

# Master Response 7

## Edge Effects, Fuel Modification, and Wildlife Habitat Connectivity

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**Table MR7-1. Comments Addressed in Master Response 7**

Comment	Commenter
G2-27	U.S. Environmental Protection Agency (Goforth, Kathleen)
G2-28	U.S. Environmental Protection Agency (Goforth, Kathleen)
G2-29	U.S. Environmental Protection Agency (Goforth, Kathleen)
I502-15	Forster, Peggy
I502-16	Forster, Peggy
I1463-6	Stafford, Lynn
O4-50	Center for Biological Diversity (Keats, Adam)
O4-51	Center for Biological Diversity (Keats, Adam)
O4-51A	Center for Biological Diversity (Keats, Adam)

## 7.1 Summary of Substantive Comments

The following summarizes the substantive comments received on the Draft EIS and Draft TU MSHCP regarding edge effects, fuel modification, and wildlife habitat connectivity. These different types of potential effects are somewhat interrelated because they can affect the function of wildlife habitat connections along boundaries between open space areas and developed areas. Table MR7-1 provides a list of the commenters and a reference to the individual comments, as summarized below. The parenthetical reference after each summary bullet indicates where a response to that comment is provided.

- The Draft EIS and Draft TU MSHCP do not address edge effects resulting from residential and commercial development. Open space is spread out and would be subject to edge effects and other indirect effects. (Response provided in Section 7.2.1, Analysis of Edge Effects.)
- Effects of fire management need to be analyzed, and a fire management plan is needed to protect Covered Species and their associated habitats. (Response provided in Section 7.2.2, Fire Management.)
- Development on portions of the Covered Lands would reduce landscape habitat connectivity for terrestrial wildlife between the Coast Range, Transverse Range, and southern Sierra Nevada, as well as north-south connectivity. The Draft EIS does not adequately discuss wildlife crossings of Interstate 5 (I-5) west of the TMV Planning Area. Development would adversely affect California condor movements between the Coast Range and Sierra Nevada. (Response provided in Section 7.2.3, Effects on Landscape Wildlife Habitat Connectivity and Movement.)
- Movement in and around Castac Lake would be constrained by development. Avoidance and mitigation measures for this effect are not discussed in the Draft EIS. (Response provided in Section 7.2.4, Condor Habitat Connectivity.)

## 7.2 Responses to Substantive Comments

### 7.2.1 Analysis of Edge Effects

A commenter asserted that well-studied edge effects on species resulting from residential and commercial development are not addressed in the Draft TU MSHCP or Draft EIS. Another commenter indicated that the Draft TU MSHCP and Draft EIS did not address the quality of the proposed open space, and that the TMV Project is spread out and would result in edge effects or indirect effects within the proposed open space areas, including habitat degradation from cats and other pets, invasive weeds, exposure of wildlife to toxins, and human disturbance. The commenter stated that labeling the majority of the 120-acre parcels as wildlands is misleading. Also related to edge and other indirect effects, a commenter stated that wildland fire protection and related fuel reduction measures would alter and degrade habitats. Because wildland fire management has broader implications than just edge effects (i.e., it applies to the entire Covered Lands landscape), it is discussed as a separate topic below.

Potential edge effects on the Covered Species are identified and discussed in Section 4.1, Biological Resources, in Volume I of this Supplemental Draft EIS, as well as Section 4, California Condor, Section 5, Other Covered Species, Section 6, Potential Biological Impacts/Take Assessment, and Section 7, Conservation Plan for Other Covered Species, of the TU MSHCP. This response focuses primarily on potential edge effects on other Covered Species, as potential effects on California condors are discussed in detail in Master Responses 1A through 1I. A discussion of general threats to Covered Species, as well as effects associated with the Covered Activities, are also discussed in Master Response 4, Covered Species Threats and Potential Effects from Covered Activities.

Section 5, Other Covered Species, in the TU MSHCP describe reasons for decline for each of the Covered Species, as well as known or suspected threats to the species, including many threats that relate to some type of edge effect, or an adverse effect occurring at the interface between development and habitat. As examples, cats and dogs from residential areas are potential predators of burrowing owls; traffic and development-related noise is a potential threat to nesting least Bell's vireos and potentially other nesting birds because it may interfere with communication, impair ability to hear predators, and increase stress levels; pesticides are a threat to tricolored blackbird, potentially causing reproductive failure; and Argentine ants are a threat to coast horned lizard and other native species, possibly including Tehachapi buckwheat, due to displacement of native invertebrates that are important prey, pollinators, or seed dispersers. Lighting affects many wildlife species for a variety of reasons, including disruption of daily (circadian) rhythms (e.g., disruption of awake and sleep periods), disruptions of habitat use patterns (e.g., orientation or disorientation related to a light source), stress, and increased vulnerability to nocturnal predators.

