

## MANAGEMENT INDICATOR SPECIES ANALYSIS

### 1. INTRODUCTION

The purpose of this assessment is to evaluate the potential effects of the Sunrise Powerlink Project on Cleveland National Forest (CNF) Management Indicator Species (MIS) identified in the Land Management Plan (LMP) for the southern California forests (US Department of Agriculture [USDA], 2005). Five alternatives and six options of the Sunrise Powerlink project cross the CNF and are assessed in this report.

Monitoring and evaluation of appropriate indicators are necessary for the USDA Forest Service to ensure appropriate adaptive management of the Forest and to identify problems that may necessitate changes to the LMP. On a forest level, evaluation requires that current habitat conditions be compared against baseline conditions at the time the LMP was enacted. Making such comparisons on the scale of an entire National Forest is prohibitively difficult, given the large diversity of vegetation communities, habitats, and species within the forest. It is possible to instead monitor individual species (in this case, MIS), the population and habitat trends of which accurately reflect the effects of resource management activities.

### 2. PROJECT DESCRIPTION

San Diego Gas and Electric (SDG&E) proposes the Sunrise Powerlink Project that would extend approximately 150 miles between the existing Imperial Valley Substation in El Centro and the Peñasquitos Substation in the City of San Diego. The project would also include a new Central East Substation and other system modifications.

Although the proposed project would not occur within the CNF, five project alternatives (Interstate 8, BCD, Route D, Modified Route D, and CNF Existing 69kV), four options to the Interstate 8 Alternative (West Buckman Springs, Buckman Springs Underground, South Buckman Springs, and Chocolate Canyon), one option to the BCD Alternative (BCD South), and one option to the Modified Route D Alternative (Star Valley) would occur partially within the CNF. These alternatives are as follows:

- **Interstate 8 Alternative** – This alternative generally follows the Interstate 8 (I-8) corridor, which runs on an east-west path across the southern Imperial and San Diego Counties. This alternative was developed in response to public and agency concerns requesting use of the existing Interstate 8 corridor, rather than creating a new major corridor in less developed areas (especially Anza-Borrego Desert State Park). This alternative would enter the CNF just west of the La Posta Indian Reservation, roughly follow I-8 to the west, and finally exit the CNF near the Viejas Indian Reservation. Along its length, the I-8 Alternative includes aboveground and underground portions, but only aboveground portions are proposed within the CNF.
- **Interstate 8: West Buckman Springs Option** - This option was designed to minimize hang gliding and paragliding impacts by moving the transmission line to a location west of Buckman Springs valley, rather than along I-8. It is located entirely

within the boundaries of the CNF. The route would cross to the south side of Interstate 8 heading west and crossing the Pacific Crest National Scenic Trail to follow the west side of Buckman Springs Road north for approximately 4 miles, passing just west of the Boulder Oaks Campground and within two miles northeast of the Morena Reservoir.

- **Interstate 8: Buckman Springs Underground Option** - The Buckman Springs Underground Option is approximately 2 miles long and is located entirely within the CNF, just east of Interstate 8 off Buckman Springs Road exit. It includes an underground 500kV cable system to match the capacity of the overhead transmission line. The transmission cables would be installed in concrete-encased duct banks and covered with up to 8 feet of backfill. Total construction impact width of the underground duct bank packages with the access road is estimated to be approximately 80 feet in width for the length of the route. A permanent access road (approximately 14 feet in width) would be graded along the path of the duct banks. An underground-to-overhead transition station would be required at each end of the underground transmission line segment. Each transition station would be located on a 2 to 3 acre area and would require structures approximately 80 feet in height.
- **Interstate 8: South Buckman Springs Option** - This option was designed to avoid backcountry non-motorized land use zones within the CNF to the north and east of Interstate 8. The route would split from the I-8: Alternative along the southern boundary of the CNF just west of the Campo Indian Reservation, and follow the existing SDG&E 69 kV corridor parallel to I-8 for 6.5 miles. It would cross Cameron Valley, pass through the Narrows, turn north through the southern portion of Cottonwood Valley, and join the West Buckman Springs Option approximately 1 mile west of Interstate 8.
- **Interstate 8: Chocolate Canyon Option** - This option was designed to reduce the visual impact of the underground-overhead transition towers by relocating the I-8 crossing and moving the 230 kV overhead transmission line in the first 3 miles north of the freeway to a location lower on the slope of Chocolate Canyon. This option would reduce visual impacts to residences on the western edge of Chocolate Canyon and would reduce the length of required access roads by using an existing road for much of the segment's construction. This option would extend the underground portion about 0.1 mile further along Alpine Boulevard, then turn west to an open area adjacent to Alpine Boulevard, where the transition towers would be constructed. From this point, the route would extend overhead across the freeway.
- **BCD Alternative** - This 19.5-mile 500 kV alternative would split from the Interstate 8 Alternative southeast of Boulevard, where it would head north-northwest, generally paralleling McCain Valley Road, head west on BLM land southwest of the Carrizo Overlook and within two miles of the Cottonwood Campground. The route would enter the CNF near the northern end of Simmons Canyon, south of Thing Valley. It would cross Thing Valley Road (La Posta Truck Trail), Fred Canyon Road, and the Pacific Crest National Scenic Trail, passing within one mile of Cibbets Flat Campground. The route would cross Kitchen Creek Road three times and Sheephead Mountain Road once before crossing I-8 and joining the I-8 Alternative in

Cottonwood Valley. The BCD segment would include 6.5 miles within the CNF, 11 miles on BLM land, 0.2 miles on State of California conservation land, and 1.8 miles on private lands.

- **BCD Alternative: South Option** - The BCD South Option would only be used in combination with the BCD Alternative, diverging south near Thing Valley Road. The option is 5.4 miles long and would connect with the Modified Route D Alternative south of La Posta Ranch and east of La Posta Road.
- **Route D Alternative** – This alternative would split from the Interstate 8 Alternative in the CNF approximately 1 mile east of East Willows Road and run north, crossing King, Conejos, Boulder, Cedar, and Ritchie Creeks, as well as the San Diego River before joining the Proposed Project route at the proposed Central South Substation near Ramona. The majority of this alternative is on CNF lands.
- **Modified Route D Alternative** - This route splits from the Interstate 8 Alternative several miles east of Campo, runs generally west to Barrett Lake, and then runs generally north to merge with the Interstate 8 Alternative in the vicinity of East Willows Road near Alpine.
- **Modified Route D Alternative: Star Valley Option** - The Star Valley Option would only be used in combination with the Modified Route D Alternative, diverging from the Modified Route D Substation Alternative approximately 1.5 miles north of Japatul Valley. The option would run west and north for approximately 3 miles, replacing 2.2 miles of the Modified Route D Alternative and 2.3 miles of the I-8 Alternative. Roughly 0.4 mile of this option would be underground along Star Valley Road, where it would join the Interstate 8 Alternative.
- **CNF Existing 69kV Alternative** – This alternative is a short (approximately 1.5 miles) route located just southeast of Highway 78, west of Dye Mountain. It would split from the Proposed Project and run in a southwesterly direction, and cross into the CNF for a distance of less than one mile, and re-join the Proposed Project. It would incorporate an existing 69 kV transmission line, which would not need to be replaced.

The Environmentally Superior Southern Route would cross the CNF (a full description of this route is provided in the Executive Summary of the Final EIR/ EIS). This route includes portions of the alternatives and options listed above, as well as several reroutes described in the Recirculated Draft EIR/Supplemental Draft EIS, and is analyzed in “Effects of Project on Habitat and Population Trends” section of each species analysis below.

The Proposed Project would not cross the CNF. The Environmentally Superior Northern Route and SDG&E’s Enhanced Northern Route (a full description of these routes is provided in the Executive Summary of the Final EIR/ EIS) would cross the CNF for a distance of less than one mile because both incorporate the CNF 69 kV Alternative. The Proposed Project, Environmentally Superior Northern Route, and SDG&E’s Enhanced Northern Route are analyzed in the Effects of Project on Habitat and Population Trends sections of each species analysis below.

### 3. Method of Effects Analysis

Project effects on MIS are generally analyzed through the environmental review process under the National Environmental Policy Act (NEPA). This process includes assessing direct, indirect, and cumulative impacts of a project on habitats and species. These project impacts, which occur on a local scale, may be related to larger-scale regional habitat or population trends.

The Forest Plan requires forest-scale monitoring of habitat status and trends for MIS, as discussed in the Part 3, Appendix C of the LRMP (USDA 2005). Monitoring of MIS is recommended every 5 years to determine MIS habitat quantity (status) and whether that quantity is stable, increasing or decreasing (trend). Habitat includes both the vegetation community in which a species occurs, and other biotic (e.g., food sources, predators) and abiotic (physical structure of the area, slope/aspect, water availability, etc.) factors. MIS habitat trends are analyzed by comparing current ecological and vegetation data with historical data collected for the forest.

Population status is a measure of the current population size of a species, whereas population trend refers to the change in population size over time. Population data for MIS are collected by private entities, as well as state and federal agencies, including the USDA Forest Service, US Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and the US Geological Survey (USGS). Population data may be assessed by direct species counts, by observation of tracks or scat, or monitoring of hunting data.

Within the CNF, the impacts of a project on habitats, plants, and animals are typically assessed by monitoring the effects on MIS. As noted in the 2005 National Forest System Land Management Planning Rule (2005 Planning Rule; 70 Federal Register 1060, January 5, 2005), such effects analysis may occur by considering habitat data unless the plan specifically requires population monitoring or focused species surveys (36 CFR 219.14(f)). Although not required under the 2005 Planning Rule, population monitoring or focused species surveys may be required at the discretion of the Responsible Official (36 CFR 219.14(f)). Thus, the project-level effects assessments for the CNF will focus on MIS habitat monitoring and analysis.

Analysis of project effects to MIS includes the following steps:

- Identifying MIS that would be potentially impacted by the project;
- Identifying monitoring requirements for these MIS;
- Analyzing direct, indirect, and cumulative project impacts to MIS populations and habitats;
- Relating these project impacts MIS and their habitats to habitat and population trends within the forest.

This MIS report for the Sunrise Powerlink project includes an analysis of impacts to MIS from the alternatives/options presented in the Draft EIR/EIS. This MIS report also includes an analysis of the four routes under final consideration for the Sunrise Powerlink

project: the Proposed Project, Environmentally Superior Northern Route, SDG&E’s Enhanced Northern Route, and Environmentally Superior Southern Route. The analysis of each of these four routes is provided in the Effects of Project on Habitat/Population Trends sections for each MIS below. A cumulative analysis is also provided for each MIS, which includes cumulative effects on habitat and population trends.

#### 4. MIS SELECTED FOR THE PROJECT

MIS are selected because their population trends are considered indicative of the effects of management activities and as a focus for monitoring. Projects within southern California forests typically assess effects on twelve MIS (USDA, 2005) because changes in these species populations or habitats are can be effectively monitored and reflect the effects of national forest management activities. These species include white fir (*Abies concolor*), Coulter pine (*Pinus coulteri*), bigcone Douglas-fir (*Pseudotsuga macrocarpa*), blue oak (*Quercus douglasii*), Engelmann oak (*Quercus engelmannii*), California black oak (*Quercus kelloggii*), valley oak (*Quercus lobata*), arroyo toad (*Bufo californicus*), song sparrow (*Melospiza melodia*), mountain lion (*Puma concolor*), mule deer (*Odocoileus hemionus*), and California spotted owl (*Strix occidentalis*). As shown in Table 1, six of these species occur in portions of the CNF that may be affected by the Sunrise Powerlink project or its alternatives.

<b>Table 1 Management Indicator Species</b>		
<b>Species</b>	<b>Indicator of Management</b>	<b>Potential to be Affected by Sunrise Powerlink project</b>
White fir ( <i>Abies concolor</i> )	Montane coniferous forest	Range includes portions of CNF, but no project alternatives would impact coniferous forest.
Coulter pine ( <i>Pinus coulteri</i> )	Coulter pine forest	Range includes portions of CNF, but no project alternatives would impact coniferous forest.
Bigcone Douglas-fir ( <i>Pseudotsuga macrocarpa</i> )	Bigcone Douglas-fir forest	Does not occur in project area; reported on Palomar and Vulcan Mountains to the north.
Blue oak ( <i>Quercus douglasii</i> )	Oak regeneration	Does not occur in project area
Engelmann oak ( <i>Quercus engelmannii</i> )	Oak regeneration	Occurs in project area
California black oak ( <i>Quercus kelloggii</i> )	Oak regeneration	Does not occur in project area; occurs primarily in coniferous forest, which would not be affected by any project alternatives in the CNF
Valley oak ( <i>Quercus lobata</i> )	Oak regeneration	Does not occur in project area

Arroyo toad ( <i>Bufo californicus</i> )	Aquatic habitat	Occurs in project area
Song sparrow ( <i>Melospiza melodia</i> )	Riparian habitat	Occurs in project area
California spotted owl ( <i>Strix occidentalis</i> )	Montane coniferous forest	Occurs in project area
Mountain lion ( <i>Puma concolor</i> )	Fragmentation	Occurs in project area
Mule deer ( <i>Odocoileus hemionus</i> )	Healthy, diverse habitats	Occurs in project area

Of the twelve MIS in Table 1, two species do not occur in the CNF (valley oak and blue oak) and four species do not occur in habitats that would be affected by the Sunrise Powerlink project (white fir, Coulter pine, bigcone Douglas-fir, and California black oak). The remaining six MIS (Engelmann oak, arroyo toad, song sparrow, California spotted owl mountain lion, and mule deer) have potential be affected by one or more of the project alternatives.

