Chapter 4
Environmental Consequences

4.0 Introduction

This chapter describes the environmental consequences, including the cumulative effects, for each of the alternatives evaluated in this Supplemental Draft EIS. Each section includes a description of the criteria and methods used to characterize the direct, indirect, and cumulative effects of the alternatives for a given resource area, an analysis of the alternatives and their effects and mitigation measures, and a comparison of the effects of the alternatives relative to the No Action Alternative. Similar to Chapter 3, Affected Environment, the effects analysis is based on resource-specific study areas, as described in each resource section.

4.0.1 Covered Lands and Study Area

As described in Section 3.0, Covered Lands and Study Area, the area where activities associated with the alternatives considered in this EIS would be implemented are referred to as the Covered Lands. The Covered Lands encompass 141,886 acres of the 270,365-acre Tejon Ranch (ranch) near Bakersfield, California (Figure 1-1). The study area, as the term is used in this chapter, represents the area considered in characterizing the direct and indirect environmental consequences of each alternative, and varies by resource topic. In some cases, the study area is the same as the Covered Lands. For other resource areas, the study area extends beyond the boundary of the Covered Lands to account for potential effects of the Covered Activities on resources outside of the Covered Lands. For example, the study area for the air quality section encompasses the entire airshed where the proposed action would occur. The study area for each resource is defined in the introduction to each section.

Section 4.0.4, Methods for Assessing Cumulative Effects, describes the area used to assess cumulative effects.

4.0.2 Alternatives Evaluated

As described in Chapter 2, Proposed TU MSHCP and Alternatives, five alternatives, including the No Action Alternative, are evaluated in detail in this Supplemental Draft EIS. The alternatives reflect a range of species conservation management scenarios and development scenarios. The components of each of the alternatives are summarized below. Table 2-1 provides a summary of common terms associated with these alternatives, and Table 2-6 presents a summary of the types of development and land use proposed under each alternative.

4.0.2.1 No Action Alternative

Under the No Action Alternative, no development would occur, and no action, including issuance of an incidental take permit (ITP) to Tejon Ranchcorp (TRC) for incidental take coverage of the Covered Species included in the Tehachapi Uplands Multiple Species Habitat Conservation Plan (TU MSHCP), would be taken by the U.S. Fish and Wildlife Service (Service). No commercial or residential development would occur under the No Action Alternative, but Existing Ranch Uses would continue at current levels and to avoid take of federally listed species. The Ranchwide Agreement would remain in effect, the TMV Project and other future commercial or residential development allowed

in the Covered Lands under the Ranchwide Agreement would not occur, and ranch uses would continue at current levels into the future.

The conditions of approval for the TMV Project by Kern County identify certain actions to be undertaken by the Service, including directing the operation of a feeding station and capture of California condors that have become habituated. The No Action Alternative does not assume future action on the part of the Service, including future action identified as a condition of Kern County's approval of the TMV Project. It is assumed the Service would continue to provide technical assistance to TRC regarding the California condor.

4.0.2.2 Proposed TU MSHCP Alternative

Under the Proposed TU MSHCP Alternative, a 50-year ITP would be issued for incidental take of 27 Covered Species resulting from implementation of the Covered Activities. Covered Activities would include Commercial and Residential Development Activities and Plan-Wide Activities (i.e., ongoing and foreseeable future ranch uses).

Development would include construction of up to 3,632 dwelling units and 1,804,390 square feet of commercial development in a 5,533-acre Disturbance Area (and in a Development Envelope of 8,817 acres). This development would occur in the TMV Planning Area and the Lebec/Existing Headquarters Area, as defined in Table 2-1. Under this alternative, the population would be expected to increase by 11,441 people.

Plan-Wide Activities would include the Existing Ranch Uses set forth in the No Action Alternative and some additional uses, including construction of development-serving infrastructure, as limited by the terms of the Ranchwide Agreement and applicable conservation easement restrictions. Plan-Wide Activities would occur in open space areas, as described below, with permanent land disturbance from Plan-Wide Activities assumed to be 200 acres, as limited by the TU MSHCP.

The Ranchwide Agreement would be implemented on the Covered Lands. Approximately 116,523 acres (82%) of the Covered Lands, including all of the Condor Study Area, would be preserved as TU MSHCP Mitigation Lands. Additionally, 12,795 acres of Existing Conservation Easement Areas conserved through the Ranchwide Agreement would be permanently preserved and managed consistent with the terms of the applicable conservation easement. In total, approximately 129,318 (91%) of the Covered Lands would be permanently preserved as open space under this alternative.

4.0.2.3 Condor Only HCP Alternative

Under this alternative, a 50-year ITP would be issued for incidental take of only the California condor. Commercial and Residential Development Activities, Plan-Wide Activities, and open space preservation would be the same as for the Proposed TU MSHCP Alternative, and the Ranchwide Agreement would be implemented.

This alternative would include conservation measures for the California condor, but not for any other Covered Species, except those measures required of the TMV Project per the Ranchwide Agreement and TMV Project Approvals. Take of other federally listed species would be avoided under this alternative through project-specific Endangered Species Act (ESA) review and approvals, (Section 7 or Section 10, as needed) and by siting development in a manner that avoids occurrences of the species.

4.0.2.4 CCH Avoidance MSHCP Alternative

Under this alternative, a 50-year ITP would be issued for incidental take of 27 Covered Species resulting from implementation of the Covered Activities (Commercial and Residential Development

Activities and Plan-Wide Activities). No commercial or residential development would occur in critical habitat for the California condor. The Ranchwide Agreement would be implemented, and development boundaries outside critical habitat would conform to the development setbacks and general boundaries provided in that agreement. This alternative would not include the TMV Project, as that project extends into California condor critical habitat, but would follow the Kern County General Plan land use designations and the Ranchwide Agreement development boundary and cluster and concentrate most commercial and residential development in the southwestern portion of the Covered Lands, outside of California condor critical habitat. Infrastructure inside California condor critical habitat necessary to serve such development (e.g., access and water/sewer) would be included under this alternative.

Development would allow for 3,161 dwelling units and 1,804,390 square feet of commercial development to be built in a 4,496-acre Disturbance Area encompassing 4,061 acres in the TMV Specific Plan Area, 170 acres in West of Freeway, and 265 acres in Lebec/Existing Headquarters Area. No development would occur in Oso Canyon. Under this alternative, the population would be anticipated to increase by 9,957 people.

Plan-Wide Activities would occur in open space to the same extent as under the Proposed TU MSHCP Alternative. Permanently preserved open space would consist of those areas subject to conservation requirements under the Ranchwide Agreement (93,522 acres in Established Open Space and 12,795 acres in Existing Conservation Easement Areas) and an additional 24,022 acres of TMV Planning Area Open Space. In total, approximately 130,339 acres (92%) of the Covered Lands would be permanently preserved as open space under this alternative.

4.0.2.5 Kern County General Plan Buildout Alternative

Under this alternative, development of the Covered Lands would proceed in accordance with the Kern County General Plan on a project-by-project basis, after approval from Kern County. Any incidental take authorized by the Service under the ESA Section 7 or 10 processes would also be provided on a project-by-project basis. Development would include 7,238 dwelling units and 2,144,594 square feet of commercial development in a 12,142-acre Disturbance Area (14,934 acre Development Envelope), and onsite avoidance and minimization measures for development activities would be implemented. The population would be anticipated to increase by 22,800 people under this alternative.

Existing Ranch Uses, as set forth in the No Action Alternative, would occur, except that Ranchwide Agreement restrictions specific to those uses would not apply. Specifically, the Kern County General Plan Buildout Alternative would not assume continuation of the Ranchwide Agreement, except for the permanent protection of the already recorded conservation easements over the Existing Conservation Easement Areas. Outside of those areas, the remainder of the Covered Lands to be precluded from development pursuant to that agreement would not be bound by the agreement. All other minimization and mitigation necessary to meet ESA requirements would be implemented.

The Kern County General Plan Buildout Alternative would include 34,130 acres of permanently protected open space, including 12,795 acres in Existing Conservation Easement Areas and the 21,335 acres of permanent open space required by the TMV Project Approvals. In addition, 85,262 acres of open space, consisting of those lands in the 8.2, 8.3, 8.5 (minimum 20- and 80-acre parcel size) and 5.7 (minimum 5 gross acres per unit) general plan land use designations, would not be developed with single-family structures, and would be available for use as mitigation lands on a project-by-project basis. In total, approximately 119,392 acres (84%) of the Covered Lands would be available for permanent protection as open space under this alternative.

4.0.3 Methods for Assessing Direct and Indirect Effects

The National Environmental Policy Act (NEPA) requires Federal agencies to consider the direct and indirect effects of their actions (40 Code of Federal Regulations [CFR] 1502.16). Direct effects are caused by the Federal action and occur at the same time and place as the action (40 CFR 1508.8(a)). Indirect effects are those that are "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR 1508.8(b)).

The description of the affected environment in Chapter 3, Affected Environment, serves as the baseline against which direct and indirect effects are assessed for each alternative. Additional details on biological resources are provided in the TU MSHCP and various other technical reports that are appendices to the TU MSHCP. The description of the affected environment also discusses, where relevant, trends in the conditions of resources and environmental stressors. In conducting this analysis, the Service has considered information from the Tejon Mountain Village Environmental Impact Report (TMV EIR)(Kern County 2009) to supplement the understanding of the development-related effects associated with the TMV Project and to further inform the decision-making process.

The level of detail in an analysis of indirect effects is driven by the underlying action before the agency. The Federal action analyzed in this EIS is the approval of the TU MSHCP and the issuance of an ITP for the Covered Species, pursuant to Section 10(a)(1)(B) of the Federal ESA. The proposed Federal action would not approve or entitle any development project, including proposed commercial or residential development in the Covered Lands. As such, the scope of the effects analysis in this EIS is focused principally on the potential effects that issuance of an ITP would have on the Covered Species, and the indirect effects the proposed action would have on other resource areas. Any development that would occur on the Covered Lands or elsewhere would be subject to a separate approval process by Kern County, including an environmental review process pursuant to the California Environmental Quality Act (CEQA). Additional project-specific authorizations, including permits from other Federal, state, regional, or local entities (e.g., U.S. Army Corps of Engineers, Central Valley Regional Water Quality Control Board) would also be required.

Through these planning, review, and entitlement processes, mitigation measures for the direct and indirect effects described in this chapter would be anticipated. With the exception of potential effects on Covered Species (which would be addressed by the Service as part of the ESA Section 10 or Section 7 processes), the implementation of these mitigation measures would be the responsibility of agencies other than the Service. For example, the TMV Project Approvals by Kern County contain detailed mitigation measures and conditions of approval, enforceable by Kern County, to reduce potential effects on each of the resource areas, including measures to reduce construction and operation-related air quality, water quality, visual resources, and transportation effects, among others (Appendix J). Additionally, species-specific conservation measures would be implemented under each of the alternatives to varying degrees (depending on species covered under an alternative), with the exception of the Kern County General Plan Buildout Alternative, where comparable conservation measures for some of the Covered Species would be anticipated as a result of the CEQA, California Endangered Species Act (CESA), or ESA processes (depending on the Federal and state listing status of the species). If the Service issues an ITP to TRC for incidental take of any of the Covered Species under any of the alternatives, the conservation measures specific to that species would be enforceable under the ESA through the ITP and applicable conservation easements. In the NEPA context, therefore, conservation measures are also considered as mitigation. By enforcing such ESA restrictions, the Service would ensure that the NEPA mitigation requirements

are met. These ESA-related conservation measures are discussed, as appropriate, for the individual resource areas.

This Supplemental Draft EIS includes a general analysis of the direct and indirect effects that could result from the proposed action, and assumes that a more thorough analysis of potential environmental effects from commercial and residential development would be considered by Kern County when more detailed project design features have been developed, and when more specific mitigation measures would be identified and imposed.

4.0.4 Methods for Assessing Cumulative Effects

NEPA requires agencies to consider the effects of both cumulative actions and cumulative impacts (40 CFR 1508.25, 1508.7). A cumulative impact is defined as "The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). A cumulative action is one "which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement" (40 CFR 1508.25(a)(2)). Cumulative effects can be beneficial, detrimental, or both.

In a general sense, all effects on affected resources are cumulative; however, it is the goal of this EIS to provide analysis of the important resource issues and to discuss the effects that are of regional or local significance. In this case, cumulative effects are the incremental effects on the environment that would result from the issuance of the ITP under one of the alternatives, when added to other past, present, and reasonably foreseeable future actions in the region, regardless of what agency or person undertakes such actions.

The discussion of cumulative effects includes analysis of both the direct effects attributable to the proposed action, as well as the indirect effects that are not directly attributable to the underlying action but that are facilitated by issuance of the ITP. This includes all commercial and residential development proposed under each of the alternatives, as described in Chapter 2, Proposed TU MSHCP and Alternatives. As noted previously in this section, the proposed Federal action does not approve or entitle any development project or any other commercial or residential development. The cumulative effects analysis attempts to delineate the cause–effect relationships between the underlying Federal action and the subsequent decisions of other Federal, state, regional, and local entities that have direct jurisdiction over the specifics of the development. It is not practical or feasible to analyze all indirect effects related to the possible construction and occupation of all future development. This cumulative analysis therefore considers a reasonable range of the attenuated, project-specific effects that would be subject to review by other agencies at a level of detail sufficient to meet the goals of determining the reasonably foreseeable environmental consequences of each of the alternatives.

The cumulative effects analysis also attempts to address the uncertainty surrounding actions that have not yet been fully developed. Regulations promulgated by the Council on Environmental Quality (CEQ) provide for the inclusion of uncertainties in the EIS analysis, and state that "[w]hen an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking" (40 CFR 1502.22). Consequently, the analysis contained in this EIS includes what could be reasonably anticipated to occur related to construction and long-term occupation of the Covered Lands, as described below.

4.0.4.1 Cumulative Effects Analysis Area

Cumulative effects occur at the landscape or regional level; therefore, for purposes of evaluating the cumulative effects of the alternatives, a regional-scale analysis is focused on growth in the Tehachapi Uplands, generally encompassing the Tehachapi Uplands portion of the Southern California Mountains Ecoregion, and the valley and foothill areas outside the Tehachapi Uplands (Figure 4.0-1). The regional-scale analysis area is referred to as the cumulative effects analysis area in this chapter.

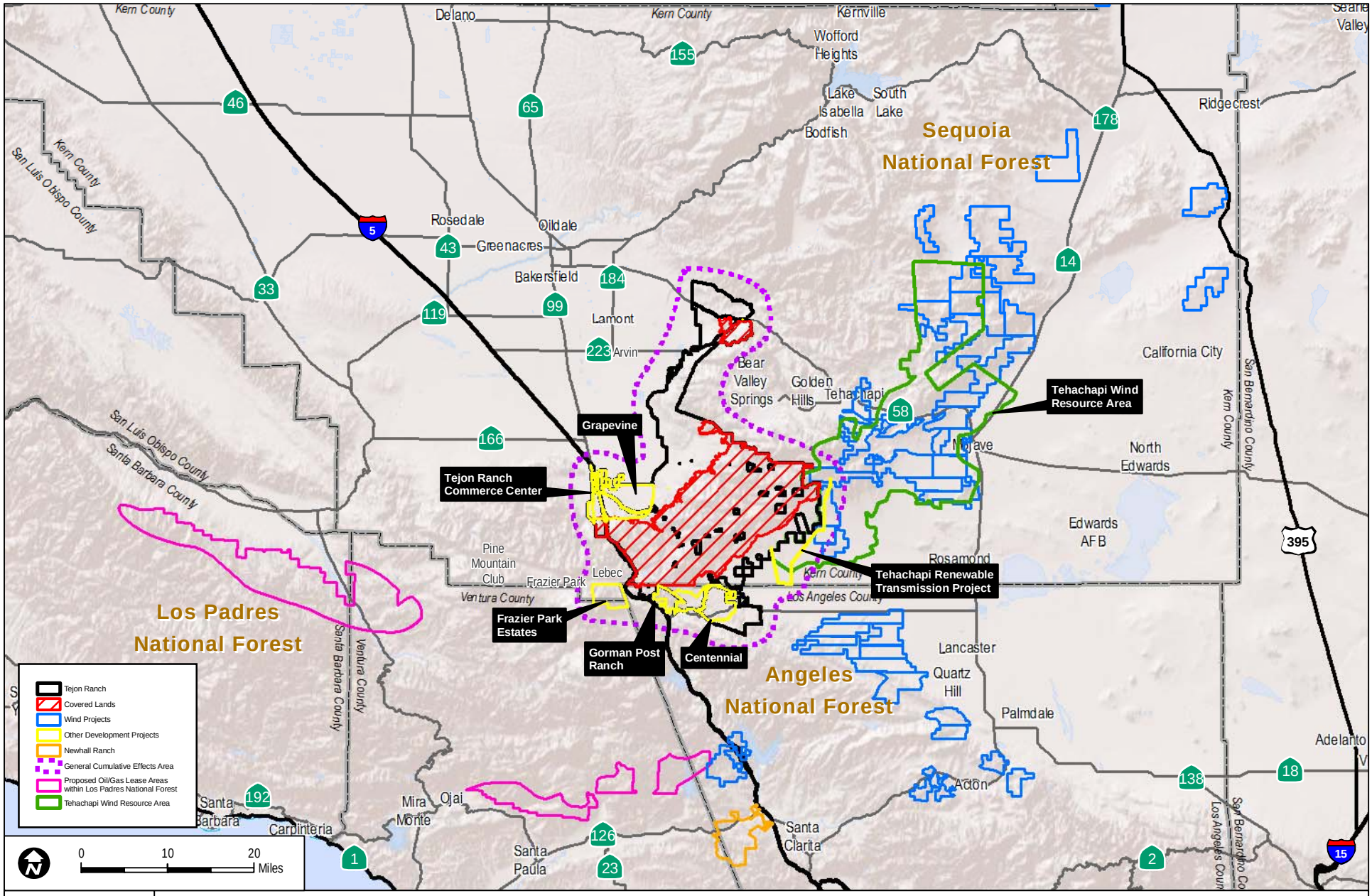
For some resource areas, the cumulative effects analysis area described above has been expanded or modified to adequately address the combined effects of the alternatives and other reasonably foreseeable projects. These resource areas include biological resources, water resources, air quality, geology and soils, visual resources, and transportation. In particular, the cumulative effects analysis area for the California condor has been expanded to represent the range of the California population of condors, including the southern California subpopulation, which generally occurs between San Luis Obispo County and Ventura County, through the Tehachapi Mountains and into the southern Sierra Nevada, and the northern California subpopulation, which generally occurs between the Big Sur Coast in Monterey County and Pinnacles National Monument in San Benito County. The cumulative effects analysis area for the condor has been expanded because the Service anticipates that there will be more intermixing between the northern and southern California subpopulations of the condor over the 50-year ITP term as the species increase in numbers, and condor use of their historic range in California continues to expand. A description of the cumulative effects analysis areas for water resources, air quality, geology and soils, visual resources, and transportation, including the specific methods applied to identify cumulative effects for those resource areas, is provided in their respective sections in Chapter 4.

4.0.4.2 Other Reasonably Foreseeable Actions

The analysis of cumulative effects in this EIS involves identification of past, present, and future land use planning efforts or large-scale projects in the cumulative effects analysis area that could contribute to the cumulative effects of the alternatives (Council on Environmental Quality 1997). In determining present and reasonably foreseeable actions that have the potential, when combined with the effects of the alternatives, to result in cumulative effects, the Service considered other planning efforts and large-scale projects that would be likely to result in effects that could interact cumulatively with those from the alternatives. For this analysis, past actions are assumed to have contributed to the current conditions described in Chapter 3, Affected Environment, and are not specifically listed below.

The following reasonably foreseeable projects are included in the analysis of cumulative effects considered in this chapter, and generally represented on Figure 4.0-1. The amount of detail available for these projects varies, so the assessment in this EIS only presents the degree of specificity supported by available information.

- **Frazier Park Estates.** Frazier Park Estates is an approved project located in Kern County west of the Covered Lands near the Kern County, Los Angeles County, and Ventura County boundary confluence on the west side of I-5. Frazier Park Estates is a planned mixed-use community encompassing approximately 850 acres. Development at Frazier Park Estates would include up to 557 single-family dwelling units, 41 multifamily units, 104,475 square feet of commercial uses, a 7.5-acre sports field, and a 348-acre nature preserve. The Kern County Board of Supervisors approved the project on May 11, 2010.



SOURCE: TRC 2007
CEC 2011

FIGURE 4.0-1

Reasonably Foreseeable Projects Considered in the Supplemental Draft EIS

Supplemental Draft Environmental Impact Statement Tehachapi Uplands Multiple Species Habitat Conservation Plan

- **Gorman Post Ranch.** Gorman Post Ranch is a proposed project of 533 single-family lots on 728 acres in Los Angeles County to the immediate south of the Kern County border. The project site is located on Gorman Post Road between Gorman School Road and State Route (SR) 138, southeast of the town of Gorman. The project also would include a water tank and sewer pump station, six debris basins and 1,875 acres of open space. A notice of preparation under CEQA was issued January 10, 2007 and a scoping meeting was held January 25, 2007. The current status of the project is not known.
- **Centennial.** Centennial is a proposed master-planned community, the northern border of which is approximately 1.5 miles southeast of the southern boundary of the Covered Lands within a portion of Tejon Ranch that is in Los Angeles County. The project is proposed to include residential development (up to 22,998 dwelling units) with approximately 2,020,915 square feet of supporting commercial uses and 12,484,730 square feet of business park uses on about 11,000 acres. The Centennial project entitlement application and environmental review process are in progress in Los Angeles County.
- **Grapevine**. Grapevine is a conceptual development project included in the Ranchwide Agreement that would be built on approximately 15,700 acres north of the Covered Lands, adjacent to I-5 in Kern County. The total developed area would be limited by the terms of the Ranchwide Agreement to no more than 12,400 acres. No plans for development of this area (e.g., potential dwelling units or square footage of commercial/industrial uses) have been specifically proposed (no application is on file), and no biological reports are available for this site; therefore the general development and preservation requirements from the Ranchwide Agreement are noted and this project is discussed qualitatively.
- **Tejon Ranch Commerce Center**. The Tejon Ranch Commerce Center is an approved project within Kern County located approximately 4 miles north of the Covered Lands on the east and west side of I-5. The Tejon Industrial Complex East Specific Plan includes approximately 1,100 acres and is approved and designated for 15 million square feet of industrial development and commercial use. Tejon Industrial Complex West is a 325-acre site with an approved precise development plan located west of I-5 and includes existing master-planned industrial and highway-oriented commercial uses, for a total of 4 million square feet of development.

Several additional reasonably foreseeable projects are also considered in assessing cumulative effects on biological resources and transportation resources. These specific projects are described in their respective resource sections and include wind projects in Kern and Los Angeles Counties, the Tehachapi Renewable Transmission Project, the Newhall Ranch Development Project, an oil lease expansion project in the Los Padres National Forest, the Panoche Valley Solar Farm project (Section 4.1, Biological Resources), and several specific transportation projects in and adjacent to the cumulative effects analysis area (Section 4.8, Transportation). These projects are only considered in these specific sections because their potential cumulative effects on other resource areas are expected to be minor, or the projects are located too far away to contribute to a cumulative effect on the other resource areas.

In addition to the potential development described above, ongoing management activities for several substantial areas of open space and public lands in the vicinity of the Covered Lands are considered in this chapter. Specifically, to the north and east of the Covered Lands, within the Sierra Nevada Ecoregion, are large areas of public (mostly Bureau of Land Management and U.S. Forest Service [i.e., Sequoia National Forest]) land. To the west of I-5 and south of SR 138, comprising the northern extent of the Southern California Mountains Ecoregion, are both private and public open space lands, including the Wind Wolves Preserve to the northwest and U.S. Forest Service lands, and the Los Padres National Forest to the west and the Angeles National Forest to the south. Ongoing management of these lands is considered for resource areas where a cumulative effect (beneficial or adverse) may occur.

The Service notes that the California High-Speed Rail Authority considered several alignments in its Statewide Program EIR/EIS that would have crossed Tejon Ranch. However, because these potential alignments were not carried forward for further analysis in the EIR/EIS (California High Speed Rail Authority 2005, California High-Speed Rail Authority 2010), they are not considered in this cumulative effects analysis. Additionally, the realignment of the Pacific Crest National Scenic Trail onto Tejon Ranch is not considered a reasonably foreseeable project in this chapter. While the route of the trail was first established in the 1970s and included plans to reroute the trail through Tejon Ranch (38 FR 2822), no realignment project has been initiated. Under the Ranchwide Agreement, TRC has committed to negotiate the potential dedication of approximately 10,000 acres to accommodate the rerouting of the Pacific Crest National Scenic Trail across the ranch, including portions of the Covered Lands. However, such dedication has not occurred, no formal project application has been filed, and the location, timing, and certainty of that activity is unclear. Relocation, if and when formally proposed, would require approval by the U.S. Forest Service, which would undertake its own NEPA and ESA review and consultation process.

4.0.4.3 Determination of Scope of Cumulative Effects

In general, the determination of the cumulative effects of a proposed Federal action involves the following elements:

- analysis of the direct and indirect effects of the proposed action,
- determination of which resources, ecosystems, and human communities would be affected by the proposed action,
- consideration of the additive, synergistic and environmental consequences over time of other reasonably foreseeable actions, and
- analysis of the magnitude of effects on these resources from a cumulative effects perspective.

As noted above, direct effects in this EIS are those effects associated with issuance of an ITP, and are generally specific to the Covered Species and their habitat. Indirect effects are those that would be caused by the action and would occur later in time; because the proposed Federal action would not approve or entitle any development project, including proposed commercial or residential development in the Covered Lands, most of the effects on other resources areas (i.e., non-biological resource areas), including cumulative effects, are considered as indirect effects in this EIS. Where identified, the cumulative effects analysis considers the incremental effects of ongoing and proposed activities within the Covered Lands, in combination with similar effects from other reasonably foreseeable projects. The synergistic effects of the overall changes in land use have a potential to lead to cumulative effects.

As noted above, in preparing this analysis, the Service considered the detailed project review reflected in the TMV EIR (Kern County 2009) to gain a better understanding of the potential cumulative effects from construction and operation of the TMV Project, as well as the mitigation required pursuant to the local approval process. Generally speaking, such information confirmed the Service's conclusions regarding the level of review undertaken by the local authorities and the likelihood of mitigation measures being required that would help alleviate cumulative effects. In addition, the Service considered information presented in the EIR to evaluate other potential residential and commercial development projects, outside of the TMV Project, that would be facilitated by the proposed action. Although no specific development plans exist for these developments (i.e., Oso Canyon, Lebec/Existing Ranch Headquarters), the analysis in the TMV EIR of the TMV Project provided an example of the approval process that would be undertaken for other development in the Covered Lands and, in particular, the type of mitigation measures likely to be imposed on such development.