Section 4.1, Biological Resources, in Volume I of this Supplemental Draft EIS and Sections 5 and 6 of the TU MSHCP include a discussion of general effects on each of the different wildlife Covered Species taxonomic groups (i.e., amphibians, birds, invertebrates, mammals, and reptiles) from the Covered Activities, and analyzes specific effects on each species. These effects may reflect general threats identified for the species rangewide that also could result from the Covered Activities, or may reflect potential threats to Covered Species based on the scientific literature for other species (e.g., effects of noise and lighting on birds). The potential effects from development, including those potentially occurring at the interface of development and habitat, are discussed in this Supplemental Draft EIS and the TU MSHCP. As examples, amphibians are vulnerable to water quality effects, such as toxins, other pollutants, and dust (because their skin is semipermeable) that can flow or descend from development into riparian, wetlands, and aquatic habitats; birds are vulnerable to invasive exotic plant species that can be introduced by landscaping at the edge of development; birds that use riparian, wetland, and aquatic habitats are vulnerable to water quality effects similar to

amphibians; and reptiles and small mammals are vulnerable to urban-related predators such as cats and dogs, and mesopredators that are tolerant of development, such as raccoons, skunks, and opossums. Potential effects identified Sections 5 and 6 of the Draft TU MSHCP, including potential edge effects, were considered in developing the Covered Species goals and objectives described in Section 7.1, Biological Goals and Objectives for Other Covered Species. Master Response 4, Covered Species Threats and Potential Effects from Covered Activities, also provides a matrix summary (Table MR4-2) of the threats, goals, and objectives for each of the Covered Species.

The primary conservation mechanism for the Covered Species under the TU MSHCP is preservation of a large open space system encompassing at least 91% of the Covered Lands, which is anticipated to provide the Covered Species with adequate suitable habitat away from habitat edges. In addition, as described in Chapter 2, Proposed TU MSHCP and Alternatives, in Volume I of this Supplemental Draft EIS and Section 7.2.1, Measures to Avoid and Minimize Impacts, of the TU MSHCP, the TU MSHCP includes a variety of general design measures to reduce edge effects for the Covered Species along the development-habitat interface, including:

- Setbacks in the design of commercial and residential development located at the boundary of open space areas that would avoid and minimize the introduction of invasive plant and animal species and urban runoff.
- Best management practices (BMPs) for water quality protection.
- Downcast lighting for commercial and residential development located at the boundary of open space areas.

Additional species-specific avoidance and minimization measures would also be implemented, including:

- Restrictions on development and public uses at various distances from golden eagle nest sites, based on a viewshed analysis prepared during approval of grading plans.
- Setbacks for preferred bald eagle roost sites near Castac Lake.
- Setbacks between commercial and residential development and striped adobe lily and Tehachapi buckwheat populations to maintain potential pollinators.
- Setbacks from breeding and nesting sites during construction or other Covered Activities, as appropriate, for American peregrine falcon, burrowing owl, least Bell's vireo, southwestern willow flycatcher, tricolored blackbird, western yellow-billed cuckoo, white-tailed kite, and ringtail.
- European starling management for purple martin based on the abundance of starlings within 500 feet of suitable habitat for the martin.
- Weekly construction monitoring of Tehachapi buckwheat occurrences within 325 feet of development activities.

The TU MSHCP would also include other measures intended to reduce edge effects, as well as general effects associated with increased human presence and public activities adjacent to and within open space. These include:

- Provision of education material to Homeowners Associations regarding acceptable recreational activities, pets, and wildlife.
- Prohibitions on feeding wildlife.
- Signage near recreational use areas regarding prohibited activities within open space areas.

- Preparation of framework and project-specific Integrated Pest Management Plans (IPMP) that address potential sources of edge effects, such as fertilizers, pesticides, and non-native plant and animal species, including bullfrogs and Argentine ants.

Additionally, it is important to note that this Supplemental Draft EIS and Revised Draft TU MSHCP analyze a larger area for the Commercial and Residential Development Activities than would actually be disturbed; thus, buffer areas would naturally be incorporated into the plan. The development envelope considered in the analysis of the Proposed TU MSHCP Alternative is 8,817 acres (including 7,860 acres of disturbance in the TMV Specific Plan Area, 506 acres in Oso Canyon, 170 acres West of Freeway, 265 acres in the Lebec/Existing Headquarters Area, and 16 acres for the Tejon Castac Water District (TCWD) facilities on the California Department of Water Resources (DWR) parcel). However, this development envelope substantially overstates the effects of the Proposed TU MSHCP Alternative since actual ground disturbance would be limited to 5,533 acres (although the exact location is unknown). Thus, approximately 3,284 acres within the development envelope would not actually be developed and would provide additional buffering to open space areas.

With respect to the comment about the TU MSHCP's treatment of the 120-acre parcels as wildlands, there are no 120-acre parcels described in the Draft TU MSHCP or Draft EIS. Additionally, neither document characterizes any lands within the Covered Lands as "wildlands." Some portion of the TMV Specific Plan Area may be developed as larger custom lots over which a portion may be subject to the deed restrictions required in the TU MSHCP and Implementing Agreement. The quality of this open space would be protected by the species-specific measures discussed above.