As explained in Section 3, forest-scale monitoring of MIS within the CNF is required every 5 years to determine if habitat conditions “are in a stable or upward trend.” The CNF MIS report (USDA 2007) describes how MIS monitoring requirements will be met. Monitoring strategies for MIS as discussed in the Final Environmental Impact Statement for the Forest Plan (USDA 2006) are shown in Table 2.

**TABLE 2  
MIS MONITORING STRATEGIES**

<i>Management Indicator Species</i>	<i>Monitoring Method</i>	<i>Measure</i>
<i>Engelmann oak</i>	<i>Forest Inventory Analysis data</i>	<i>Trend in sapling abundance</i>
<i>Arroyo toad</i>	<i>Population abundance and/or habitat condition in selected locations</i>	<i>Trends in abundance, distribution, and/or habitat conditions</i>
<i>Song sparrow</i>	<i>Riparian bird species point counts, and/or habitat condition</i>	<i>Trend in abundance and/or habitat condition</i>
<i>California spotted owl</i>	<i>Region 5 survey protocol, CDFG protocol</i>	<i>Occupied territories and/or habitat condition</i>
<i>Mountain Lion</i>	<i>Studies in cooperation with CDFG, USGS</i>	<i>Trend in distribution, movement, and/or habitat conditions</i>
<i>Mule Deer</i>	<i>Herd composition in cooperation with CDFG, habitat condition</i>	<i>Trend in abundance and/or habitat condition</i>

## 5. Project Impacts to Selected MIS

### 5.1 Engelmann Oak

Many oak species exhibit very low reproductive rates, and Holland and Keil (1995) noted that the majority of oaks in oak woodlands appear to have ceased reproduction around 1900. As a result, the primary management concern for Engelmann oak woodlands is maintaining sufficient regeneration to sustain long-term viability of the species. Engelmann oaks are used by the USDA Forest Service as a proxy for oak regeneration and as a determinant of oak woodland habitat quality within the CNF (USDA 2007). Monitoring of this species, in particular saplings, will measure the success of the forest management strategies (USDA 2007).

#### 5.1.1 Natural History

The Engelmann oak is a deciduous tree species that has a small natural range and is the only species of subtropical white oaks in California (USDA 2007). This species most commonly occurs in savannas with grassland understory on valley floors, foothill slopes and raised stream terraces within riparian corridors. It has the smallest natural range of any oak species in California, occurring from the foothills of the San Gabriel Mountains in Los Angeles County through the Santa Ana Mountains in Orange County to the Peninsular Ranges of Riverside and San Diego Counties (USDA 2007, Sawyer and Keeler-Wolf, 1995).

#### 5.1.2 Status and Trends

The rapid expansion of the urban landscape through much of the Engelmann oak's small natural range is one of the primary threats to this species. As stated above, it has been suggested that oak reproduction throughout California has ceased or is declining. This may be a result of an increase in the numbers of seed-eating species (enabled by the elimination of many natural predators), introduction and rapid expansion of exotic annual grasses which dominate the understory of many oak woodlands, grazing of naturally-occurring understory species, and, in some areas, root rot. Although the threats to Engelmann oaks are not as serious as those to some other oak species (Holland 1988), it is still at risk because of its limited distribution, low reproductive rate, and other threats.

Engelmann oak populations are difficult to accurately measure because mapping criteria employed differ from study to study (USDA 2007). Population and cover estimates vary greatly, but it is estimated that approximately 24 percent of the overall Engelmann oak population occurs within the CNF. The CNF MIS report (USDA 2007) states that Engelmann oak populations are relatively abundant and stable but population trends have not been delineated because not enough data has been collected.

### 5.1.3 Potential Project Impacts

#### Direct Impacts

Engelmann oaks were observed during vegetation mapping and rare plant surveys conducted in 2007 and would be directly and indirectly impacted by implementation of the Interstate 8 Alternative, Route D Alternative, and CNF Existing 69kV Alternative (Figure 1). Direct impacts to Engelmann oaks were identified on the basis of individual trees mapped, as well as areas of Engelmann oak woodland. Since individual trees were not mapped within areas of Engelmann oak woodland, these areas are treated in this analysis as exclusively consisting of Engelmann oaks. Other habitats where Engelmann oaks were mapped include coastal sage scrub, chaparral, and non-native grassland.

Permanent impacts would occur from construction of towers and access roads, as well as from tree removal related to vegetation management. Temporary impacts would occur from clearing required for staging areas, pull sites, and helicopter pads, as well as necessary clearing around the tower footings. Temporary impact areas would be revegetated following construction. As noted in Mitigation Measure B-1a of the Sunrise Powerlink EIR/EIS, direct impacts to Engelmann oak woodland shall be mitigated at a 3:1 ratio.

As noted in Mitigation Measure B-1a of the EIR/EIS, mitigation for loss of native trees or native tree trimming (including Engelmann oaks) shall be provided by (1) acquiring and preserving habitat within which the trees occur and/or (2) restoring (i.e., planting) trees on land that would not be subject to vegetation clearing.

Native trees that are removed shall be replaced in-kind as follows.

- Trees less than five inches diameter at breast height (DBH) shall be replaced at 3:1
- Trees between five and 12 inches DBH shall be replaced at 5:1
- Trees between 12 and 36 inches shall be replaced at 10:1
- Trees greater than 36 inches shall be replaced at 20:1

Native trees that are trimmed shall be replaced in-kind as follows.

- Trees less than 12 inches DBH shall be replaced at 2:1
- Trees greater than 12 inches DBH shall be replaced at 5:1

The EIR/EIS contains specific details about mitigation for loss of trees (see Mitigation Measure B-1a in Appendix 12 of the Final EIR/EIS).

**Interstate 8 Alternative.** Engelmann oak woodland is mapped along the Interstate 8 Alternative upstream and downstream of the Sweetwater River in the vicinity of Descanso; however, no individual trees were mapped at the time of the survey (Figure 1). Implementation of this alternative would result in permanent impacts to 0.1 acres of Engelmann oak woodland (no temporary impacts to this vegetation community would occur). Permanent impacts would be mitigated at a 3:1 ratio with off site acquisition and preservation of 0.3 acres of Engelmann oak woodland.



Vegetation management as part of this alternative may also require Engelmann oaks to be removed. Mitigation for loss of individual trees would follow the mitigation listed above.

**Route D Alternative.** Numerous Engelmann oak individuals are mapped within the CNF along much of the length of the Route D Alternative, and are particularly dense between King and Conejos Creeks (Figure 1). Thirteen Engelmann oak trees were mapped within the right-of-way for this alternative as part of other vegetation communities. Construction of this alternative, including the associated vegetation management, would require most (if not all) of these Engelmann oaks to be removed. Mitigation for loss of individual trees would follow the mitigation listed above. In addition to individual trees, Engelmann oak woodland is mapped along this alternative, but not within the CNF boundaries. Mitigation for impacts to Engelmann oak woodland outside of the CNF would still be required as part of the overall project mitigation required in the EIR/EIS.

**CNF Existing 69kV Alternative.** At the time of the survey, access to the CNF had not been granted, so habitat mapping was conducted by aerial photograph interpretation (by comparison with similar habitat mapped in person outside of the CNF) and no individual trees were mapped. Based on aerial photo interpretation, one patch of Engelmann oak woodland is mapped within the CNF along the CNF Existing 69kV Alternative (Figure 1). Implementation of this alternative would result in direct, permanent impacts to 0.8 acres and temporary impacts to 0.1 acres of Engelmann oak woodland. Temporary impacts would be mitigated within the alignment by restoration of 0.1 acres of Engelmann oak woodland and off-site mitigation of 0.2 acres. Permanent impacts would be mitigated off site at a 3:1 ratio with preservation of 2.4 acres.

### **Indirect Impacts**

Potential indirect impacts would be similar for all of the alternatives and options that cross the CNF or that would be constructed adjacent to the CNF. Construction activities, such as grading, tower footing excavation, and driving of heavy equipment on unpaved roadways, would result in increased levels of blowing dust that may settle on Engelmann oaks. Increased levels of dust on plants can significantly impact plants' photosynthetic capabilities and degrade the overall quality of the Engelmann oak woodland. To offset these indirect impacts during construction, all cleared areas would be regularly watered and a 15 mile-per-hour speed limit shall be observed on dirt access roads to reduce fugitive dust (BIO-APM-3).

High voltage power lines have been associated with a number of wildfires, which cause direct loss of vegetation communities, wildlife habitat, and wildlife species. Although periodic fires are part of the natural ecosystem, fires burning too frequently can have significant long-term ecological effects such as degradation of habitat and loss of species. While habitats in southern California are adapted to wildfires, an increased fire frequency can dramatically change the plant composition in a habitat, which is called "type conversion" (Keeley et al. 2005). When burned too frequently, vegetation communities are often taken over by highly flammable, weedy, non-native plant species that burn even

more often and provide minimal habitat value for native plant and animal species, especially those of special status. Often, type conversion occurs with replacement of native scrub habitats with non-native grassland.

### **Effects of Project on Habitat and Population Trends**

The CNF MIS report (USDA 2007) states that Engelmann oak populations are relatively abundant and stable but population trends have not been delineated because not enough data has been collected. The Proposed Project would result in permanent impacts to approximately 14 acres and temporary impacts to approximately 7 acres of Engelmann oak woodland (SDG&E's Northern Enhanced Route and the Environmentally Superior Northern Route would result in similar impacts). The current population trend of Engelmann oaks on the CNF would not be altered if any of the northern routes would be constructed because impacts within and adjacent to the CNF would be minimal and would be mitigated at a 3:1 ratio, including on site restoration for temporary impacts.

The Environmentally Superior Southern Route would not alter the current population trend for this species because impacts to Engelmann oak woodland would be limited to one location with impacts totaling less than one acre. Impacts to this habitat would be mitigated at a 3:1 ratio. The mitigation ratio for impacts to individual Engelmann oak trees ranges from 2:1 to 20:1 depending on the type of impact and size of the tree (see above).

### **Cumulative Impacts**

Table G.3 of the Sunrise Powerlink Draft EIR/EIS lists the cumulative projects lists for each alternative and option. Many of the projects in Table G.3 have not been fully developed and do not have defined project footprints, which prevents a precise calculation of cumulative impacts to Engelmann oaks.

The cumulative impacts to Engelmann oaks from the Proposed Project, as well as SDG&E's Northern Enhanced Route and the Environmentally Superior Northern Route, would not alter the population trends on the CNF because each of these routes would impact less than one acre of Engelmann oak woodland on the CNF.

The cumulative impacts to Engelmann oaks from the Environmentally Superior Southern Route would not alter the population trends on the CNF because this route would impact less than one acre of Engelmann oak woodland on the CNF

## **5.2 Arroyo Toad**

The arroyo toad was selected as an MIS for low-elevation riparian and aquatic habitats (USDA 2005). Management goals include maintaining and improving habitat functions, including primary feeding areas, winter ranges, breeding areas, birthing areas, rearing areas, movement corridors, and habitat linkages. Trends in abundance, distribution, and habitat conditions will be assessed to determine management effectiveness for the arroyo

toad and other aquatic and riparian fish and game species (USDA 2007).

### 5.2.1 Natural History

The arroyo toad is a federal listed endangered species that is endemic to riparian environments in the foothill canyons and inter-mountain valleys of central and southern California and northwestern Baja California from near sea level to approximately 8,000 feet. During the breeding season, this species is typically found the middle reaches of slow-moving, third-order streams with shallow pools and, sandy or gravelly soils and sandy terraces. Breeding pools must be open and shallow with minimal current, and with a sand or pea gravel substrate overlain with sand or flocculent silt. Adjacent terraces must provide open, sandy or gravelly terraces with very little herbaceous cover for adult and juvenile foraging areas within a moderate riparian canopy of cottonwood, willow, or oak. They tend to be found along rivers and streams with open vegetation canopies; heavily shaded pools are unsuitable for larvae and juvenile toads due to lower water and soil temperatures and poor algal mat development. During the non-breeding season, arroyo toads are found in burrows within the upland habitats located up to 1 mile from breeding streams.