4.0.5 Method for Assessing Relative Magnitude of Effects

As required by NEPA, the magnitude and incremental effects (qualitative or quantitative) of each alternative are disclosed and compared in this EIS. The NEPA regulations require that this evaluation discuss the context and intensity of each potential effect (40 CFR 1508.27). Under NEPA, a significance conclusion is not legally required. However, to provide the public with a meaningful understanding of how potential effects were considered in this EIS, each section in this chapter describes the general criteria (quantitative and/or qualitative) by which the effects are evaluated. These criteria are considered in assessing the relative magnitude of the potential direct, indirect, and cumulative effects of each alternative, including, where appropriate, determining whether the effects are anticipated to be minor (i.e., minimal or hardly noticeable), moderate (i.e., above negligible), or substantial. Although these criteria are subjective, they are intended to provide the public with a reference for comparing the relative effects of the five alternatives considered in this EIS.

While NEPA requires that an EIS describe any adverse environmental effects that cannot be avoided (42 United States Code [U.S.C.] 4332(C)(ii)), such a disclosure does not impose any additional legal obligations on the agency. The summary of potential adverse, substantial environmental effects that cannot be avoided is provided in Section 5.1.1, Substantial Adverse Effects That Cannot Be Avoided.

4.1 Biological Resources

4.1.1 Overview

This section describes the regulatory setting applicable to biological resources and the potential direct, indirect, and cumulative effects of the alternatives on biological resources in the study area, including vegetation communities and the plant and wildlife species proposed for incidental take coverage under the TU MSHCP. The study area for assessing the direct and indirect effects of the alternatives is considered concurrent with the Covered Lands. As described in Section 4.1.7, Cumulative Effects, the cumulative effects analysis area for most biological resources generally encompasses the regional area in which vegetation, elevational, geographical, and climate conditions similar to the study area occur, including the wider Tehachapi Uplands ecoregion, and surrounding valley and foothill areas, where adjacent projects have the potential to affect local breeding and/or migratory populations of the other Covered Species (Figure 4.0-1). The cumulative effects analysis area has been expanded for the California condor to include the range of the California population.

4.1.1.1 Regulatory Setting

Activities proposed in the study area would be required to conform to Federal, state, and local laws and regulations that protect biological resources, as described below.

Federal Authorities and Administering Agencies

Clean Water Act of 1976

The Federal Clean Water Act (CWA) was enacted to protect the nation's waters. Section 404 of the CWA authorizes the Secretary of the Army, acting through the U.S. Army Corps of Engineers (USACE), to issue permits regulating the discharge of dredged or fill materials into “navigable waters at specified disposal sites.” Waters of the United States are broadly defined in the Code of Federal Regulations (CFR), Title 33, Section 328.3, subdivision (a) to include navigable waters, perennial and intermittent streams, lakes, rivers, and ponds, as well as wetlands, marshes, and wet meadows. The CWA extends additional protection to certain rare and/or sensitive aquatic habitats, including wetlands which occur in the study area. Authorization to discharge dredge or fill materials into these areas, or other waters of the United States, would require the applicant to demonstrate the project has been designed to avoid, minimize and mitigate for all unavoidable effects on water of the United States. In addition, the project would be required to demonstrate it would not result in a net loss of wetland functions or values. Section 4.2, Water Resources, describes the potential effects of the proposed action on wetlands. In this analysis, the term *wetlands* refers to wetland habitat generally, which is a broader category than jurisdictional wetlands regulated under the CWA and described in Section 4.2 of this EIS. This section describes potential effects on wetlands as they relate to habitat for plant or wildlife species.

Endangered Species Act of 1973

The Federal Endangered Species Act (ESA) (16 U.S. Code [U.S.C] 1531 *et seq*.) was enacted to provide a means by which endangered and threatened species and the ecosystems on which they depend may be conserved. The ESA and the implementing regulations (50 CFR 17.1 *et seq*.) include provisions for the protection and management of federally listed threatened or endangered plants and animals and their critical habitats. Generally, the U.S. Fish and Wildlife Service (Service) regulates upland and freshwater species, and the National Marine Fisheries Service (NMFS) oversees provisions for protection of anadromous, marine, and estuarine species. Section 4 of the ESA requires the Service and/or NMFS to make determinations on whether any species should be listed as an endangered or threatened species and to designate critical habitat for endangered and threatened species (16 U.S.C. 1533). Section 7 of the ESA requires Federal agencies to consult with the Service and/or NMFS and obtain a biological opinion prior to carrying out any Federal program or agency action that may adversely affect threatened or endangered species. The ESA Section 7 consultation and biological opinion process includes an evaluation of whether a project, including issuance of an incidental take permit (ITP) under ESA Section 10, is likely to jeopardize the continued existence of any endangered or threatened species or result in the "destruction or adverse modification" of critical habitat. If a proposed action would result in take of a listed animal species, ESA Section 7 requires the Service to provide an incidental take statement that includes reasonable and prudent measures and terms and conditions implementing those measures, to minimize the effects of such take. Compliance by the Federal agency and any applicant with the incidental take statement exempts take resulting from the proposed action from the prohibition against take in Section 9 of the ESA (16 U.S.C. 1536, 50 CFR 402 *et seq*.). Section 10 of the ESA provides mechanisms for authorizing otherwise prohibited take through the ITP process under Section 10(a)(1)(B). Incidental take is defined by the ESA as take that is "incidental to, and not the purpose of, the carrying out of otherwise lawful activities."

Under Section 10(a) of the ESA, an ITP can be obtained provided the permit applicant submits to the Service a conservation plan (often termed a habitat conservation plan [HCP], or a multiple species habitat conservation plan [MSHCP] when addressing more than one species) that satisfies Section 10(a)(2)(A) of the ESA, and provided the Service determines that the habitat conservation plan meets the issuance criteria of Section 10(a)(2)(B) of the ESA. Section 10(a)(2)(B) of the ESA requires the following criteria to be met before the Service may issue an ITP. If these criteria are met, the habitat conservation plan and supporting information are statutorily complete, the applicant is qualified to hold a permit under 50 CFR Part 13, and all other applicable legal requirements are fulfilled, the permit must be issued.

- The taking will be incidental.
- The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking.
- The applicant will ensure that adequate funding for the habitat conservation plan and procedures to deal with unforeseen circumstances will be provided.
- The taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild.
- The applicant will ensure that other measures that the Service may require as being necessary or appropriate will be provided.

- The Service has received other assurances as may be required that the habitat conservation plan will be implemented.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703–712) includes provisions for the protection of migratory birds and prohibits the non-permitted take of most migratory birds. Take under the MBTA is defined as to "pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured" (16 U.S.C. 703).

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C 668 – 668d provides specific protection for bald eagles and golden eagles, including a prohibition against take of eagles. Take as defined under the BGEPA, includes: "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" 16 U.S.C668c. To *disturb* a bald and golden eagle means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding or sheltering behavior" (50 CFR 22.3). The BGEPA "is not a habitat management law" (72 *Federal Register* [FR] 31132, June 5, 2007), and does not protect habitat per se, other than eagle nests. Therefore, permit coverage for eagles is not required for activities that modify habitat, unless the activities result in take of an eagle under one of the terms in the definition. The take analysis under the BGEPA is much narrower than that provided under the ESA, as take under the BGEPA is defined to mean harm caused by actions directed at eagles themselves and not harm resulting from modifications to eagle habitat. The Service determined through recent rulemaking that ITPs pursuant to the ESA and its implementing regulations may be lawfully issued to cover *take* under the BGEPA (16 U.S.C. 1531 *et seq*., 50 CFR 17.1 *et seq*.). Therefore, take authorized under an ESA Section 10 ITP does not require an additional permit under the BGEPA.

State Authorities and Administering Agencies

California Endangered Species Act

The California Endangered Species Act (CESA) (California Fish and Game Code, 2050 *et seq*.) is intended to conserve, protect, restore, and enhance any state-protected endangered or threatened species and its habitat and is implemented by the California Department of Fish and Game (CDFG). California Fish and Game Code authorizes the take of endangered, threatened, or candidate species either through a state permit under Section 2081, or through a Federal consistency determination under Section 2080.1, when an applicant has obtained an ITP pursuant to the ESA and that permit is found to be consistent with the CESA.

The California Fish and Game Code lists fully protected species (California Fish and Game Code 3511, 4700, 5056, and 5515). Presently, the take, as defined by state law, of fully protected species

incidental to otherwise lawful development is not permitted under state law. *Take* under state law is defined as actions to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (California Fish and Game Code 86). This definition does not include *harm* or *harass* as included in the Federal ESA definition. Because take (as defined by state law) of fully protected species is prohibited and may not be authorized, all potential take of fully protected species must be avoided.

California Fish and Game Code, Section 1600–1616

Section 1602 of the California Fish and Game Code (Chapter 6, Fish and Wildlife Protection and Conservation) states that it is unlawful for any person to "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake" without first notifying CDFG of that activity. Thereafter, if CDFG determines and informs the entity that the activity will not substantially adversely affect any existing fish or wildlife resources, the entity may commence the activity. If, however, CDFG determines that the activity may substantially adversely affect an existing fish or wildlife resource, before the entity may perform any activity, a Lake or Streambed Alteration Agreement, which includes reasonable measures necessary to protect the resource, may be required from the CDFG to permit the entity to conduct the activities (California Fish and Game Code 1602).

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne) provides regional water quality control boards (RWQCBs) the jurisdiction to regulate discharges to wetlands or waters of the state that may or may not be subject to Federal regulation under the CWA. Similar to the CWA, to obtain a waste discharge requirement from the RWQCB, an applicant must demonstrate a project has been designed to avoid, minimize, and mitigate for unavoidable effects on waters of the state, including wetlands, and that it would not result in a net loss of wetlands.

Native Plant Protection Act of 1977

The Native Plant Protection Act of 1977 (California Fish and Game Code 1900 *et seq*.) authorizes CDFG to designate rare and endangered native plants and provides specific protection measures for state listed species.

Local Authorities and Administering Agencies

Kern County administers the land use requirements for the study area, and prepared the Tejon Mountain Village Environmental Impact Report (TMV EIR) (Kern County 2009a) for the TMV Project (which is one component of the Covered Activities considered in several of the alternatives), in compliance with the California Environmental Quality Act (CEQA). Kern County also administers biological resource protection requirements in the study area, as described below.

Kern County General Plan

The Kern County General Plan includes policies related to threatened and endangered species in the Land Use, Open Space, and Conservation Element, Chapter 1 (Kern County 2009b). The policies outlined in Section 1.10.5 of the Kern County General Plan specify that threatened or endangered plant and wildlife species should be protected in accordance with state and Federal laws, that

discretionary projects should consider the project's effects on biological resources as required by CEQA, and that responsible and trustee wildlife agencies should be consulted and their comments considered when reviewing discretionary projects subject to CEQA.

Kern County Oak Tree Policies

The Kern County General Plan includes policies related to oak resources in the Land Use, Open Space, and Conservation Element, Chapter 1 (Kern County 2009b). The policies specify that large oak trees and oak woodlands shall be protected where possible (and that oak resources be incorporated into project developments) and that oak tree woodlands be conserved for scenic beauty and environmental value. Based on the standards outlined in Section 1.10.10 of the Kern County General Plan, the County regulates oak woodland (defined as having oak tree canopy cover of at least 10%) and/or trees with trunks that are at least 12 inches in diameter as measured at 4.5 feet above natural ground. On properties with at least 10% oak tree canopy cover, Section 1.10.10 states that projects must retain 30% of the canopy cover.

4.1.1.2 Methods

The analysis of direct, indirect, and cumulative effects on biological resources is considered in terms of whether each alternative would substantially affect a species and/or their habitat, including critical habitat. For the California condor and its critical habitat, this evaluation considers the loss of foraging habitat, effects of habituation to human structures and activities, risk of collisions with powerlines and/or artificial structures, and ingestion of microtrash. Unless otherwise specified, the analysis in this EIS is specific to the southern California subpopulation of the California condor. For the other Covered Species, this evaluation considers the loss of modeled habitat, potential effects on known species occurrences in the Covered Lands (where applicable), as well as the overall range and rarity of the species in relation to the potential loss of modeled habitat. Generally, the magnitude of effects identified in this section is also considered in terms of whether an alternative would substantially reduce the number of acres or substantially degrade habitat for special-status species, or unique or sensitive habitats, or if it would exceed a standard or criteria provided by another Federal, state or local statute specific to biological resources, such as the California Fish and Game Code or Federal CWA.

The analytical framework used to evaluate potential biological effects is described below.

Analytical Framework for Biological Effects

For purposes of the analysis of the potential effects of the alternatives on biological resources, the land use types in the study area are divided into the following analytical categories: Open Space (permanently protected areas where Existing Ranch Uses or Plan-Wide Activities would occur), Development Areas (where Commercial and Residential Development Activities would occur), and Other Lands (which consists of Not-A-Part Inholdings [i.e., lands owned by other entities, including the California Department of Water Resources (DWR) and private entities] and areas where existing uses not covered under the TU MSHCP [i.e., mineral extraction and cemetery uses] would occur), as described below. Refer to Appendix B for a more detailed description of land use assumptions considered in this Supplemental Draft EIS.

Open Space

Open space lands consist of permanently protected areas within which no development would occur. Existing Ranch Uses or Plan-Wide Activities would continue to occur in these areas, including ranching, grazing, and other uses, such as repair and maintenance of roads and utilities, film production, ancillary structures, back-country cabins, and private and passive public recreation. As described in Chapter 2, Proposed TU MSHCP and Alternatives, different restrictions would apply to the open space areas under the different alternatives. Permanent ground disturbance associated with Plan-Wide Activities in open space areas would be limited to 200 acres under the Proposed TU MSHCP Alternative, the Condor Only HCP Alternative, and the CCH Avoidance MSHCP Alternative. There would be no specific limitation on ground disturbance in open space in the study area under the No Action Alternative and Kern County General Plan Buildout Alternative. Because the location of permanent disturbance is unknown for all alternatives, potential effects on biological resources from ground disturbance in these areas are analyzed qualitatively.

Development Areas

Commercial and Residential Development Activities would consist of permanent ground disturbance that would occur as a result of future commercial, residential, and related community development in the study area under each alternative. As described in Chapter 2, Proposed TU MSHCP and Alternatives, no commercial or residential development would occur under the No Action Alternative. For the other alternatives, development levels and locations would vary, although the exact location of the development footprint is not known. To assess the potential effects on biological resources from Commercial and Residential Development Activities, each of the alternatives identifies a maximum Disturbance Area that would be associated with development activities. For the Proposed TU MSHCP Alternative, Condor Only HCP Alternative, and Kern County General Plan Buildout Alternative, a larger Development Envelope within which those disturbance activities may occur was also identified. For the CCH Avoidance MSHCP Alternative, the Development Envelope was assumed to be the same as the Disturbance Area, given the nature and location of that alternative, which would not include the TMV Project, and would not allow for flexibility in siting proposed development. The larger Development Envelope is considered a conservative approximation of potential ground-disturbance effects on biological resources given that it is larger than the footprint anticipated to occur as a result of development. Of note, a conservative Development Envelope is used for analysis of effects on biological resources only. The Disturbance Area is used to assess potential effects on other resource areas because these effects are primarily related to density-dependent or population-based effects where use of the larger footprint would unrealistically distort the analysis.

For the Proposed TU MSHCP and Condor Only HCP Alternatives, a Development Envelope of 8,817 acres was used to assess potential effects on biological resources. This Development Envelope is slightly larger than the Development Envelope used by Kern County to assess the effects of the TMV Project, which used a Development Envelope of 7,860 acres in the TMV EIR (Kern County 2009a), because the development areas under consideration in this Supplemental Draft EIS are broader. Specifically, the Development Envelope considered in this Supplemental Draft EIS includes Development Envelopes associated with the TMV Planning Area (i.e., TMV Specific Plan Area [7,860 acres], Oso Canyon [506 acres], and West of Freeway [170 acres]), the Lebec/Existing Headquarters area (265 acres), and the Tejon Castac Water District (TCWD) parcel, including existing facilities, future expansion and maintenance areas (16 acres).

Per the terms of the proposed TU MSHCP, if Oso Canyon development were to proceed in the future, the Disturbance Area in Oso Canyon would need to be "borrowed" from the TMV Specific Plan Area. As such, the actual Disturbance Area under the Proposed TU MSHCP and Condor Only HCP Alternatives would be limited to 5,533 acres, 5,252 acres of which would be located in the TMV Planning Area, 265 acres in the Lebec/Existing Headquarters Area, and 16 acres in the TCWD parcel.

For the CCH Avoidance MSHCP Alternative, the anticipated Disturbance Area was based on the Kern County General Plan land use designations within the boundaries of development allowed under the Ranchwide Agreement (i.e.,Tejon Ranch and outside the boundaries of California condor critical habitat, as described below).

For the Kern County General Plan Buildout Alternative, the land disturbance calculation was based on the Kern County General Plan land use designations without the restrictions of the Ranchwide Agreement or California condor critical habitat. Land disturbance based on Kern County General Plan land use designations was calculated as follows:

- **Density-Based Designations**. Planned communities in locations identified for development under each alternative that have designated development densities in the general plan are assumed for purposes of this Supplemental Draft EIS to result in permanent ground disturbance for the entire acreage in the planned communities (includes Kern County land use designations 3.1, 4.1, 4.3, 5.3, 5.4, 5.7, 5.8, 6.2, and 6.3). (Refer to Figure 2-3 for locations of these designations under the alternative analyzed in this Supplemental Draft EIS.)
- **Rural Use Designations**. Rural large lot development in portions of the study area not identified as open space or as Other Lands are assumed for purposes of this Supplemental Draft EIS to be developed as either 80-acre or 20-acre lots, depending on the Williamson Act status of the lands (areas depicted with Kern County land use designations 8.2, 8.3 and 8.5; see Figure 2-3). No parcelization or lot development plans are available for these areas, so an average permanent land Disturbance Area of 2 acres is assumed for these rural large lots to include construction of residential and ancillary structures, landscaped areas, and driveways. It is also assumed that the Disturbance Areas in each of these large lots would be sited to avoid the take of any federally listed species.

For all alternatives, there are 145 acres of land in rural land use designations in the Lebec/Existing Headquarters Area. These 145 acres are outside the 2-acre Disturbance Area assumed for each lot within these rural land use designations. It is assumed that development would not occur on these 145 acres, but that these areas would not be permanently protected as open space either. For the Kern County General Plan Buildout Alternative, there are an additional 85,262 acres of land in rural land use designations that would not be disturbed. Under the Kern County General Plan Buildout Alternative, these 85,262 acres are considered to be Restricted Open Space. This means that no new development is presumed to occur in these areas. Ongoing uses, such as grazing, would continue in these areas consistent with existing Kern County practices and existing physical constraints, such as available water supply. These areas would be available for use as mitigation lands on a project-by-project basis. Lands set aside for such project-by-project mitigation may be managed for the benefit of Covered Species with appropriate funding and management. For purposes of analysis of effects related to wildlife movement and connectivity, these lands are analyzed in the context of overall reserve design considerations.

Other Lands

Other Lands consist of lands not owned by Tejon Ranchcorp (TRC), existing mineral extraction areas (including the National Cement and La Liebre mineral extraction areas), and the Veterans Cemetery. Other Lands consist of 6,890 acres for the Proposed TU MSHCP, Condor Only HCP, CCH Avoidance MSHCP, and Kern County General Plan Buildout Alternatives. For the Not-A-Part Inholdings, each of the alternatives (excluding the No Action Alternative) include development on 16 acres of a 35-acre parcel owned by DWR on which TCWD would be provided coverage for the operations and maintenance and any future expansion of its water supply infrastructure. No other activities on these lands are included for consideration in any of the alternatives or analyzed in this Supplemental Draft EIS.

Table 4.1-1 summarizes the total acreages in the study area that would be in open space or used for Commercial and Residential Development Activities under each alternative.

Table 4.1-1. Acreage of Land in Open Space or Developed Areas under all Alternatives

Alternative	Study Area (acres)[1]	Open Space (acres)	Assumed Development Envelope (acres)	Assumed Disturbance Area (acres)
No Action Alternative	134,996	106,317[2]	0	0
Proposed TU MSHCP Alternative/Condor Only HCP Alternative	134,996	126,034[3]	8,817	5,553
CCH Avoidance MSHCP Alternative	134,996	130,339[4]	4,496	4,496
Kern County General Plan Buildout Alternative	134,996	117,774[5]	14,934	12,142

[1] Acreages in this column are based on the total study area (141,886 acres) less the acreage in Other Lands (including Not-A-Part Inholdings, mineral extraction areas, and the Veterans Cemetery [6,890 acres]).

[2] Permanently conserved open space includes 93,522 acres of Established Open Space and 12,795 acres of Existing Conservation Easement Areas. The TMV Planning Area Open Space would not be permanently protected, because without development, the Ranchwide Agreement requirements to deed restrict the TMV Planning Area Open Space would not be triggered.

[3] Permanently conserved open space includes 93,522 acres of Established Open Space,12,795 acres of Existing Conservation Easement Areas, and 19,717 acres of TMV Planning Area Open Space. The TMV Planning Area Open Space acreage is less than the acreage described in Chapter 2, Proposed TU MSHCP and Alternatives, Table 2-7 (i.e., 23,001 acres) because of the greater Development Envelope area considered to assess biological effects.

[4] Permanently conserved open space includes 93,522 acres of Established Open Space preservation,12,795 acres of Existing Conservation Easement Areas, and 24,022 acres of TMV Planning Area Open Space.

[5] Permanently conserved open space includes 12,795 acres of Existing Conservation Easement Areas and 19,717 acres of TMV Planning Area Open Space (for a total of 32,512 acres of permanently conserved open space). In addition, 85,262 acres of Restricted Open Space would be available for mitigation and conservation on a project-by-project basis. The TMV Planning Area Open Space acreage is less than the acreage described in Chapter 2, Proposed TU MSHCP and Alternatives, Table 2-6 (i.e., 23,001 acres) because of the greater Development Envelope area considered to assess biological effects.

4.1.2 No Action Alternative

4.1.2.1 Vegetation Communities

Commercial and Residential Development Activities

No Commercial and Residential Development Activities would occur under the No Action Alternative and there would be no direct or indirect effects on vegetation communities.

Existing Ranch Uses

Under the No Action Alternative, Existing Ranch Uses would continue to occur in similar areas and at similar levels. Grazing, the most extensive existing use in the study area, could damage vegetation in areas where livestock congregate and trample vegetation, or where overgrazing occurs. For some vegetation communities (e.g., wetlands and riparian areas), congregating and trampling may degrade habitat value and water quality, and overgrazing could result in the suppression of native herbaceous species (including special-status herbaceous plants) and natural recruitment (e.g., oaks). For other vegetation communities, depending on seasonality and level of intensity, in the absence of native ungulate browsers and grazers, cattle grazing can be a benefit in maintaining relative distribution of shrublands and grasslands by checking the expansion of nonnative annual plants. Moreover, animal hooves could increase litter turnover and nutrient recycling by grinding dead plant material into the soil and increasing seed-soil contact (Menke 1992, Edwards 1992, U.S. Forest Service 2004). Thatch removal is important early in the growing season, so that native seeds stand a better chance of germinating.

The best management practices (BMP) and use restrictions required pursuant to the Ranchwide Agreement, as currently set forth in the Interim Ranchwide Management Plan (RWMP) (Tejon Ranch Company 2009) and described in Chapter 2, Proposed TU MSHCP and Alternatives, would continue to be implemented under the No Action Alternative and would include provisions to minimize the effects of grazing on the landscape in general and sensitive communities in particular, such as the required rotation of livestock across Tejon Ranch using fences, distribution of salt and mineral supplements away from water sources, additional distribution of a variety of water sources across the land, and seasonal rotation of livestock to lower elevations during winter and higher elevations during summer. However, under the No Action Alternative, because development would not occur, the Ranchwide Agreement requirements to deed restrict the TMV Planning Area Open Space would not be triggered. As such, the portions of open space in the TMV Planning Area would not be subject to the Ranchwide Agreement use restrictions and BMPs, and neither the provisions provided in the RWMPs specific to grazing management nor the in perpetuity deed restrictions would be required in this area. The remaining areas would continue to be limited to existing uses (no commercial or residential development) and it is anticipated that historic BMPs would occur on the entire ranch, although implementation of those measures cannot be guaranteed.

Existing Ranch Uses that could result in ground disturbance, such as repair or maintenance of ancillary ranch structures or back-country cabins, could also affect vegetation communities. Construction or maintenance activities with the potential to result in temporary or permanent effects on special-status vegetation communities (e.g., wetlands, oak woodlands) would be subject to approval by Federal, state or local jurisdictions, which would reduce the potential for substantial, unmitigated effects on those vegetation communities. In addition, construction-related BMPs

prescribed by the local jurisdiction as part of the construction, grading, or building permit review processes, would likely be required to minimize the potential for erosion during construction, which could benefit vegetation communities (for example, see Appendix J, TMV Specific and Community Plan Mitigation Monitoring and Reporting Program). Similarly, BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP), such as the requirement that a site evaluation be performed prior to any ground-disturbing activities to avoid sensitive resources to the extent practical, would continue to be implemented and would reduce potential effects associated with Existing Ranch Use on sensitive vegetation communities, including riparian and stream areas. Other Existing Ranch Uses, such as film production and private recreation, are expected to continue to occur mostly in existing disturbed areas, roads, or trails, and would generally not affect vegetation communities.

The continuation of Existing Ranch Uses under the No Action Alternative would result in minor effects on vegetation communities, all of which would be reduced through the implementation of the BMPs and use restrictions required pursuant to the Ranchwide Agreementand through compliance with other Federal, state or local regulations. Existing Ranch Uses under the No Action Alternative would not degrade unique or sensitive habitats, or exceed a standard or criteria provided under another Federal, state, or local statute.

4.1.2.2 Wildlife and Plant Species

California Condor

Commercial and Residential Development Activities

No Commercial and Residential Development Activities would occur under the No Action Alternative and there would be no direct or indirect effects on the California condor from Commercial and Residential Development Activities.

Existing Ranch Uses

As noted above, under the No Action Alternative, Existing Ranch Uses would continue to occur in similar areas and at similar levels as they do currently. Grazing activities would continue under this alternative, which would benefit the condor by supplying an ongoing source of food. Hunting, although not a Covered Activity, would also continue. Other ongoing activities, such as road and utility construction, repair, and maintenance, ancillary ranch activities, film production, back-country cabin use, and private recreation, would be conducted to avoid effects on condors. Specifically, BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would continue to be implemented to ensure that uses that could result in the generation of microtrash or the disturbance of roosting or feeding condors would not occur. For example, Section 3.2.13.4, Hunting Cabins, in the Interim RWMP provides that TRC require back-country cabins be maintained in a neat and orderly condition, ensuring that trash and materials do not accumulate in a manner that becomes an attractant or threat to native wildlife, such as condors. Similarly, per the Ranchwide Agreement use restrictions and BMPs, private recreation would be confined to existing ranch roads and trails and would not be expected to affect California condors or condor foraging and roosting habitat. The BMPs and use restrictions in the Ranchwide Agreement further require that new utility infrastructure or other structures be sited so as to identify and avoid or minimize impacts to sensitive resources, subject to approval by various

agencies. Finally, as described in Chapter 2, Proposed TU MSHCP and Alternatives, no new overhead utilities and related structures would be constructed in the Condor Study Area under the No Action Alternative.