## 7.2.2 Fire Management

A commenter stated that a fire management plan needs to be developed "not only to protect human life and habitation, but also Covered Species life and habitation." The commenter stated that habitat clearance for fires can significantly degrade habitat and affect species; therefore, a thorough analysis of a fire plan and its effects on each species is required. The commenter also stated that due to the fragmentation and large edge-to-area ratio of the TMV Project, the 1,772 acres of fuel modification planned in open space is problematic.

As described in Chapter 2, Proposed TU MSHCP and Alternatives, in Volume 1 of this Supplemental Draft EIS, continued grazing would be the primary fuel management activity under the Proposed TU MSHCP Alternative. Fuel management activities in open space would also include maintenance of existing roads and irrigation and/or vegetation clearing around existing structures (within 120 feet), as well as coordination with state or local agencies for mowing or other fire protection measures along fire-prone areas (e.g., highways). A fuel management plan is required to be submitted for review and approval by the Service in accordance with the terms of the Implementing Agreement. Further, Tejon Ranch Conservancy management, including fuel management, of designated open space areas would be required to comply with the TU MSHCP, and any fuel management plan developed by the Conservancy would be subject to Service review and approval through the Ranchwide Management Plan (RWMP) approval process. Of note, a fire protection plan covering up to approximately 1,770 acres in the TMV Planning Area Open Space was approved by Kern County on October 5, 2009, as part of the TMV Project approvals and is included in Appendix F to the TU MSHCP.

The short-term, nonpermanent effects from fuel modification in open space are expected to be minimal for several reasons. First, grazing is the primary method of fuel management planned in Covered Lands, and grazing activities would be consistent with past practices. Second, any fuel management plans proposed by the Tejon Ranch Conservancy would incorporate TU MSHCP species-specific avoidance and minimization measures and would be subject to Service review and

approval. Finally, any fuel modification areas extending into open space within the TMV Planning Area would be a maximum of 200 feet and would be limited to the thinning and nonirrigated treatments noted above.

As described in the fire protection plan approved by Kern County (Dudek 2008), fuel modification within TMV Planning Area Open Space would occur within 200 feet maximum of existing structures, and only additional mowing and thinning would be permitted. Thinned areas would not be markedly different in appearance from the adjacent natural areas not subject to thinning. Within the thinned areas, there would be requirements for moving and removal of flammable shrubs and dead and dying trees, as well as for limbing up oak trees for proper horizontal and vertical spacing; however, existing oak trees would not be removed, and additional oak trees may be planted, maintaining existing habitat values in these areas. No irrigation of fuel modification areas would occur within open space, thereby avoiding the potential for introduction of invasive species, such as Argentine ants, into open space. Additionally, no roadside irrigation is anticipated as long as the adjacent grasses are mowed so that they do not exceed 4 inches in height. Thus, only occasional mowing and thinning would be needed for fuel modification in open space, the oak canopy would remain or be expanded, understory grass cover would remain but would be mowed once per year (possibly more often in some areas), and the limited scrub habitat would have flammable species removed, with the remaining scrub thinned. Where wetlands occur in the fuel modification thinning and restricted planting zones, limited thinning, if any, would be anticipated because wetland areas usually exhibit higher soil moisture and subsequently higher fuel moisture. Plants that retain higher fuel moisture throughout the year do not burn as readily as other vegetation communities.

To be consistent with the final fuel modification zone for the TMV Project set forth in the Tejon Mountain Village Environmental Impact Report (Kern County 2009), which was 1,773 acres, the Revised Draft TU MSHCP and this Supplemental Draft EIS have been revised to use the 1,773-acre number throughout. This acreage likely overstates the size of the fuel modification zone that would occur in the TMV Planning Area Open Space, because much of the 200-foot area may actually occur within the development envelope.

While the Draft EIS specifically analyzed the effects of this fuel modification zone for each alternative, the Supplemental Draft EIS has revised the analysis to calculate the development-related fuel modification zone for each revised alternative and to clarify that this effect would be short-term and not permanent. As discussed in Section 4.1, Biological Resources, in Volume I of this Supplemental Draft EIS, the fuel modification activities, including those in the 1,773-acre fuel modification zone, would not significantly or permanently degrade existing habitat:

In general, it is anticipated that fuel modification effects would be roughly proportional to the distribution of vegetation communities within Covered Lands, with about 98% occurring within special-status upland communities, about 1% in riparian/wetland communities, and about 1% within agricultural lands.

For example, fuel modification on 1,773 acres would not be expected to substantially degrade live-in habitat for Covered Species in oak savannah, grassland, scrub, and riparian habitats and may in fact provide benefits to the Covered Species. Effects of removing flashy fuels, such as nonnative grasslands, on Covered Species would range from minimal to beneficial, as discussed below.