The arroyo toad has been extirpated from 75 percent of its former range, and the remaining occupied habitat is threatened by continued dam construction, river diversion, conversion of riparian wetland habitat by agriculture and urbanization, road construction, off-highway vehicle use, campground development, grazing, and mining activities (USFWS 1994). Arroyo toads are diurnal for the first four to five weeks as juveniles and stay close to breeding pools; they become nocturnal when they reach 17 to 23 millimeters in length and spend the day in burrows. Nocturnal activity is normal for both adults and large juveniles, but they may occasionally be active and observed during the day (US Fish and Wildlife Service, 1999).

### 5.2.2 Status and Trends

Regionally, arroyo toads are threatened by removal of riparian habitats and damming or diverting of streams. Dams alter stream flows, reducing the frequency of flooding, increasing water temperature, increasing scour upstream of the dam, and reducing the sediment supply. Without this sediment, which contains nutrients and plant seeds, appropriate physical characteristics and plant species associated with arroyo toads can not form or be maintained. Additionally, spread of exotic species through the watersheds reduces the habitat value as it generally results in replacement of native species.

Arroyo toads occur in most of the major stream systems in the CNF and occupied habitat covers approximately 8,000 acres within the forest (USDA 2007). The USDA Forest Service has designed a digital model to identify potential habitat for the arroyo toad, which identified approximately 25 miles of potentially suitable riparian habitat (hereafter referred to as USDA Forest Service modeled habitat). The CNF has taken measures to improve habitat values for arroyo toad, including improving stream crossings to prevent impacts to arroyo toads, removing unauthorized roads, excluding grazing from certain areas, and acquiring potential habitat areas. Notwithstanding these measures, most

arroyo toad sub-populations in the CNF are small. Most arroyo toad populations within the CNF are near the edge of the forest and that most prime breeding habitat occurs just outside the CNF boundary (USDA 2007).

It has been estimated that arroyo toad populations on federal lands have increased since the species' listing in 1994 (Sweet and Sullivan 2005) and approximately half of the remaining populations are considered to be relatively secure (USDA 2007). Within the CNF, it appears that the habitat and populations of the arroyo toad are stable.

### 5.2.3 Potential Project Impacts

#### **Direct Impacts**

An analysis of the arroyo toad habitat model for the Sunrise Powerlink project determined that potential arroyo toad habitat occurs within streams that cross all of the project alternatives within the CNF. Arroyo toad habitat assessments conducted in spring 2007 for all of these stream crossings identified 16 drainages within the CNF that had suitable conditions or habitat quality to warrant focused surveys (Figure 2). Focused surveys were conducted in 2007, following U.S. Fish and Wildlife Service (1999) protocol where possible. For the purposes of assessing impacts, all areas within 1 km of an observed arroyo toad and within 1 km of areas where arroyo toads are assumed present are considered occupied habitat (USFWS 1999).

In locations where a proposed alignment would cross through occupied habitat, arroyo toad habitat could be permanently impacted by construction of towers and access roads. Because the towers are generally placed on ridgelines and hilltops rather than in canyon bottoms and streambeds, impacts caused by tower installation generally would avoid arroyo toad breeding habitat, but has potential to impact upland, non-breeding habitat. However, where access roads and/or underground construction of transmission lines would cross creeks or drainages, arroyo toad breeding habitat would be permanently impacted. Temporary impacts would occur from clearing required for staging areas, pull sites, and helicopter pads, as well as necessary clearing around the tower footings. All temporary impact areas would be revegetated following construction (see Mitigation Measure B-7j in Appendix 12 for a detailed description of mitigation requirements for impacts to arroyo toad habitat).

Mitigation for impacts to occupied arroyo toad habitat (or habitat that is assumed occupied) would occur with a combination of exclusion, pre-construction surveys, and habitat restoration and preservation. Exclusion fencing would be installed around the construction zone to prevent toad access from areas where the arroyo toad is present (or assumed present). Pre-construction surveys (including one no more than 24 hours prior to construction) would be conducted for arroyo toads by a biologist permitted by the USFWS to handle the toad. During construction within occupied habitat, surveys would be conducted every morning prior to work. Any toads found would be relocated to appropriate habitat outside the impact footprint. Additionally, loss of arroyo toad-occupied habitat would include 1:1 on-site restoration for temporary impacts and off-site

purchase and preservation of arroyo toad-occupied mitigation land at a 1:1 to 3:1 ratio (depending on vegetation type).

**Interstate 8 Alternative.** USDA Forest Service modeled habitat occurs at nine locations along the Interstate 8 Alternative (Figure 2). Five of the locations, (La Posta Creek just north of Interstate 8, Kitchen Creek north and east of I-8, Pine Valley Creek, Sweetwater River at Wildwood Glen Lane, and San Diego River immediately downstream of El Capitan Reservoir), supported suitable arroyo toad breeding habitat at the time of the habitat assessment and focused surveys were conducted. The remaining four locations (two unnamed tributaries to La Posta Creek, Cottonwood Creek north of Buckman Springs and an unnamed drainage near Pine Valley Las Bancas Road) did not support suitable habitat at the time of the habitat assessment and were not surveyed.

Arroyo toad presence was assumed at the La Posta Creek, Kitchen Creek, Sweetwater River, and San Diego River locations (Figure 2). The site where the Interstate 8 Alternative crosses La Posta Creek is on a private inholding within the CNF. To avoid trespassing, this site could only be surveyed by listening for calls from La Posta Truck Trail. Because surveys were not conducted to protocol, presence is assumed at this location. Although suitable habitat for arroyo toads was present, Kitchen Creek was dry at the time of the habitat assessment and the area did not receive any rainfall subsequent to the assessment. However, arroyo toads were found downstream of the confluence of Kitchen and Cottonwood Creeks in 2007, approximately 2 miles to the southwest (HELIX 2008). Additionally, arroyo toads are known to occur upstream of the alignment along Kitchen Creek (CNDDDB 2007). Because suitable habitat was present, arroyo toads were found in the same drainage nearby, and conditions were dry during the survey period, arroyo toad presence was assumed for the Kitchen Creek site. Protocol arroyo toad surveys conducted at the Sweetwater River site were negative; however, habitat at that site was highly suitable, with slow-moving pools, sandy benches, and open riparian vegetation. Moreover, the California Natural Diversity Database (CNDDDB; CDFG 2007) has a 2001 arroyo toad observation north of the intersection of Highway 79 and Riverside Drive less than 1 km northeast of the site. As a result, the arroyo toad is assumed present at this site despite the negative protocol surveys. Because the El Capitan Reservoir was closed at nighttime, arroyo toad surveys at the San Diego River site were not conducted to protocol, and the arroyo toad is assumed present. Surveys at the San Diego River were completed by listening for calls from El Monte Road.

Protocol surveys at the Pine Valley Creek site were negative although the CNDDDB has 1991 records from within 1 km of the site. The habitat at the survey area was marginally suitable, with an open willow canopy and sandy substrate; however, the site is disturbed by ongoing cow grazing. Grassy groundcover is high in this area, and crayfish, a very effective predator on arroyo toad eggs, tadpoles, and metamorphs, were noted during each site visit. Based on the age of the arroyo toad observations along Pine Valley Creek, the high level of disturbance, and the negative 2007 protocol surveys, this site is not considered occupied by the arroyo toad.

Construction of the I-8 Alternative would result in permanent impacts to 0.2 acres of

breeding habitat, permanent impacts to 28.1 acres of upland burrowing habitat, and temporary impacts to 13.0 acres of upland burrowing habitat, the majority of which would occur on the CNF. Temporary impacts to burrowing habitat would be mitigated by restoration of 13.0 acres of arroyo toad habitat within the alignment and off-site acquisition and preservation of 13.0 acres of occupied arroyo toad habitat. Permanent impacts to breeding habitat would be mitigated off-site at a 3:1 ratio for a total of 0.6 acres. Permanent impacts to upland habitat would be mitigated at a 2:1 ratio through acquisition and preservation of 56.2 acres of occupied arroyo toad habitat. The mitigation listed above may be reduced if conclusive pre-construction surveys for the species determine it to be absent from the four locations where toads were assumed to be present along this alternative.

**Interstate 8: West Buckman Springs Option.** The Interstate 8: West Buckman Springs Option would cross USDA Forest Service modeled arroyo toad habitat at two sites: Cottonwood Creek near the Boulder Oaks campground and an unnamed tributary drainage near the intersection of Buckman Springs Road and Bear Valley Road (Figure 2). At the time of the habitat assessment, only the Cottonwood Creek site supported suitable arroyo toad habitat and was surveyed.

The arroyo toad was observed and heard calling along Cottonwood Creek during protocol surveys in 2007 (Figure 2). Additionally, USDA Forest Service data show numerous arroyo toad observations both upstream and downstream of where the option would cross the creek. The Interstate 8: West Buckman Springs Option would impact occupied arroyo toad habitat as a result of tower construction and a permanent access road that would cross Cottonwood Creek.

Construction of the I-8: West Buckman Springs Option would result in permanent impacts to 0.1 acres of breeding habitat, permanent impacts to 4.2 acres of upland burrowing habitat, and temporary impacts to 4.4 acres of upland burrowing habitat, which would occur on the CNF. Permanent impacts to breeding habitat would occur as a result of an access road being constructed across Cottonwood Creek.

Temporary impacts to burrowing habitat would be mitigated by restoration of 4.4 acres of arroyo toad habitat within the alignment and off-site acquisition and preservation of 4.4 acres of occupied arroyo toad habitat. Permanent impacts to breeding habitat would be mitigated off-site at a 3:1 ratio for a total of 0.3 acres. Permanent impacts to upland habitat would be mitigated at a 2:1 ratio through acquisition and preservation of 8.4 acres of occupied arroyo toad habitat.

**Interstate 8: Buckman Springs Underground Option.** USDA Forest Service modeled occurs along Kitchen Creek, including where the I-8: Buckman Springs Underground Option crosses Kitchen Creek (Figure 2). This option would cross Kitchen Creek approximately 1,000 feet downstream of where the I-8 Alternative would cross it. As discussed in Section 3.2.22, conditions were dry at the time of the arroyo toad habitat assessment. Because suitable habitat was present, arroyo toads were found in the same drainage nearby, and conditions were dry during the survey period, arroyo toad presence

was assumed for the this site

This underground alternative would temporarily clear an 80-foot-wide right of way for the installation of the underground line. A 14-foot-wide permanent access road would remain along the length of the option following construction. As a result, implementation of this alternative would result in temporary and permanent impacts to arroyo toad breeding habitat along Kitchen Creek.

Construction of the I-8: Buckman Springs Underground Option would result in permanent impacts to 0.2 acres of breeding habitat, permanent impacts to 7.7 acres of upland burrowing habitat, and temporary impacts to 2.8 acres of upland burrowing habitat, the majority of which occurs on the CNF. Temporary impacts to upland burrowing habitat would be mitigated by restoration of 2.8 acres of arroyo toad habitat within the alignment and off-site acquisition and preservation of 2.8 acres of occupied arroyo toad habitat. Permanent impacts to breeding habitat would be mitigated off-site at a 3:1 ratio for a total of 0.6 acres. Permanent impacts to upland habitat would be mitigated at a 2:1 ratio through acquisition and preservation of 15.4 acres of occupied arroyo toad habitat. The mitigation listed above may be reduced if conclusive pre-construction surveys for the species determine it to be absent from the location where toads were assumed to be present along this option.

**Interstate 8: South Buckman Springs Option.** USDA Forest Service modeled arroyo toad habitat occurs along much of the western portion of Interstate 8: South Buckman Springs Option (Figure 2). Protocol surveys were not conducted for this option because it was proposed after the arroyo toad survey season was complete.

An arroyo toad was observed near the confluence of La Posta Creek and Cottonwood Creek during protocol surveys in 2007 (Figure 2). An arroyo toad observation was recorded by the USDA Forest Service within this option along La Posta Creek near the Narrows, and numerous USDA Forest Service observations have been made near the confluence of La Posta and Cottonwood Creeks, approximately 1,000 feet west of this option. Arroyo toads are assumed to be present along La Posta Creek because suitable habitat is present, toads are known to occur in the vicinity, and protocol surveys could not be conducted.