While the level of condor activity on the ranch is expected to increase as more condors are released into the wild, it is anticipated that the potential benefits of Existing Ranch Use (e.g., cattle grazing) on California condors would continue, and that potential adverse effects would continue to be avoided through implementation of the BMPs and use restrictions required pursuant to the Ranchwide Agreement. The overall functions and values of existing foraging habitat for condors in the Covered Lands would be expected to continue, and the No Action Alternative would not would substantially affect condors or adversely affect their critical habitat.

Other Covered Species

Commercial and Residential Development Activities

No Commercial and Residential Development Activities would occur under the No Action Alternative and there would be no direct or indirect effects on other Covered Species from Commercial and Residential Development Activities.

Existing Ranch Uses

As described in Section 4.1.2.1, Vegetation Communities, Existing Ranch Uses under the No Action Alternative have the potential to damage vegetation and degrade habitat or water quality in areas where livestock congregate, or suppress native herbaceous species (including covered plant species) in areas where the landscape is overgrazed. Ground-disturbing activities have the potential to affect vegetation and habitat quality through erosion, compaction, and sedimentation of surface waters, or degradation of riparian or wetland habitats, which, in turn could affect species using those areas for breeding or foraging. Potential effects on wildlife movement and connectivity from Existing Ranch Uses are described in the Section 4.1.2.3, Wildlife Movement and Connectivity, below.

Other Covered Species typical of grassland communities (i.e., areas where the majority of concentrated grazing would continue to occur) are the most likely to be affected by Existing Ranch Uses under the No Action Alternative. Raptors, such as the American peregrine falcon, burrowing owl, and golden eagle, may benefit from grazing to the extent that grazing could maintain low vegetation cover and make prey more visible. Western spadefoot may hibernate in grasslands that are close to aquatic breeding sites, and could be subject to injury or mortality if trampled or crushed by livestock, or if habitat is substantially degraded. However, grazing may alternatively benefit western spadefoot breeding sites by reducing vegetation and allowing for long-duration inundation to support the development of tadpoles. Birds, amphibians, and reptiles that fulfill one or more of their life history requirements in riparian areas, such as least Bell's vireo, purple martin, southwestern willow flycatcher, western yellow-billed cuckoo, yellow warbler, two-striped garter snake, Tehachapi slender salamander, and western spadefoot, could also be directly affected by livestock use of water sources, or indirectly affected by sedimentation, erosion, or other adverse water quality affects associated with grazing and/or limited ground disturbance. Finally, plant species could be trampled or otherwise damaged by ground-disturbing activities.

The BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would continue to be implemented under the No Action Alternative and

would include provisions to minimize the effects of grazing on the landscape in general and sensitive communities in particular, such as the required rotation of livestock across Tejon Ranch using fences, distribution of salt and mineral supplements away from water sources, additional distribution of a variety of water sources across the land, and seasonal rotation of livestock to lower elevations during winter and higher elevations during summer (Tejon Ranch Company 2009a). These BMPs would minimize effects on other Covered Species typical of grassland communities from grazing. Potential effects on riparian and wetland habitats associated with Existing Ranch Uses that could result in ground disturbance are expected to be minor, and would be required to comply with relevant state and local grading requirements. Ranchwide Agreement use restrictions and BMPs,such as the requirement that a site evaluation be performed prior to any ground-disturbing activities to avoid sensitive resources to the extent practical, would also reduce potential effects on special-status or unique or sensitive vegetation communities andthe wildlife typical of those communities. Other Existing Ranch Uses, such as road and utility repair and maintenance, ancillary ranch activities, film production, and private recreation, are expected to continue to occur mostly in existing disturbed areas, roads, or trails, and would generally not affect other Covered Species.

The continuation of Existing Ranch Uses under the No Action Alternative would result in minor effects on other Covered Species, all of which would be reduced through the implementation of the use restrictions and BMPs required pursuant to the Ranchwide Agreement, and through compliance with other Federal, state or local regulations. Existing Ranch Uses under the No Action Alternative would not result in more than a minor loss of modeled habitat for the other Covered Species, and would not be anticipated to affect known occurrences of any of these species.

Other Special-Status Species

Commercial and Residential Development Activities

Under the No Action Alternative, no Commercial and Residential Development Activities would occur and there would be no direct or indirect effects on any other special-status species from Commercial and Residential Development Activities.

Existing Ranch Uses

Under this alternative, Existing Ranch Uses would continue to occur in similar areas at similar levels, as restricted by the Ranchwide Agreement. Potential effects on special-status species and their habitat would the same as those described in Section 4.1.2.1, Vegetation Communities, above, as those communities relate to the habitat types of individual species.

4.1.2.3 Wildlife Movement and Connectivity

Commercial and Residential Development Activities

Under the No Action Alternative, no Commercial and Residential Development Activities would occur and there would be no direct or indirect effects on wildlife movement and connectivity from Commercial and Residential Development Activities.

Existing Ranch Uses

As described in Chapter 2, Proposed TU MSHCP and Alternatives, a network of mostly unpaved roads used for the grazing operation and for access to hunting and other recreational activities cross the study area. Two paved roads, providing access to the California Aqueduct and to the National Cement plant occur in the study area. In addition, ranch dirt roads are occasionally constructed and/or existing roads are relocated to serve Existing Ranch Uses. Use, repair, and maintenance of these roads would continue as an Existing Ranch Use under the No Action Alternative.

In principle, roads can have a wide variety of effects on wildlife movement, habitat connectivity, and the value of adjacent areas depending on their size, frequency of travel and context. The *road effect zone* (Foreman and Sperling et al. 2003) is a concept describing direct and indirect effects on species and their habitats within an area extending various distances (depending on the species) from the actual footprint of a road. Factors such as wind, water movement, noise, geology, and topography also influence the extent of the road effect zone depending on the species present and the localized conditions. Species movement across both paved and dirt roads can be adversely affected as a result of direct mortality from vehicle strikes and loss of habitat connectivity. A direct loss of habitat may occur when new roads replace existing habitat that is of value to a species. The loss of genetic exchange, loss of access to habitat, spread of invasive, nonnative species (which can reduce habitat value for some species as a result of a reduction in food availability, increased competition for food resources and other habitat components [i.e., shelter sites]), and loss of food resources, are examples of other general effects that result from existing and new roads. The size and amount of unfragmented large habitat blocks (which generally hold more habitat value than small habitat blocks) decrease with the addition of new roads, and the edges of unfragmented habitat blocks may provide less habitat value (depending on species) than the center of habitat blocks. Habitat value tends to be greater the farther a given species and/or population occurs from roads (Foreman and Sperling et al. 2003).

The current extent and use of roads in open space areas in the study area is minimal. Nevertheless, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP), which would continue to be implemented under the No Action Alternative, including provisions which would reduce the potential for these roads to adversely affect wildlife movement and habitat connectivity. Specifically, Sections 3.2.2, Farming, and 3.2.7, Fuel Management, in the Interim RWMP, provide a compiled list of BMPs that are currently implemented to protect and preserve conservation values on the ranch in areas subject to road use, maintenance, or repair. These include, for example, evaluating proposals for road relocation to ensure they avoid effects on sensitive resources; implementing a dust control plan to reduce particulate matter emissions on well-traveled roads; and maintenance of berms on dirt roads to handle minor stormwater flows (Tejon Ranch Company 2009). Given the limited existing road network on the Covered Lands, and the implementation of these use restrictions and BMPs, it is anticipated that potential effects on wildlife movement and connectivity from Existing Ranch Uses would be minor.

Other Existing Ranch Uses, such as utility lines and fences, may affect bird (i.e., collisions) or wildlife movement across the study area. As described above, no new overhead utilities would be constructed in the Condor Study Area under the No Action Alternative, and the BMPs and use restrictions required pursuant to the Ranchwide Agreement would require that any new utility infrastructure or other structure be sited so as to identify, and avoid or minimize effects on sensitive

resources, subject to approval by various agencies. These measures would ensure potential effects on bird movement from utility infrastructure would generally be minor and the same as existing conditions. Similarly, the Interim RWMP includes several BMPs to minimize the effect of fences on wildlife movement, including allowing the construction of new fencing only if it is determined to be reasonably necessary for operations purposes, and implementing "wildlife-friendly" fencing of the type and design necessary to allow for passage of wildlife, where possible (Tejon Ranch Company 2009). The Ranchwide Agreement requires that all subsequent RWMPs similarly reflect BMPs that protect the conservation values of the land and that such management standards and use restrictions be carried through in the conservation easements required by the Ranchwide Agreement.

For these reasons, the continuation of Existing Ranch Uses under the No Action Alternative would result in minor effects on wildlife movement and connectivity, all of which would be reduced through the implementation of BMPS and use restrictions required pursuant to the Ranchwide Agreement.

4.1.3 Proposed TU MSHCP Alternative

4.1.3.1 Vegetation Communities

Table 4.1-2 summarizes the potential effects on vegetation communities from the Proposed TU MSHCP Alternative. Permanent and temporary direct and indirect effects resulting from Commercial and Residential Development Activities and Plan-Wide Activities are discussed below.

Commercial and Residential Development Activities

Construction associated with Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would result in moderate effects on vegetation communities. As shown in Table 4.1-2, 8,387 acres (about 6%) of existing upland communities and 31 acres (2%) of riparian/wetland/wash communities would be permanently affected by construction-related ground disturbance. Of these, many of the upland communities (including alluvial scrub, native grasslands, and oak savannahs and oak woodlands) and all of the riparian/wetland/wash communities are considered to be special-status by Federal, state, or local resource agencies. However, approximately 96% of total scrub vegetation, 94% of chaparrals, 98% of grasslands (excluding disturbed/nonnative grasslands), 94% of savannahs, 95% of woodlands, 98% of conifer forest, 84% of riparian/wetland, 92% of riparian woodland, and 99% of wash communities would be conserved in open space areas under this alternative (Table 4.1-2). Approximately 232 acres (98%) of agricultural land, a nonnative land cover, would be permanently disturbed by Commercial and Residential Development Activities.

Approximately 145 acres of special-status uplands would be located in rural large lot developments assumed to be developed as either 80-acre or 20-acre lots under the Proposed TU MSHCP Alternative (Section 4.1.1.2, Methods - Analytical Framework for Assessing Effects on Biological Resources). For the purposes of this analysis, this area is not included in the open space, development area, or other lands categories described in Section 4.1.1.2, Methods. These areas would be in private lots and uses would be required to be consistent with those allowed in the Kern County General Plan (Kern County 2009b). It is assumed however, that permanent ground

disturbance associated with development would not be allowed, and that adverse effects on vegetation would not occur.

Under this alternative, 1,773 acres of development-related fuel modification activities (e.g., vegetation clearing around existing structures) could occur. Because specific development plans are not available for this alternative, the specific locations of fuel modification zones cannot be determined. While it is likely that most of these activities would occur in the Development Envelope, and not in permanently protected open space, this analysis considers potential effects on vegetation communities should fuel modification measures extend into open space areas. Also, because the specific location of this fuel modification zone is unknown, an acreage breakdown of effects on specific vegetation communities associated with fuel modification cannot be calculated. In general, it is anticipated that fuel modification effects would be roughly proportional to the distribution of vegetation communities in the study area, with about 98% occurring in upland communities, about 1% occurring in riparian/wetland/wash communities, and about 1% occurring in agricultural lands. To minimize the potential effect of fuel modification on vegetation communities under the Proposed TU MSHCP Alternative, preactivity surveys for special-status plants would be conducted in conjunction with fuel modification activities. Fuel modification associated with development activities would extend up to 200 feet into open space areas and only mowing and thinning would be permitted in these portions of the fuel modification areas. Thinned areas would not be markedly different in appearance from the adjacent natural areas not subject to thinning. Fuel modification on 1,773 acres would not be expected to substantially affect vegetation communities or to degrade existing habitat.

Table 4.1-2. Potential Effects on Vegetation Communities—Proposed TU MSHCP Alternative

Vegetation Community[1,2]	Total Acreage in Study Area [3]	Acreage Retained as Open Space[4]	Acreage Removed for Development[5,6]
Upland Communities			
Scrubs			
Alluvial scrub	36	26	10
Mojavean scrub	6,951	6,951	0
Saltbush/buckwheat scrub	290	257	33
Scrub	564	281	283
Total Scrubs	*7,841*	*7,515*	*326*
Chaparrals			
Brewer's oak scrub	2,720	2,719	1
Chaparral	11,050	10,370	678
Scrub oak	641	506	135
Undetermined chaparral	4	4	0
Total Chaparrals	*14,415*	*13,599*	*814*
Grasslands			
Disturbed/nonnative grassland	6,411	4,197	2,214
Grassland	17,387	17,164	170
Native grassland	1,146	1,045	101
Total Grasslands	*24,944*	*22,406*	*2,485*

Vegetation Community[1,2]	Total Acreage in Study Area [3]	Acreage Retained as Open Space[4]	Acreage Removed for Development[5,6]
Savannahs			
Black oak savannah	29	29	0
Blue oak savannah	5,114	5,050	65
Canyon oak savannah	432	432	0
Gray pine savannah	64	64	0
Interior oak savannah	276	276	0
Mixed oak savannah	11,997	11,965	1
Oak savannah	5,603	3,640	1,963
Undetermined savannah	678	678	0
White oak savannah	8,927	8,902	17
Total Savannahs	*33,120*	*31,036*	*2,046*
Woodland			
Black oak woodland	2,701	2,543	158
Blue oak woodland	9,089	7,192	1,897
California buckeye woodland	338	338	0
Canyon oak woodland	6,193	6,051	142
Gray pine woodland	109	109	0
Interior oak woodland	761	740	21
Mixed oak woodland	28,086	27,668	374
Oak woodland	147	141	6
Pinyon pine woodland	285	255	30
Undetermined woodland	153	153	0
White oak woodland	874	853	15
Total Woodland	*48,736*	*46,043*	*2,643*
Conifer Forest			
Conifer/mixed oak	912	839	73
Incense-cedar stand	4	4	0
Intermixed conifer	1,059	1,059	0
White fir stand	320	320	0
White fir/mixed oak	1,661	1,661	0
Total Conifer Forest	*3,956*	*3,883*	*73*
Total Upland Communities	***133,012***	***124,482 (94%)***	***8,387 (6%)***
Riparian/Wetland/Wash Communities			
Riparian/Wetland			
Riparian scrub	76	55	5
Riparian/wetland	10	4	2
Wetland	281	195	22
Lake	336	335	0
Total Riparian/Wetland	*703*	*589*	*29*

Vegetation Community[1,2]	Total Acreage in Study Area [3]	Acreage Retained as Open Space[4]	Acreage Removed for Development[5,6]
Riparian Woodland			
Riparian woodland	43	38	1
Oak riparian	16	16	0
Total Riparian Woodland	*59*	*54*	*1*
Wash			
Desert wash/riparian/seeps	841	841	0
Wash	22	20	1
Total Wash	*863*	*861*	*1*
Total Riparian/Wetland/Wash Communities	***1625***	***1504 (93%)***	***31 (2%)***
Nonnative Land Covers			
Agriculture	232	5	227
Developed	127	38	88
Total Nonnative Land Covers	***359***	***43 (12%)***	***315 (88%)***
Total	**134,996**[3]	**126,029 (93%)**[4]	**8,733 (7%)**[5,6]

1 Slight differences between total acreages presented in Tables 4.1-1 and 4.1-2 may occur due to rounding and small slivers in shapefiles in the geographic information system (GIS) analysis of vegetation communities (e.g., sliver polygons occur when different GIS coverages overlap but do not match exactly). These discrepancies are minor and do not alter the overall conclusions of the analysis or comparison of the relative merits of various alternatives and scenarios.

2 The quantitative analysis of effects on vegetation communities does not include 200 acres of ground disturbance associated with Plan-Wide Activities under the Proposed TU MSHCP Alternative, which are analyzed qualitatively, or the 145 acres of non-disturbed areas associated with rural lots (Section 4.1.1.2, Methods - Analytical Framework for Assessing Effects on Biological Resources). The 145 acres in rural lots are regarded as effect- and conservation-neutral since it is undetermined what uses would be proposed on rural lots by individual landowners and quantitative analysis of effects or conservation in these areas is not possible.

3 Acreages in this column are based on the study area encompassing 134,996 acres, or the total study area (141,886 acres) less the acreage in Other Lands (6,890 acres).

4 Acreages in this column are based on an assumed acreage of permanently conserved open space of approximately 126,034 total acres, which includes 12,795 acres of Existing Conservation Easement Areas, as well as the TU MSHCP Mitigation Lands, including 93,522 acres of Established Open Space and 19,717 acres of TMV Planning Area Open Space. The TMV Planning Area Open Space acreage is less than the acreage described in Chapter 2, Proposed TU MSHCP and Alternatives, Table 2-6 (i.e., 23,001 acres) because of the greater Development Envelope area analyzed to assess biological effects. TMV Planning Area Open Space also includes 1,773 acres of vegetation clearing/thinning for fuel modification in accordance with the fire protection plan (Dudek 2008a) developed for the TMV Project.

5 Development includes Commercial and Residential Development Activities in the TMV Planning Area and Lebec/Existing Headquarters Area. Acreages in this column are based on a total Development Envelope of 8,817 acres for this alternative. See Section 4.1.1.2, Methods - Analytical Framework for Assessing Effects on Biological Resources, for a discussion of how the Development Envelope was developed for each alternative and how it applies to the effects analysis in this section.

6 The analysis assumes 75% avoidance of effects on riparian/wetland vegetation communities. The total development acres for each alternative reflect this assumption, as well as the development acres for riparian vegetation communities and species models that are based on these riparian communities. The total development acreage presented in this table for the Proposed TU MSHCP Alternative is 84 acres less than the total development acreage presented in Section 4.1.1.2, Methods, for this reason. This is a conservative assumption, as the CWA 404(b)(1) alternatives analysis submitted to USACE for the TMV Project shows avoidance of 100% of the federally jurisdictional wetland areas and avoidance of 97% of the state and Federal jurisdictional waters over all (Kern County 2009a, April 15, 2011 Alternatives Analysis; Kern County 2009, November 13, 2009 Permit Application to CDFG).

Finally, increased human presence and introduction of urban-type uses associated with development could degrade vegetation communities supporting Covered Species and other special-status species. These indirect effects are discussed in the analysis of effects on species presented below.

All development under the Proposed TU MSHCP Alternative would be subject to project-specific approvals, and permanent or temporary effects on special-status vegetation communities, such as wetlands (regulated by USACE and the RWQCB) or oak woodlands (protected under Kern County oak tree ordinances), would require approval by Federal, state, or local jurisdictions. For example, the proposed TMV Project, as approved by Kern County (Kern County 2009a), was designed to avoid all but 1% of wetlands in the TMV Planning Area (Central Valley Regional Water Quality Control Board 2011) (Appendix J). In addition, disturbance of some vegetation communities (as they relate to Covered species habitat) would be limited by relevant conservation measures provided in the TU MSHCP (e.g., measures to limit work in and around riparian/wetland areas to protect Tehachapi slender salamander; see Table 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives). In consideration of the proposed open space areas under the Proposed TU MSHCP Alternative, and with implementation of the conservation measures required under the TU MSHCP and mitigation measure discussed in Section 4.1.3.4, Mitigation Measures, it is anticipated that potential effects on sensitive vegetation communities from Commercial and Residential Development Activities would be minor, would not substantially degrade unique or sensitive habitats, and would not exceed a standard or criteria provided under another Federal, state, or local statute. These effects would be greater than the No Action Alternative where no development would occur.

Plan-Wide Activities

Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities under the Proposed TU MSHCP Alternative would have a limited potential to affect vegetation communities. Grazing would be expected to continue on about 126,034 acres[1] of the study area (i.e., open space), and grazing levels would be similar to historic levels (approximately 14,500 cattle). Grazing could damage vegetation in areas where livestock congregate and trample vegetation, or in areas where overgrazing occurs. For some vegetation communities (e.g., wetland and riparian areas), congregating and trampling by livestock may degrade habitat function and water quality, and overgrazing could result in suppression of native herbaceous species and natural recruitment. For other vegetation communities, livestock grazing could limit the expansion of nonnative annual plants, and increase litter turnover and nutrient recycling, improving the potential for native seed germination.

Plan-Wide Activities that could result in ground disturbance, such as repair and maintenance of back county cabins and ancillary ranch structures, could also affect vegetation communities through erosion or compaction. Other Plan-Wide Activities, such as film production and recreation, would continue to occur mostly in existing disturbed areas, roads, or trails, and would generally have only minor, temporary effects on vegetation communities.

[1] As described in Table 4.1-1, this acreage of open space (126,034 acres) is less than the open space acreage associated with Proposed TU MSHCP Alternative and described in Chapter 2, Proposed TU MSHCP and Alternatives, (129,318 acres) because of the larger Development Envelope area considered to assess direct biological effects.

The BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would continue to be implemented under the Proposed TU MSHCP Alternative and would include, for example, provisions to minimize the effects of grazing on the landscape (e.g., distribution of water sources and seasonal rotation of livestock), as well as site evaluation requirements prior to construction of new or relocated infrastructure. Construction or maintenance activities with the potential to result in temporary or permanent effects on special-status vegetation communities (e.g., wetlands, oak woodlands) would be subject to approval by Federal, state, or local jurisdictions, as described in Section 4.1.3.4, Mitigation Measures, which would reduce the potential for substantial, unmitigated effects on those vegetation communities. In addition, disturbance of some vegetation communities (as they relate to Covered species habitat) would be limited by relevant conservation measures provided in the TU MSHCP (e.g., measures to limit work in and around riparian/wetland areas to protect Tehachapi slender salamander; see Table 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives).

Fuel modification may also occur in conjunction with Plan-Wide Activities. Grazing would be the primary method of fuel management in areas where Plan-Wide Activities would occur, and grazing would be managed and limited as discussed above. Limited fuel management would continue to occur around existing structures and roads in open space and would be governed by a fuel management plan subject to review and approval by the Service. Fuel management activities associated with Plan-Wide Activities would not have a substantial effect on vegetation communities.

Finally, this alternative would limit permanent ground disturbance associated with construction of new roads and structures in open space necessary to support Plan-Wide Activities or Commercial and Residential Development Activities to 200 acres. As described above, the location of this acreage is not known at this time, but would be consistent with the Ranchwide Agreement and requirement to protect the conservation values of the ranch.

Although Plan-Wide Activities under the Proposed TU MSHCP Alternative could result in moderate effects on vegetation communities, these effects would be reduced through conservation measures required under the TU MSHCP that limit ground disturbance, and implementation of BMPs prescribed as part of the Federal, state, or local permitting processes (Section 4.1.3.4, Mitigation Measures) or as prescribed under the Ranchwide Agreement, and would not degrade unique or sensitive habitats, or exceed a standard or criteria provided under another Federal, state, or local statute. These effects would be comparable to those associated with Existing Ranch Uses under the No Action Alternative, although they may be slightly less given the acreage limitation for ground disturbance (200 acres) provided under the Proposed TU MSHCP Alternative.

4.1.3.2 Wildlife and Plant Species

California Condor

Commercial and Residential Development Activities

Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative have the potential to adversely affect the California condor and its habitat. These effects would be associated with the loss of foraging habitat; habituation to human structures and activities; increased risk of collisions with power lines, communication towers, and other artificial structures; and ingestion of microtrash.

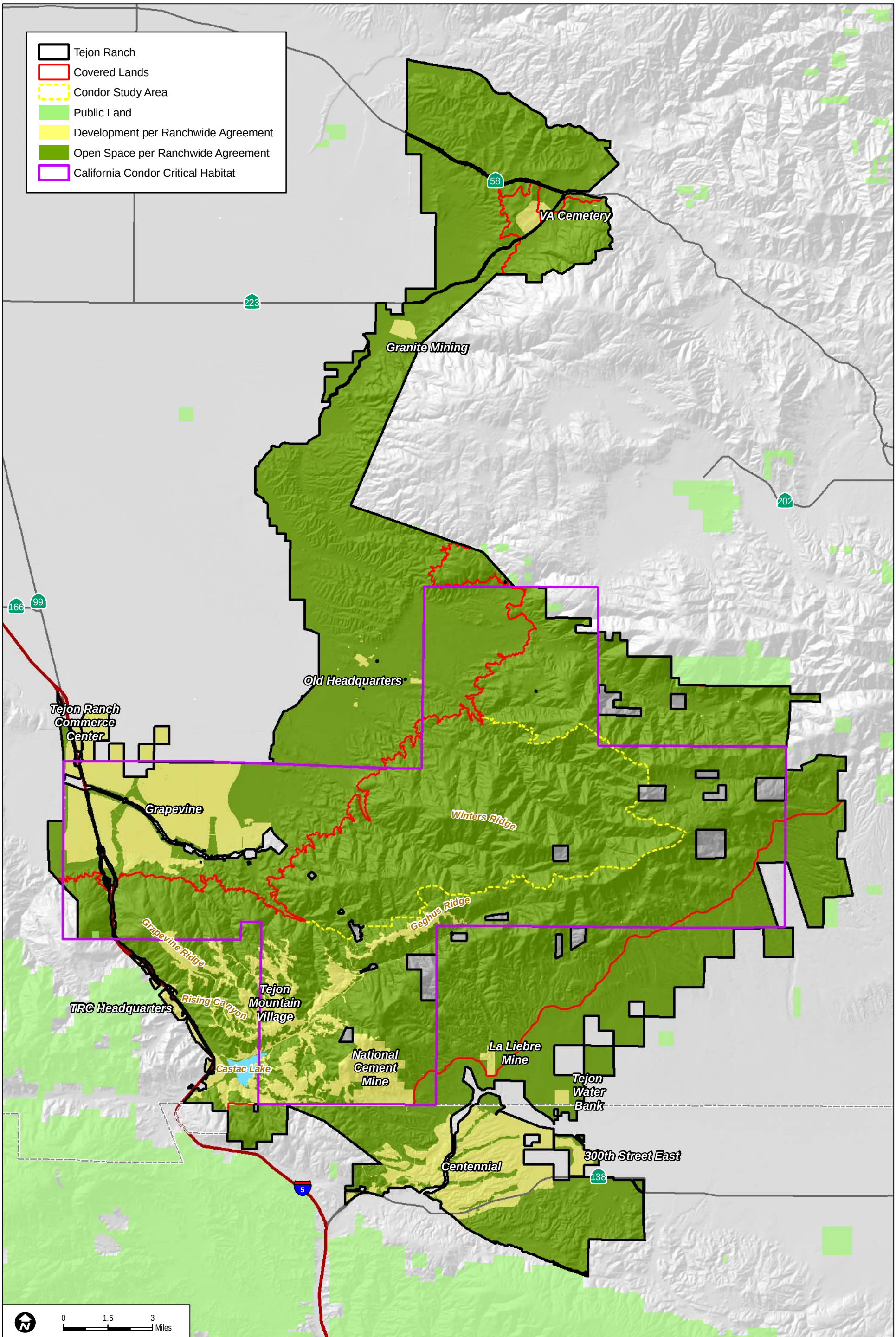
Loss of Foraging Habitat

As described in Section 3.1, Biological Resources, and Master Response 1E, California Condor Loss of Foraging Habitat, in Volume II of this Supplemental Draft EIS, the Service has determined that substantially more California condors are using Tejon Ranch and the Tehachapi Mountain region than analyzed in the Draft EIS. This conclusion is based on the results contained in the 2010 U.S. Geological Survey (USGS) condor study (Johnson et al. 2010) (Appendix I, Analysis of California Condor) and additional evaluations of condor global positioning system (GPS) data collected by the Service through May of 2011. The Service determined that grasslands and oak savannahs are the vegetation communities on Tejon Ranch where condors are the most able to consistently access food, and constitute the vast majority of suitable foraging habitat in the study area. Consequently, the Service has revised the model of foraging habitat for the California condor on Tejon Ranch to inform the analysis presented in this Supplemental Draft EIS. The revised model indicates a total of 182,614 acres of suitable condor foraging habitat occurs on Tejon Ranch, including 84,112 acres in the study area.