With respect to birds, such fuel modification may benefit raptors, such as American peregrine falcon, burrowing owl, and golden eagle, which may more easily access prey in these areas due to the removal of brush and other dense vegetation. In addition, they may hunt more effectively because prey would be more visible, and prey such as gophers and California ground squirrels are often more attracted to recently cut and mowed areas because of the greater availability of seeds and other food items. Voles are a prey species for white-tailed kite, and while voles tend to prefer dense grassland habitat, mowing could make other prey species for white-tailed kite available, such as

gophers and ground squirrels. Bald eagles forage over Castac Lake, an area that would not be affected by fuel modification, and roost in trees, also not subject to fuel modification. Other bird species use riparian areas and would not be substantially affected because, as noted above, there would be little or no change in habitat values in riparian areas as a result of fuel modification. Riparian/woodland birds such as least Bell's vireo, purple martin, willow flycatcher, western yellow-billed cuckoo, and yellow warbler would not be affected by fuel modification activities because most of their life history is within riparian/woodland areas. Tricolored blackbirds may benefit from greater accessibility to food because grassland habitat would open up and make seeds and insect prey such as grasshoppers more available. While mowing and selective thinning would likely have some beneficial effects on habitat quality for several species, there is a potential for some adverse impacts from disturbance of nest/burrows; therefore, surveys prior to fuel modification activities would be required to address this issue.

In addition, proposed fuel modification activities would not adversely affect the suitability of already open habitat areas for California condors. Because of their large size, condors generally prefer to forage in open habitat areas to minimize potential damage or injury from approaching animal carcasses in shrub- or tree-covered areas. Fuel modification activities that involve the removal of vegetation cover would not adversely affect foraging habitat for condors, although development-related deterrents, such as noise recreational activity, and pets, would likely limit condor foraging in fuel modification areas. Furthermore, restrictions on carcass and gut pile disposal in the TMV Planning Area would reduce food availability in fuel modification areas (see Section 2.2.2.5, Adaptive Management, in Volume I of this Supplemental Draft EIS).

With respect to amphibians and reptiles, mowing in grassland areas and selective thinning in scrub areas may also open up habitat and allow for occupation by harvester ants, which are the main prey for coast horned lizard. Western spadefoot, Tehachapi slender salamander, yellow-blotched salamander, and two-striped garter snake fulfill many of their life history requirements in riparian areas that would not be affected by fuel modification. These species may benefit from removal of dense grasses by occasional mowing and selective thinning of dead shrubs in adjacent upland areas because it may be easier for them to move, forage, and locate prey; dense nonnative grasslands tend to preclude small terrestrial species such as toads and salamanders because locomotion and prey detection become difficult. However, while mowing and selective thinning would likely have some beneficial effects on habitat quality for several species, there is a potential for some mortality or injury of individuals from mowing and other thinning tools, and disturbance of burrows; therefore, surveys prior to fuel modification activities would be required to address this issue.

With respect to insects and mammals, elderberry plants would not be removed for fuel modification, and the valley elderberry longhorn beetle would not be affected. Similarly, riparian habitat would not be affected by fuel modification activities, so no effect on the ringtail is anticipated. The Tehachapi pocket mouse could benefit from thinning of dense grasses and some shrubs as long as native shrubs are still present, as this species forages on open ground and beneath shrubs (Zeiner et al. 1990).

Finally, covered plant species are not expected to be affected by fuel modification activities. Surveys prior to grading would be required to avoid effects on covered plant species during fuel modification activities associated with the residential and commercial development. In addition, none of the covered plant species are on the lists of species that would need to be removed or thinned from fuel modification areas, as outlined in the fire protection plan (Appendix F of the TU MSHCP).

With respect to the commenter's concern regarding the edge-to-area ratio of the TMV Project, it is likely that the fuel modification zone would largely fall into the development envelope, rather than the open space. Nevertheless, the full 1,773-acre area was considered in the effects analysis presented in this Supplemental Draft EIS. As discussed above, effects on Covered Species from fuel management activities under the Proposed TU MSHCP Alternative are not anticipated to be

significant, may in many cases be beneficial, and where potentially adverse, would be reduced through minimization measures.

## 7.2.3 Effects on Landscape Wildlife Habitat Connectivity and Movement

Several commenters stated that wildlife connectivity in the Tehachapi Mountains is important for terrestrial species and the California condor, and stated concerns that development on portions of the Covered Lands would reduce wildlife habitat connectivity between the Coast Range, Transverse Range, and southern Sierra Nevada, including across the Covered Lands themselves and across I-5. A commenter stated that the Draft EIS does not discuss how four specific I-5 wildlife crossings west of the TMV Planning Area would be affected and whether mitigation measures would maintain access to these locations. This commenter also questioned what the wildlife movement constraints would be going north and south as a result of the combined effects of the proposed TMV Project and the proposed developments to the north and south that are not part of the Covered Lands.