Construction of the I-8: South Buckman Springs Underground Option would result in permanent impacts to 0.7 acres of breeding habitat and temporary impacts to 0.4 acre of breeding habitat, as well as permanent impacts to 9.4 acres of upland burrowing habitat and temporary impacts to 2.7 acres of upland burrowing habitat, which would occur on the CNF. Temporary impacts to breeding habitat would be mitigated by restoration of 0.4 acres of arroyo toad habitat on site and off-site acquisition and preservation of 0.8 acres of occupied arroyo toad breeding habitat. Temporary impacts to upland burrowing habitat would be mitigated by restoration of 2.7 acres of arroyo toad habitat on site and off-site acquisition and preservation of 2.7 acres of occupied arroyo toad habitat. Permanent impacts to breeding habitat would be mitigated off-site at a 3:1 ratio for a total of 2.1 acres. Permanent impacts to upland habitat would be mitigated at a 2:1 ratio

through acquisition and preservation of 18.8 acres of occupied arroyo toad habitat. The mitigation listed above may be reduced if conclusive pre-construction surveys for the species determine it to be absent from the location where toads were assumed to be present along this option.

**Interstate 8: Chocolate Canyon Option.** USDA Forest Service modeled habitat occurs down the slopes to the east of this option and at the northern junction with the Interstate 8 Alternative (immediately downstream of El Capitan Reservoir). The San Diego River location supported suitable arroyo toad breeding habitat at the time of the habitat assessment and focused surveys were conducted. Arroyo toad presence was assumed at this location because the El Capitan Reservoir was closed at nighttime and arroyo toad surveys could not be conducted to protocol. This option is expected to occur primarily on the hillsides and would avoid direct impacts to breeding habitat, but would impact upland burrowing habitat. Permanent impacts to upland habitat would be mitigated at a 2:1 ratio with habitat acquisition and preservation.

**BCD Alternative.** The BCD Alternative would cross six drainages and creeks supporting riparian vegetation within the CNF. La Posta Creek, Long Canyon, Kitchen Creek, and Horse Canyon contain USDA Forest Service modeled arroyo toad habitat, while Antone and Fred Canyons contain substantial riparian habitat, but were not identified by the habitat model. All of these drainages and creeks were dry at the time of the 2007 arroyo toad habitat assessments, so no protocol surveys were conducted along the BCD Alternative. Although they were dry, La Posta Creek and Horse Canyon contain otherwise suitable arroyo toad habitat, so these drainages are assumed to be occupied by arroyo toads (Figure 2).

Antone, Fred, and Long Canyons contain first- and second-order streams that do not contain water for long enough to support arroyo toads. At the point where Kitchen Creek crosses the BCD Alignment, it contains largely clay soils and lacks sandy or gravelly benches. Moreover water flows through Kitchen Creek at this point are likely too fast for arroyo toads. Although arroyo toads have been reported along Kitchen Creek, approximately 0.7 mile south of Cibbets Flat Campground, no recorded observations have been made within one kilometer of the BCD Alternative. As a result, the arroyo toad is considered absent from Long Canyon, Kitchen Creek, Antone Canyon, and Fred Canyon (Figure 2).

Construction of the BCD Alternative would result in permanent impacts to 11.0 acres of upland burrowing habitat and temporary impacts to 5.8 acres of upland burrowing habitat, the majority of which occurs on the CNF. Permanent impacts to upland habitat would be mitigated at a 2:1 ratio through acquisition and preservation of 22.0 acres of occupied arroyo toad habitat. Temporary impacts to upland burrowing habitat would be mitigated by on-site restoration of 5.8 acres of arroyo toad habitat and off-site acquisition and preservation of 5.8 acres of occupied arroyo toad habitat. The mitigation listed above may be reduced if conclusive pre-construction surveys for the species determine it to be absent from the two locations where toads were assumed to be present along this alternative.



**BCD Alternative: BCD South Option.** The BCD Alternative: South Option would cross USDA Forest Service modeled arroyo toad habitat in three locations: (1) at the northern end of the alignment upslope of La Posta Creek; (2) along an unnamed tributary to La Posta Creek just east of Thing Valley Road; and (3) at La Posta Creek just north of Interstate 8.

Although La Posta Creek would not be crossed at the northern end of the alignment, habitat in the creek at this location is suitable to support arroyo toads. Due to lack of water during the survey period, protocol surveys were not conducted during 2007. As a result, the arroyo toad is assumed present at this site. The unnamed tributary drainage east of Thing Valley Road is a low-order stream that does not contain water long enough to support arroyo toads. The BCD Alternative: South Option crosses La Posta Creek just north of Interstate 8 is on a private inholding within the CNF. To avoid trespassing, this site could only be surveyed by listening for calls from La Posta Truck Trail. Because surveys were not conducted to protocol, presence is assumed for this creek. Thus impacts to occupied arroyo toad habitat would occur in two locations: at the northern end of the alignment upslope of La Posta Creek and at La Posta creek just north of Interstate 8

Construction of the BCD Alternative: South Option would result in permanent impacts to 0.2 acres of breeding habitat and temporary impacts to 0.7 acre of breeding habitat, as well as permanent impacts to 7.4 acres of upland burrowing habitat and temporary impacts to 7.0 acres of upland burrowing habitat, which would occur on the CNF. Temporary impacts to breeding habitat would be mitigated by on-site restoration of 0.7 acres of arroyo toad habitat and off-site acquisition and preservation of 1.4 acres of occupied arroyo toad breeding habitat. Temporary impacts to upland burrowing habitat would be mitigated by on-site restoration of 7.0 acres of arroyo toad habitat and off-site acquisition and preservation of 7.0 acres of occupied arroyo toad habitat. Permanent impacts to breeding habitat would be mitigated off-site at a 3:1 ratio for a total of 0.6 acres. Permanent impacts to upland habitat would be mitigated at a 2:1 ratio through acquisition and preservation of 14.8 acres of occupied arroyo toad habitat. The mitigation listed above may be reduced if conclusive pre-construction surveys for the species determine it to be absent from the two locations where toads were assumed to be present along this option.

**Route D Alternative.** The Route D Alternative would cross USDA Forest Service modeled arroyo toad habitat in several locations, including King Creek, Conejos Creek, Boulder Creek, Kelly Creek, Cedar Creek, and the San Diego River (Figure 2). Based on the arroyo toad habitat assessments along the Route D Alternative, potentially suitable breeding habitat was present along King Creek, Conejos Creek (including two tributary drainages), Boulder Creek, Cedar Creek, and the San Diego River. Additionally, suitable habitat may occur where the alternative would cross Ritchie Creek, but this could not be determined because the area is on private property. Focused surveys were conducted in all locations with suitable habitat. The survey at the Ritchie Creek site consisted of listening for toads from Eagle Peak Road because the crossing is on private property.

An arroyo toad was observed on the San Diego River on May 8, 2007. Focused arroyo toad surveys were negative for King Creek, Conejos Creek, Boulder Creek, Cedar Creek, and Ritchie Creek. Because the Ritchie Creek site is approximately 1 kilometer from the occupied San Diego River site, arroyo toads are assumed to occupy this creek based on the USFWS (1999) survey protocol (Figure 2).

Route D Alternative construction would not impact occupied breeding habitat along the San Diego River, but would impact upland burrowing habitat. Construction would impact breeding habitat assumed to be occupied by the toad in Ritchie Creek.

Construction of the Route D Alternative would result in permanent impacts to less than 0.1 acres of breeding habitat, permanent impacts to 12.6 acres of upland burrowing habitat, and temporary impacts to 5.9 acres of upland burrowing habitat, the majority of which occurs on the CNF. Temporary impacts to upland burrowing habitat would be mitigated by on-site restoration of 5.9 acres of arroyo toad habitat and off-site acquisition and preservation of 5.9 acres of occupied arroyo toad habitat. Permanent impacts to breeding habitat would be mitigated off-site at a 3:1 ratio for a total of 0.1 acres. Permanent impacts to upland habitat would be mitigated at a 2:1 ratio through acquisition and preservation of 25.2 acres of occupied arroyo toad habitat. The mitigation listed above may be reduced if conclusive pre-construction surveys for the species determine it to be absent from the location where toads were assumed to be present along this alternative.

**Modified Route D Alternative.** The Modified Route D Alternative would cross USDA Forest Service modeled arroyo toad habitat in at 3 locations within the CNF: the Sweetwater River, Peterson Canyon, and Taylor Creek. Additionally, the Modified Route D Alternative would cross an unnamed tributary to Taylor Creek within the CNF, as well as Long Potrero Creek, Cottonwood Creek, Wilson Creek, and a second unnamed tributary to Taylor Creek just outside the CNF (Figure 2).

At the time of the arroyo toad habitat assessment, only the Sweetwater River site (approximately 1 mile south of I-8) supported suitable arroyo toad breeding habitat. Drainage crossings at Long Potrero Creek, Cottonwood Creek, Wilson Creek, Taylor Creek, the unnamed tributaries to Taylor Creek, and Peterson Canyon were either dry at the time of the habitat assessment or were dominated by coast live oak. As a result protocol surveys were only conducted on the Cottonwood Creek and Sweetwater River sites.

No arroyo toads were observed during 2007 focused surveys. Arroyo toads have been recorded in Long Potrero Creek in 1993 (CDFG 2007). This creek crossing was not surveyed in 2007 because it was dry at the time of the arroyo toad habitat assessment. Although the location where the Modified Route D Alternative crosses Long Potrero Creek is located outside of the CNF, all habitat within 1 km of the observation is considered occupied, including areas within the CNF (Figure 2).

Construction of the Modified Route D Alternative would result in permanent impacts to

1.5 acres of upland burrowing habitat and temporary impacts to 19.0 acres of upland burrowing habitat, the majority of which occurs on the CNF. Temporary impacts to upland burrowing habitat would be mitigated by on-site restoration of 19.0 acres of arroyo toad habitat and off-site acquisition and preservation of 19.0 acres of occupied arroyo toad habitat. Permanent impacts to upland habitat would be mitigated at a 2:1 ratio through acquisition and preservation of 3.0 acres of occupied arroyo toad habitat. The mitigation listed above may be reduced if conclusive pre-construction surveys for the species determine it to be absent from the location where toads were assumed to be present along this option.

**Modified Route D Alternative: Star Valley Option.** The Modified Route D Alternative: Star Valley Option would cross the Sweetwater River, which supports USDA Forest Service modeled arroyo toad habitat (Figure 2). This Option was designed after the end of the 2007 arroyo toad breeding season so no protocol surveys were conducted. Suitable habitat occurs at the Sweetwater River location for the Modified Route D Alternative approximately 1 mile upstream. Because suitable habitat likely occurs but protocol surveys were not conducted, the Sweetwater River site is assumed occupied by arroyo toads.

Construction of the Modified Route D Alternative: Star Valley Option would result in permanent impacts to 3.6 acres of upland burrowing habitat and temporary impacts to 1.4 acres of upland burrowing habitat, which would occur on the CNF. Temporary impacts to upland burrowing habitat would be mitigated by on-site restoration of 1.4 acres of arroyo toad habitat and off-site acquisition and preservation of 1.4 acres of occupied arroyo toad habitat. Permanent impacts to upland habitat would be mitigated at a 2:1 ratio through acquisition and preservation of 7.2 acres of occupied arroyo toad habitat. The mitigation listed above may be reduced if conclusive pre-construction surveys for the species determine it to be absent from the location where toads were assumed to be present along this option.

### **Indirect Impacts**

Potential indirect effects include risk of increased fire frequency, invasive species introduction, and dust. The project would not realign or divert any drainages, so downstream loss of habitat is not expected to occur as a result of implementation of any of the project alternatives.

The construction and operation of new transmission lines in areas with high fire risk could cause wildfires and reduce the effectiveness of fire fighting efforts. Wildfire can be a threat because it can cause direct loss habitat and species, and can also lead to type conversion. This fire risk is especially high during the dry period during summer and fall, when arroyo toads are typically aestivating in upland areas. While toads aestivate in burrows underground and may survive the initial burn, the loss of habitat from such a burn could seriously reduce survivorship and reproductive success. Although periodic fires are part of the natural ecosystem, fires burning too frequently can have significant long-term ecological effects such as type conversion. When burned too frequently,

vegetation communities are often taken over by highly flammable, weedy, non-native plant species that burn even more often and provide minimal habitat value for native plant and animal species, especially those of special status. Often, type conversion occurs with replacement of native scrub habitats with non-native grassland.

Installation of towers and access roads would create openings in existing habitat and increase edge effects, which could provide avenues for invasive plant species to colonize. Such invasive plants could supplant native species and alter the habitat, reducing its quality for arroyo toads. A Weed Control Plan would be implemented to reduce the effects of invasive plants (Mitigation Measure B-3a).