For the purposes of this analysis, it is assumed that all suitable foraging habitat within the TMV Planning Area Development Envelope would be directly affected by Commercial and Residential Development Activities, and that suitable foraging habitat within 0.5 mile of the TMV Planning Area Development Envelope would be indirectly affected. Specifically, given the configuration of the TMV Planning Area Open Space area relative to the proposed Development Envelope, the Service determined that much of the suitable foraging habitat in the TMV Planning Area Open Space would occur within a 0.5 mile of proposed developed areas, and therefore would not consistently provide feeding opportunities for condors. It is assumed, however, that the larger blocks of suitable foraging habitat in the TMV Planning Area Open Space would continue to function as foraging habitat (e.g., the eastern end of Geghus Ridge and the area north of Grapevine Peak) when more than 0.5 mile away from development. Based on these assumptions, Commercial and Residential Development Activities proposed within the TMV Planning Area Development Envelope would result in the direct loss of and indirect effects on 17,995 acres of suitable foraging habitat, including 12,015 acres of critical habitat. This would include 6,656 acres of foraging habitat directly lost to development and 11,339 acres indirectly affected by changes in adjacent land uses. Suitable foraging habitat is not located in other proposed developed areas (i.e., Lebec/Existing Headquarters or the TCWD facility) outside of the TMV Planning Area Development Envelope.

Of the 84,112 acres of foraging habitat in the study area, a minimum of 66,117 acres, including 46,045 acres of critical habitat, would be conserved in perpetuity as part of the TU MSHCP Mitigation Lands and Existing Conservation Easement Areas, and managed for the benefit of the species pursuant to a resource management plan implemented by Tejon Ranch Conservancy, as well as conservation easements approved by the Service. This would include 23,040 acres of suitable foraging habitat in the approximately 37,000-acre Condor Study Area. An additional 83,818 acres of foraging habitat would be conserved outside of the study area under the Ranchwide Agreement (Figure 4.1-1).

To further analyze potential effects on the condor population and its critical habitat, the Service also estimated potential food availability in the condor's range, focusing on the portion of the range currently used by the southern California subpopulation. Additional foraging habitat, and associated food resources, outside the current range of the southern California subpopulation are also considered in terms of the overall amount of carrion that would be necessary to support one free-



SOURCE: California Resource Agency 2011
TRC 2007
USFWS 2011

FIGURE 4.1-1

California Condor Critical Habitat with Respect to the Ranchwide Agreement

flying population of 150 condors, as identified in the California Condor Recovery Plan (which would constitute one of the two wild and disjunct populations needed to meet the down-listing criterion of the Recovery Plan) (U.S. Fish and Wildlife Service 1996). Therefore, the analysis of potential effects on condor foraging habitat in this Supplemental Draft EIS includes the Service's analysis of food availability throughout the range of the species in California (i.e., southern and northern California subpopulations). For the purposes of this analysis, the Service considers condors in southern California and condors in Big Sur/Pinnacles National Monument (northern California subpopulation) as two subpopulations that will both contribute to one free-flying population in California per the recovery plan down-listing criteria. Although condors in southern California are not currently mixing regularly with condors in the north (generally between the Big Sur Coast in Monterey County and Pinnacles National Monument in San Benito County), the Service expects that individuals, probably juveniles and unpaired adults, will eventually intermix more frequently than they currently are, throughout the permit term and beyond, if these subpopulations continue to grow and expand their ranges. As such, the following provides a summary of estimated potential food availability within the condor's range in California.

Free-flying California condors need approximately 2.2 pounds of food per day based on caloric requirements (Houston 1971 in Wilbur 1978). Assuming condors obtain a minimum of 50 pounds of food from the average ungulate carcass (some carcasses likely provide more than 50 pounds), Wilbur (1978) calculated that a population of 50 condors would require 39,600 pounds of food or 720 carcasses per year. Based on these calculations, the Service estimates 2,160 carcasses per year would be necessary to provide enough food for one wild population of 150 condors.

The total number of beef cattle reported in Kern, Los Angeles, San Luis Obispo, Santa Barbara, Tulare, Kings, and Ventura Counties in 2009 equaled 112,000 head (U.S. Department of Agriculture 2011). There was an average mortality rate of 4.7% for cattle and calves in California from 1988 through 2010 (U.S. Department of Agriculture 2011). The U.S. Department of Agriculture includes death loss of all cattle in their reporting (J. Hardegree pers. comm. 2011), and the average mortality of range cattle could be lower or higher than the overall average. However, for lack of another available mortality rate, using an average mortality rate of 4.7%, it is estimated that approximately 112,000 head of cattle would provide 5,260 carcasses within the range of the southern California subpopulation of condors.

The average sheep and lamb mortality rate in California from 1988 through 2010 was 4.6% (U.S. Department of Agriculture 2011). Sheep also historically provided an important food resource for condors (Wilbur 1978, Koford 1953). A total of 106,600 sheep and lamb were reported in Kern and San Luis Obispo Counties in 2009 (Kern County 2009, San Luis Obispo County 2009), with an additional 28,469 sheep reported in Ventura County in 2009 (Ventura County 2009). Using the average mortality rate for sheep and lambs, 135,069 sheep and lambs would provide an estimated 6,212 sheep and lamb carcasses.

Based on the above livestock data, it is estimated that 11,472 cattle and sheep carcasses would be produced within the current range of the southern California subpopulation of condors, from San Luis Obispo County through Kings County (although because not all are range animals, not all of them would be available for condors), and an unknown number of native ungulate, other native mammal, and wild pig carcasses would provide additional food for condors. Livestock, wild pig, and native ungulate carcasses in Monterey and San Benito Counties would add to the 11,472 carcasses estimated in the southern California subpopulation's current range. This is more than what would

be needed (2,160 carcasses) to support one (California population) of the two populations of 150 free-flying condors identified in the recovery plan's down-listing criteria.

Not all carcasses would be found and eaten by condors. Some carcasses may be disposed of by landowners, consumed by predators, or simply not discovered by condors. The variability in food availability is consistent with the opportunistic scavenging and far-ranging foraging behavior characteristic of condors (U.S. Fish and Wildlife Service 1976, 1996; Wilbur 1978; Snyder and Snyder 2000). For these reasons, the Service cannot accurately predict what proportion of the estimated annual food base would actually be used by condors, nor the number of condors these available carcasses would support. Regardless, reasonable estimates suggest that the overall available food supply is well in excess of that needed to support a population of 150 free-flying condors in California.

The Service anticipates that at least some of this food supply would continue to be available to condors into the future. While livestock production in the condor's historic range in California may be declining, it continues to play a role in the economies of the counties within the condors range, and is not expected to disappear from those counties in the foreseeable future; in fact, livestock production in Kern County appears to be increasing (Kern County 2010). Therefore, it is not expected that all condors in the recovering population would feed exclusively on Tejon Ranch at all times. Large areas of additional suitable foraging habitat occur elsewhere in the historic range of the condor, including lands in public and private ownership (i.e., Los Padres National Forest and Wind Wolves Preserve, ranch lands in foothills of the southern Sierra Nevada, respectively), and it is assumed that at least some of this habitat would be available to condors into the future, particularly on Federal lands and lands held in conservation. Overall, the Service estimates there are currently more than enough potential carcasses from livestock, hunting, and other mortality of native ungulates and feral pigs in the condors' historic range in California to support not only the current condor population, but also one of the two free-flying population of 150 birds envisioned in the recovery plan and necessary to down list the condor to threatened status (assuming mortality factors, particularly lead poisoning, are minimized or eliminated).

The continued availability of a reliable and consistent food source for condors on Tejon Ranch is likely to increase in importance if the overall production of livestock within the range of the condor declines. Under the Proposed TU MSHCP Alternative, hunting and grazing would continue in open space areas (including the TU MSHCP Mitigation Lands and the Existing Conservation Easement Areas), as well as the other areas of foraging habitat conserved under the Ranchwide Agreement. Ranching would continue on the Covered Lands at current grazing levels up to total of 14,500 head of cattle, consistent with past practices. As outlined in the grazing management plan in the Interim RWMP, grazing would follow seasonal rotations currently in place, where cattle use grazing lands on the lower elevations of the ranch in the winter, moving gradually onto the higher elevation grazing lands through the spring and summer. The continuation of calving on Tejon Ranch, both on the TU MSHCP Mitigation Lands outside of the TMV Planning Area, the Existing Conservation Easement Areas, and on the other conserved rangelands on the ranch, is particularly important with regard to food availability for condors. Calves in particular have served as an important food source for condors in the past (Koford 1953, Wilbur 1978, Miller et al. 1965) and the Service (1976) has concluded that cow/calf operations on Tejon Ranch provide a crucial food source for condors.

Hunting, particularly hunter-killed native ungulate and feral pig carcasses and gut piles, also provides an important food source for condors on Tejon Ranch (see Master Response 1E, California Condor Loss of Foraging Habitat, for more discussion of hunting and potential effects associated with the Proposed TU MSHCP Alternative). Approximately 800 to 1,200 pigs are killed on Tejon Ranch each year (Tejon Ranch Conservancy pers. comm.) and wild pigs are expanding their range in California (California Department of Fish and Game 2011a). Although not a Covered Activity under the Proposed TU MSHCP Alternative, TRC would continue its established commercial hunting program and wild pig depredation on the TU MSHCP Mitigation Lands and other conserved areas of the ranch.

Based on this analysis, the Service has determined that the recent historic range of the California condor supports sufficient food resources from grazing, hunting, and native ungulate populations to support in excess of 150 birds. Given the estimated amount of foraging habitat that would be conserved and managed on Tejon Ranch, and the estimated food for condors that would be produced from cattle, pig, and native ungulate carcasses on that foraging habitat within the TU MSHCP Mitigation Lands and other conserved areas of Tejon Ranch, it is likely that the ranch would continue to function as an essential and viable foraging area for the expanding condor population. Although the loss of foraging habitat resulting from Commercial and Residential Development (direct/indirect loss of up to 17,995 acres of suitable foraging habitat, including 12,015 acres of critical habitat) would be greater under this alternative than the No Action Alternative, this loss would not result in a substantial adverse effect on the condor population or its critical habitat.

Habituation

Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative have the potential to result in habituation of California condors to human structures and activities. Habituation poses several risks to condors, including intentional and accidental injury, well-meaning efforts to feed the birds, collisions with artificial structures, or ingestion of microtrash found in association with such activities and human structures. The Service has determined that California condors that become attracted to human activity and/or structures, and that are not responsive to deterrence efforts, have become habituated and must be captured and relocated, captured to undergo additional aversion training and be re-released, or be permanently removed from the wild. Habituation that results in any of the above scenarios would constitute a non-lethal take of the California condor, as described further below.

TRC has requested authorization through the ITP for non-lethal take of up to four condors (see Master Response 1C, California Condor Take and Habituation, in Volume II of this Supplemental Draft EIS). Take of condors, as contemplated under the TU MSHCP, would be in the form of habituation; that is, the circumstance where a condor becomes attracted to development or other human activity and becomes unresponsive to measures incorporated into the plan to deter such condor/human interaction such that its “normal behavioral patterns are disrupted”, thereby creating a “likelihood of injury” to an individual bird. No lethal take of condors has been applied for or would be authorized under an ITP for the TU MSHCP.

For the purposes of this analysis, it is assumed that up to four condors may be removed from the wild over the 50 year term of the proposed permit as a result of the Covered Activities. As described in more detail below, the Service has determined that take in this manner of up to four condors over a 50-year time span is reasonable given the expanding condor population, the Service’s experience

with previous undesirable interactions between humans and condors, the Service's success with hazing efforts to date, and the conservation measures under the Proposed TUMSHCP Alternative to reduce the potential for habituation. It is not anticipated that removing four condors from the wild over 50 years would have a substantial effect on the population, particularly if the removal is temporary. The potential for the permanent removal of condors from the wild as a result of habitation is low.

Most permanent removals of condors from the wild occurred early in the recovery program, when younger condors were released without the benefit of adults that would normally serve as models to juvenile birds in avoiding human/condor interactions. Relatively few condors have needed to be permanently removed from the wild in recent years. The most recent incidence of permanent removal from the wild as result of habituation occurred in 2010, where two juvenile birds were removed from the Arizona population. These birds exhibited extreme tolerance to humans to such an extent that they roosted overnight on the tailgate of a truck parked at the campsite, and approached humans on the south rim of the Grand Canyon. They were eventually captured in Arizona, held temporarily, then transferred to southern California where they were rereleased to see if a change in their environment would alter their negative behavior. Subsequent aberrant behavior, including a lack of fear of humans, resulted in the Service's decision that the birds were a danger to themselves, and their behavior would compromise other condors. In this instance, the Service attributes the habituation to the extended amount of time these birds were allowed to associate with humans while receiving positive reinforcement (i.e. food). In most situations where condors have been attracted to human structures or activity, the Condor Recovery Program has been able to respond to human/condor interactions soon enough that hazing efforts have been effective and habituation has not occurred, especially in more recent years as some of the released condors have reached breeding age. In 2011, one juvenile was removed from the wild for behavioral reasons when it repeatedly landed near visitors to Pinnacles National Park. Whether or not this bird will be rereleased in the future is unknown at this time.

Younger birds with less experience in the wild may be more prone to approaching human activity and/or structures than older, more experienced birds, although it is not anticipated that breeding-aged birds would entirely ignore new stimulus in their environment (i.e., new human structures or activity). Both breeding-age condors and juveniles have recently approached human structures and human activity, particularly when food sources were available to them; however, habituation has not occurred because these birds have responded to hazing. To date, no breeding condors have been permanently removed from the wild as a result of habituation.

It is a standard tenet of population biology that the value of a breeding adult in a population of a long-lived species has more ecological value than a non-breeding juvenile. Thus, the loss of wild breeding condors as a result of habituation would be more significant than the loss of juveniles. However, the Service cannot predict what the age structure of the population will be during the 50-year permit term because natural population growth (i.e., without the introduction of captive reared juveniles) in the wild is suppressed, primarily due to mortality from lead poisoning and because the mortality of condors in the wild is random with respect to age class. The Service considers that the habituation and permanent removal of breeding adult condors from the wild would have a greater effect on the growth of the wild population and on condor recovery in general than the habitation/removal of a juvenile bird. However, based on past experience, the habituation (trapping and removal) of adult breeding condors is considered to be not likely. Regardless, given that the condor population has increased since the initiation of the recovery program, and is likely to

continue to increase at a similar rate over the 50-year term of the proposed permit, removal of up to four condors from the wild should not significantly affect the overall wild condor population.

The Service considers these assumptions to be reasonable over the 50-year term of the proposed permit for the purposes of the effects analysis presented in this Supplemental Draft EIS. They are based on the general historic patterns of habituation, the success of past hazing efforts in the field that have been implemented quickly to preclude positive reinforcement, in association with humans and human structures, and the growing presence of mature adult birds in the wild which are less likely to engage in undesirable behaviors and can serve as models for juvenile birds.

As summarized in Table 2-3 in Chapter 2, Proposed TU MSHCP and Alternatives, the Proposed TU MSHCP Alternative would include ESA conservation measures intended to prevent habituation. In addition to the measures summarized below for power lines, towers, and microtrash, the Proposed TU MSHCP Alternative would limit design and construction of development on the ridges within the TMV Planning Area (the east–west ridge above Rising Canyon, the western portion of Geghus Ridge, and on Grapevine, Middle, Squirrel, Silver, and Lolas ridges, and upper slopes immediately adjacent to these ridges) to low-density Mountain Residential; require TMV Planning Area setbacks and use restrictions; and dedicate an onsite, Service-approved biologist with the responsibility to monitor condors on Tejon Ranch and respond to negative interactions between humans and condors quickly, using Service-approved measured to haze condors. The Service-approved Tejon Ranch Biologist would supervise and train additional qualified biologists in Service-approved hazing techniques to assist in efforts to haze condors from undesirable situations associated with the proposed action, and would be empowered to enforce rules governing use of the study area. The Proposed TUMSHCP Alternative would also include protection of the Condor Study Area and other large blocks of condor habitat within the TU MSHCP Mitigation Lands and Existing Conservation Easement Areas, and would include adaptive management provisions to address habituation or the potential for habituation of condors in the study area, based on ongoing monitoring by the Service-approved Tejon Ranch Biologist(s).

For the reasons described above, habituation of up to four condors under the Proposed TU MSCHP Alternative is not anticipated to result in a substantial effect on the population. The potential for habituation under the Proposed TU MSHCP Alternative would be greater than that associated with the No Action Alternative where habitation would be unlikely because development and associated infrastructure would not occur, and human presence/activity would not increase.

Collisions with Power Lines and Towers

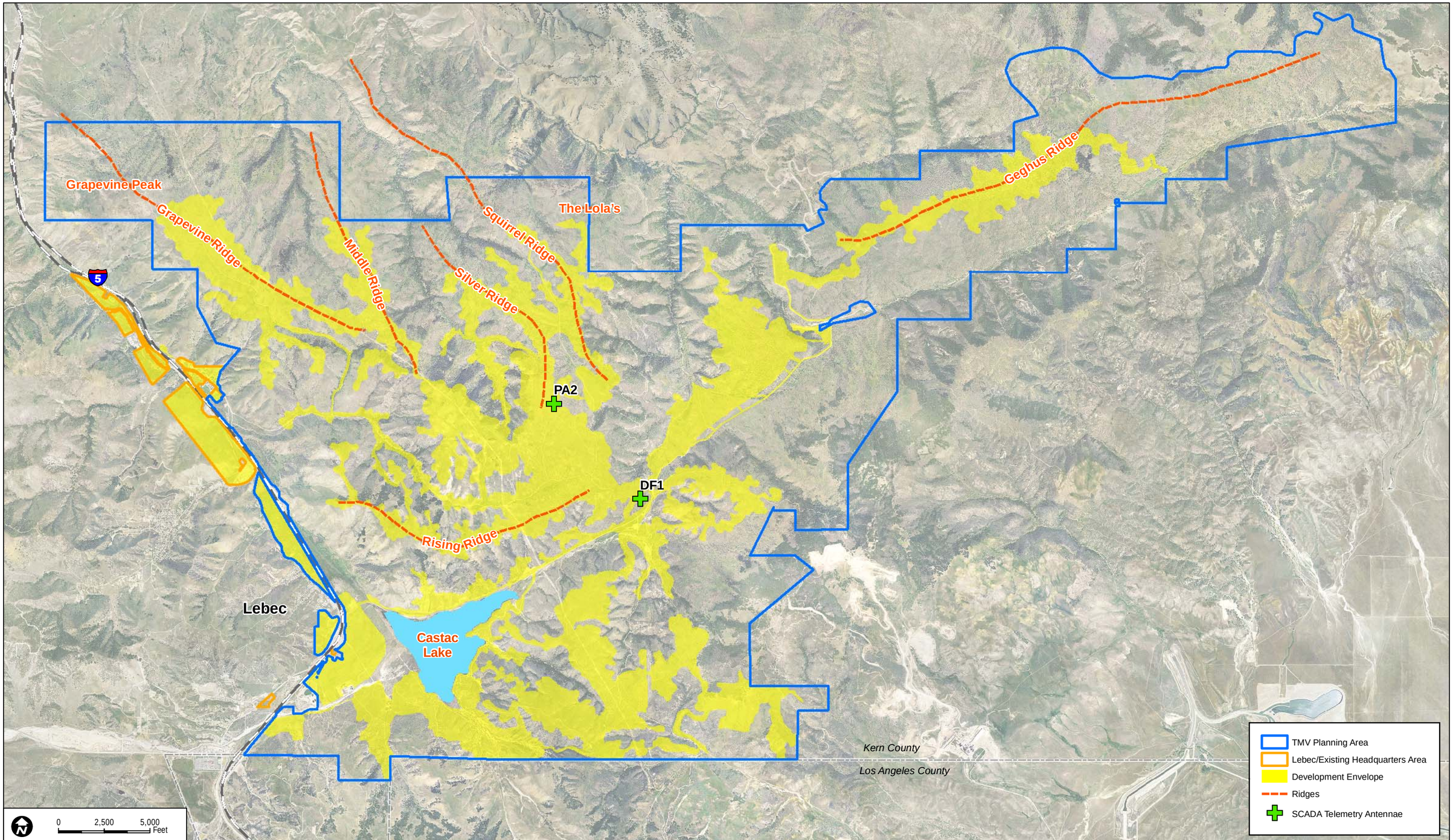
Since their reintroduction into the wild, the California condor population has been affected by collisions with power lines and high voltage transmission lines. A total of 10 condors were killed as a result of collisions with power lines between 1993 and 2007 (U.S. Fish and Wildlife Service unpublished data). While direct collisions with stationary transmission or communication towers have not been documented in historic condor populations, or with condors released into the wild since, any new aboveground transmission lines or transmission and communication towers or similar vertical structures installed as a result of development increase the potential for collisions. This is particularly a threat if such towers and lines are located on or near prominent ridgelines or slopes used by condors.

Table 2-3 in Chapter 2, Proposed TU MSHCP and Alternatives, summarizes the conservation measures that would be implemented under the Proposed TU MSHCP Alternative to reduce the potential for condor collisions with transmission lines, distribution lines, and towers. Specifically, no new aboveground high-voltage towers and transmission lines, or similar aboveground electrical transmission structures and lines would be built in the TMV Planning Area or elsewhere in the study area under the Proposed TU MSHCP Alternative. Third-party utilities, which TRC does not control, would be required to obtain their own ESA coverage should a transmission project be proposed in the future. Under this alternative, two existing lines may be relocated within 1,000 feet of existing locations, and associated transmission towers would include installation of antiperching devices. Additional permanent relocation of transmission or distribution lines would be prohibited unless reviewed and approved by the Service. All new transmission and distribution lines would be placed underground. In addition, an existing above-ground transmission line that runs from I-5 north of Castac Lake would be undergrounded within the TMV Planning Area after construction is complete. These measures would reduce the existing exposure of condors to transmission lines and towers.

Within the study area, TRC may not construct and maintain, or allow any third person to construct and maintain, new vertical communication or other utility structures outside of existing antenna farms, excluding flexible or small antennas (e.g., whip antennas) under 20 feet in height, unless the Service specifically approves such structures, including their design and location. Such factors as tower height and construction design, and proximity to existing towers and structures would be considered as part of the Service's review. The towers must be self-supporting to minimize the potential for collisions (i.e., no guide wires included as part of the design). Towers that would provide perches would be designed with antiperching devices. The design and location of the antiperching devices must also be approved by the Service.

Within the TMV Planning Area and Lebec/Existing Headquarters Area, the installation of two towers (PA-2/DF-1) would be authorized under the Proposed TU MSHCP Alternative. These towers would be located at two separate locations in the TMV Planning Area Development Envelope to provide suitable emergency radio communication coverage (Figure 4.1-2). One of these towers would be approximately 68 feet in height (including antennae) and the other would be approximately 65 feet in height (including antennae). Both towers would be required to be designed to be self-supporting (i.e., no guide wires) and would incorporate anti-perching devices. For the PA-2 tower, TRC would consult with the Service regarding the feasibility of locating the tower downslope (closer to a group of large oak trees), and agrees to do so if Kern County determines the Service's proposed location would provide suitable emergency radio communications. Although there has been no documented take from collision with a tower or antennae by a condor, the risk of collision with the PA-2 tower would be further minimized if at final design and installation it can be located closer to a group of large oak trees. The placement of any future communication towers to meet public safety requirements in the study area would be subject to review and approval by the Service.

The Proposed TU MSHCP Alternative also provides for smaller vertical communication structures (e.g., cell phone or radio antennas) to be placed within the TMV Planning Area Development Envelope or Lebec/Existing Headquarters areas, provided they meet design and height restrictions (i.e., the structures shall be no higher than 10 feet above houses or buildings [taller structures shall require the review and approval of the Service]; structures that contain surfaces suitable for perching by condors shall contain anti-perching devices; and the structures shall be located closer to trees where practicable and consistent with effective operations of communication systems). TRC would be required to confer with the Service regarding the placement of cell towers, antennas or



SOURCE: TRC 2007

FIGURE 4.1-2

Proposed Kern County Emergency Communication Tower Locations

other similar structures during the preparation of tentative tract maps and corresponding grading plans.

The above design guidelines and conservation measures would reduce the potential for condor collisions with transmission lines, distribution lines, and towers. A substantial effect on the condor population from collisions is not anticipated. The potential for collision under this alternative would be greater than associated with the No Action Alternative, where no new power lines or towers would be constructed in the Development Envelope.

Ingestion of Microtrash

Small bits of plastic and metal, such as bottle caps and pop-tops, which are inadvertently fed to hatchlings by their parents, have resulted in the mortality of several wild-hatched condor chicks. Microtrash that has affected condor breeding in the wild may come from several possible sources, including roadsides, camp sites, recreational events, and scattered refuse piles. The increase in human presence associated with development under the Proposed TU MSHCP Alternative would be expected to increase the risk that microtrash may occur in areas currently not exposed to high levels of human activity.

Table 2-3 in Chapter 2, Proposed TU MSHCP and Alternatives, summarizes conservation measures under the Proposed TU MSHCP Alternative that would be implemented to minimize the risk of increased exposure of condors to microtrash. For example, all communication tower sites must be kept clean of debris, such as cable, trash, construction materials, and other microtrash likely to adversely affect condors. Additionally, education and educational materials regarding threats to condors and the measures to minimize these threats must be provided to contractors, residents, and guests. This information would identify the types of microtrash that could be ingested by condors, and would identify measures to eliminate microtrash at construction sites, recreational areas, outdoor filming projects, roads, and back-country areas where human presence occurs. Land managers would be empowered to take action to prevent any such activity that would pose a threat to condors under the terms of project conservation easements, covenants, conditions and restrictions (CC&Rs), and similarly enforceable measures. Tejon Ranch, or an included entity, would ensure that routine community maintenance activities include regular efforts to eliminate microtrash at and near all work sites, recreational events, filming projects, roads, and back-country cabin areas where human presence occurs. All trash receptacles would be fitted with animal and weather-proof lids, would be regularly emptied, and would be regularly inspected by the Service-approved Tejon Staff Biologist. The Tejon Staff Biologist or designated Tejon Ranch employees, would be assigned to be with all film crews to enforce rules regarding discarding of microtrash items and would require a thorough clean-up by the filming entity during and immediately upon completion of all film shoots to eliminate any microtrash that may have accumulated.