The Draft EIS provided a description of documented wildlife movement patterns on the Covered Lands in Section 3.1.5, Wildlife Habitat Linkages and Corridors. Wildlife movement on the Covered Lands is currently unrestricted, and there are no major barriers to movement and dispersal of wildlife and plants. Within the Covered Lands, native wildlife, including high-mobility species such as black bear, mountain lion, mule deer, bobcat, and coyote, have been observed at several locations, including around existing developed areas such as the cluster of buildings and facilities at the Tejon Ranchcorp (TRC) headquarters and adjacent school. The California condor frequently flies over the Covered Lands, which provide important foraging and roosting habitat for the species.

This response addresses issues related to habitat connectivity in two separate parts: the relationship of the Covered Lands and proposed development to terrestrial wildlife access to I-5 crossings, and terrestrial wildlife movement within and across Covered Lands. Habitat connectivity for the California condor is addressed in Section 4.1, Biological Resources, in Volume I of this Supplemental Draft EIS, and Section 7.2.4, Condor Habitat Connectivity, of TU MSHCP and Volume I. Master Response 1G, California Condor Overflight Habitat Connectivity, addresses habitat connectivity for the California condor in additional detail.

### 7.2.3.1 Terrestrial Movement through I-5 Crossings

Although wildlife can freely move across the Covered Lands, I-5 and associated highway fences are potential barriers to wildlife movement and dispersal west of the Covered Lands. In order to understand current patterns of wildlife movement related to I-5, TRC conducted a wildlife movement study between 2002 and 2007 using motion-sensitive cameras positioned at 14 potential I-5 wildlife crossing points, including bridges and culverts, located between the I-5/California Aqueduct in the north to approximately the junction of I-5 and State Highway 138 to the south (Figure 3.1-3 in Volume I of this Supplement Draft EIS). The full results of the study are presented in the Biological Resources Technical Report for the TMV Project (Dudek 2009), and summarized in Section 3.1, Biological Resources, in Volume I of this Supplemental Draft EIS. Specifically, Table 3.1-3 in Section 3.1, Biological Resources, in Volume I of this Supplemental Draft EIS summarizes the results of the camera study. Generally, the amount of wildlife photographed at the northern crossing points was greater than the amount photographed at southern crossing points, with the Grapevine Group (the GV locations on Figure 3.1-3) accounting for approximately 65% of all terrestrial species photographed in the study. Overall, the camera study data indicate that activity by larger mammals (i.e., mule deer, bobcat, and coyote) was concentrated at the Castac Lake Group (the TL locations on Figure 3.1-3) and the Grapevine Group (GV-RC4, -RC5, and -RC6). Coyotes and bobcats, but no mule deer, were documented at the Gorman Group (Table 3.1-3). In particular, the data for bobcats and

coyotes from the Grapevine Group GV-RC4 and GV-RC5 strongly indicate that these species move across I-5 via existing culverts. Additional visual surveys of wildlife activity (e.g., tracks, scat) along trails leading from nine I-5 culverts that showed significant evidence of movement in the camera study found evidence of mule deer, bobcat, and coyote moving to and from the I-5 culverts. These survey data indicate movement by large and small mammals in areas in and adjacent to the Covered Lands and also demonstrate that I-5 is not an impermeable barrier to east-west terrestrial wildlife movement under existing conditions. Most of the wildlife movement is occurring at the more northerly underpasses and culverts in the Tehachapi Uplands. Furthermore, large and small mammals are traversing steep and rugged landscapes such as the north face of Grapevine Peak. Movement across these areas allows direct access from the Covered Lands to the Wind Wolves Preserve and Los Padres National Forest west of I-5. One species known to occur on Covered Lands but that was not detected during the camera study is the mountain lion. However, this species has been documented in other studies to use fairly constrained crossings under roadways (Beier 1995, p. 234; Foster and Humphrey 1995, p. 99), and there is no reason to expect that mountain lions are precluded from crossing I-5 using these culverts.

Section 4.1.3.3, Wildlife Movement and Connectivity, in Volume 1 of this Supplemental Draft EIS analyzes the potential effects of the Proposed TU MSHCP Alternative on wildlife movement in the Covered Lands as related to access to the I-5 crossings. As shown in Figure 2-7 in Volume 1 of this Supplemental Draft EIS, commercial and residential development would be limited to the western portion of the Covered Lands, with the commercial and resort residential development clustered around Castac Lake, and the low-density mountain residential development located to the north and west. The combined 93,522-acre Established Open Space Areas and 12,795-acre Existing Conservation Easement Areas would remain unconstrained for wildlife movement. The TMV Planning Area Open Space would be preserved adjacent to and within the low-density mountain residential development, as shown in Figure 2-7 of this Supplemental Draft EIS. More than 94% of the TMV Planning Area Open Space is generally composed of contiguous habitat blocks greater than 200 acres that would be suitable for use and movement by wildlife. The open space established under the Proposed TU MSHCP Alternative in the western portion of the Covered Lands would provide a substantial unconstrained habitat linkage within and north of the TMV Planning Area to convey east-west wildlife movement. Along the northern boundary of the Covered Lands, the open space habitat linkage would be approximately 1 to 2 miles wide and would consist mostly of woodland and savannah habitats. This linkage would provide direct wildlife access to the GV-RC6 undercrossing of I-5 located west of this linkage (where 97 deer photographs were documented). Retaining this area for wildlife to continue to move to and from the existing I-5 culverts would allow them to move between the Covered Lands east of I-5 and the Wind Wolves Preserve and Los Padres National Forest essentially as they do currently.