Construction activities, such as grading, tower footing excavation, and driving of heavy equipment on unpaved roadways could increase dust that may settle on surrounding vegetation. Such dust would be considered an indirect impact that would degrade the overall quality of arroyo toad habitat. To offset these indirect impacts during construction, all cleared areas would be regularly watered and a 15 mile-per-hour speed limit shall be observed on dirt access roads to reduce fugitive dust (BIO-APM-3).

### **Effects of Project on Habitat Trends**

The CNF MIS report (USDA 2007) indicates a stable and improving trend in arroyo toad habitat on the CNF. Habitat improvement is the result of closure of two miles of unauthorized roads, exclusion of grazing from over 12,000 acres (centered on riparian areas), and acquisition of arroyo toad habitat.

Implementation of the Proposed Project, as well as the Environmentally Superior Northern Route and SDG&E's Enhanced Northern Route, would not impact arroyo toad breeding or upland habitat on or adjacent to the CNF. As a result, if any of these routes is constructed, it would not alter the current habitat trend for arroyo toad.

Implementation of the Environmentally Superior Southern Route would impact occupied/assumed occupied arroyo toad habitat on and adjacent to the CNF along La Posta Creek, Potrero Creek, Sweetwater River, and San Diego River. Impacts to breeding habitat would be limited to a small area along La Posta Creek that is assumed to be occupied by arroyo toad, which occurs on private land adjacent to the CNF. For the EIR/EIS, impacts to upland habitat were calculated within 1 kilometer of occupied and assumed occupied arroyo toad locations, in accordance with USFWS (1999) guidelines. However, impacts to upland habitat generally outside the 100 meter contour from breeding habitat of the drainages listed above. Given these limited impacts to arroyo toad habitat on the CNF, the Environmentally Superior Southern Route would not alter the current habitat status or trend.

### **Effects of Project on Population Trends**

The CNF MIS report (USDA 2007) indicates a stable population trend for arroyo toad on the CNF, with no new populations being detected in recent years. Implementation of the

Proposed Project, as well as the Environmentally Superior Northern Route and SDG&E's Enhanced Northern Route, would not impact arroyo toad breeding or upland habitat on or adjacent to the CNF. As a result, if any of these routes is constructed, it would not alter the current population status or trend for arroyo toad.

Implementation of the Environmentally Superior Southern Route would impact occupied arroyo toad upland habitat within the CNF along Potrero Creek. Impacts to assumed occupied arroyo toad breeding habitat would occur adjacent to the CNF along La Posta Creek; impacts to assumed occupied upland habitat would occur within the CNF along La Posta Creek, Sweetwater River, and San Diego River. The Environmentally Superior Southern Route is not expected to alter the current arroyo toad population status or trend on the CNF because impacts are generally limited to upland habitat and the avoidance and minimization measures detailed in Mitigation Measure B-7j are expected to reduce the impacts to less than significant.

### **Cumulative Impacts**

Table G.3 of the Sunrise Powerlink Draft EIR/EIS lists the cumulative projects lists for each alternative and option. Many of the projects in Table G.3 have not been fully developed and do not have defined project footprints, which prevents a precise calculation of cumulative impacts to arroyo toads.

The cumulative impacts to arroyo toads from the Proposed Project, as well as SDG&E's Northern Enhanced Route and the Environmentally Superior Northern Route, would not alter the population trends on the CNF because none of these routes would impact arroyo toad habitat on or adjacent to the CNF.

The cumulative impacts to arroyo toads from the Environmentally Superior Southern Route is not expected to alter the population trends on the CNF because the avoidance and minimization measures required by Mitigation Measure B-7j (i.e., pre-construction surveys, exclusion fencing, clearance surveys, and monitoring during construction) are adequate to reduce the impacts to less than significant. Given that an estimated 8,000 acres of occupied habitat occur within the CNF (USDA 2007), the Environmentally Superior Southern Alternative's impacts to arroyo toads and arroyo toad habitat is negligible and the overall cumulative impact would not be significant.

### **5.3 Song Sparrow**

The song sparrow was selected as an MIS for riparian areas because its abundance is indicative of management and reflects the overall health of riparian communities (USDA 2005). Because over 90% of song sparrows observed are made in riparian habitats (Big Sur Ornithology Lab 2000), its population trends are considered indicative of changes in riparian habitat. Breeding survey data collected between 1966 and 2004 suggest that song sparrow numbers are decreasing (Sauer et al. 2005). Threats to song sparrows include habitat loss, water extraction, brood parasitism by brown-headed cowbirds (*Molothrus ater*), and predation by native and introduced wildlife.

### 5.3.1 Natural History

The song sparrow is the most common bird within the riparian woodlands of San Diego County (Unitt 2004). It is often found in riparian habitat with a dense understory, although it has adapted somewhat to urbanization and has been found in upland scrub habitats or landscaped areas provided permanent water is present.

### 5.3.2 Status and Trends

Because song sparrows occur almost exclusively in riparian areas, all riparian habitat within the CNF is considered occupied for the purpose of this assessment. On the whole, riparian habitats within the CNF are of moderate to good quality although large areas burned in the 2007 Witch Creek and Harris Fires and the 2003 Cedar Fire.

Riparian habitat within the CNF is considered to be in stable or improving condition as a result of measures implemented by the USDA Forest Service to enhance and protect these areas, including restrictions on livestock grazing, re-routing roads and trails away from streams, and replanting streamside areas (USDA 2007).

Survey information for song sparrows in the CNF is lacking, but regionally, song sparrow populations may be declining at a slow, steady rate (Sauer et al 2005). While this decline, measured between 1966 and 2004, did not indicate a statistically significant population trend, a USDA Forest Service study detected similar negative population trend within the southern California forests (USDA 1988).

### 5.3.3 Potential Project Impacts

#### **Direct Impacts**

All project alternatives within the CNF would cross drainages supporting riparian habitat and would therefore affect song sparrows; however, impacts would be limited because the towers are generally constructed on ridgelines and hillsides rather than in canyons and streambeds. Access road construction would cross a number of riparian areas throughout the CNF.

Permanent impacts would occur from construction of towers and access roads. Temporary impacts would occur from clearing required for staging areas, pull sites, and helicopter pads, as well as necessary clearing around the tower footings. All temporary impact areas would be revegetated following construction.

**Interstate 8 Alternative.** Construction of the I-8 Alternative would result in temporary impacts to 7.2 acres and permanent impacts to 0.6 acres of song sparrow habitat (southern willow scrub, mule fat scrub, southern coast live oak riparian forest, southern cottonwood-willow riparian forest, southern riparian forest, and riparian woodland), which occur within and outside of the CNF. As noted above, the towers that would be installed would generally be placed on ridgelines and hillsides and as such would avoid

clearing riparian habitats, which generally occur in canyons and low-lying areas.

Impacts would be mitigated through on-site restoration of 7.2 acres of riparian habitat and off-site acquisition and preservation of 9.0 acres of riparian habitat.

**Interstate 8: West Buckman Springs Option.** Construction of the I-8: West Buckman Springs Option would result in permanent impacts to 0.1 acres of song sparrow habitat (riparian woodland) on the CNF. Impacts would be mitigated through off-site acquisition and preservation of 0.3 acres of riparian woodland.

**Interstate 8: Buckman Springs Underground Option.** Construction of the I-8: Buckman Springs Underground Option would result in permanent impacts to 0.2 acres of song sparrow habitat (southern cottonwood-willow riparian forest) on the CNF. Impacts would be mitigated through off-site acquisition and preservation of 0.6 acres of southern cottonwood-willow riparian forest.

**Interstate 8: South Buckman Springs Option.** Construction of the I-8: South Buckman Springs Option would result in temporary impacts to 0.4 acres and permanent impacts to 0.9 acres of song sparrow habitat (emergent wetland, southern willow scrub, and southern cottonwood-willow riparian forest). The majority of the riparian impacts would occur on the CNF. Impacts would be mitigated through on-site restoration of 0.4 acres of riparian habitat and off-site acquisition and preservation of 2.6 acres of riparian habitat.

**Interstate 8: Chocolate Canyon Option.** Construction of the Interstate 8: Chocolate Canyon Option would occur primarily on the hillsides above the adjacent riparian habitat, but would impact a small area of habitat at the northern end, where it meets the Interstate 8 Alternative. Impacts would be mitigated with on-site restoration at a 1:1 ratio and off-site acquisition and preservation at a 2:1 ratio.

**BCD Alternative.** Construction of the BCD Alternative would not result in temporary or permanent impacts to riparian habitat.

**BCD Alternative: South Option.** Construction of the BCD Alternative: South Option would result in temporary impacts to 0.7 acres and permanent impacts to 0.2 acres of song sparrow habitat (southern cottonwood-willow riparian forest). The majority of the impacts would occur on private land adjacent to the CNF. Impacts would be mitigated through on-site restoration of 0.7 acres of riparian habitat and off-site acquisition and preservation of 1.3 acres of southern cottonwood-willow riparian forest.

**Route D Alternative.** Construction of the Route D Alternative would result in permanent impacts to 2.0 acres of song sparrow habitat (southern willow scrub, riparian woodland [including burned], southern coast live oak riparian forest [including burned], and southern riparian forest), which occur within and outside of the CNF. Impacts would be mitigated through off-site acquisition and preservation of 6.0 acres of riparian habitat.

**Modified Route D Alternative.** Construction of the Modified Route D Alternative

would result in temporary impacts to 0.2 acres and permanent impacts to 0.2 acres of song sparrow habitat (southern coast live oak riparian forest, southern cottonwood-willow riparian forest, and southern riparian forest), which occur within and outside of the CNF. Impacts would be mitigated through on-site restoration of 0.2 acres of riparian habitat and off-site acquisition and preservation of 0.8 acres of riparian habitat.

**Modified Route D Alternative: Star Valley Option.** Construction of the Modified Route D Alternative: Star Valley Option would result in permanent impacts to 0.1 acres of song sparrow habitat (southern coast live oak riparian forest), which would occur on private land. Impacts would be mitigated through off-site acquisition and preservation of 0.3 acres of southern coast live oak riparian forest.

**CNF Existing 69kV Alternative.** Construction of the CNF Existing 69kV Alternative would result in permanent impacts to less than 0.1 acres of song sparrow habitat (freshwater marsh, emergent wetland, and southern willow scrub). The majority of the impacts would occur on private land adjacent to the CNF. Impacts would be mitigated through off-site acquisition and preservation of 0.1 acres of riparian habitat.

### **Indirect Effects**

Potential indirect effects include increased fire frequency, edge effects, invasive species introduction, fugitive dust, noise, electrocution, and collision risk.

The construction and operation of new transmission lines in areas with high fire risk could cause wildfires and reduce the effectiveness of fire fighting efforts. Fires cause direct loss of vegetation communities, wildlife habitat, and wildlife species. Although periodic fires are part of the natural ecosystem, fires burning too frequently can have significant long-term ecological effects such as degradation of habitat and loss of species. While habitats in southern California are adapted to wildfires, an increased fire frequency with growth in the human population can cause type conversion. When burned too frequently, vegetation communities may often be taken over by weedy, non-native plant species that may be more flammable and provide minimal habitat value. It should be noted that the riparian habitats in which song sparrows occur are probably less susceptible to type conversion than upland shrub habitats. While direct impacts to song sparrows caused by fire would be negligible, any impacts from type conversion would be treated as a temporary impact and would be mitigated with restoration at a 1:1 ratio.

Installation of towers and access roads would create openings in existing habitat and increase edge effects, which could provide avenues for invasive plant species to colonize. A Weed Control Plan would be implemented to reduce the effects of invasive plants (Mitigation Measure B-3a).

Construction activities, such as grading, tower footing excavation, and driving of heavy equipment on unpaved roadways could increase dust that may settle on surrounding vegetation. Such dust would be considered an indirect impact that would degrade the quality of song sparrow habitat. To offset these indirect impacts during construction, all



cleared areas would be regularly watered and a 15 mile-per-hour speed limit shall be observed on dirt access roads to reduce fugitive dust (BIO-APM-3).

Construction noise could cause a temporary, indirect impact to song sparrows, some of which may be displaced from the vicinity of the construction areas. Birds would be expected to return to the area following construction.

Song sparrows are unlikely to be at risk of electrocution because the birds are too small to simultaneously contact two energized phase conductors or an energized conductor and grounded hardware. However the species is at risk of collision with towers and transmission lines. Most collisions occur with migratory birds during spring migration when strong winds and storms are more likely to force the birds to fly at relatively low altitudes. The collision risk for song sparrows is expected to be relatively low because populations are largely sedentary (Unitt 2004).