It is anticipated that implementation of these conservation measures under the Proposed TU MSHCP Alternative would limit the potential for microtrash to accumulate in the study area, and would minimize the risk of increased exposure of condors to microtrash. As such, the Proposed TU MSHCP Alternative would not result in a substantial adverse effect on the condor population from increased availability of microtrash. The potential for the occurrence of microtrash under this alternative would be greater than associated with the No Action Alternative, where no new development would occur, and human-related debris would not increase.

Plan-Wide Activities

Current and future livestock grazing and related range management activities under the Proposed TU MSHCP Alternative would not be expected to have adverse effects on California condors. These activities have been a part of the landscape for many decades and have been one of the primary sources of food for condors over time. Grazing also reduces cover of nonnative grasses, opens habitat for foraging, and reduces fuel loads and the risk of catastrophic wildfire. Grazing would continue to provide an ongoing food source for condors, comparable to what would occur under the No Action Alternative.

Other ongoing Plan-Wide Activities, such as road and utility construction, repair, and maintenance, ancillary ranch activities, film production, back-country cabin use, and private and passive public recreation, may result in indirect effects on condors, such as generation of microtrash or human disturbance of condors that are roosting or feeding. Construction of utilities such as transmission towers and transmission lines could increase the potential for condors to collide with these structures, particularly if constructed along ridgelines or slopes likely to be used by condors.

As discussed above, the Proposed TU MSHCP Alternative would include conservation measures to restrict the design and construction of utilities in open space, as well as measures to protect against microtrash and habituation. Ground disturbance associated with Plan-Wide Activities under the Proposed TU MSHCP Alternative would be small enough (200 acres or less) to not substantially affect overall condor use of foraging and roosting habitat on the ranch. In addition, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would continue to be implemented under the Proposed TU MSHCP Alternative, and would include provisions to minimize the effects of ground-disturbing activities.

With respect to public access, the Proposed TU MSHCP Alternative would include development of a plan for review and approval by the Service; the Service would maintain this review and approval right in perpetuity. Public access of the study area would also be required to adhere to the conditions of the Ranchwide Agreement and the BMPs provided in the RWMP. Currently, the Interim RWMP provides for docent-led tours, citizen science activities, such as the Audubon Christmas bird count, school groups and special events (Tejon Ranch Company 2009). Additionally, the Interim RWMP provides that recreational access would only be allowed with qualified guides/docents, and in accordance with visitor guidelines that include a list of prohibited activities including, but not limited to, fireworks, smoking, littering, or driving off road. Public access would be subject to all the conservation measures in the TU MSHCP, including prohibitions on human behaviors that would adversely affect California condors, a provision for educational materials regarding condors, and limitations on pets (i.e., pets must be leashed).

While the level of condor activity on the ranch is expected to increase as their population continues to increase, it is anticipated the effects of Plan-Wide Activities on the California condor and its habitat would be minor given the additional restrictions of the TU MSHCP conservation measures. The effects would be somewhat greater than the No-Action Alternative, given the anticipated increased population of condors and increased human presence in the study area under the Proposed TU MSHCP Alternative.

Other Covered Species

Table 4.1-3 provides a summary of the potential effects of the Proposed TU MSHCP Alternative on modeled habitat for each of the 26 other Covered Species included in the TU MSHCP. Habitat modeling for the other Covered Species is briefly described in Section 3.1.7, Other Wildlife Species Considered for Conservation under the TU MSHCP, both in general terms and for each Covered Species, and fully described in Appendix D, Habitat Suitability Criteria Methods. Permanent and temporary direct and indirect effects associated with Commercial and Residential Development and Plan-Wide Activities are discussed below.

Table 4.1-3. Potential Effects on Modeled Habitat for Other Covered Species—Proposed TU MSHCP Alternative

Species	Species Model	Acreage of Modeled Habitat in Study Area[1]	Acreage of Modeled Habitat Lost[2,4]	Acreage of Modeled Habitat Conserved[3,4]
Tehachapi slender salamander	Suitable habitat	4,071	143 (4%)	3,921 (96%)
Western spadefoot	Suitable habitat	1,175	30 (3%)	1,055 (90%)
Yellow-blotched salamander	Suitable habitat	35,213	1,179 (3%)	33,988 (97%)
American peregrine falcon	Foraging	26,742	2,741 (10%)	23,862 (89%)
	Breeding	80	1 (1%)	79 (99%)
Bald eagle	Foraging	518	5 (1%)	499 (96%)
	Wintering	1,438	834 (58%)	604 (42%)
Burrowing owl	Breeding/foraging	24,944	2,485 (10%)	22,406 (90%)
	Secondary breeding/foraging	8,073	552 (7%)	7,521 (93%)
Golden eagle	Foraging	33,891	3,040 (9%)	30,791 (91%)
	Breeding/foraging	33,056	2,045 (6%)	30,972 (94%)
	Primary breeding	48,019	2,613 (5%)	45,357 (94%)
Least Bell's vireo	Breeding/foraging	614	8 (1%)	582 (95%)
Little willow flycatcher	Foraging/stopover	986	8 (1%)	954 (97%)
Purple martin	Breeding/foraging	85,870	4,762 (5%)	81,015 (94%)
Southwestern willow flycatcher	Breeding/foraging	986	8 (1%)	954 (97%)
Tricolored blackbird	Foraging	18,553	1,107 (6%)	17,373 (94%)
	Primary breeding	289	23 (8%)	198 (69%)
Western yellow-billed cuckoo	Breeding/foraging	986	8 (1%)	954 (97%)
White-tailed kite	Foraging	9,009	1,874 (21%)	7,021 (78%)
Yellow warbler	Breeding/foraging	986	8 (1%)	954 (97%)
	Secondary foraging	51,743	2,687 (3%)	49,008 (95%)

Species	Species Model	Acreage of Modeled Habitat in Study Area[1]	Acreage of Modeled Habitat Lost[2,4]	Acreage of Modeled Habitat Conserved[3,4]
Valley elderberry longhorn beetle	Suitable habitat	2,597	0 (0%)	2,578 (99%)
Ringtail	Suitable habitat	99,253	8,287(8%)	90,735 (91%)
Tehachapi pocket mouse	Suitable habitat	1,931	57(3%)	1,071 (95%)
Coast horned lizard (*frontale* and *blainvillii* populations)	Primary habitat	41,083	3,959 (10%)	37,074 (90%)
	Secondary habitat	62	3 (5%)	51 (82%)
Two-striped garter snake	Suitable habitat	364	34 (9%)	254 (70%)
Fort Tejon woolly sunflower	Suitable habitat	57,430	5,368 (9%)	52,046 (91%)
Kusche's sandwort	Suitable habitat	30,505	2,097 (7%)	28,407 (93%)
Round-leaved filaree	Suitable habitat	58,073	4,997 (9%)	53,076 (91%)
Striped adobe lily	Suitable habitat	32,213	2,737 (8%)	29,476 (91%)
Tehachapi buckwheat	Suitable habitat	2,579	16 (1%)	2,562 (99%)
Tejon poppy	Suitable habitat	12,672	108 (1%)	12,533 (99%)

[1] Acreages in this column are based on the study area encompassing 134,996 total acres, or the total acreage in the study area (141,886 acres) less the acreage in Other Lands (6,890 acres).

[2] Acreages in this column represent the acreage of modeled habitat lost in the 8,817 acre Development Envelope. Percentages represent the percent of modeled habitat lost relative to the acreage of modeled habitat in the study area.

[3] Acreage is this column represents the acreage of modeled habitat conserved in Established Open Space and TMV Planning Area Open Space (TU MSHCP Mitigation Lands), and Existing Conservation Easement Areas. Percentages represent the percent of modeled habitat conserved relative to the acreage of modeled habitat in the study area.

[4] The percentages of modeled habitat conserved and lost may not sum to 100% for three possible reasons: (1) rounding error; (2) 75% of riparian/wetlands are assumed avoided in development areas, but avoided areas are not included in the open space acreages; and (3) 145 acres in the Lebec/Existing Headquarters Area are assumed not developed, but are also not included in open space. As a result, it is likely that modeled habitat conserved in the Lebec/Existing Headquarters Area is underestimated because the County land use designations for this area would only allow a small component of land in that area to be developed (see Section 4.1.1.2, Methods – Analytical Framework for Biological Effects). A more specific explanation for these differences is provided in the species-specific discussion below for the species where the sum is less than 90% (i.e., tricolored blackbird, coast horned lizard, and two-striped garter snake).

Commercial and Residential Development Activities

As described in Section 3.1, Biological Resources, modeled habitat is composed of vegetation communities supporting the life history requirements of the Covered Species, along with other habitat suitability criteria appropriate for a particular species, such as soils or elevations. Therefore, for the purposes of this EIS, permanent loss of modeled habitat is used to assess direct effects on species. In addition to permanent ground disturbance, construction-related effects, including noise, toxins, and lighting, and operations effects, including increased human presence and introduction of

urban-type uses associated with development, could indirectly affect the other Covered Species, and are described below.

Loss of Habitat

Table 4.1-3 indicates the extent of the permanent loss of modeled habitat for each of the other Covered Species, as well as the extent of modeled habitat that would be conserved in the study area. While only some portion of each of these modeled habitats would represent the most suitable habitat for the Covered Species, in the absence of more detailed species habitat information, they are used here to conservatively represent the extent of suitable habitat that would be lost for each species under the Proposed TU MSHCP Alternative. For each of the other Covered Species, the following evaluation considers the loss of modeled habitat, potential effects on known species occurrences within the study area (where applicable), as well as the overall range and rarity of the species in relation to the potential loss of modeled habitat.

In general, the primary conservation measure under the Proposed MSHCP Alternative would be conservation and management of 129,318 acres of open space. In addition, species-specific conservation measures would be provided under the Proposed TU MSHCP Alternative, as summarized in Table 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives. These measures generally address construction- or operation-related effects, and are described in more detail below. Where conservation measures are provided specifically to offset the loss of modeled habitat, they are summarized for each species.

Tehachapi Slender Salamander

Modeled habitat for the Tehachapi slender salamander would be reduced by 143 acres (4%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, Tehachapi slender salamanders have been detected at five locations in the study area (Monroe Canyon [1 record], Bear Trap Canyon [2 records], adjacent to the California aqueduct [1 record], and Tejon Canyon[1 record]), all of which would be preserved in open space areas under this alternative. The Tehachapi slender salamander is endemic to California and only occurs in the Piute and Tehachapi Mountains of Kern County.

Potential effects on Tehachapi slender salamander are considered in the context of the species' limited range and the difficulty of detecting species presence during surveys. An estimated 3,921 acres (96%) of modeled habitat for this species would be conserved in open space under the Proposed TU MSHCP Alternative. As summarized in Table 2-4, this alternative would include species-specific conservation measures to reduce potential effects on Tehachapi slender salamander, including preconstruction surveys in suitable habitat by the Service-approved Tejon Ranch Biologist and reasonable efforts to capture and relocate observed individuals to suitable habitat that is the closest distance to the Disturbance Area from where the individuals were removed. Construction activities would also be monitored, and exclusion fencing erected, if appropriate, to prevent Tehachapi slender salamanders from entering construction zones. In modeled habitat within the TMV Planning Area, and for all hard surface roads within open space, culverts would be placed under road connections to reduce the potential for the species to enter on-site roads. These conservation measures, including preservation of 96% of modeled habitat in open space, would reduce potential effects on this species from the loss of habitat. In consideration of the species limited range, it is anticipated that the loss of 4% of modeled habitat under the Proposed TU MSHCP Alternative would result in a moderate effect on the Tehachapi slender salamander in the

study area, and a minor effect on the population rangewide.[2] This alternative would not substantially affect this species.

Western Spadefoot

Modeled habitat for the western spadefoot would be reduced by 30 acres (3%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, western spadefoot has not been detected in the TMV Planning Area and has low potential to occur in other parts of the study area. The western spadefoot is endemic to California and northern Baja California. It has been extirpated throughout most of the lowlands of southern California and from many locations in the Central Valley (U.S. Fish and Wildlife Service 2005).

An estimated 1,055 acres (90%) of modeled habitat for this species would be conserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on western spadefoot, including preconstruction surveys in suitable habitat by the Service-approved Tejon ranch Biologist and reasonable efforts to capture and relocate observed individuals to suitable habitat that is the closest distance to the Disturbance Area from where the individuals were removed. If western spadefoots are detected (including egg masses and larvae), construction activities would stop within 300-feet of the occupied area until larvae have metamorphosed. Preconstruction activities would also be monitored, and exclusion fencing erected, if appropriate, to prevent western spadefoot from entering construction zones. These conservation measures, including preservation of 90% of modeled habitat in open space, would reduce potential effects on this species from the loss of habitat. In consideration of the low potential for occurrence in the study area, it is anticipated that the loss of 3% of modeled habitat under the Proposed TU MSHCP Alternative would have a minor effect on the population of western spadefoot in the study area (if present), and a minor effect on the species rangewide. This alternative would not substantially affect this species.

Yellow-Blotched Salamander

Modeled habitat for the yellow-blotched salamander would be reduced by 1,179 acres (3%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the yellow-blotched salamander was detected in several drainages in the TMV Planning Area, and all currently known populations in the study area would be conserved generally north of Rising Canyon and south of Pastoria Canyon, east of Grapevine Peak in the vicinity of Silver, Monroe, and Squirrel canyons, and along tributaries to Bear Trap Canyon. Yellow-blotched salamanders are endemic to California, specifically in Kern and Ventura Counties, and occur at elevations between 1,400 and 7,496 feet amsl.

Potential effects on yellow-blotched salamander are considered in the context of the species' limited geographic range. An estimated 33,988 acres (97%) of modeled habitat for this species would be conserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects

[2] In the 12-Month Finding for the Tehachapi slender salamander, the Service concluded that the TMV Project would not significantly affect the survival and recovery of the Tehachapi Mountains Distinct Population Segment (DPS) of Tehachapi slender salamander because the five occupied canyons that comprise the Tehachapi Mountains DPS are widely distributed (76 FR 62926).

on yellow-blotched salamander, including preconstruction surveys in suitable habitat by the Service-approved Tejon ranch Biologist and reasonable efforts to capture and relocate observed individuals to suitable habitat that is the closest distance to the Disturbance Area from where the individuals were removed. Construction activities would also be monitored, and exclusion fencing erected, if appropriate, to prevent yellow-blotched salamanders from entering construction zones. These conservation measures, including preservation of 97% of modeled habitat in open space and preservation of all known populations in the study area, would reduce potential effects on this species from the loss of habitat. In consideration of these conservation measures, it is anticipated that the loss of 3% of modeled habitat under the Proposed TU MSHCP Alternative would have a minor effect on yellow-blotched salamander in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

American Peregrine Falcon

Modeled foraging habitat for the American peregrine falcon would be reduced by 2,741 acres (10%) in the study area under the Proposed TU MSHCP Alternative; modeled breeding habitat (steep cliff and bluffs) would be reduced by 1 acre (less than 1%) (Table 4.1-3). As described in Section 3.1, Biological Resources, the peregrine falcon has not been documented to nest in the study area and has only been observed to be an occasional winter visitor. It has an extensive range that spans from Alaska south to northern Mexico and east across Arizona through Alabama, and is known to use a large variety of open habitats for foraging.

An estimated 23,862 acres (89%) of modeled foraging habitat and 79 acres (99%) of modeled breeding habitat for this species would be conserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on American peregrine falcon, including preconstruction surveys in suitable breeding habitat to determine if nesting falcons are present. If active nests are detected, a 0.25-mile protection zone would be established around each active nest and grading and land management activities would be prohibited in this zone while the nest is active. Construction activities would also be monitored by a Service-approved biologist. Similarly, if an active peregrine falcon nest is detected in open space, a 1,000-foot protection zone would be established around the nest, and recreation and other activities would be prohibited in that zone until all young have fledged and are no longer dependent on the nest for survival.

In consideration of the extensive range of the species, the fact that no known nesting populations would be affected by the Covered Activities, and because 89% of the modeled foraging habitat and 99% of modeled breeding habitat would be conserved and protected in open space areas, it is anticipated that the loss of 10% of modeled foraging habitat and 1% of modeled breeding habitat under the Proposed TU MSHCP Alternative would have a minor effect on American Peregrine falcon that may nest or forage in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Bald Eagle

Modeled winter roosting habitat for the bald eagle would be reduced by 834 acres (58%) in the study area under the Proposed TU MSHCP Alternative; modeled foraging habitat would be reduced by 5 acres (1%) (Table 4.1-3). Modeled winter roosting habitat is concentrated around and within 1 mile of Castac Lake, particularly to the south and east where trees are sufficiently large to support roosting substrate for bald eagles. A substantial amount of development is planned for the perimeter

and in the vicinity of Castac Lake under this alternative. The removal of 58% of the modeled winter roosting habitat would represent a substantial amount of the existing woodland habitat available to the bald eagle as winter roosting habitat in the study area. While foraging habitat at the lake would remain largely undisturbed, bald eagle use of aquatic foraging habitats is in part a function of the availability of roosting and perching trees in the vicinity of the aquatic foraging habitat. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include conservation measures to protect this habitat, including a prohibition on removal of preferred diurnal perches and high quality roost trees from fuel modification zones within 1 mile of Castac Lake. In addition, snags and large trees would be avoided within 100 feet of the shoreline of Castac Lake, where possible, and an adequate setback from preferred roosting areas would be established by a Service-approved biologist.

As described in Section 3.1, Biological Resources, bald eagles have a widespread distribution in North America, wintering from Alaska eastward to Newfoundland and southward locally to Baja California, Sonora, Texas, and Florida. In California, breeding populations are more limited and restricted primarily to the northern Sierra. Within the study area, at least six bald eagles were observed in winter 2007, and the loss of 58% of available modeled winter roosting habitat would likely reduce the use of Castac lake by wintering bald eagles. However, the bald eagle does not breed on site and surveys indicate that a large wintering population does not occur in the study area. In consideration of the extensive range of the species and the conservation measures that would be implemented to protect the remaining modeled foraging and wintering habitat it the study area, it is anticipated that the loss of 1% of modeled foraging habitat and 58% of modeled wintering habitat under the Proposed TU MSHCP Alternative would have a moderate effect on bald eagle that winter or forage in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Burrowing Owl

Modeled breeding/foraging habitat for burrowing owl would be reduced by 2,485 acres (10%) in the study area under the Proposed TU MSHCP Alternative; modeled secondary breeding/foraging habitat would be reduced by 552 acres (7%) (Table 4.1-3). As described in Section 3.1, Biological Resources, burrowing owls are infrequent winter visitors to the study area. One migrant burrowing owl was incidentally observed in the study area in 2007; however, no breeding, resident, or wintering burrowing owls were detected on site during any of the focused surveys of the TMV Planning Area. In general, the burrowing owl is widespread in the United States and Canada and is found in a wide variety of habitat types typically characterized by low-growing vegetation and burrows made by fossorial mammals, such as ground squirrels.

An estimated 22,406 acres (90%) of modeled breeding/foraging habitat and 7,521 acres (93%) of modeled secondary breeding/foraging habitat for this species would be conserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on burrowing owl, including preconstruction surveys in suitable breeding habitat 30 days prior to scheduled grading to determine if owls are present on site. If non-nesting burrowing owls are observed on site, grading construction would stop until owls are evacuated from the site using CDFG-approved burrow closure procedures. If nesting burrowing owls are observed on site, a 300-foot setback would be provided around all active nests until fledglings have left or are independent of the nest, as determined by a Service-approved biologist. Given the extensive range of the species, their limited

presence in the study area, and because 90% of the modeled breeding/foraging habitat and 93% of modeled secondary breeding/foraging habitat would be conserved and protected in open space, it is anticipated that loss of 10% of modeled breeding/foraging habitat and 7% of modeled secondary breeding/foraging habitat under the Proposed TU MSHCP Alternative would have a minor effect on burrowing owl in the study area (if present), and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Golden Eagle

Modeled foraging, breeding/foraging, and primary breeding habitat for golden eagle would be reduced by 3,040 acres (9%), 2,045 acres (6%), and 2,613 acres (5%) in the study area, respectively, under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, golden eagles have been regularly observed in the TMV Planning Area since 1999 and are a documented breeding resident on site. Three active nest sites are currently known to occur in the study area. Within their range, golden eagles are sparsely distributed throughout most of California, occupying primarily mountain, foothill, and desert habitats. The golden eagle preferred territories have a favorable nest site, a dependable food supply, and broad expanses of open country for foraging. Nesting of the golden eagle is primarily restricted to rugged, mountainous country with canyons and escarpments.

An estimated 30,791 acres (91%) of modeled foraging habitat, 30,792 acres (94%) of modeled breeding/foraging habitat, and 43,357 acres (94%) of modeled primary breeding habitat for this species would be conserved in open space under this alternative. As summarized in Table 2-4, all known active golden eagle nests (primary and alternate) in the study area would be protected during the breeding season. Additional measures to reduce potential effects on golden eagle would include preconstruction surveys (i.e., prior to approval of a grading plan to better incorporate avoidance planning and completion of baseline surveys in open space) to confirm nest activity status and to search for any new active nests, application of a viewshed analysis to any new nests discovered during preconstruction surveys, and implementation of development and recreational use setbacks and trail closures (during the nesting season) to avoid potential disturbance of golden eagle nests and associated foraging habitat. Given the extensive range of the species, the species-specific conservation measures that would be applied to active nest sites, and the combined high level of habitat conservation (91% of the modeled foraging habitat, 94% of modeled breeding/foraging habitat, and 94% of primary breeding habitat would be conserved and protected), it is anticipated that the loss of modeled habitat under the Proposed TU MSHCP Alternative would have a minor effect on golden eagles in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Least Bell's Vireo

Modeled breeding/foraging habitat for the least Bell's vireo would be reduced by 8 acres (less than 1%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the least Bell's vireo is endemic to California and northern Baja California. However, its current breeding distribution is primarily restricted to distinct locations in southern California (south of the Tehachapi Mountains) to northern Baja California. The primary breeding and foraging habitat of the least Bell's vireo is early successional, dense riparian habitat below 1,500 feet amsl.

This species has not been detected in the study area, and the study area is not an area of focus in the least Bell's vireo recovery plan (U.S. Fish and Wildlife Service 1998). However, the least Bell's vireo has a very limited distribution, and low reproductive success due to loss of riparian habitat and cowbird nest parasitism. Therefore, loss of any potential breeding habitat is an important consideration for this species. An estimated 582 acres (95%) of breeding/foraging habitat for this species would be conserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the least Bell's vireo, including preconstruction surveys in and immediately adjacent to suitable breeding/foraging habitat during the breeding season (April through August), and creation of a 500-foot buffer around any nests detected in preconstruction surveys if construction cannot be avoided entirely during the breeding season.

Although the net loss of 8 acres of riparian habitat under the Proposed TU MSHCP Alternative could affect least Bell's vireo if they occur on site, appropriate management of the remaining 95% of modeled breeding/foraging habitat (i.e., maintenance of a high proportion of the riparian areas suitable for the species in an early successional state) would reduce this effect. In consideration of the conservation measures provided under this alternative, including appropriate management of modeled breeding/foraging habitat in open space, it is anticipated that the loss of 1% of modeled breeding/foraging habitat under the Proposed TU MSHCP Alternative would have a minor effect on the population of least Bell's vireo in the study area (if present), and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Little Willow Flycatcher

Modeled foraging/stopover habitat for the little willow flycatcher would be reduced by 8 acres (less than 1%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, this species breeds in California from Tulare County north along the western side of the Sierra Nevada, with most of the remaining breeding populations occurring in isolated mountain meadows of the Sierra Nevada and Cascades. The full species willow flycatcher winters in Mexico, Guatemala, Honduras, Nicaragua, Costa Rica, Colombia, and into South America. Foraging flycatchers have been observed in the study area, although the entire breeding range of the little willow flycatcher is located outside of the study area. However, suitable foraging and stopover habitat exists in the study area, and little willow flycatchers have been detected near Castac Lake, Cuddy Creek, Beartrap Canyon, Rising Canyon and along Grapevine Creek.

An estimated 954 acres (97%) of modeled foraging/stopover habitat for this species would be conserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on little willow flycatcher, including incorporation of design features at the boundary between modeled habitat and development areas to minimize the introduction of nonnative species and urban runoff into adjacent natural areas, which could degrade flycatcher stopover habitat. Lighting would also be directed away from modeled habitat to reduce disturbance. Given that little willow flycatchers on migration have more general habitat requirements than breeding individuals, and that 97% of the modeled foraging/stopover habitat would be conserved and protected in open space, it is anticipated that the loss of 1% of modeled foraging/stopover habitat under the Proposed TU MSHCP Alternative would have a minor effect on little willow flycatcher stopping over and foraging in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Purple Martin

Modeled breeding/foraging habitat for the purple martin would be reduced by 4,762 acres (5%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the purple martin breeds locally from British Columbia eastward to Nova Scotia, and southward to Baja California, central Mexico, and the Gulf Coast. The winter range of the species is not well understood, but they are presumed to winter in Amazonia and south-central Brazil. In California, the purple martin occurs as a summer resident and migrant; the breeding populations are highly localized, primarily inland and along the central and southern coast. In the Tehachapi Mountains, the purple martin nests regularly in oak woodland, and has been detected breeding and foraging in the oak woodland and oak savannah communities in the study area. Airola and Williams (2008) found the Tehachapi Mountains support 100 to 200 pairs of purple martin, and may be the one remaining area in California where purple martins regularly nest in oak woodland.

An estimated 81,015 acres (94%) of modeled breeding/foraging habitat for this species would be conserved in open space under this alternative. Despite the conservation of 94% of modeled habitat in open space, the Proposed TU MSHCP Alternative would likely directly affect breeding sites in the TMV Planning Area that have been used by purple martin in the past, and could indirectly affect breeding pairs through competition from starlings, which can be exacerbated with human development of remote areas (Williams 2002). As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the purple martin, including preconstruction surveys for breeding purple martins and avoidance of active nests during the breeding season (April through August). A European starling management plan would also be implemented by a Service-approved biologist if determined necessary. These conservation measures, including preservation of 94% of modeled breeding/foraging habitat in open space, would reduce potential effects on this species from the loss of habitat. Given the apparent importance of the Tehachapi Mountains to this species, it is anticipated that the loss of 5% of modeled breeding/foraging habitat for purple martin under the Proposed TU MSHCP Alternative would have a minor to moderate effect on the species in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Southwestern Willow Flycatcher

Modeled breeding/foraging habitat for the southwestern willow flycatcher would be reduced by 8 acres (less than 1%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, southwestern willow flycatchers breed in Arizona, New Mexico, California, southwestern Colorado, southern Nevada and Utah, and western Texas. The total number of southwestern willow flycatcher territories in 2002 was estimated to be approximately 1,100 to 1,200, and these territories were distributed in a large number of small breeding populations. These small, isolated breeding populations make the species particularly vulnerable to local extirpation.

