%205Year%20Review_FINAL.pdf or.

2 - Map illustrating the 12 critical habitat units of the desert tortoise and the aggregate stress that multiple threats place on critical habitat.

3 - Map depicting the extent of the threat of invasive plants

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UPPER VIRGIN RIVER

NORTH-EAST MOJAVE

WESTERN MOJAVE

COLORADO DESERT

Critical Habitat Units
 Recovery Units 2009
 USGS Human Footprint Model
 Exotic Plant Invasion Risk
 High : 3
 Low : 0

0 12.5 25 50 75 Kilometers
 0 12.5 25 50 75 Miles
 Redlands