### **Effects of Project on Habitat Trends**

The CNF MIS report (USDA 2007) states that the riparian habitat status on 86 percent of the 88 watersheds on the Southern California National Forests were rated as being in either good or moderate condition. The current habitat trend on the CNF is a stable and improving condition.

The Environmentally Superior Northern Route and SDG&E's Enhanced Northern Route would each directly impact less than 0.1 acre of song sparrow habitat on the CNF. The Proposed Project would not result in any impacts to CNF lands. However each of these routes would impact song sparrow habitat that exists adjacent to the CNF, which are limited to areas along SR-78 between San Diego Country Estates and Santa Ysabel. As a result, if any of these routes is constructed, it would not alter the current habitat trend for song sparrow.

The Environmentally Superior Southern Route would not alter the current habitat status or trend because the towers would be generally constructed on ridgelines and hillsides rather than in canyons and streambeds. Permanent impacts to riparian habitat would be less than 1.0 acre on this route. Temporary impacts would be restored on site at a 1:1 ratio and mitigation would also include off site acquisition and preservation of riparian habitat at a 2:1 ratio. Impacts to riparian areas generally would result from access roads that would cross drainages at right angles or staging areas or pulling sites that would impact small portions of drainages. Large blocks of riparian habitat would not be cleared because towers are generally located on hillsides, transmission lines would pass over drainages, and the impact footprint of each project feature is generally small (several acres in size) and separated in space by several hundred feet.

### **Effects of Project on Population Trends**

The CNF MIS report (USDA 2007) states that song sparrows are common and abundant, but are experiencing a negative population trend. Song sparrows are expected to disperse

from construction areas; construction would be timed to avoid the bird breeding season in accordance with Mitigation Measure B-8a. Impacts to riparian habitat from each project feature are generally small in size (several acres), are separated in space by several hundred feet, and would be mitigated at a 3:1 ratio, including on site restoration for temporary impacts. Access roads would generally be constructed at right angles to drainages (BIO-APM-5).

It is expected that implementation of either the Proposed Project, Environmentally Superior Northern Route, SDG&E's Enhanced Northern Route, or the Environmentally Superior Southern Route would not alter the current population trend due to mitigation measures to be implemented during construction and maintenance. It is expected that the selected project would contribute to the negative population trend for song sparrows on the CNF.

### **Cumulative Impacts**

Table G.3 of the Sunrise Powerlink Draft EIR/EIS lists the cumulative projects lists for each alternative and option. Many of the projects in Table G.3 have not been fully developed and do not have defined project footprints, which prevents a precise calculation of cumulative impacts to song sparrows.

The cumulative impacts to song sparrows from the Proposed Project, SDG&E's Northern Enhanced Route, or the Environmentally Superior Northern Route, or the Environmentally Superior Southern Route would not alter the current habitat or population trends on the CNF because impacts to riparian habitat would be small at each construction location and impacts would be spread across the landscape. It is expected that the selected project would contribute to the negative population trend for song sparrows on the CNF.

## **5.4 California Spotted Owl**

The California spotted owl was chosen as the MIS for mature, large diameter, high canopy closure conditions of montane conifer forest. The management goals for this species include maintaining and improving habitat conditions to sustain healthy populations, and to prevent federal listing (USDA 2005). To meet this goal it is necessary to preserve primary feeding areas, winter ranges, breeding areas, birthing areas, rearing areas, migration corridors, and landscape linkages. Trends in the number of occupied territories and/or habitat condition will be measured to assess management success. The USDA Forest Service does not have sufficient data to quantify impacts and trends in habitat types utilized by spotted owls in southern California. However, the current drought, beginning in 1999, has resulted in drastically increased woody plant mortality in the CNF (USDA 2007)

### **5.4.1 Natural History**

California spotted owls occur in all the major mountain ranges in southern California

from below 1,000 feet along the Monterey coast to approximately 8,500 feet in the San Bernardino Mountains (USDA 2007). It occurs in forests and canyons throughout the western United States. In southern California, spotted owls occur within four general but distinct forest types: riparian/hardwood forest, live oak/bigcone Douglas-fir forest, mixed conifer forest, and redwood/California laurel forest (USDA 2005).

The spotted owl occurs in old growth forests with a complex, multi-layer structure and a closed canopy, often with an understory of oaks and other hardwoods, and a conifer overstory. In San Diego County, it occurs year-round in woodlands characterized by a mix of coast live oaks and conifers, particularly in areas with a closed canopy, permanent water, and ample tree cavities, abandoned raptor nests, or debris platforms (Unitt 2004).

Within the CNF, the California spotted owl is known from numerous observations in the Laguna Mountains, from USDA Forest Service records near Long and Antone Canyons, and from a nest sighting near Espinosa Creek and Corte Madera Mountain.

#### 5.4.2 Status and Trends

The MIS report for the CNF (USDA 2007) suggests that recent drought conditions, coupled with negative effects from air pollution, disease, and insect infestations have increased conifer mortality in conifer forests in all four southern California National Forests. The resulting mortality in the CNF was the most severe in recorded history. These die-offs affected the trees and habitat of highest value to spotted owls. Although the wildfires in 2003 and 2007 greatly affected spotted owl habitat in the other southern California National Forests, the effects within the CNF were relatively minor because much of the occupied habitat did not burn. The MIS report (USDA 2007) indicates a negative habitat and population trend for spotted owls on the CNF.

#### 5.4.3 Potential Project Impacts

##### **Direct Impacts**

Suitable old-growth forest does not occur along any of the alignments; however USDA Forest Service records near Long and Antone Canyons are within 200 to 400 feet of southern coast live oak riparian forest on the BCD Alternative (Figure 2). Based on these data, and the relatively large home range of the bird (800 to 2016 acres, measured in the San Bernardino Mountains), the California spotted owl is assumed to occupy the southern coast live oak riparian forest where the BCD Alternative crosses Long and Antone Canyons.

Permanent impacts would occur from clearing and thinning of vegetation necessary to reduce the fire risk from the high voltage power lines.

**BCD Alternative.** Construction of the BCD Alternative would not result in temporary or permanent impacts to the southern coast live oak riparian forest at Long and Antone Canyons. Vegetation management along this portion of the route may result in a loss of trees within these riparian areas. Mitigation for loss of trees follows that described in

Section 3.1.2 above.

### **Indirect Impacts**

Potential indirect impacts include increased fire frequency, collision risk, construction noise, fugitive dust, and reduced habitat value caused by invasive species.

As described above for Engelmann oak, there is a risk of fire with the presence of power lines. Fires cause direct loss of vegetation communities, wildlife habitat, and wildlife species, and may lead to type conversion, which would impact song sparrow.

Installation of any of the alternatives could increase the risk of collision with towers and power lines. As mentioned in Section 5.3.3, most collisions occur with migratory birds during spring migration when strong winds and storms are more likely to force the birds to fly at relatively low altitudes.

Construction noise could cause a temporary, indirect impact to California spotted owls outside of the project footprint, some of which may be displaced from the vicinity of the construction areas. Any displaced birds would be expected to return to the area following construction.

Fugitive dust released construction activities as grading, excavation, and driving on unpaved roadways would be considered an indirect impact that could degrade the quality of occupied California spotted owl habitat. To offset these indirect impacts during construction, all cleared areas would be regularly watered and a 15 mile-per-hour speed limit shall be observed on dirt access roads to reduce fugitive dust (BIO-APM-3).

Installation of towers and access roads could result in the introduction of invasive plant species; however a Weed Control Plan would be implemented to reduce the effects of invasive plants (Mitigation Measure B-3a).

### **Effects of Project on Habitat Trends**

The CNF MIS report (USDA 2007) states that the habitat status and trend for spotted owl is declining as a result of multiple years of drought and subsequent attack by insects, particularly bark beetle.

Implementation of the Proposed Project, as well as the Environmentally Superior Northern Route and SDG&E's Enhanced Northern Route, would not impact spotted owl habitat on or adjacent to the CNF. Spotted owls have been recorded in Santa Ysabel Valley, but this area is not adjacent to the CNF. As a result, if any of these routes is constructed, it would not alter the current habitat trend for spotted owl.

The Environmentally Superior Southern Route would cross habitat that is adjacent to where spotted owls have been observed and would impact oak woodland habitat at Structures 162 and 163, which is approximately 2 miles to the northeast of where spotted

owls have been documented. However, impacts to spotted owl habitat is limited to this one area of the Environmentally Superior Southern Route; therefore the route is not expected to alter the current habitat status or trend for this species.

### **Effects of Project on Population Trends**

The CNF MIS report (USDA 2007) states that in 1994, the Southern California Spotted Owl Biologist Team documented a total of 36 territories on the CNF. However, there are no data to indicate population trends for spotted owl on the CNF.

Implementation of the Proposed Project, as well as the Environmentally Superior Northern Route and SDG&E's Enhanced Northern Route, would not impact spotted owl habitat on or adjacent to the CNF. Spotted owls have been recorded in Santa Ysabel Valley, but this area is not adjacent to the CNF. As a result, if any of these routes is constructed, it would not alter the population habitat trend for spotted owl.

The Environmentally Superior Southern Route would cross suitable habitat for the species and would impact oak woodland habitat at Structures 162 and 163. This habitat is approximately 2 miles to the northeast of where spotted owls have been documented. Structures 162 and 163 would be constructed using vehicles that deliver materials for the project features. However, the towers to the south of Structure 163 would be constructed and maintained by helicopter. Although the helicopter noise would be relatively short in duration during construction activities, which would likely cause spotted owls to temporarily avoid this area during construction. The use of helicopters for maintenance activities would be limited to several times per year and would again cause a temporary noise disturbance to owls that may reside in this area. Overall, the Environmentally Superior Southern Route is not expected to alter the current population status or trend for this species because of the limited amount of suitable oak woodland habitat that would be removed and the limited impacts due to noise.

### **Cumulative Impacts**

Table G.3 of the Sunrise Powerlink Draft EIR/EIS lists the cumulative projects lists for each alternative and option. Many of the projects in Table G.3 have not been fully developed and do not have defined project footprints, which prevents a precise calculation of cumulative impacts to spotted owls.

The Sunrise Powerlink project would contribute to cumulative impacts to spotted owls and spotted owl habitat on the CNF. The Proposed Project, SDG&E's Northern Enhanced Route, and the Environmentally Superior Northern Route would not impact any spotted owl habitat adjacent to the CNF. The Environmentally Superior Southern Route would impact suitable habitat for the species at Structures 162 and 163 (Thing Valley); spotted owls have been documented less than 2 miles to the southwest of these structures. Helicopter construction of towers to the south of Structure 163 would result in temporary noise impacts to the species during construction and maintenance activities. However, the cumulative impacts would not alter the current habitat or population trends on the CNF

because impacts to spotted owl habitat are limited to this one area of the project and would be temporary in duration.

## 5.5 Mule Deer

The mule deer was selected as an MIS to determine if shrub, woodland, and forests are being managed adequately to provide the quality and quantity of habitat for species dependent on or strongly associated with large blocks of healthy, diverse habitats with low to moderate disturbance (USDA 2007). The goal of management is to ensure that a mosaic of meadow, woodland, and shrub habitats are maintained or improved. Prescribed burning helps keep a continued supply of high-quality forage in close proximity to cover areas.

### 5.5.1 Natural History

The mule deer is a widespread species that occurs over much of western North America, from Alaska, through western Canada and western United States, into Baja California and the southern end of the Mexican Plateau (USDA 2007).

The mule deer occurs in a wide variety of habitats, but in southern California forests it occurs in the highest densities in oak woodlands and riparian areas, scrublands, and grasslands (USDA 2007). It typically prefers ecotone habitats, where there is a mosaic of dense shrubs for cover and new shrub growth and grasses for food. Fawning typically occurs in higher elevation meadows and woodlands with trees or shrubs that provide protection for birthing does and newborns. Wintering habitat is in lower elevation meadows and woodlands, as well as open sage scrub and chaparral such as occurs in the first several years after a fire. Because fire and other forms of disturbance open up vegetation, providing new foraging options for deer, lack of fire, which results in denser vegetation, has a detrimental effect on mule deer habitat quality (USDA 2007).

### 5.5.2 Status and Trends

One of the primary threats to mule deer at higher elevations is fire suppression, which results in denser, lower quality habitat. Vegetation thinning to protect nearby communities is improving habitat conditions for mule deer in these areas. On the other hand, the high frequency of large wildfires in recent years may be negatively affecting mule deer habitat at lower elevations, converting shrublands to grasslands. Additionally, urban development is expanding in the region at an unprecedented rate (USDA 2007), removing mule deer habitat as it expands. As a result of these factors, mule deer populations are declining in the portions of the CNF that are adjacent to developing areas (USDA 2007).