No southwestern willow flycatchers have been observed in the study area and the study area is not an area of focus in the southwestern willow flycatcher recovery plan (U.S. Fish and Wildlife Service 2002). However, the southwestern willow flycatcher has low reproductive success due to loss of riparian habitat and cowbird nest parasitism; therefore, loss of any potential breeding habitat is an important consideration for this species. An estimated 954 acres (97%) of modeled breeding/foraging habitat would be conserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation

measures to reduce potential effects on southwestern willow flycatcher, including preconstruction surveys in and immediately adjacent to suitable breeding/foraging habitat during the breeding season (April through August), and creation of a 500-foot buffer around any nests detected in preconstruction surveys if construction cannot be avoided entirely during the breeding season.

Although the net loss of 8 acres of riparian habitat under the Proposed TU MSHCP Alternative could affect southwestern willow flycatchers, should they occur in the study area, appropriate management of the remaining 97% of modeled habitat (i.e., maintenance of a high proportion of the riparian areas suitable for the species in an early successional state) would reduce this effect. In consideration of the conservation measures provided under this alternative, including appropriate management of modeled breeding/foraging habitat in open space, it is anticipated that the loss of 1% of modeled breeding/foraging habitat under the Proposed TU MSHCP Alternative would have a minor effect on southwestern willow flycatchers in the study area (if present), and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Tricolored Blackbird

Modeled foraging habitat for the tricolored blackbird would be reduced by 1,107 acres (6%) in the study area under the Proposed TU MSHCP Alternative; modeled primary breeding habitat would be reduced by 23 acres (8%) (Table 4.1-3). As described in Section 3.1, Biological Resources, tricolored blackbirds have been observed nesting in the study area adjacent to Castac Lake. Tricolored blackbird breeding colonies generally require open accessible water, a protected nesting substrate, and a suitable foraging area which provides adequate insect prey. About 99% of the population is endemic to California, and in 2011, tricolored blackbirds nesting in Tulare Basin in Kern County represented approximately 34% of the California population.

Modeled breeding habitat for the tricolored blackbird in the study area is concentrated around Castac Lake. Under this alternative, 198 acres (69%) of modeled breeding habitat and 17,373 acres (94%) of modeled foraging habitat would be conserved in open space.[3] As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the tricolored blackbird, including preconstruction surveys in and immediately adjacent to suitable breeding habitat during the breeding season (April through August), and creation of a 500-foot buffer around any nesting colony if construction cannot be avoided entirely during the breeding season.

The net loss of 23 acres of modeled primary breeding habitat under the Proposed TU MSHCP Alternative could affect nesting tricolored blackbird colonies in the study area. Under this alternative, development would surround a significant portion of Castac Lake, which is the primary body of water in the study area and is also the location where tricolored blackbirds have historically been observed. Managing open space to provide cattail marsh and appropriate nesting habitat for

[3] The percentages of modeled primary breeding habitat conserved and lost for tricolored blackbird only sum to 77% under the Proposed TU MHSCP Alternative (Table 4.1-3). This is attributable to the assumptions in the habitat model specific to riparian areas (i.e., 75% of riparian/wetlands are assumed avoided in development areas, but avoided areas are not included in the open space acreages) and assumptions specific to future uses of the Lebec/Existing Headquarters Area (i.e., 145 acres in the Lebec/Existing Headquarters Area are assumed not developed, but are also not included in open space). It is likely that modeled primary breeding habitat conserved is underestimated because riparian areas have not been fully considered, and because the County land use designations in the Lebec/Existing Headquarters Area would only allow a small component of land in that area to be developed (see Section 4.1.1.2, Methods – Analytical Framework for Biological Effects).

the species, along with implementation of the above conservation measures, would reduce this effect. It is anticipated that the loss of 6% of modeled foraging habitat and 8% of modeled breeding habitat under the Proposed TU MSHCP Alternative would have a moderate effect on tricolored blackbirds in the study area and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Western Yellow-Billed Cuckoo

Modeled breeding/foraging habitat for the western yellow-billed cuckoo would be reduced by 8 acres (less than 1%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the western yellow-billed cuckoo nests at scattered locations in California including Sacramento and Owens Valley, the south fork of the Kern River, the Santa Ana River, the Colorado River, and the Amargosa River. The western yellow-billed cuckoo breeds primarily in dense, riparian woodlands, and requires a wide band of riparian habitat. This species has not been detected in the study area, and although vegetation communities indicative of breeding habitat have been modeled, suitable patch size for nesting western yellow-billed cuckoos has not been found in the study area.

An estimated 954 acres (97%) of modeled breeding habitat would be conserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on western yellow-billed cuckoo, including preconstruction surveys in and adjacent to suitable breeding habitat prior to scheduled grading to determine if cuckoos are present. If breeding western yellow-billed cuckoos are observed on-site, a 500-foot buffer would be provided around any active nests until fledglings have left and are no longer dependent on the nest or test territory. Given the lack of suitable patch size for western-yellow billed cuckoos to nest in the study area, and because 97% of modeled breeding habitat would be conserved and protected in open space, it is anticipated that the loss of 1% of modeled breeding/foraging habitat under the Proposed TU MSHCP Alternative would have a minor effect on the population of western yellow-billed cuckoo in the study area (if present), and a minor effect on the population rangewide. This alternative would not substantially affect this species.

White-Tailed Kite

Modeled foraging habitat for the white-tailed kite would be reduced by 1,874 acres (21%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the white-tailed kite breeds in Oregon, Washington, and Texas, but the primary breeding populations are found in California, occupying most areas west of the Sierra Nevada foothills and outside of the southeast deserts. The white-tailed kite is an infrequent winter visitor to the study area and there are no breeding records and few occurrence records of the species in the study area.

An estimated 7,021 acres (78%) of the modeled foraging habitat for this species would be conserved in open space under this alternative. Breeding habitat was not modeled for this species because the study area is located east of the published year-round range for the species. No nests were detected and few birds were observed foraging in the study area. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the white-tailed kite, including preconstruction surveys for active white-tailed kite nests during the breeding season (March through September) prior to grading. Any active nests would be conserved and protected by a 500-foot buffer. Given the large range of the species, their limited presence in the study area, and because 78% of the modeled foraging habitat would be conserved and protected in open space, it is anticipated that the loss of 21% of modeled foraging habitat under the Proposed TU MSHCP Alternative would have a minor effect on white-tailed kite visiting or wintering in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Yellow Warbler

Modeled breeding/foraging and secondary foraging habitat for the yellow warbler would be reduced by 8 acres (less than 1%) and 2,687 acres (3%) in the study area, respectively, under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the breeding range of the yellow warbler extends from northern Alaska, eastward to Newfoundland and southward to northern Baja California and Georgia. It migrates through North America and winters from southern California, Arizona, and the Gulf Coast to central South America. In California, the yellow warbler has an extensive breeding range, nesting in riparian woodlands from coastal and desert lowlands up to 8,000 feet amsl in the Sierra Nevada. Yellow warbler breeding habitat also includes montane chaparral, ponderosa pine, and mixed conifer habitats. Yellow warblers have been observed in the TMV Planning Area and are expected to occur in a regular distribution in the study area based on these observations. Although nests have not been documented, this species is expected to nest in the study area within suitable habitat.

An estimated 954 acres (97%) of modeled breeding/foraging habitat and 49,008 acres (95%) of secondary foraging habitat would be conserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the yellow warbler, including preconstruction surveys during the breeding season (April through August) in or adjacent to suitable breeding habitat. If nesting yellow warblers are observed on site, appropriate setbacks would be established if construction cannot be avoided entirely during the breeding season.

Yellow warblers are sensitive to decreases in deciduous habitat, heterogeneity of riparian habitat and riparian corridor width. They also have reduced reproductive success due to cowbird nest parasitism and nest predation. Given these factors, the net loss of riparian habitat is an important consideration for this species. However, despite many local declines, yellow warblers currently occupy most of their former breeding range with the exception of the Central Valley. Given the high level of habitat conservation and protection (97% of modeled breeding/foraging habitat and 95% of secondary foraging habitat), and with the appropriate management of conserved riparian habitat in open space, it is anticipated that the loss of 1% of modeled breeding/foraging habitat and 3% of modeled secondary foraging habitat under the Proposed TU MSHCP Alternative would result in a minor effect on yellow warblers in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Valley Elderberry Longhorn Beetle

Modeled habitat for the valley elderberry longhorn beetle would not be lost in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the primary range of the valley elderberry longhorn beetle is in the Central Valley, although the species' distribution ranges from southern Shasta County to Fresno County. The host plants of the valley elderberry longhorn beetle are red or blue elderberry, and the species spends the majority of its life cycle inside the limbs of the elderberry shrub. Presence of the valley elderberry longhorn beetle is confirmed by the existence of emergence holes in elderberry shrubs. Elderberry shrubs have been mapped at several locations in the TMV Planning Area; however, no emergence holes were found on any of the mapped shrubs.

An estimated 2,578 acres (99%) of modeled habitat for the valley elderberry longhorn beetle would be conserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the valley elderberry longhorn beetle, including development of an integrated pest management plan (IPMP), which would limit the exposure of elderberry trees to herbicides that could damage or destroy the trees. Given that no modeled valley elderberry longhorn beetle habitat would be lost under this alternative and 99% of modeled habitat would be conserved, it is anticipated that the Proposed TU MSHCP Alternative would have a minor effect on the population in the study area (if present), and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Ringtail

Modeled habitat for the ringtail would be reduced by 8,287 acres (8%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the ringtail occurs in the southwestern United States. In California, the ringtail is widely distributed and is only absent from Modoc Plateau, Antelope Valley, and portions of the San Joaquin Valley. Potential ringtail scat has been observed in the TMV Planning Area, however, the observation was unverified, and no occurrences of the ringtail were recorded in the TMV Planning Area during the course of extensive camera/scent station surveys in 2007.

An estimated 90,735 acres (91%) of modeled habitat for this species would be conserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species specific conservation measures to reduce potential effects on the ringtail, including preconstruction surveys within 300 feet of a disturbance zone within 30 days of permanent ground disturbance to determine if ringtails are present in the area. If ringtails (or signs of ringtails) are observed within 300 feet of the disturbance zone, construction would be avoided during the breeding period (February through September). Similarly, if ringtails (or signs of ringtail) are observed within 300 feet of the disturbance zone during the nonbreeding period (September through February), the Service-approved biologist will work in consultation/coordination with CDFG) to implement avoidance measures (e.g., flush the species from the disturbance zone). Construction in modeled riparian, wash, and wetland habitat would be avoided to the extent practicable with the exception of road crossings and culverts.

The loss of 8,287 acres of modeled habitat would, at a minimum, reduce the amount of potential habitat for ringtail in the study area; however, given the extensive range of the ringtail, its unconfirmed presence (or likely limited distribution if present) in the study area, and because 91%

of the modeled habitat would be conserved in open space, it is anticipated that the loss of 8% of modeled habitat under the Proposed TU MSHCP Alternative would have a minor to moderate effect on the ringtail population in the study area (if present), and a minor effect on the rangewide population. This alternative would not substantially affect this species.

Tehachapi Pocket Mouse

Modeled habitat for the Tehachapi pocket mouse would be reduced by 57 acres (3%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the Tehachapi pocket mouse is considered to be very rare and has only been documented in a few scattered localities in the Tehachapi Mountains, from Tehachapi Pass on the northeast to the area of Mt. Pinos on the southwest, and around Elizabeth, Hughes, and Quail Lakes on the southeast. There are three CNDDB occurrences of the Tehachapi pocket mouse along the southern edge of the TMV Planning Area. The Tehachapi pocket mouse was also documented during trapping surveys in and adjacent to the study area as recently as 2010 (Cypher et. al. 2010, Dudek 2009); occurrences were in the southeastern portion of the TMV Planning Area between Oso and Dark Canyons near the southern border of the study area, and in and near the Bi-Centennial and Tri-Centennial conservation easement areas. All occurrences of the Tehachapi pocket mouse are within the Antelope-Fremont Valley watershed, and it is possible that the ridgeline north of this watershed poses obstacles to the expansion of its range. Development in Oso Canyon could affect two populations of Tehachapi pocket mouse documented in the TMV Planning Area.

In general, surface-disturbing activities are incompatible with the persistence of native small mammal populations, and as this species occurs in small, scattered populations within a limited range, it is highly vulnerable to local extirpation from natural or human-related disturbance. In addition, the indirect effects of human development have the potential to adversely affect this species. An estimated 1,071 acres (95%) of modeled habitat for this species would be conserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the Tehachapi pocket mouse. These include a preconstruction live-trapping program in modeled habitat within 100 feet of the disturbance zone within 7 days of ground-disturbing activities, with captured individuals relocated to modeled habitat away from the disturbance zone. Construction activities would also be monitored in proximity to modeled habitat, and exclusion fencing could be installed to prevent Tehachapi pocket mice from entering construction zones. Additional conservation measures would include implementation of an IPMP to avoid the exposure of the Tehachapi pocket mouse to rodenticides, and a grazing management plan for open space that maintains existing modeled habitat for the Tehachapi pocket mouse.

With respect to the two known occurrences of this species that could be affected by proposed development in Oso Canyon, TRC would commit to avoiding all modeled habitat, avoiding all known occurrences, or implementing the following mitigation and minimization measures: (1) conducting research throughout modeled habitat in the TU MSHCP Mitigation Lands to better determine species distribution and habitat preference; (2) for the westerly occurrence area, demonstrating a minimum of four Tehachapi pocket mouse occurrences in conserved open space through field survey work and a written survey report filed with the Service, upon approval of which development of the westerly occurrence area would be authorized to occur; and (3) for the easterly occurrence, demonstrating a minimum of two additional Tehachapi pocket mouse occurrences in conserved open space through field survey work and a written survey report filed with and approved by the

Service, and minimizing effects by limiting development activities to a road and subsurface infrastructure within 150 feet of the mapped known occurrence trap line location. Prior to commencing ground disturbance activities, TRC would consult with the Service to identify and implement design features (e.g., culverts beneath the road) to minimize effects in this occurrence area.

Given the limited and concentrated range of the species, its known occurrence in the TMV Planning Area (and potential effects on two known populations), and because little is known about the ecology of the species, it is anticipated that the loss of 3% of modeled habitat under the Proposed TU MSHCP Alternative would result in a moderate effect on the Tehachapi pocket mouse in the study area, and a moderate effect on the population rangewide. This alternative would not substantially affect this species.

Coast Horned Lizard

Modeled primary habitat for the coast horned lizard would be reduced by 3,959 acres (10%) in the study area under the Proposed TU MSHCP Alternative; modeled secondary habitat would be reduced by 3 acres (5%) (Table 4.1-3). As described in Section 3.1, Biological Resources, the coast horned lizard is endemic to California and is broadly distributed through the foothills of the Sierra Nevada and throughout most of coastal, central and southern California. Coast horned lizards were observed in the study area, primarily in the southwest portion of the TMV Planning Area, southeast of Dry Field Canyon and north of Oso Canyon. The species has also been observed in the southeast portion of the TMV Planning Area, in the northwestern corner of Castac Lake at Grapevine Creek, and in the north-central portion of the TMV Planning Area. An estimated 37,074 acres (90%) of modeled primary habitat and 51 acres (82%) of modeled secondary habitat for this species would be conserved in open space under this alternative.[4] As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on coast horned lizard, including conservation of eight of the 12 known occurrences of the species in the southwestern portion of the TMV Planning Area. In addition, avoidance/minimization measures would be implemented, including exclusion fencing for construction perimeters and biological monitoring. Preconstruction surveys would be conducted in modeled primary and secondary habitat by a Service-approved Tejon Ranch Biologist, and reasonable efforts to capture and relocate observed individuals to suitable habitat that is the closest distance to the Disturbance Area from where the individuals were removed would be taken. Given the relatively widespread distribution of the coast horned lizard throughout the region, and because 90% of modeled primary habitat and 82% of modeled secondary habitat would be conserved in open space, it is anticipated that the loss of 10% of modeled primary habitat and 5% of modeled secondary habitat under the Proposed TU MSHCP Alternative would result in a minor effect on coast horned lizard in the study area, and a

[4] The percentages of modeled secondary habitat conserved and lost for coast horned lizard only sum to 87% under the Proposed TU MHSCP Alternative (Table 4.1-3). This is attributable to the assumptions in the habitat model specific to riparian areas (i.e., 75% of riparian/wetlands are assumed avoided in development areas, but avoided areas are not included in the open space acreages) and assumptions specific to future uses of the Lebec/Existing Headquarters Area (i.e., 145 acres in the Lebec/Existing Headquarters Area are assumed not developed, but are also not included in open space). It is likely that modeled secondary habitat conserved is underestimated because riparian areas have not been fully considered, and because the County land use designations in the Lebec/Existing Headquarters Area would only allow a small component of land in that area to be developed (see Section 4.1.1.2, Methods – Analytical Framework for Biological Effects).

minor effect on the population rangewide. This alternative would not substantially affect this species.

Two-Striped Garter Snake

Modeled habitat for the two-striped garter snake would be reduced by 34 acres (9%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the two-striped garter snake is endemic to southern California and Baja California, Mexico. The species ranges from the southeastern slope of the Diablo Range and the Salinas Valley south along the south Coast and Transverse Ranges to the Mexican border, and also on Santa Catalina Island. However, it is only found in about 60% of its historic range, and is now common only in eastern San Diego County. The two-striped garter snake has been observed in the TMV Planning Area east of Rising Canyon, in Dry Field Canyon, in Bear Trap Canyon, at Castac Lake, and at a stock pond south of Castac Lake; the species is expected to occur throughout modeled habitat in the study area.

An estimated 254 acres (70%) of modeled habitat for this species would be conserved in open space under this alternative.[5] As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the two-striped garter snake, including either daily preconstruction surveys or the installation of an exclusion fence around the work zone. A Service-approved biologist would perform an initial clearance survey followed by periodic checks to verify that the fencing is intact and functioning. The Service-approved Tejon Ranch Biologist would make reasonable efforts to capture and relocate any observed individuals to suitable habitat that is the closest distance to the Disturbance Area from where the individuals were removed. In addition, all currently known occurrences of two-striped garter snake in the southwestern and central portions of the TMV Planning Area east of Rising Canyon, in Dry Field Canyon, and in Bear Trap Canyon would be conserved under this alternative.

In consideration of the range of this species, and the above conservation measures, including conservation of 70% of modeled habitat in open space, it is anticipated that the loss of 9% of modeled habitat under the Proposed TU MSHCP Alternative would have a minor to moderate effect on two-striped garter snake in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Fort Tejon Woolly Sunflower

Modeled habitat for Fort Tejon woolly sunflower would be reduced by 5,368 acres (9%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the overall geographic distribution of the Fort Tejon woolly sunflower is extremely restricted. The range of the Fort Tejon woolly sunflower is considered to be the southern Tehachapi Mountains (near Fort Tejon) and the Sierra Madre Mountains in the southeastern–outer south Coast Ranges (University of California Berkeley 2011). Presence/absence surveys in 2007 detected 36 occurrences of Fort Tejon woolly sunflower in the TMV Planning Area.

[5] The percentages of modeled habitat conserved and lost for two-striped garter snake only sum to 79% under the Proposed TU MHSCP Alternative (Table 4.1-3). This is attributable to the assumption in the habitat model specific to riparian areas (i.e., 75% of riparian/wetlands are assumed avoided in development areas, but avoided areas are not included in the open space acreages). It is likely that modeled habitat conserved is underestimated because riparian areas have not been fully considered in the model.

An estimated 52,046 acres (91%) of modeled habitat for this species would be conserved in open space under the Proposed TU MSHCP Alternative. All of the 36 previously observed occurrences would be preserved in open space under this alternative. In addition, as summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on Fort Tejon woolly sunflower, including preconstruction surveys in suitable habitat within 150 feet of a disturbance zone during the appropriate survey season to determine presence or absence, and establishment of protective barriers around known occurrences to avoid disturbance during construction. Given the preservation of 91% of modeled habitat for this species in open space, and all known occurrences in the study area, as well as the avoidance and minimization measures that would be implemented to reduce effects on additional occurrences detected prior to construction, it is anticipated the loss of 9% of modeled habitat under the Proposed TU MSHCP Alternative would have a minor effect on Fort Tejon woolly sunflower in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Kusche's Sandwort

Modeled habitat for Kusche's sandwort would be reduced by 2,097 acres (7%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the overall geographic distribution of the Kusche's sandwort is relatively limited. According to the Jepson Online Interchange, Kusche's sandwort occurs in the following subregions of the California Floristic Province: southern Sierra Nevada, western Transverse Ranges, and the San Gabriel Mountains (University of California, Berkeley 2011). There are no CNDDB records of Kusche's sandwort in the study area, although seven occurrences of Kusche's sandwort were observed in the TMV Planning Area during presence/absence surveys completed in 2007.

An estimated 28,407 acres (93%) of modeled habitat for this species would be conserved in open space under the Proposed TU MSHCP Alternative. All seven observed locations would be conserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on Kusche's sandwort, including preconstruction surveys in modeled habitat within 150 feet of a disturbance zone during the appropriate survey season to determine presence or absence, and marking known locations with a protective barrier to avoid disturbance during construction. Given the preservation of 93% of modeled habitat for this species in open space, as well as all known occurrences in the study area, and the avoidance and minimization measures that would be implemented to reduce effects on additional occurrences detected prior to construction, it is anticipated the loss of 7% of modeled habitat under the Proposed TU MSHCP Alternative would have a minor effect on Kusche's sandwort in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Round-Leaved Filaree

Modeled habitat for round-leaved filaree would be reduced by 4,997 acres (9%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the range of the round-leaved filaree extends from Baja California (northern Mexico) to Oregon (California Native Plant Society 2011). While apparently well distributed in central and northern California, it is very rare in southern California (Reiser 2001). There are no CNDDB records

of round-leaved filaree in the study area, although 11 occurrences were observed in the TMV Planning Area during presence/absence surveys completed in 2007.

An estimated 53,076 acres (91%) of modeled habitat for this species would be conserved in open space under the Proposed TU MSHCP Alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on round-leaved filaree, including completion of preconstruction surveys in suitable habitat within 150 feet of a disturbance zone during the appropriate survey season and when the species is detectable to determine presence or absence, and marking known locations with a protective barrier to avoid disturbance during construction. Known or future detected populations of round-leaved filaree would be conserved in one of two ways under this alternative: (1) three of 11 known occurrences, totaling approximately 220 to 420 individuals, would be conserved in TMV Planning Area Open Space; or (2) at least three occurrences would be conserved in TMV Planning Area Open Space, including two known occurrences, representing approximately 120 to 220 individuals, and any new occurrence(s) documented in TMV Planning Area Open Space prior to development, such that the new occurrence(s) would total at least 100 individuals. The remaining eight occurrences would be directly affected by proposed development activities.

In consideration of the conservation of 91% of modeled habitat and implementation of the above conservation measures, it is anticipated that the loss of 9% of modeled habitat under this alternative, and the loss of eight out of 11 known occurrences (42 to 48% of individuals) in the study area, would have a moderate effect on the local population of round-leaved filaree, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Striped Adobe Lily

Modeled habitat for striped adobe lily would be reduced by 2,737 acres (8%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the striped adobe lily is endemic to the southern Sierra Nevada foothills of eastern Tulare and Kern Counties (California Department of Fish and Game 2000). The distribution of striped adobe lily is extremely limited with only 23 occurrences known in the state, 16 of which are from Kern County (California Native Plant Society 2011, California Department of Fish and Game 2011). Three CNDDB occurrences of striped adobe lily have been reported in the study area, although presence/absence surveys did not detect any occurrences within the TMV Planning Area or in the Bear Trap Turnout Improvement Project Area.

An estimated 29,476 acres (91%) of modeled habitat for this species would be conserved in open space under the Proposed TU MSHCP Alternative. All three known occurrences in the study area would be preserved in Existing Conservation Easement Areas under this alternative. In addition, as summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on striped adobe lily, including completion of preconstruction surveys in suitable habitat within 150 feet of a disturbance zone during the appropriate survey season and when the species is detectable to determine presence or absence, and marking known locations with a protective barrier to avoid disturbance during construction. In addition, if striped adobe lily is detected during preconstruction surveys, TRC would avoid habitat within 325 feet of the known occurrence. In consideration of these conservation measures, including preservation of 91% of modeled habitat in open space and all known occurrences of the species in

the study area, it is anticipated that the loss of 8% of modeled habitat under the Proposed TU MSHCP Alternative would have a minor effect on striped adobe lily in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Tehachapi Buckwheat

Modeled habitat for Tehachapi buckwheat would be reduced by 16 acres (1%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the distribution of the Tehachapi buckwheat is extremely limited. The CNDDB has only a single record of Tehachapi buckwheat that is reported within the Lebec USGS 7.5-minute quadrangle (California Department of Fish and Game 2011). This species was observed in 31 locations in the TMV Planning Area during presence/absence surveys completed in 2007.

An estimated 2,562 acres (99%) of modeled habitat for this species would be conserved in open space under the Proposed TU MSHCP Alternative, as would all known occurrences of the species. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on Tehachapi buckwheat should additional occurrences be discovered prior to construction activities. These measures would include completion of preconstruction surveys in suitable habitat within 150 feet of a disturbance zone during the appropriate survey season to determine presence or absence, and marking known locations with a protective barrier to avoid disturbance during construction. If Tehachapi buckwheat is detected during preconstruction surveys, TRC would avoid habitat within 325 feet of the known occurrence. Weekly construction monitoring would be performed by a Service-approved biologist when ground disturbing activities are proposed within 325 feet of Tehachapi buckwheat occurrences. In addition, to preclude the invasion of Argentine ants, within the 325-foot buffer, TRC would (1) provide dry zones between development activities and buckwheat populations; (2) ensure that dry zone landscape container plants installed within the buffer zone are ant free prior to installation; (3) maintain natural hydrological conditions near the buckwheat occurrences; and (4) use drought-resistant plants in fuel modification zones to minimize irrigation requirements. Finally, both the occurrence and the associated buffer would be incorporated into open space areas for protection in perpetuity.

In consideration of the above conservation measures, including preservation of 99% of modeled habitat in open space and all known occurrences of the species in the study area, it is anticipated that the loss of 1% of modeled habitat under the Proposed TU MSHCP Alternative would have a minor effect on Tehachapi buckwheat in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Tejon Poppy

Modeled habitat for Tejon poppy would be reduced by 108 acres (1%) in the study area under the Proposed TU MSHCP Alternative (Table 4.1-3). As described in Section 3.1, Biological Resources, the distribution of the Tejon poppy is extremely limited. Tejon poppy is endemic to central and western Kern County. The Jepson Online Interchange for California Floristics (University of California, Berkeley 2011) lists the southwest Tehachapi Mountain Area and northern Western Transverse Ranges as the geographic regions in which Tejon poppy occurs. Although no occurrences of Tejon poppy were observed in the study area during presence/absence surveys, there are several CNDDB records for the species adjacent to the study area.