A commenter questioned how the remaining four crossings west of the TMV Planning Area and south of GV-RC6 would be affected. These crossings are identified on Figure 3.1-3 in this Supplemental Draft EIS as TL-RC1, TL-RC2, TL-RC3, and TL-RC-4 and are referred to as the Castac Lake Group crossings.

Proposed land uses at TL-RC1 and TL-RC2 west of I-5 are commercial and residential development associated with the Lebec/Existing Headquarters Area (Figure 2-7 in Volume 1 of this Supplemental Draft EIS). Land east of I-5 at these crossings would be in designated open space. As indicated in Table 3.1-3 in Section 3.1, Biological Resources, of the Supplemental Draft EIS, these crossings are frequently used by deer. Wildlife use at these crossings (Castac Lake Group) likely would be constrained in the future by development west of I-5. However, species that are relatively tolerant of development are expected to continue to use the crossings at TL-RC3 and TL-RC4 following development west of I-5. For example, existing land uses around TL-RC4 already include residential and commercial strip development (e.g., the Flying J Truckstop), arterial roads, I-5 rest areas, and associated nighttime lighting that are not conducive to wildlife movement. Nevertheless, this

crossing is currently used by urban-tolerant species such as coyotes, mule deer, and raccoons, and this use is expected to continue. The Grapevine Creek crossing at TL-RC3 would connect directly to open space with more than 500 feet of open space buffer between the undercrossing and potential future development areas and similarly would provide for continued opportunities for movement by urban-tolerant wildlife. Furthermore, both Cuddy Creek west of Castac Lake associated with TL-RC4 and Grapevine Creek to the north of Castac Lake associated with TL-RC3 would have setback areas along the creeks and the reclaimed water ponds south of Cuddy Creek that would provide buffer areas for wildlife moving along the creeks.

While there would be some constraints to wildlife movement at the Castac Lake Group crossings, it is important to note that access to these crossings is not crucial for maintaining wildlife movement across I-5. In general, a high frequency or number of individuals crossing between core habitat areas is not necessary to promote genetic exchange and maintain healthy populations. Because there would be no impairment of the crossings at the Grapevine Group crossings, there would be adequate movement to maintain healthy wildlife populations east and west of I-5. Additionally, none of the Covered Species associated with the Proposed TU MSHCP Alternative depend on the Castac Lake Group crossings.

Large species that are much more likely to avoid more urban settings, such as mountain lion and black bear, would be expected to move across the unconstrained northern portion of the Covered Lands and use the existing undercrossing of I-5 at GV-RC6. In addition, movement to the northwest and across I-5 at the GV-RC4 and GV-RC5 crossings would not be precluded by the Proposed TU MSHCP Alternative. Figure 2-7 in Volume 1 of this Supplemental Draft EIS illustrates the location of contiguous lands in the northern portion of the TMV Planning Area that are anticipated to facilitate wildlife movement.

### **7.2.3.2 Terrestrial Movement Across the Covered Lands**

With regard to terrestrial movement across the Covered Lands, open space in the Covered Lands would provide a large, unfragmented habitat area that would support wildlife use and movement for the species currently present on site, including species that use large land areas such as mountain lion, black bear, and mule deer. Under the Proposed TU MSHCP Alternative, 93,522 acres would be preserved in Established Open Space, 23,001 acres would be preserved in TMV Planning Area Open Space, and 12,795 acres would be preserved in Existing Conservation Easement Areas, resulting in preservation of 91% of the Covered Lands. As described above, the Established Open Space and Existing Conservation Easement Areas would be unconstrained for wildlife movement. The TMV Planning Area Open Space would be preserved adjacent to and within the low-density mountain residential development, as shown in Figure 2-7 in Volume I of this Supplemental Draft EIS. As noted above, more than 94% of the TMV Planning Area Open Space would be generally composed of contiguous habitat blocks greater than 200 acres, and suitable for movement by wildlife.

In addition, the Ranchwide Agreement, which would conserve lands within TRC ownership outside of and adjacent to the Covered Lands, would provide additional open space areas north of the western portion of the Covered Lands, where the habitat linkage width is the most narrow.

The wildlife linkage would include a contiguous, fully avoided block of land within the Tehachapi Uplands landscape, including lands protected within the Covered Lands and lands protected by the Ranchwide Agreement. The avoided and preserved areas would include a contiguous 4- to 8-mile-wide block of land that extends for approximately 9 miles from west of I-5 to areas east of the Tejon Ranch ownership and would include more than 100,000 acres of preserved upland habitat. The western portion of the habitat linkage would connect directly with the northern I-5 underpasses and culverts (the Grapevine Group) documented to be most heavily used in the camera study.