Mule deer are an important game species in southern California, and globally their populations are considered to be secure. Within the CNF, deer kill data suggest stable but slightly negative population trend.

### 5.5.3 Potential Project Impacts

#### **Direct Impacts**

Mule deer observations were noted throughout the project alternatives that cross the CNF during vegetation mapping and focused surveys in 2007. However, specific locations were not recorded on all maps. The mule deer is a wide-ranging species with broad habitat requirements, including woodland, grassland, and shrubland, so all habitat within the CNF is considered occupied for the purpose of this assessment. Thus, all project alternatives would result in impacts to mule deer habitat. Permanent impacts would occur from construction of towers and access roads. Any required thinning of vegetation would not be expected to reduce the mule deer habitat quality because this species is often drawn to disturbed areas with new forage. Temporary impacts would occur from clearing required for staging areas, pull sites, and helicopter pads, as well as necessary clearing around the tower footings. All temporary impact areas would be revegetated following construction.

For all alternatives and options that occur on the CNF, temporary and permanent impacts to mule deer habitat would be mitigated as part of the habitat mitigation described in the EIR/EIS. Temporary impacts would be mitigated at a 1:1 to 3:1 ratio, depending on the specific habitat impacted. Mitigation for temporary impacts include 1:1 ratio of on-site restoration. Permanent impacts to habitat would be mitigated off-site through acquisition and preservation of lands at a 1:1 to 3:1 ratio, depending on the specific habitat impacted.

#### **Indirect Impacts**

Potential indirect impacts to mule deer include construction noise, fugitive dust, increased fire risk/habitat type conversion.

As described above for Engelmann oak, there is a risk of fire with the presence of power lines. Fires cause direct loss of vegetation communities, wildlife habitat, and wildlife species. Frequently burned areas can cause type conversion, which would impact song sparrow.

Construction noise could cause a temporary, indirect impact to mule deer outside of the project footprint, and may displace some individuals. Any displaced deer would be expected to return to the area following construction.

Fugitive dust released by such construction activities as grading, tower footing excavation, and driving of heavy equipment on unpaved roadways would be considered an indirect impact that could degrade the quality of occupied mule deer habitat. To offset these indirect impacts during construction, all cleared areas would be regularly watered to reduce fugitive dust (BIO-APM-3). Additionally, a 15 mile-per-hour speed limit shall be observed on dirt access roads to reduce dust (BIO-APM-3).

### **Effects of Project on Habitat Trends**

The CNF MIS report (USDA 2007) states that mule deer habitat is improving in some areas due to wildfires, which create openings and new growth for foraging, and improved management of conflicting uses (e.g., reduction in grazing). However, habitat quality is declining in other areas of the CNF due to frequent wildfires in the same areas that have resulted in type conversion of scrub habitat into grasslands.

The Environmentally Superior Southern Route would impact hundreds of acres of mule deer habitat on the CNF, which would generally be dispersed across the landscape (e.g., tower locations are separated by hundreds of feet). Dozens of miles of new access roads would be constructed on the CNF for use during construction and maintenance. These roads will be closed, gated, and/or patrolled once construction is complete to prevent unauthorized access, in accordance with Mitigation Measure B-1a. The access roads will create more edge habitat and are expected to create openings in some areas of dense chaparral habitat, both of which are considered improvements to habitat quality. Vegetation management conducted as part of this project is expected to improve habitat quality for mule deer. The Environmentally Superior Southern Route is not expected to alter the current habitat status or trends on the CNF.

The Environmentally Superior Northern Route and SDG&E's Enhanced Northern Route would each impact a small amount of mule deer habitat on the CNF (along the CNF 69kV Alternative). The Proposed Project would not result in any impacts to CNF lands. However each of these routes would impact mule deer habitat that exists adjacent to the CNF, which are limited to areas along SR-78 between San Diego Country Estates and Santa Ysabel. As a result, if any of these routes is constructed, it would not alter the current habitat trend for mule deer.

### **Effects of Project on Population Trends**

The CNF MIS report (USDA 2007) states a stable and slightly negative population trend for mule deer on the CNF. The population trend is based on kill records because the National Forests do not conduct forest-specific population surveys.

The Environmentally Superior Southern Route is not expected to alter the current population status or trends because of the intermittent nature of construction and maintenance activities at each project feature and because the hundreds of acres of impacts would be dispersed across the landscape. Construction at each tower location would occur over short periods of time, which will allow mule deer to disperse into nearby habitat areas during construction. Mule deer are expected to return to these areas once construction is complete. Vehicles and personnel would use access roads several times per year for maintenance activities, which would result in only minor disturbance if mule deer are in these areas during maintenance (see Section D.2.16 of the Draft EIR/EIS for a description of maintenance activities).

The Environmentally Superior Northern Route and SDG&E's Enhanced Northern Route



would each impact a small amount of mule deer habitat on the CNF (along the CNF 69kV Alternative). The Proposed Project would not result in any impacts to CNF lands. However each of these routes would impact mule deer habitat that exists adjacent to the CNF, which are limited to areas along SR-78 between Santa Ysabel and San Diego Country Estates. As a result, if any of these routes is constructed, it would not alter the current habitat trend for mule deer.

### **Cumulative Impacts**

Table G.3 of the Sunrise Powerlink Draft EIR/EIS lists the cumulative projects lists for each alternative and option. Many of the projects in Table G.3 have not been fully developed and do not have defined project footprints, which prevents a precise calculation of cumulative impacts to mule deer.

The Sunrise Powerlink project would contribute to cumulative impacts to mule deer and mule deer habitat on the CNF. The Proposed Project, SDG&E's Northern Enhanced Route, and the Environmentally Superior Northern Route would impact mule deer habitat adjacent to the CNF. The Environmentally Superior Northern Route and SDG&E's Northern Enhanced Route would impact a small amount of mule deer habitat within the CNF (along the CNF 69 kV Alternative). The Environmentally Superior Southern Route would impact mule deer habitat on the CNF because most of the habitat on the CNF is considered suitable for the species (exceptions are dense, closed canopy chaparral). However, the cumulative impacts would not alter the current habitat or population trends on the CNF because impacts to mule deer habitat would be dispersed across the landscape (towers are generally separated by hundreds of feet), access roads would not be regularly used and would create openings in dense habitat and an increase in edge habitat that is suitable for foraging.

## **5.6 Mountain Lion**

The mountain lion was selected as an MIS to evaluate management of habitat fragmentation and maintenance of habitat linkages (USDA 2005). The biggest threat to mountain lions in southern California is habitat fragmentation and isolation by urban and agricultural development, as well as construction of freeways and highways (USDA 2007). The management goal for mountain lions is to maintain functional landscape linkages and populations well distributed through National Forests.

### **5.6.1 Natural History**

The mountain lion is a wide-ranging species occurring throughout much of the western hemisphere, from western Canada and the western United States, south through Mexico, Central America, and nearly all of South America east of Andes. It occurs in a wide variety of habitats, including deserts, woodlands, grasslands, and scrublands, especially in areas that support mule deer, its primary prey item.

As a top predator, mountain lions occur in low densities with very large home ranges

averaging nearly 23,000 acres for females and 90,000 acres for males (USDA 2007). As a result, mountain lion habitat quality is dependent on large areas of contiguous habitat. Fragmentation can reduce the carrying capacity for prey species, which, in turn, reduces the carrying capacity for mountain lions. Habitat linkages are important for mountain lions because they connect otherwise isolated habitat patches, allowing mountain lions to move between different sections of their home ranges.

### 5.6.2 Status and Trends

Mountain lion populations are dependent on the abundance of their prey. As mule deer comprise the majority of a mountain lion's diet, mountain lion populations are largely dependent on the abundance of mule deer. While population data on mountain lion numbers are lacking, there has been a slow decline of mule deer populations within the CNF due to increased wildfire frequency and expansion of adjacent development (USDA 2007). This suggests the mountain lion numbers may also be in decline. Vegetation thinning for fuel management has opened up scrub habitat for mule deer, thereby improving its value for mountain lions.

### 5.6.3 Potential Project Impacts

#### **Direct Impacts**

Mountain lion sign was recorded in two locations within the CNF during vegetation mapping and focused surveys for the project alternatives in 2007, both of which were just southwest of Cedar Creek within the Route D Alternative right-of-way (Figure 2). However, because this species has very large home ranges and can occur in a wide variety of habitats, the entire CNF is assumed occupied for the purpose of this assessment. As a result, all alternatives within the CNF would impact mountain lion habitat. Direct, permanent impacts to mountain lion habitat would result from tower and access road installation along all the alternatives. However, vegetation thinning is expected to attract mule deer, the mountain lion's primary prey, so it would not substantially reduce mountain lion habitat quality. Temporary impacts would occur from clearing required for staging areas, pull sites, and helicopter pads, as well as necessary clearing around the tower footings. All temporary impact areas would be revegetated following construction.

For all alternatives and options that occur on the CNF, temporary and permanent impacts to mountain lion habitat would be mitigated as part of the habitat mitigation described in the EIR/EIS. Temporary impacts would be mitigated at a 1:1 to 3:1 ratio, depending on the specific habitat impacted. Mitigation for temporary impacts include 1:1 ratio of on-site restoration. Permanent impacts to habitat would be mitigated off-site through acquisition and preservation of lands at a 1:1 to 3:1 ratio, depending on the specific habitat impacted.

#### **Indirect Impacts**

Potential indirect impacts to mountain lions include construction noise, fugitive dust,

increased fire risk, and habitat type conversion.

Construction noise could cause a temporary, indirect impact to mountain lions outside of the project footprint, and may displace some individuals. However, given the very large home range of this species, any displaced individuals would be expected to move to other suitable areas of their home ranges during construction.

Fugitive dust released by such construction activities as grading, tower footing excavation, and driving of heavy equipment on unpaved roadways would be considered an indirect impact that could degrade the quality of occupied mountain lion habitat. To offset these indirect impacts during construction, all cleared areas would be regularly watered to reduce fugitive dust (BIO-APM-3). Additionally, a 15 mile-per-hour speed limit shall be observed on dirt access roads to reduce dust (BIO-APM-3).

Installation of high voltage power lines creates a fire risk. On one hand, fires are a natural phenomenon and have been shown improve the quality of shrub habitats for mountain lions by opening up the vegetation and improving access for mule deer, which are the mountain lion's primary prey. On the other hand, a too-frequent fire regime could result in habitat type conversion, allowing invasion by opportunistic non-native annual grasses resulting in habitat type conversion from chaparral to non-native grassland. Such type conversion would reduce habitat quality and would be considered an indirect impact to mountain lions. Impacts from fire/type conversion would be treated as a temporary impact and would be mitigated with restoration at a 1:1 ratio.

### **Effects of Project on Habitat Trends**

The CNF MIS report (USDA 2007) states that good mountain lion habitat exists on the CNF. As mountain lion populations are dependent on presence of mule deer, factors that affect mule deer habitat similarly affect mountain lion habitat. Some areas of mountain lion habitat are improving because wildfire and vegetation thinning are improving their value for mule deer. However, habitat quality is declining in other areas of the CNF because wildfires have been too frequent in the same areas that have resulted in type conversion of scrub habitat into grasslands.

The Environmentally Superior Southern Route would impact hundreds of acres of mountain lion habitat on the CNF, which would generally be dispersed across the landscape (e.g., tower locations are separated by hundreds of feet). Dozens of miles of new access roads would be constructed on the CNF for use during construction and maintenance. These roads will be closed, gated, and/or patrolled once construction is complete to prevent unauthorized access, in accordance with Mitigation Measure B-1a. The access roads would create more edge habitat and are expected to create openings in some areas of dense chaparral habitat, which would be an improvement to mule deer habitat. With the expectation that mule deer would utilize this increased edge habitat for foraging, it is also expected that mountain lions would utilize these areas for preying upon mule deer.

## Effects of Project on Population Trends

The CNF MIS report (USDA 2007) does not provide a population trend for the CNF or for southern California, but does state that mountain lion populations in southern California face serious risks due to habitat fragmentation and loss of landscape connectivity.

The Environmentally Superior Southern Route is not expected to alter the current population status or trends because of the intermittent nature of construction and maintenance activities at each project feature and because the hundreds of acres of impacts would be dispersed across the landscape. Construction at each tower location would occur over short periods of time, which will allow mountain lions to disperse into nearby habitat areas during construction. Mountain lions are expected to return to these areas once construction is complete. Vehicles and personnel would use access roads several times per year for maintenance activities, which would result in only minor disturbance if mountain lions are in these areas during maintenance (see Section D.2.16 of the Draft EIR/EIS for a description of maintenance activities).