An estimated 12,533 acres (99%) of modeled habitat for this species would be preserved in open space under this alternative. As summarized in Table 2-4, the Proposed TU MSHCP Alternative would include species-specific conservation measures to reduce potential effects on Tejon poppy should occurrences be discovered in the study area prior to construction, including completion of preconstruction surveys in suitable habitat within 150 feet of a disturbance zone during the appropriate survey season and when the species is detectable to determine presence or absence, and marking known locations with a protective barrier to avoid disturbance during construction.

As noted above, there are no known occurrences of Tejon poppy in the study area. Given the preservation of 99% of modeled habitat for this species in open space and the avoidance and minimization measures that would be implemented to reduce effects on occurrences should they be detected prior to construction, it is anticipated the loss of 1% of modeled habitat under the Proposed TU MSHCP Alternative would have a minor effect on Tejon poppy in the study area (should the species occur), and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Construction Effects

There are a number of construction-related or temporary effects that could adversely affect the other Covered Species. The general categories of effects are described below.

Fugitive Dust

Excessive dust from construction activities can decrease the vigor and productivity of vegetation communities through effects on light penetration, photosynthesis, respiration, transpiration, increased penetration of phytotoxic gaseous pollutants, and increased incidence of pests and diseases.

Noise and Vibration

Construction noise and vibration may affect behavior of wildlife in several ways. Excessive noise may affect birds, for example, in at least four ways: noise may cause birds to abandon nests that are otherwise suitable; noise may raise the level of stress hormones, interfering with sleep and other activities; intense noise can cause permanent injury to the auditory system; and noise can interfere with acoustic communication by masking important sounds or sound components (Dooling 2006). Similar effects may occur in other taxa. Noise may interfere with communication in toads and frogs, which use calls to advertise their location and attract mates (Barrass and Cohn 1984). Loud noise, such as that generated by off-road vehicles, may damage the hearing of some terrestrial species (Berry 1980, Brattstrom and Bondello 1983). Vibration may also directly disturb terrestrial species that occupy burrows, dens, and depressions, such as rodents, coyotes (*Canis latrans*), badgers (*Taxidea taxus*), and lagomorphs (rabbits and hares), causing them to abandon these areas. Excessive vibration might cause the collapse of burrow systems and dens in areas with highly friable soils.

Lighting

Lighting may affect behavioral activities, physiology, population ecology, and ecosystems of both diurnal and nocturnal wildlife. Attraction to lights includes birds that may suffer injury or mortality due to collisions with lighted structures. Many insects are attracted to light sources, resulting in high numbers of prey being taken by nocturnal insectivores, such as bats. Repulsion of nocturnal wildlife

by lights is probably quite common and may cause them to avoid lighted areas in their normal home ranges. Wildlife reproduction may be affected by lighting in various ways. Movement to breeding areas, chorus behavior, and mate selection by some amphibians may be affected (Longcore and Rich 2004). Lighting may disturb the nighttime rest and sleep periods of diurnal species, including most passerine (perching) birds, having similar effects as noise, including annoying individuals and causing them to abandon nests that are otherwise perfectly suitable.

Human Activity

Increased human activity in construction areas could affect essential behavioral activities and physiology of wildlife. Similar to noise and lighting effects, increased human activity could disturb nocturnal animals during their rest or sleep periods, annoying them and causing them to abandon nests or den sites, as well as disrupting their normal biological rhythms and raising the level of stress hormones. Abandonment (even temporary) of active nests or dens increases the risk to eggs, nestlings, fledglings, and other dependent young. Flushing animals from nests, dens, and other refuges also increases their risk of injury or mortality from collisions with construction equipment and other vehicles, as well as predation. Human presence may also alter the spatial behavior of animals, causing them to avoid certain parts of their home range, which may prevent them from using critical resources, such as water.

Hydrology

Construction could result in hydrologic and water quality-related effects adjacent to and downstream of a construction area. Hydrologic alterations include changes in flow rates and patterns in streams and rivers and dewatering, which may affect adjacent and downstream aquatic, wetland, and riparian vegetation communities.

Chemical Pollution

Erosion and chemical pollution (fuel, oil, lubricants, paints, release agents, and other construction materials) may affect riparian and upland sensitive natural communities and riparian habitats. The use of chemical pollutants during the development stage can decrease the number of plant pollinators, increase the prevalence of nonnative plants, and cause damage and destruction of native plants.

Summary of Potential Effects Associated with Construction

As noted above and summarized in Table 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives, species-specific conservation measures would be implemented under the Proposed TU MSHCP Alternative to reduce potential construction-related effects on other Covered Species. Representative measures that would reduce construction-related effects include erecting flagging or fencing to limit construction activities in sensitive habitat areas; completion of preconstruction surveys in modeled habitat; placement of exclusion fencing, as necessary, to prevent species from entering construction zones; and monitoring by the Service-approved Tejon Staff Biologist during construction. In addition, construction-related BMPs, prescribed by the local jurisdiction as part of the construction, grading, or building permit review processes, would likely be required to minimize potential effects resulting from ground-disturbing activities (e.g., adverse effects on water quality, erosion). A list of representative BMPs is provided in the Mitigation, Monitoring, and Reporting Program (MMRP) from the TMV EIR (Kern County 2009a) (Appendix J). BMPs could include the

requirement that a stormwater pollution prevention plan (SWPPP) with erosion and sediment control options be developed; that soil stabilizers, such as straw mulch or erosion control blankets, be employed during construction; and that silt fences, fiber rolls, gravel bag berms or straw bale barriers be placed around environmentally sensitive areas to protect them. The requirement that any proposed development or ground-disturbing activity comply with local jurisdiction requirements is provided in Section 4.1.3.4, Mitigation Measures. In consideration of the conservation measures provided in the TU MSHCP, the additional mitigation measures likely required through Federal, state, or local permitting process, and the conservation and management of 129,318 acres of open space, it is unlikely that construction-related effects associated with the Proposed TU MSHCP Alternative would substantially affect any of the other Covered Species.

Operations Effects

Potential operational or long-term effects on the other Covered Species are described below.

Chemical Pollution

The use of chemical pollutants (i.e., pesticides, fertilizers, fungicides, herbicides, and rodenticides) by residents of new development may affect vegetation communities and habitat quality, may be toxic to species, can decrease the number of plant pollinators, and can increase the incidence of nonnative plants. Rodenticides are directly toxic to rodents but may also indirectly affect rodent predators, such as hawks and owls, coyotes, or snakes, either through loss or contamination of prey.

Hydrology

Increased urban and stormwater runoff due to the increase in post-construction impervious surfaces may result in long-term hydrologic alterations, including increased runoff volume, increased peak flow rates, increased duration of flows, and altered flow patterns in streams and rivers. Altered erosion, increased surface flows, and underground seepage can allow for the establishment of nonnative plants and invasion by Argentine ants, which can compete with native ant species that could be seed dispersers or plant pollinators.

Nonnative Invasive Plant and Animal Species

Nonnative species have been found to invade and become established after repeated burnings, clearing of vegetation for fire protection, or following periods of drought and overgrazing. Invasive plant species, especially upland species, often colonize modified or otherwise disturbed zones between development and natural open space areas. Invasive species can also colonize any upland area that is subject to disturbance, such as road shoulders; cleared zones along railroad lines; clearings along utility easements; and gaps in vegetation caused by excessive fire, fire breaks, and grazing. The introduction of nonnative invasive animal species (e.g., Argentine ants) could negatively affect native species that may be pollinators of or seed dispersal agents for sensitive natural communities and riparian habitats.

Fire Regime

Urbanization alters natural wildfire regimes in terms of frequency, extent, and intensity. Longer-than-natural fire return intervals can result in excessive buildup of fuel loads so that when fires do occur, they are catastrophic. Unnaturally long fire intervals can also result in senescence of plant communities, such as chaparral, that rely on shorter intervals for rejuvenation. Shorter-than-natural

fire return intervals can preclude recovery of the native vegetation between fires, weaken the ecological system, allow for invasion of exotic species, and, in some cases, can result in permanent transition of the vegetation to nonnative communities, such as annual grassland and weedy communities (Malanson and O'Leary 1982, Keeley 1987, O'Leary et al. 1992).

Lighting

As described above for temporary effects, long-term lighting may affect behavioral activities, physiology, population ecology, and ecosystems of both diurnal and nocturnal wildlife.

Increased Human Activity and Domestic Pets

As described above for temporary effects, increased human activity in open space areas could affect essential behavioral activities and physiology of wildlife. In addition, the use of the recreational trails could result in effects on vegetation communities, wildlife habitats, and wildlife species, including trampling of vegetation, creation of unauthorized trails, increased human presence around and potential harassment of or harm to wildlife (e.g., causing abandonment of nest sites, collection of animals, crushing by bicycles and horses), potential harassment of or harm to wildlife by pets, contact with pet fecal material, and potential for transmission of diseases and parasites as well as trash and debris.

Fuel Modification

Grazing would continue to be the primary fuel management activity under the Proposed TU MSHCP Alternative. In addition, up to 1,773 acres in the TMV Planning Area Open Space would be subject to fuel modification activities (i.e., vegetation clearing/thinning) in accordance with the fire protection plan (Dudek 2008a) developed for the TMV Project. The 1,773 acres of fuel modification associated with Commercial and Residential Development Activities would not be expected to substantially degrade live-in habitat for the other Covered Species in oak savannah, grassland, scrub, and riparian habitats, and may benefit some species. Effects of removing flashy fuels, such as nonnative grasslands, on the other Covered Species would range from minimal to beneficial as discussed below.

With respect to birds, fuel modification may benefit raptors, such as the American peregrine falcon, burrowing owl, and golden eagle, by facilitating access to prey in areas where brush and other dense vegetation are removed. Raptors may hunt more effectively because prey would be more visible and are often more attracted to recently cut and mowed areas because of the greater availability of seeds and other food items. The tricolored blackbird may also benefit from greater accessibility to food because grassland habitat would open up and make seeds and insect prey more available. Bird species that use riparian areas, such as the least Bell's vireo, purple martin, willow flycatcher, western yellow-billed cuckoo, and yellow warbler, would not be affected by fuel modification activities because riparian areas/woodlands would not be subject to fuel modification, and there would be little or no change in habitat values. Similarly, bald eagles that forage around Castac Lake would not likely be affected by fuel modification activities because roost trees would not be subject to fuel modification. 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 crushing, contact with mowing blades and other thinning tools, and disturbance of burrows.

With respect to amphibians and reptiles, mowing in grassland areas and selective thinning in scrub areas may allow for occupation by harvester ants, which are the main prey for the coast horned lizard, western spadefoot, Tehachapi slender salamander, and yellow-blotched salamander. In addition, these species 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 thatchy grasses by occasional mowing and selective thinning of dead shrubs in adjacent upland areas because it may be easier 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, as noted above, while moving and selective thinning would likely have some beneficial effects on habitat quality for several species, there would be a potential for some mortality or injury of individuals from crushing, contact with mowing blades and other thinning tools, and disturbance of burrows.

With respect to insects, elderberry plants would not be removed for fuel modification and the valley elderberry longhorn beetle would not be affected. Similarly for mammals, riparian habitat would not be affected by fuel modification activities, so no effect on ringtail is anticipated. The Tehachapi pocket mouse could benefit from thinning of dense grasslands and some shrubs as long as native shrubs are still present as this species tends to forage on open ground and beneath shrubs (Zeiner et al. 1990). However, if present in these areas during fuel modification activities, there is some potential for individuals to be killed or crushed, or injured by mowing blades or other thinning tools

Finally, covered plant species are not expected to be affected by fuel modification activities. Preactivity surveys 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).

Summary of Potential Effects Associated with Operations

As summarized in Table 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives, species-specific conservation measures would be provided under the Proposed TU MSHCP Alternative to reduce potential operation-related effects on other Covered Species. Representative measures that would reduce operation-related effects include incorporation of design features at the boundary between modeled habitat and development areas to reduce the potential for introduction of nonnative species; requiring that lighting be directed away from open space areas/modeled habitat; and installation of culverts under road connections within open space to facilitate movement of amphibians and small mammals. In consideration of the conservation measures provided in the TU MSHCP and the conservation and management of 129,318 acres of open space, it is unlikely that operation-related effects associated with the Proposed TU MSHCP Alternative would substantially affect any of the other Covered Species.

Plan-Wide Activities

Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities under the Proposed TU MSHCP Alternative would have a limited potential to affect other Covered Species. Grazing activities would continue to have the potential to degrade habitat or water quality in areas where livestock congregate, or where overgrazing occurs. Ground-disturbing activities would have the potential to affect vegetation and habitat quality through erosion, compaction, and

sedimentation of surface waters, or degradation or riparian or wetland habitats, which, in turn could affect other Covered Species using those areas for breeding or foraging. Potential effects on wildlife movement and connectivity from Plan-Wide Activities are described in the Section 4.1.3.3, Wildlife Movement and Connectivity below.

Other Covered Species typical of grassland communities are the most likely to be affected by Plan-Wide Activities. Raptors, such as the American peregrine falcon, burrowing owl, and golden eagle, may benefit from grazing to the extent that grazing could maintain low vegetation cover and make prey more visible. The western spadefoot may hibernate in grasslands that are close to aquatic breeding sites, and could be subject to injury or mortality if trampled or crushed by livestock, or if habitat is substantially degraded. However, grazing could also benefit western spadefoot by reducing nonnative vegetation at breeding sites, allowing for longer inundation to support tadpole development. Birds, amphibians, and reptiles that fulfill one or more of their life history requirements in riparian areas, such as the least Bell's vireo, purple martin, willow flycatcher, western yellow-billed cuckoo, yellow warbler, two-striped garter snake, Tehachapi slender salamander, and western spadefoot, could also be directly affected by livestock use of water sources, or indirectly affected by sedimentation, erosion, or other adverse water quality affects associated with grazing and/or limited ground disturbance. Finally, plant species could be trampled or otherwise damaged by ground-disturbing activities.

The BMPS and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would continue to be implemented under the Proposed TU MSHCP Alternative and would include provisions to minimize potential effects on sensitive vegetation communities (i.e., riparian and wetland areas) and other Covered Species in grassland areas as a result of ground-disturbing Plan-Wide Activities. For example, the Interim RWMP requires that a site evaluation be performed prior to any ground-disturbing activities to avoid sensitive resources to the extent practical, including special-status or unique or sensitive vegetation communities and the wildlife typical of those communities. In addition, potential effects on riparian and wetland habitats associated with Plan-Wide Activities that could result in ground disturbance would be required to comply with Federal, state and local grading and land use requirements, as described in Section 4.1.3.4, Mitigation Measures, below. Other Plan-Wide Activities, such as road and utility repair and maintenance, ancillary ranch activities, film production, and private recreation, which are also subject to Ranchwide Agreement limitations, are expected to continue to occur mostly in existing disturbed areas, roads, or trails, and would have only minor, temporary affects on other Covered Species.

Although Plan-Wide Activities under the Proposed TU MSHCP Alternative could result in minor effects on the other Covered Species, these effects would be reduced through implementation of the use restrictions and BMPs required pursuant to the Ranchwide Agreement, and any minimization measures required as a result of Federal, state, or local permitting processes. As such, Plan-Wide Activities would not be anticipated to substantially affect any of the other Covered Species. These effects would be comparable to those associated with Existing Ranch Uses under the No Action Alternative, although they may be slightly less given the acreage limitation for ground disturbance (200 acres) provided under the Proposed TU MSHCP Alternative.

Other Special-Status Species

Other special-status species known to occur, or with the potential to occur, in the study area are summarized in Table 3.1-5 in Section 3.1, Biological Resources. These species are not proposed for coverage (wildlife) / conservation (plants) under the TU MSHCP because they have low potential to occur in the study area based on known ranges or on specific habitat or life history requirements; they have taxonomic issues or life history traits that make coverage difficult; and/or they meet the criteria for species covered by the TU MSHCP but are not likely to be affected by the Covered Activities.

Other special-status species include all plants or animals listed as threatened, endangered, candidates, or proposed for listing under the ESA or the California Endangered Species Act (CESA); animals fully protected in California; plants included on Lists 1, 2, 3, or 4 of the California Rare Plant Rank (CRPR) (formerly the California Native Plant Society Inventory of Rare and Endangered Plants of California (2008); and species of undescribed taxa.

Commercial and Residential Development Activities

Habitat models for other special-status species were not developed to the same level of detail as those for the other Covered Species. Permanent effects on these species resulting from Commercial and Residential Development Activities were generally quantified by analyzing the vegetation communities identified in Table 3.1-5 as habitat associations for these species. Potential habitat factors, such as elevation limits, soils, and slopes, were not factored into these analyses. The acreages reported in Table 4.1-4 therefore likely overestimate the amount of suitable habitat available for the other special-status species. For this reason, habitat for these species is referred to as "potential habitat." The other special-status species shown in Table 4.1-4 include those that are considered to have at least a moderate potential to occur in the study area and to potentially be affected by development.

The level of effect for the other special-status species would be relatively minor, ranging from 4% of potential habitat loss for yellow-breasted chat to 9% for northern harrier. Conservation would range from 84% of potential habitat for yellow-breasted chat to 95% for several of the other special-status species. As noted above, construction-related BMPs, prescribed by the local jurisdiction as part of the construction, grading, or building permit review processes, would likely be required to minimize potential effects (e.g., water quality, erosion) resulting from ground-disturbing activities, which could benefit special-status species (Appendix J, Section 4.1.2.4, Mitigation Measures). In addition, the Proposed TU MSHCP Alternative includes a conservation measure to protect active bird nests. As summarized in Table 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives, the Service-approved Tejon Staff Biologist would establish appropriate buffers for active nests detected during preconstruction surveys in compliance with applicable regulatory protocols. Construction within the buffers would be avoided until the nests are abandoned or the young have fledged and are no longer dependent on the nest. Other conservation measures provided for Covered Species would also likely benefit other special-status species. For example, erection of exclusion fencing to limit Tehachapi slender salamanders from entering exclusion zones could benefit other amphibians and reptiles, such as slivery legless lizard.

In consideration of these conservation measures, additional mitigation measures likely required through Federal, state, or local permitting process, and the conservation and management of 129,318 acres of open space, it is unlikely the Proposed TU MSHCP Alternative would substantially affect any other special-status species. These effects would be greater than the under the No Action Alternative, where no development would occur.

Commercial and Residential Development Activities under this alternative could also result in indirect effects on other special-status species. Indirect effects for other special-status species under the Proposed TU MSHCP Alternative would be similar to those described for the Covered Species.

Plan-Wide Activities

Under this alternative, Plan-Wide Activities would continue to occur in similar areas and at similar levels as Existing Ranch Uses under the No-Action Alternative. Potential effects on special-status species and their habitat would be the same as those described in Section 4.1.3.1, Vegetation Communities, above, as those communities relate to the habitat types of individual species. The effects would be comparable to the No Action Alternative, although they could be somewhat less given the acreage limitation on ground disturbance associated with this alternative.

Table 4.1-4. Potential Effects on Vegetation Communities for Other Special-Status Species—Proposed TU MSHCP Alternative

	Scrubs		Chaparrals		Grasslands		Savannahs		Woodlands		Conifer Forest		Riparian/ Wetland		Riparian Woodland		Wash		Agriculture		Total Acreage		Percent	
Total Acreage in Study Area[1]	7,841		14,145		24,944		33,120		48,736		3,956		703		59		863		232					
	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost
	7,515	326	13,599	814	22,406	2,485	31,036	2,046	46,043	2,643	3,883	73	589	29	54	1	861	1	5	227	125,991	8,645		
Other Special-Status Species																								
California spotted owl									x	x	x	x			x	x					49,980	2,717	95%	5%
Cooper's hawk									x	x	x	x			x	x					49,980	2,717	95%	5%
Long-eared owl									x	x	x	x			x	x					49,980	2,717	95%	5%
Northern harrier	x (foraging)	x			x (foraging)	x							x (nesting)	x					x (foraging)	x	30,515	3,067	90%	9%
Prairie falcon	x	x			x	x	x	x	x	x	x	x	x	x	x	x			x	x	111,531	7,830	93%	7%
Yellow-breasted chat													x	x	x	x					643	30	84%	4%
American badger	x	x			x	x	x	x	x	x	x	x			x	x	x	x	x	x	111,803	7,802	93%	7%
San Bernardino ringneck snake	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	125,991	8,645	94%	6%
Silvery legless lizard	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				125,986	8,418	94%	6%
Aromatic canyon gooseberry			x	x	x	x	x	x	x	x	x	x									117,040	8,061	94%	6%
Calico monkeyflower	x	x	x	x					x	x	x	x			x	x					102,130	5,903	95%	5%
Delicate bluecup			x	x					x	x					x	x					59,696	3,458	95%	5%
Flax-like monardella			x	x					x	x	x	x									63,525	3,458	95%	5%
Golden violet	x	x	x	x					x	x	x	x									102,076	5,902	95%	5%
Pale-yellow layia					x	x	x	x	x	x											99,485	7,174	93%	7%
Palmer's mariposa lily			x	x			x	x	x	x	x	x	x	x	x	x					95,204	5,606	95%	6%
Piute Mountains navarretia	x	x	x	x	x	x	x	x	x	x	x	x							x	x	124,487	8,614	94%	6%
San Bernardino aster	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x			112,387	7,604	93%	6%

[1] These acreages are derived and explained in Table 4.1-2.

4.1.3.3 Wildlife Movement and Connectivity

Commercial and Residential Development Activities

With respect to wildlife movement and habitat connectivity, the Proposed TU MSHCP Alternative would limit Commercial and Residential Development Activities to the western portion of the study area, with proposed commercial and resort residential loosely clustered around Interstate 5 (I-5) and Castac Lake, and mountain residential located generally to the north, east and west (Figure 2-5). The urban-type Commercial and Residential Development Activities in the western portion of the study area and around I-5 would generally represent a constraint to local wildlife movement due to land uses and infrastructure that are incompatible with maintaining wildlife habitat and use, as well as indirect effects on wildlife movement, such as lighting, noise, increased human activity, pets, and increased vehicle collisions. The mountain residential uses, as identified in the TMV Specific Plan Area, would include deed restrictions on the majority of the lot area to conserve habitat value in the TMV Specific Plan Area, and development in these areas would not substantially restrict movement for Covered Species, other special-status species, and common species because substantial habitat areas would be retained between developed lots. In addition, the open space in the northern and eastern portions of the study area would remain unconstrained, consistent with existing conditions, as discussed below.

The analysis of the potential effects on wildlife movement in the proposed low-density mountain residential area included a review of several wildlife linkage studies of high-mobility species (i.e., bobcat, mule deer, coyote, and mountain lion), including studies conducted in California in the Nature Reserve of Orange County (George and Crooks 2006), the Foothill-Trabuco region of southern Orange County (Dudek 2008b), the Southern Subregion HCP area of southern Orange County (Dudek 1995), the Puente-Chino hills area (Haas 2000), the Santa Monica Mountains (Riley et al. 2003), the Simi Hills of western Los Angeles County, and the Conejo Valley of eastern Ventura County (Tigas et al. 2002), Ventura County (Ng et al. 2004), and several other regions. The general findings of these various studies were that high mobility species, including species considered to be highly sensitive to urban development (i.e., bobcat and mountain lion), readily moved through low- and moderate-density residential developments with higher densities than would occur in the mountain residential area of the TMV Project. Studies indicate that lower mobility species (e.g., rodents, small birds) would also use and move through the low-density mountain residential area of the TMV Project. A study of voles by Andreassen et al. (1996), for example, found that voles moved through open space linkages of comparable dimensions to those that would be present in the TMV Project residential area. A study in western Oregon of moderate- and low-mobility ground-dwelling species and higher mobility birds documented substantial movement through urban and rural developments (Lloyd et al. 2006).

A least-cost corridor analysis was also conducted using commercial habitat linkage design software to model the safety movement corridor for a species through a landscape. Specifically, using information about a species' natural history (e.g., habitat requirement, home range size, typical movement patterns), the wildlife corridor model determines the wildlife movement route that optimizes movement with regard to minimizing energy expenditure in relation to distance moved (i.e., the least cost corridor or most permeable route). Research indicates that the preservation of the highest 1% values of the least-cost corridor (i.e., those routes that scored in the highest 1% of the permeability model) is sufficient to maintain sufficient species movement across a landscape

(Beier et al. 2006). The analysis replicates an earlier study by Penrod et al. (2003) entitled *South Coast Missing Linkages: A Linkage Design for the Tehachapi Connection* using updated modeling software and more detailed vegetation coverage. The analysis modeled the least-cost corridor for the same four species modeled by Penrod et al. (2003): mountain lion, mule deer, gray squirrel, and spotted owl. Virtually all of the highest 1% least-cost corridors for these four species in both the Penrod et al. (2003) analysis and this replicated analysis included the low-density mountain residential areas and the unconstrained habitat linkage along the northern portion of the study area.

Based on the least-cost corridor modeling, combined with review of the scientific literature above, it is anticipated that the proposed low-density mountain residential development associated with the Proposed TU MSHCP Alternative would not significantly affect the highest value movement corridors across the western Tehachapi landscape, nor would movement of most species be precluded though the low-density development areas. For example, species that use riparian features for movement (e.g., amphibians, reptiles, rodents, gray fox, bobcat) would not be substantially affected as the Proposed TU MSHCP Alternative includes project design features and conservation measures to facilitate movement of low-mobility species through the mountain residential area, including those applicable to the TMV Project. For example, ground disturbance in riparian areas would be avoided, except as necessary for road crossings and culverts (which must be designed to allow movement), and placement of fencing and trails would be designed to avoid potential effects on wildlife linkages.

Movement of species using other vegetation communities would also not be substantially affected because those communities are all well represented in the east-west corridor north of the TMV Planning Area. Specifically, the open space established under the Proposed TU MSHCP Alternative in the western portion of the study area would provide a substantial unconstrained habitat linkage in and north of the TMV Planning Area to convey east-west wildlife movement. Along the northern boundary of the study area, the open space habitat linkage would be approximately 1 to 2 miles wide. Table 4.1-5 shows the vegetation community acreages comprising the northern habitat linkage. Savannahs (43%), grasslands (31%), and woodlands (26%) are the dominant vegetation communities in the northern habitat linkage, totaling 6,706 acres (99%) of the linkage. These three general communities comprise 80% of the overall open space under this alternative, so their dominance of the northern habitat linkage is consistent with their broader distribution in the open space. The two vegetation communities most under-represented in the northern habitat linkage in relation to the overall open space are the scrubs and chaparrals. These two communities total about 17% of the overall open space, but only comprise 0.4% of the northern habitat linkage. However, as shown in Figure 3.1-2, the scrub and chaparral communities are mostly limited to the southern portion of the study area. Further, about 95% of these two communities already would be conserved in the overall open space, so the northern habitat linkage and TMV Planning Area Open Space cannot be reconfigured to include substantially more acreage of the scrubs and chaparrals. General wildlife use of these communities for linkages is discussed below.