North and south wildlife movement also would not be precluded by the Proposed TU MSHCP Alternative. Open space in the eastern two-thirds of the Covered Lands would allow unimpeded movement to and from the northeast along the Tehachapi Uplands, as well as movement to the northwest. Movement directly to the north and northwest, east of I-5, however, would continue to be limited. The northern portion of the Covered Lands is bounded by the San Joaquin Valley and agricultural uses, which generally lack habitat for many of the species expected to use the Tehachapi Uplands for movement, such as mountain lion, mule deer, and black bear (Figure 3.7-1 in Volume 1 of this Supplemental Draft EIS). As described above, camera stations at GV-RC4 and GV-RC5 had heavy use by mule deer, coyotes, and bobcats (Table 3.1-3 in Volume 1 of this Supplemental Draft EIS). This use would be expected to continue. These crossings are located where the north and southbound lanes of I-5 are separated, as depicted in Figure 3.1-3 in Volume 1 of this Supplemental Draft EIS. GV-RC4 and GV-RC5 are included in the northern portion of designated open space under the Ranchwide Agreement. North-south wildlife movement across State Route (SR) 138 and I-5 south of SR 138 was not studied as part of the proposed action because these locations are outside of the Covered Lands, represent existing conditions and would remain unchanged by the proposed action, but it is expected any undercrossings similar to those west of the TMV Planning Area would be used.

In addition to the proposed development on the Covered Lands, growth within the mountain communities is anticipated to occur in the Tehachapi Uplands region, including Frazier Park Estates and Gorman Post Ranch. Frazier Park Estates would include large blocks of contiguous open space adjacent to other public lands with open space, including the Los Padres National Forest on the western edge of the Frazier Park Estates project (Kern County Planning Department 2009, pp. 4.3-21, 4.3-22, 4.3-49, 4.3-50). The Gorman Ranch project would provide 2,000 acres of open space including wildlife corridors greater than 1 mile wide between the development footprint and the southern border of the TMV Planning Area (Harmsworth 2006, pp. 95 to 99 and 133 to 137). Additionally, with respect to the valley and foothill development, while Centennial is not located in the Tehachapi Uplands, the Centennial project would include preservation of roughly 8,667 acres of natural lands located between the developed portions of Centennial and adjoining open space, where regional movement is expected to occur, including the more mountainous areas to the northwest and southeast of the project's development areas (BonTerra 2008, pp. 51 to 55 and 132 to 139). Similarly, Grapevine, which would be primarily located in the San Joaquin Valley, would include preservation of roughly 3,300 acres of open space located between the developed portions of Grapevine and open space adjacent to the TMV Planning Area. This includes the base of the Tehachapi foothills connecting to the Tehachapi Mountains to the south, and along drainages, resulting in an east-west landscape linkage approximately 1 to 2 miles wide (1 mile at its narrowest point) across the northern boundary of the TMV Planning Area. The Tejon Ranch Commerce Center project would include preservation in the western portion of the site, which is not linked to wildlife connectivity areas in the Tehachapi Uplands. However, this project is located in the San Joaquin Valley and is not considered to be an important part of wildlife connectivity in the Tehachapi Uplands (Kern County 2002, p. 4.2-18).

Implementation of the Proposed TU MSHCP Alternative and Ranchwide Agreement, together with other projects in the Tehachapi Uplands region (Frazier Park Estates and Gorman Post Ranch) and other projects in the valley regions (Grapevine, Centennial, and Tejon Industrial Complex) would result in a combined total of approximately 143,630 acres of permanent open space, preserving large, contiguous blocks of habitat for wildlife movement in both the Tehachapi Uplands landscape and the valley and foothills areas outside of the Covered Lands. Moreover, substantial habitat linkages would be maintained to provide connections to the Los Padres National Forest and Wind Wolves Preserve to the west, the Angeles National Forest to the south, and the Sequoia National Forest to the north.

## 7.2.4 Condor Habitat Connectivity

A commenter indicated that the Tehachapi Mountains are a critical landscape linkage for the California condor, connecting the Coast Range and Transverse Range with the southern Sierra Nevada. The commenter asserted that allowing development on key ridgelines would reduce the effectiveness of this landscape connection and functionally cut off the southern Sierra Nevada and critical habitat from the range of the expanding condor population. Another commenter suggested that the California condor would be subject to an arbitrary design for rerouting condor flight away from the development. This commenter asserted that because the Tejon region has been home to the condor for millennia, the species would not be able to change its flight patterns to accommodate the new development.

The Service agrees that Tejon Ranch and the Tehachapi Mountains as a whole serve as an important linkage between historic condor habitat areas in the southern Sierra Nevada to the Sespe Wilderness Area and Coast Range habitats to the west of the ranch. However, implementation of the Proposed TU MSHCP Alternative, including development in the TMV Planning Area, would not preclude condors from continuing to fly over Tejon Ranch to access areas farther to the east or west of the ranch.