The Environmentally Superior Northern Route and SDG&E's Enhanced Northern Route would each impact a small amount of mountain lion habitat on the CNF (along the CNF 69kV Alternative). The Proposed Project would not result in any impacts to CNF lands. However each of these routes would impact mountain lion habitat that exists adjacent to the CNF, which are limited to areas along SR-78 s between Santa Ysabel and San Diego Country Estates. As a result, if any of these routes is constructed, it would not alter the current habitat trend for mountain lion..

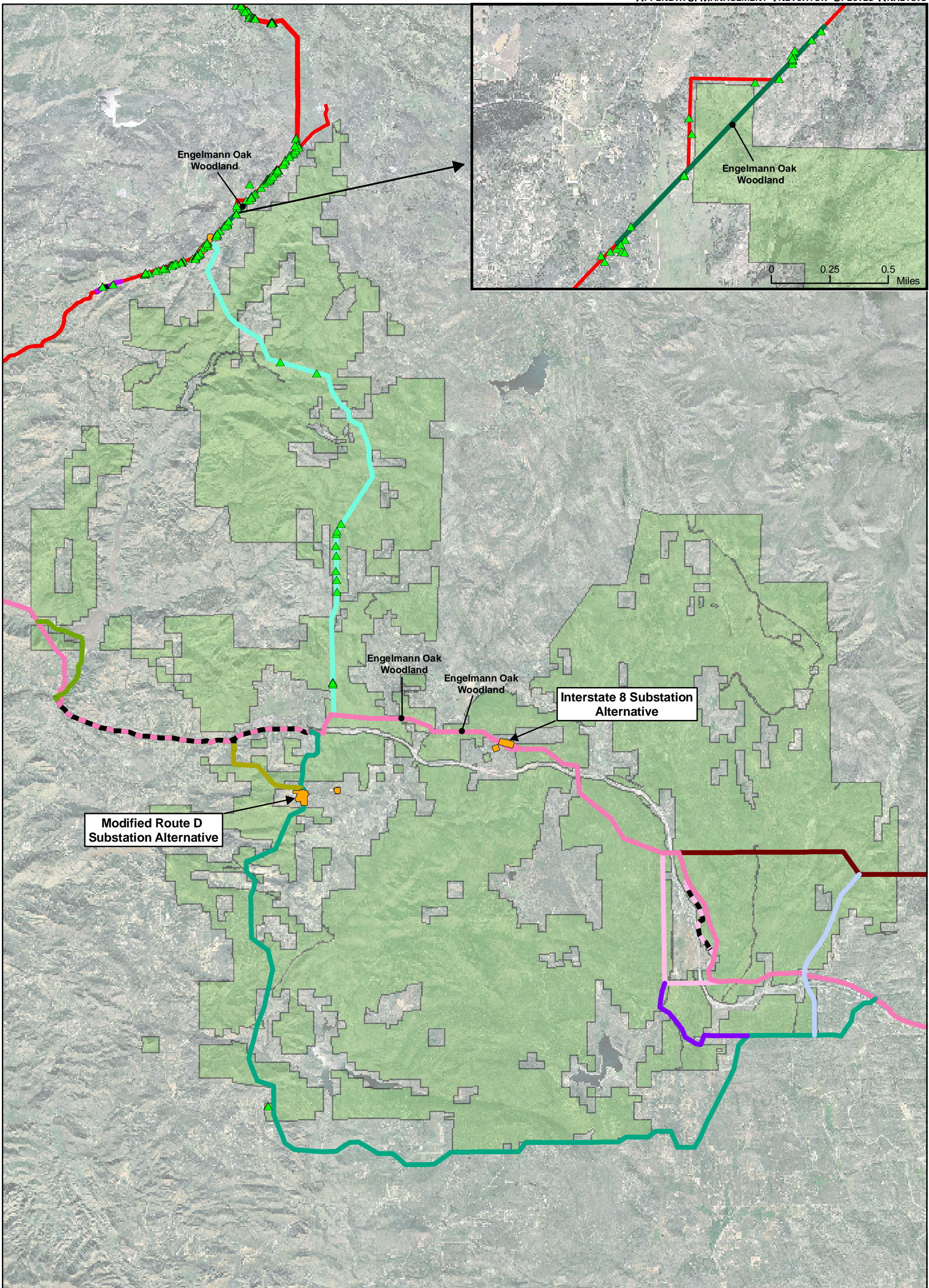
## Cumulative Impacts

Table G.3 of the Sunrise Powerlink Draft EIR/EIS lists the cumulative projects lists for each alternative and option. Many of the projects in Table G.3 have not been fully developed and do not have defined project footprints, which prevents a precise calculation of cumulative impacts to mountain lions.

The Sunrise Powerlink project would contribute to cumulative impacts to mountain lion and mountain lion habitat on the CNF. The Proposed Project, SDG&E's Northern Enhanced Route, and the Environmentally Superior Northern Route would impact mountain lion habitat adjacent to the CNF. The Environmentally Superior Northern Route and SDG&E's Northern Enhanced Route would impact a small amount of mountain lion habitat within the CNF (along the CNF 69 kV Alternative). The Environmentally Superior Southern Route would impact mountain lion habitat on the CNF because most of the habitat on the CNF is considered suitable for the species (exceptions are dense, closed canopy chaparral). However, the cumulative impacts would not alter the current habitat or population trends on the CNF because impacts to mountain lion habitat would be dispersed across the landscape (towers are generally separated by hundreds of feet), access roads would not be regularly used and would create openings in dense habitat and an increase in edge habitat that is suitable for foraging.

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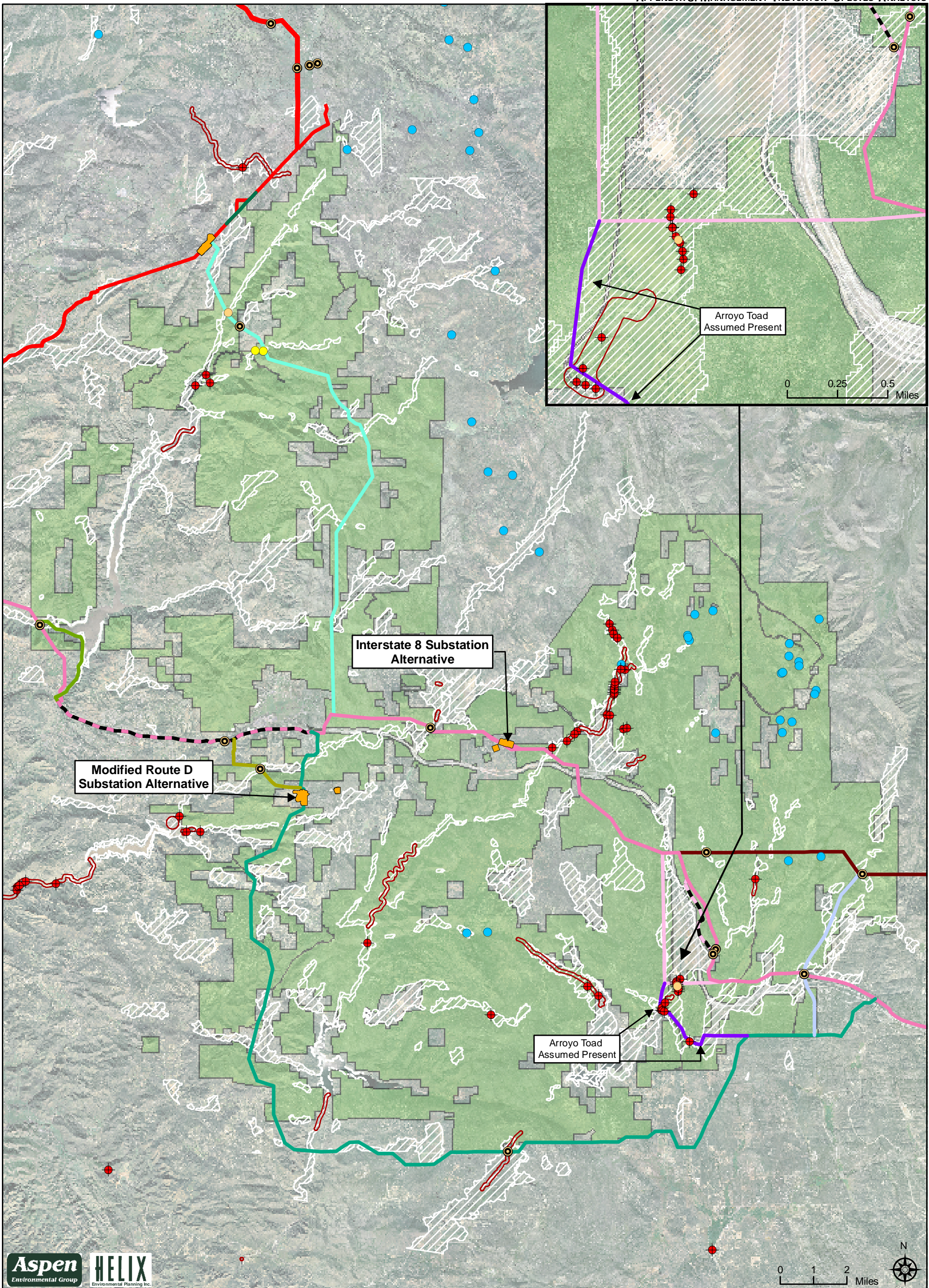


<ul style="list-style-type: none"> <li><span style="color: green;">▲</span> Engelmann Oak (<i>Quercus engelmannii</i>)</li> <li><span style="color: orange;">■</span> Substations</li> <li><span style="color: green;">■</span> Cleveland National Forest</li> <li><span style="color: red;">—</span> Proposed Project</li> <li><span style="color: brown;">—</span> BCD Alternative</li> </ul>	<ul style="list-style-type: none"> <li><span style="color: lightblue;">—</span> BCD Alternative: South Option</li> <li><span style="color: darkgreen;">—</span> CNF Existing 69kV Route Alternative</li> <li><span style="color: cyan;">—</span> Route D Alternative</li> <li><span style="color: magenta;">—</span> Interstate 8 Overhead Alternative</li> <li><span style="color: black;">- - -</span> Interstate 8 Underground Alternative</li> <li><span style="color: pink;">—</span> Interstate 8 Alternative: West Buckman Springs Option</li> <li><span style="color: black;">- - -</span> Interstate 8 Alternative: Buckman Springs Underground Option</li> </ul>	<ul style="list-style-type: none"> <li><span style="color: purple;">—</span> Interstate 8 Alternative: South Buckman Springs Option</li> <li><span style="color: olive;">—</span> Interstate 8 Alternative: Chocolate Canyon Option</li> <li><span style="color: teal;">—</span> Modified Route D Alternative</li> <li><span style="color: yellow;">—</span> Modified Route D Alternative: Star Valley Option</li> </ul>
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**Sunrise Powerlink Project**

**Figure 1**  
**Management Indicator Species Analysis: Engelmann Oak**





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| <ul style="list-style-type: none"> <li>● Arroyo Toad (<i>Bufo californicus</i>) Helix Observation</li> <li>● Arroyo Toad (<i>Bufo californicus</i>) Assumed Present</li> <li>● Arroyo Toad (<i>Bufo californicus</i>) USFS Record</li> <li>● Mountain Lion (<i>Puma concolor</i>) Helix Observation</li> <li>● Spotted Owl (<i>Strix occidentalis</i>) USFS Record</li> <li>▨ USFS Arroyo Toad Modeled Habitat</li> <li>○ Arroyo Toad (<i>Bufo californicus</i>) CNDDDB Record</li> <li>— Proposed Project</li> <li>— Interstate 8 Overhead Alternative</li> </ul> | <ul style="list-style-type: none"> <li>— Interstate 8 Underground Alternative</li> <li>— Interstate 8 Alternative: West Buckman Springs Option</li> <li>— Interstate 8 Alternative: Buckman Springs Underground Option</li> <li>— Interstate 8 Alternative: South Buckman Springs Option</li> <li>— Interstate 8 Alternative: Chocolate Canyon Option</li> <li>— Modified Route D Alternative</li> </ul> | <ul style="list-style-type: none"> <li>— Modified Route D Alternative: Star Valley Option</li> <li>— BCD Alternative</li> <li>— BCD Alternative: South Option</li> <li>— CNF Existing 69kV Route Alternative</li> <li>— Route D Alternative</li> <li>■ Substations</li> <li>■ Cleveland National Forest</li> </ul> |
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- Note: Song Sparrow is assumed present in all riparian habitat, and mule deer and mountain lion are assumed present throughout the Cleveland National Forest.

**Sunrise Powerlink Project**

**Figure 2  
Management Indicator  
Species Analysis:  
Animals**