With respect to urbanization and potential effects on condor movement patterns, it is important to note that the free-flying condors in the southern California subpopulation have been recorded flying over mountain communities in the Tehachapi Mountains that have rural residential densities similar to or greater than that proposed for the TMV Project, including Pine Mountain Club and Frazier Park, over I-5, and even developed portions of Santa Clarita and the northern San Fernando Valley. Indeed, according to global positioning system (GPS) tracking data, as well as on data presented in the U.S. Geological Survey (USGS) condor study (Johnson et al. 2010; Appendix I of this Supplemental Draft EIS), condors regularly fly over regional mountain communities such as Frazier Park, Lebec, Pine Mountain Club, and I-5 to access Hopper and Bitter Creek National Wildlife Refuges, the Wind Wolves Preserve, and Tejon Ranch. Condors also regularly forage in and around the communities of Stallion Springs and Bear Valley Springs to the east and northeast of the ranch. Thus, development proposed for the Covered Lands is not anticipated to interfere with California condor flyover routes. With regard to the comment about development of key ridgelines, the initial Development Envelope associated with the TMV Planning Area was substantially modified, after discussions between the Service and TRC, to move development off of the northernmost higher-elevation (“key”) ridges and slopes to preserve high-quality California condor foraging and flyover habitat. These areas include Grapevine Peak and northern Grapevine Ridge, the northern portions of Middle, Silver, Squirrel, and Lolas Ridges, the area encompassing the junction of Tunis and Geghus Ridges, and the easternmost 3-mile reach of Geghus Ridge. This resulted in an almost 2-mile-wide (at its smallest width) corridor with a contiguous block of high-quality condor foraging and roosting habitat that extends from the western ranch boundary near Grapevine Peak eastward throughout the upland portions of the ranch, inclusive of the east-west condor flight corridor between Grapevine Peak and Tunis-Winters Ridge area (Appendix C of the TU MSHCP).

In summary, while Tejon Ranch is an important linkage between historic condor habitat areas in the southern Sierra Nevada to the Sespe Wilderness Area and Coast Range habitat to the east of the ranch, the Service does not anticipate that implementation of the TU MSHCP, including development of the TMV Project, would preclude condors from continuing to fly over Tejon Ranch to reach other habitat areas within their range east and west of the ranch. See Master Response 1G, California Condor Overflight Habitat Connectivity, for a more detailed discussion of this issue.

## 7.2.5 Movement Around Castac Lake

A commenter suggested that movement in the area around Castac Lake would be constrained by Commercial and Residential Development Activities proposed under the TU MSHCP. The commenter indicated that avoidance and mitigation measures are not discussed for the species that could be prevented from accessing Castac Lake due to the TMV Project.

As summarized above, the linkages and corridors analysis in Section 4.1.3.3, Wildlife Movement and Connectivity, of this Supplemental Draft EIS shows that wildlife would continue to have opportunities to move across the Covered Lands and be able to access important crossing locations along I-5 after development. The EIS also concludes that wildlife movement in and around the Castac Lake area would be constrained due to the higher density “urban-type and residential development” of this area, and thus is consistent with the comment regarding this constraint. However, while constrained, connectivity in the area will continue to exist as discussed below. Additionally, because wildlife movement across the northern portion of the Covered Lands and access to existing crossings of I-5 (that were the most frequently visited during the camera study) would be maintained, constraining wildlife access to the Castac Lake area is not considered a substantial adverse effect on regional wildlife movement.

Moreover, existing land uses in the vicinity of the Castac Lake Group crossing (TL-RC4) west of I-5 and southwest of Castac Lake are not particularly conducive to wildlife movement. These land uses include residential and commercial strip development (e.g., the Flying J Truckstop), arterial roads, I-5 rest areas, and associated nighttime lighting. However, wildlife species that are less sensitive to urban settings, such as coyotes, mule deer, and raccoons, use this crossing. As shown in Table 3.1-3 of this Supplemental Draft EIS, most of the use of the Castac Lake Group crossings was by mule deer and raccoons, accounting for 98% of the mammals photographed at these cameras. Neither of these species is particularly sensitive to the existing urban development west of I-5 (e.g., compared to bobcat), and both species are expected to continue to use these crossings post-development. Even with development in the TMV Planning Area, deer, raccoons, and other wildlife that are less sensitive to urban settings would have ample opportunity to move along Cuddy Creek to the west and Grapevine Creek to the north, given the setback areas along the creeks and the reclaimed water ponds south of Cuddy Creek. Large species that are much more likely to avoid such urban settings, such as mountain lion and black bear, would be expected to move across the unconstrained northern portion of the Covered Lands and use the existing undercrossing of I-5. Castac Lake is not a particularly important resource for other terrestrial species in the area and no non-avian special-status species were observed using the lake (e.g., focused surveys for western pond turtle were negative). Other species that may use Castac Lake post-development are birds that would not be constrained in accessing the lake (see Master Response 3, Raptors, regarding use of Castac Lake by bald eagles).