Table 4.1-5. Northern Habitat Linkage Vegetation Communities—Proposed TU MSHCP Alternative

Vegetation Type[1]	Acreage of Vegetation Communities in Study Area[2]	Acreage of Open Space[3]	Acreage of Northern Habitat Linkage Open Space[4]
Upland Communities			
Scrubs			
Alluvial scrub	36	26	0
Mojavean scrub	6,951	6,951	0
Saltbush/buckwheat scrub	290	257	1
Scrub	564	281	13
Total Scrubs	*7,841*	*7,515*	*14 (<1%)*
Chaparrals			
Brewer's oak scrub	2,720	2,719	0
Chaparral	11,050	10,370	13
Scrub oak	641	506	0
Undetermined chaparral	4	4	0
Total Chaparrals	*14,415*	*13,599*	*13 (<1%)*
Grasslands			
Disturbed/nonnative grassland	6,411	4,197	713
Grassland	17,387	17,164	1,328
Native grassland	1,146	1,045	19
Total Grasslands	*24,944*	*22,406*	*2,060 (31%)*
Savannahs			
Black oak savannah	29	29	0
Blue oak savannah	5,114	5,050	1,023
Canyon oak savannah	432	432	0
Gray pine savannah	64	64	0
Interior oak savannah	276	276	0
Mixed oak savannah	11,997	11,965	775
Oak savannah	5,603	3,640	688
Undetermined savannah	678	678	0
White oak savannah	8,927	8,902	430
Total Savannahs	*33,120*	*31,036*	*2,916 (43%)*
Woodland			
Black oak woodland	2,701	2,543	19
Blue oak woodland	9,089	7,192	955
California buckeye woodland	338	338	24
Canyon oak woodland	6,193	6,051	186
Gray pine woodland	109	109	0
Interior oak woodland	761	740	3
Mixed oak woodland	28,086	27,668	458
Oak woodland	147	141	45
Pinyon pine woodland	285	255	0
Undetermined woodland	153	153	0
White oak woodland	874	853	40
Total Woodland	*48,736*	*46,043*	*1,730 (26%)*

Vegetation Type[1]	Acreage of Vegetation Communities in Study Area[2]	Acreage of Open Space[3]	Acreage of Northern Habitat Linkage Open Space[4]
Conifer Forest			
Conifer/mixed oak	912	839	0
Incense-cedar stand	4	4	0
Intermixed conifer	1,059	1,059	0
White fir stand	320	320	0
White fir/mixed oak	1,661	1,661	0
Total Conifer Forest	*3,956*	*3,883*	*0 (0%)*
Riparian/Wetland Communities			
Riparian/Wetland			
Riparian scrub	76	55	0
Riparian/wetland	10	4	0
Wetland	281	195	0
Lake	336	335	0
Total Riparian/Wetland	*703*	*589*	*0 (0%)*
Riparian Woodland			
Riparian woodland	43	38	0
Oak riparian	16	16	10
Total Riparian Woodland	*59*	*54*	*10 (<1%)*
Wash			
Desert wash/riparian/seeps	841	841	0
Wash	22	20	0
Total Wash	*863*	*861*	*0 (0%)*
Nonnative Land Covers			
Agriculture	232	5	1
Developed	127	38	1
Total Nonnative Land Covers	*359*	*43*	*2 (<1%)*
Total[1]	134,996	126,029	6,745

[1] Slight differences between total acreages presented in Tables 4.1-1 and 4.1-5 may occur due to rounding and small slivers in shapefiles in the GIS analysis of vegetation communities (e.g., sliver polygons occur when different GIS coverages overlap but do not match exactly). These discrepancies are minor and do not alter the overall conclusions of the analysis or comparison of the relative merits of various alternatives and scenarios.

[2] Acreages in this column are based on the study area encompassing 134,996 total acres, or the total acreage in the study area (141,886 acres) less the acreage in Other Lands (6,890 acres).

[3] Acreages in this column are based on an assumed acreage of permanently conserved open space of approximately 126,034 total acres, which includes 12,795 acres of Existing Conservation Easement Areas, as well as the TU MSHCP Mitigation Lands, including 93,522 acres of Established Open Space, and 19,717 acres of TMV Planning Area Open Space. The TMV Planning Area Open Space acreage is less than the acreage described in Chapter 2, Proposed TU MSHCP and Alternatives, Table 2-6 (i.e., 23,001 acres) because of the greater Development Envelope area considered to assess biological effects. TMV Planning Area Open Space includes 1,773 acres of vegetation clearing/thinning for fuel modification in accordance with the fire prevention plan (Dudek 2008b) developed for the TMV Project.

[4] Acreages in this column reflect the contiguous unconstrained east-west habitat linkage across the northwestern portion of the study area. The percentage for the totals of each general vegetation type is calculated from the total 6,745 acres in the habitat linkage.

Most of the Tunis/Winters Ridge area would be protected under the Proposed TU MSHCP Alternative, and thus would provide unhindered wildlife movement through this regional linkage. The northern habitat linkage would primarily function for wildlife species that use savannah, grassland, and woodland habitats. Table 3.1-2 in Section 3.1, Biological Resources, lists representative wildlife observed in the study area and their general vegetation community associations. Of the approximately 70 taxa (including consolidated groups such as grebes, gulls, mice), about 41 (59%) use these three communities. Six species (9%) are mostly limited to scrubs and/or chaparrals, including California quail, California thrasher, California towhee, spotted towhee, wren tit, and Pacific kangaroo rat. These species likely would not use the northern habitat linkage due to a lack of suitable habitat. However, about 95% of these two communities already would be conserved in the open space areas associated with the Proposed TU MSHCP Alternative, providing more than sufficient conservation of habitat for these species. Several higher elevation species that occur in coniferous habitats, including mountain quail, Steller's jay, mountain chickadee, and Merriam's chipmunk, also may not use the northern habitat linkage due to a lack of suitable habitat. However, 98% of coniferous communities would be conserved in the study area under the Proposed TU MSHCP Alternative. Also, because the coniferous communities are limited to the higher elevations in the eastern portion of the study area, the northern habitat linkage cannot be reconfigured to include substantially more acreage of the coniferous communities. Further, many of the representative wildlife species observed in the study area are limited to riparian and wetland communities. Most of these species are highly mobile and/or migrant birds that occur around Castac Lake and are not dependent on continuous riparian zones. The habitat linkages do not need to be reconfigured to further benefit these species. Limited mobility amphibians such as the salamanders, frogs, and toads would not be expected to use the northern habitat linkage due to lack of wetland and riparian habitat; however, these species could move along Grapevine and Cuddy creeks and would not be impeded by development because wetland and riparian resources used by these species would be largely avoided. Finally, the northern habitat linkage would provide direct access to the undercrossing of I-5 located west of this linkage (GVRC6), which has been documented by camera stations to facilitate wildlife crossings of the interstate. Retaining linkages for wildlife to the existing I-5 undercrossing would allow wildlife to move between the study area east of I-5 and the Wind Wolves Preserve and Los Padres National Forest essentially as they do under existing conditions.

With respect to the California condor, although the ranch does serve as an important linkage between historic condor habitat areas east and west of the ranch, the proposed development on Tejon Ranch would not prevent condors from continuing to fly over Tejon Ranch, or to access areas further to the east or west of the ranch for the following reasons. The free-flying condors in the southern California subpopulation have been recorded flying over 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, Piñon Pines, Lake of the Woods, I-5, and even developed portions of Santa Clarita and the northern San Fernando Valley. Such flyovers have resulted in no measurable ill effects with respect to continued condor use of historical and current foraging, roosting, and nesting areas, as evidenced by Service GPS tracking data. These data indicate increasing use of these habitat areas since 2002, when the Service began to use GPS transmitters to track free-flying condors.

Furthermore, USGS recently released a report presenting a statistical analysis of GPS data collected from 2004 to 2009 for spatial behavior patterns in six management units in southern California, including Hopper Mountain and Bitter Creek National Wildlife Refuges, Wildlands Conservancy Wind Wolves Preserve, the TMV Specific Plan Area, the California Condor Study Area, and Tejon Ranch, excluding the TMV Specific Plan Area and the Condor Study Area (Johnson et al. 2010) (Appendix I). The study generated condor home ranges by estimating the utilization distribution that can then be used to estimate the probability and intensity of use of certain areas of interest. Appendix A of the USGS condor study includes the utilization distribution maps for 21 individual condors and shows urbanized areas of Santa Clarita in the estimated home ranges of 16 individuals, and the communities of Frazier Park and Pine Mountain Club in the home ranges of 18 individuals. The USGS condor study supports the conclusion that condors regularly fly over developed areas and that these areas, based on the GPS data, are part of their estimated home ranges. As such, the Service does not expect condors to avoid flying over similar areas in the TMV Specific Plan Area after buildout, particularly over the more outlying areas farther north from Castac Lake that would be characterized by lower residential development densities. For a more detailed discussion of the potential effects of the Proposed TU MSHCP Alternative on habitat connectivity for the California condor, refer to Master Response 1G, California Condor Overflight Habitat Connectivity, in Volume II of this Supplemental Draft EIS.

Based on the above, it is anticipated that Commercial and Residential Development under the Proposed TU MSHCP Alternative would result in moderate effects on wildlife movement and connectivity, particularly in western portion of the study area, and no effect on condor overflight of the study area. Although the northern habitat linkage would provide for movement across a large portion of the study area, these effects would be greater than the No Action Alternative, where no development would occur.

Plan-Wide Activities

Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities under the Proposed TU MSHCP Alternative would have a limited potential to affect wildlife movement and habitat connectivity in the study area. Specifically, existing roads that provide access to ranch infrastructure, hunting, other recreational activities or emergency vehicle access, could adversely affect species movement through direct mortality from vehicle strikes and/or loss of habitat connectivity. Other Plan-Wide Activities, such as utility lines and fences, may affect bird (i.e., collisions) or wildlife movement across the study area.

The BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would continue to be implemented under the Proposed TU MSHCP Alternative and would include provisions to minimize the effects of roads, utility lines, and fences on wildlife movement and habitat connectivity. For example, these BMPs would include implementation of a dust control plan to reduce particulate matter emissions on well-traveled roads; maintenance of berms on dirt roads to handle minor stormwater flows; and construction of "wildlife friendly" fencing of the type and design necessary to allow for passage of wildlife, where possible (Tejon Ranch Company 2009). Additionally, conservation measures provided under the Proposed TU MSHCP Alternative, including restrictions on utility lines and fencing design restrictions in open space (see Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives) would be implemented. Given the limited existing/proposed road network within open space areas under the Proposed TU MSHCP Alternative, and the BMPs and use restrictions

provided pursuant to the Ranchwide Agreement, it is anticipated that Plan-Wide Activities would result in minor effects on wildlife movement and connectivity. These effects would be comparable to those associated with Existing Ranch Uses under the No Action Alternative, except they may be slightly less given the acreage limitation for ground disturbance (200 acres) provided under the Proposed TU MSHCP Alternative.

4.1.3.4 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP), would reduce the effects of the Proposed TU MSHCP Alternative on vegetation communities and wildlife, as would the provisions of the Ranchwide Agreement and applicable conservation easement restrictions for open space areas.

The Proposed TU MSHCP Alternative would also include species-specific conservation measures (see Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives) to avoid, minimize, and mitigate the effects of the Covered Activities on the Covered Species. If the Service issues an ITP to TRC for incidental take of the 27 species covered under the TU MSHCP, these measures would be enforceable under the ESA through the ITP and applicable conservation easements.

The following mitigation measure would further reduce potential effects on biological resources that may be associated with the Proposed TU MSHCP Alternative.

- ***Comply with Applicable Federal, State, and Local Biological Resource Protection Regulations***. All development in the study area will comply, at a minimum, with applicable Federal, state, and local laws and regulations that directly or indirectly protect biological resources, including the CWA, Porter-Cologne, CESA, MBTA, BGEPA, and the Kern County General Plan. For example, all development will identify and implement structural and treatment BMPs, such as detention basins, bioswales, and stormwater filters or other project design features, as required by applicable Federal, state, and local water quality protection laws and regulations, to protect surface water quality and potential habitat for aquatic dependent species. In addition, development will avoid, minimize, and mitigate for effects on wetland areas, as required by applicable Federal, state, or local laws and regulations, and, as required by those laws and regulations, not result in a net loss of wetlands in the study area.

4.1.4 Condor Only HCP Alternative

4.1.4.1 Vegetation Communities

Because the permanently conserved areas (open space) and ground disturbance areas would be the same under the Condor Only HCP Alternative as the Proposed TU MSHCP Alternative, the same direct and indirect effects on vegetation communities from Commercial and Residential Development Activities and Plan-Wide Activities would occur.

4.1.4.2 Wildlife and Plant Species

California Condor

Similarly, because the permanently conserved areas and ground disturbance areas associated with Commercial and Residential Development Activities would be the same under the Condor Only HCP Alternative as the Proposed TU MSHCP Alternative, and because the Covered Activities under this

alternative would also be the same, development-related effects on the condor resulting from loss of foraging habitat, habituation to human structures and activities, risk of collisions with power lines, communication towers, and other artificial structures, and ingestion of microtrash would be the same as those described for the Proposed TU MSHCP Alternative. Effects associated with Plan-Wide Activities would also be consistent with those from the Proposed TU MSHCP Alternative. Conservation measures intended to protect the condor and their habitat that would be included in the TU MSHCP would still be included in the single-species (condor) HCP associated with this alternative.

Other Covered Species

Commercial and Residential Development Activities

Potential effects on the other Covered Species from Commercial and Residential Development Activities and Plan-Wide Activities under the Condor Only HCP Alternative would be generally consistent with those from the Proposed TU MSHCP Alternative. The only difference would be that development-related measures incorporated in the Proposed TU MSHCP Alternative that benefit other Covered Species would not be implemented through an HCP under this alternative. Under the Condor Only HCP Alternative, the protection measures for the other federally listed species would be determined as a result of project-specific review and approval processes triggered by applicant requests. For example, the TMV Project, which would be implemented under this alternative, would include a suite of mitigation measures for the other Covered Species similar to those included in the TU MSHCP, as set forth in the TMV Project Approvals (Kern County 2009c). It is uncertain whether similar measures would be applied to other development under this alternative, including West of Freeway and Lebec/Headquarters, although it is considered likely.

Plan-Wide Activities

Potential effects on other Covered Species from Plan-Wide Activities (e.g., degradation of water quality from livestock use of water sources, ground disturbance of habitat) under the Condor Only HCP Alternative would be minor and similar to those described for the Proposed TU MSHCP Alternative. These effects would be reduced through the implementation of BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP), and the mitigation measure described in Section 4.1.3.4, Mitigation Measures. However, because the other Covered Species would not be covered under the HCP, any conservation measures implemented through other project approvals to benefit these species would not be subject to review, approval or oversight by the Service. These effects would be comparable to those associated with Existing Ranch Uses under the No Action Alternative, although they may be slightly less given the acreage limitation for ground disturbance (200 acres) provided under the Condor Only HCP Alternative.

Other Special-Status Species

As noted above, because the permanently conserved areas and ground disturbance areas associated with Commercial and Residential Development Activities would be the same under the Condor Only HCP Alternative as the Proposed TU MSHCP Alternative, the same direct effects on vegetation types would occur. Although all of the conservation measures related to other Covered Species may not be implemented and/or required under this alternative, similar effects on other special-status

species would be anticipated. Potential indirect effects on other special-status species would also be the same as described for the Proposed TU MSHCP Alternative.

4.1.4.3 Wildlife Movement and Connectivity

Effects on wildlife movement and connectivity under the Condor Only HCP Alternative would be the same as the effects under the Proposed TU MSHCP Alternative, given that the development and open space configurations would be the same.

4.1.4.4 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the Condor Only HCP Alternative on vegetation communities and wildlife. However, only the species-specific conservation measures for the California condor (Table 2-3 in Chapter 2, Proposed TU MSHCP and Alternatives) would be implemented under this alternative.

The mitigation measures listed in Section 4.1.3.4, Mitigation Measures, for the Proposed TU MSHCP Alternative are also applicable to the Condor Only HCP Alternative.

4.1.5 CCH Avoidance MSHCP Alternative

4.1.5.1 Vegetation Communities

Table 4.1-6 provides a summary of effects on vegetation communities from the CCH Avoidance MSHCP Alternative. The permanent and temporary direct and indirect effects of the Commercial and Residential Development Activities and Plan-Wide Activities are discussed below.

Table 4.1-6. Potential Effects on Vegetation Communities—CCH Avoidance MSHCP Alternative

Vegetation Community[1,2]	Total Acreage in Study Area[3]	Acreage Retained in Open Space[4]	Acreage Removed by Development[5,6]
Upland Communities			
Scrubs			
Alluvial scrub	36	32	4
Mojavean scrub	6,951	6,951	0
Saltbush/buckwheat scrub	290	230	60
Scrub	564	335	228
Total Scrubs	*7,841*	*7,548*	*292*
Chaparrals			
Brewer's oak scrub	2,720	2,720	0
Chaparral	11,050	10,829	218
Scrub oak	641	587	53
Undetermined chaparral	4	4	0
Total Chaparrals	*14,415*	*14,140*	*271*

Vegetation Community[1,2]	Total Acreage in Study Area[3]	Acreage Retained in Open Space[4]	Acreage Removed by Development[5,6]
Grasslands			
Disturbed/nonnative grassland	6,413	5,002	1,403
Grassland	17,387	17,164	170
Native grassland	1,147	1,035	111
Total Grasslands	*24,947*	*23,201*	*1,684*
Savannahs			
Black oak savannah	29	29	0
Blue oak savannah	5,114	5,036	78
Canyon oak savannah	432	432	0
Gray pine savannah	64	64	0
Interior oak savannah	276	276	0
Mixed oak savannah	11,997	11,965	1
Oak savannah	5,604	4,987	614
Undetermined savannah	678	678	0
White oak savannah	8,927	8,902	17
Total Savannahs	*33,121*	*32,369*	*710*
Woodland			
Black oak woodland	2,705	2,670	27
Blue oak woodland	9,093	8,456	630
California buckeye woodland	338	336	2
Canyon oak woodland	6,193	6,010	183
Gray pine woodland	109	109	0
Interior oak woodland	761	759	3
Mixed oak woodland	28,087	27,812	230
Oak woodland	147	134	12
Pinyon pine woodland	285	285	0
Undetermined woodland	153	153	0
White oak woodland	874	853	15
Total Woodland	*48,745*	*47,577*	*1,102*
Conifer Forest			
Conifer/mixed oak	912	889	23
Incense-cedar stand	4	4	0
Intermixed conifer	1,059	1,059	0
White fir stand	320	320	0
White fir/mixed oak	1,661	1,661	0
Total Conifer Forest	*3,956*	*3,933*	*23*
Total Upland Communities	***133,025***	***128,768 (97%)***	***4,082 (3%)***

Vegetation Community[1,2]	Total Acreage in Study Area[3]	Acreage Retained in Open Space[4]	Acreage Removed by Development[5,6]
Riparian/Wetland/Wash Communities			
Riparian/Wetland			
Riparian scrub	76	55	4
Riparian/wetland	10	8	0
Wetland	281	209	16
Lake	336	335	0
Total Riparian/Wetland	*703*	*607*	*20*
Riparian Woodland			
Riparian woodland	44	31	3
Oak riparian	16	16	0
Total Riparian Woodland	*60*	*47*	*3*
Wash			
Desert wash/riparian/seeps	841	841	0
Wash	22	12	3
Total Wash	*863*	*853*	*3*
Total Riparian/Wetland/Wash Communities	***1,626***	***1,507 (93%)***	***26 (2%)***
Nonnative Land Covers			
Agriculture	232	7	225
Developed	127	51	71
Total Nonnative Land Covers	***359***	***58 (16%)***	***296 (83%)***
Total[1]	**135,010**	**130,333 (97%)**	**4,404 (3%)**

1 Slight differences between total acreages presented in Tables 4.1-1 and 4.1-6 may occur due to rounding and small slivers in shapefiles in the GIS analysis of vegetation communities (e.g., sliver polygons occur when different GIS coverages overlap but do not match exactly). These discrepancies are minor and do not alter the overall conclusions of the analysis or comparison of the relative merits of various alternatives and scenarios.

3 Acreages in this column are based on the study encompassing 134,996 acres, or the total of acreage of the study area (141,886) less the acreage in Other Lands (6,890 acres).

4 Acreages in this column are based on approximately 130,339 total acres of permanently conserved open space for this alternative, which includes 12,795 acres in Existing Conservation Easement Areas, 93,522 acres in Established Open Space Areas, and 24,022 acres in TMV Planning Area Open Space.

5 Development includes Commercial and Residential Development Activities in the TMV Planning Area and Lebec/Existing Headquarters Area. Acreages in this column are based on a total Development Envelope of 4,496 acres for this alternative.

6 The analysis assumes 75% avoidance of effects on riparian/wetland vegetation communities. The total development acres for each alternative reflect this assumption, as well as the development acres for riparian vegetation communities and species models that are based on these riparian communities. The total development acreage presented in this table is 92 acres less than the total development acreage presented in Section 4.1.1.2, Methods, for this reason. This is a conservative assumption, as the CWA 404(b)(1) alternatives analysis submitted to USACE for the TMV Project shows avoidance of 99% of the federally jurisdictional areas and avoidance of 97% of the state and Federal jurisdictional waters overall (Kern County 2009a, April 15, 2011 Alternatives Analysis; Kern County 2009, November 13, 2009 Permit Application to CDFG).

Commercial and Residential Development Activities

Construction associated with Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would result in moderate effects on vegetation communities, particularly agricultural lands. As shown in Table 4.1-6, 4,082 acres (3%) of upland communities and 26 acres (2%) of riparian/wetland/wash communities would be permanently affected by construction-related ground disturbance. Of these, many of the upland communities (excluding agriculture, disturbed/nonnative grassland, and developed) and all of the wetland communities are considered to be special-status by Federal, state, or local resources agencies. However, approximately 96% of total scrub vegetation, 98% of chaparrals, 98% of grasslands (excluding disturbed/nonnative grasslands), 98% of savannahs, 98% of woodlands, 99% of conifer forest, 86% of riparian/wetland, 78% of riparian woodland, and 99% of wash communities would be conserved in open space areas under this alternative (Table 4.1-6). Approximately 225 acres (97%) of agricultural land, a nonnative land cover, would be permanently removed by Commercial and Residential Development Activities.

Under this alternative, approximately 145 acres of special-status uplands would be located in rural large lot developments assumed to be developed as either 80-acre or 20-acre lots (Section 4.1.1.2, Methods - Analytical Framework for Assessing Effects on Biological Resources). For the purposes of this analysis, this area is not included in the open space, development area, or other lands categories described in Section 4.1.1.2. These areas would be in private lots and uses in these areas would be required to be consistent with those allowed in the Kern County General Plan (Kern County 2009b). It is assumed, however, that permanent ground disturbance associated with development would not be allowed, and that adverse effects on vegetation would not occur.

Finally, increased human presence and introduction of urban-type uses associated with development could also degrade vegetation communities. These indirect effects, as they related to potential effects on Covered Species and other special-status species, are described below.

All development under the CCH Avoidance MSHCP Alternative would be subject to project-specific approvals, and permanent or temporary effects on special-status vegetation communities, such as wetlands (regulated by USACE and RWQCB) or oak woodlands (protected under Kern County oak tree ordinances), would require approval by Federal, state, or local jurisdictions. For example, the proposed TMV Project, as approved by Kern County (Kern County 2009a), was designed to avoid all but 1% of wetlands in the TMV Planning Area in response to Federal and state permitting requirements (Central Valley Regional Water Quality Control Board 2011) (Appendix J). In addition, conservation measures under an MSHCP for the protection of Covered Species, including protections for communities such as wetland and riparian communities, would be expected to be implemented. In consideration of the proposed open space areas under the CCH Avoidance MSHCP Alternative, and with implementation of the mitigation measures discussed in Section 4.1.5.4, Mitigation Measures, it is anticipated that potential effects on sensitive vegetation communities from Commercial and Residential Development Activities would be minor, would not substantially degrade unique or sensitive habitats, and would not exceed a standard or criteria provided under another Federal, state, or local statute. These effects would be greater than the No Action Alternative where no development would occur.

Plan-Wide Activities

Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would have a limited potential to affect vegetation communities. Grazing would be expected to continue on approximately 130,339 acres of the study area (i.e., open space), and could damage vegetation in areas where livestock congregate and trample vegetation, or in areas where overgrazing occurs. Similarly, Plan-Wide Activities that could result in ground disturbance, such as repair and maintenance of back-country cabins, could affect vegetation communities through erosion or compaction. Other Plan-Wide Activities, such as film production and recreation, are expected to continue to occur mostly in existing disturbed areas, roads, or trail, and would generally have only minor, temporary affects on vegetation communities.

The BMPS and use restriction required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would continue to be implemented under the CCH Avoidance MSHCP Alternative and would include, for example, provisions to minimize the effects of grazing on the landscape (e.g., distribution of water sources and seasonal rotation of livestock), as well site evaluation requirements prior to construction of new or relocated infrastructure. Similarly, conservation measures under an MSHCP for the protection of the Covered Species, including protections for communities such as wetland and riparian communities, would be implemented. Construction or maintenance activities with the potential to result in temporary or permanent effects on special-status vegetation communities (e.g., wetlands, oak woodlands) would be subject to approval by Federal, state or local jurisdictions, as described in Section 4.1.5.4, Mitigation Measures, which would reduce the potential for substantial, unmitigated effects on those vegetation communities. For example, construction-related BMPs prescribed by the local jurisdiction as part of the construction, grading, or building permit review processes, would be required to minimize potential water quality effects as a result of ground-disturbing activities (Appendix J).

Finally, this alternative would limit permanent ground disturbance associated with construction of new roads and structures in open space necessary to support Plan-Wide Activities or Commercial and Residential Development Activities to 200 acres. As described above, the location of this acreage is not known at this time, but would be consistent with the Ranchwide Agreement and requirement to protect the conservation values of the ranch.

Although Plan-Wide Activities under the CCH Avoidance MSHCP Alternative could result in minor effects on vegetation communities, these effects would be reduced through implementation of BMPs prescribed as part of the Federal, state, or local permitting processes (Section 4.1.5.5, Mitigation Measures) or as prescribed under the Ranchwide Agreement use restrictions and BMPs, and would not degrade unique or sensitive habitats, or exceed a standard or criteria provided under another Federal, state, or local statute. These effects would be comparable to those associated with Existing Ranch Uses under the No Action Alternative, although they may be slightly less given the acreage limitation for ground disturbance (200 acres) provided under the CCH Avoidance MSHCP Alternative.

4.1.5.2 Wildlife and Plant Species

California Condor

Commercial and Residential Development Activities

Similar to the Proposed TU MSHCP Alternative, Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would have the potential to adversely affect California condors and their habitat. Potential effects associated with the loss of foraging habitat; habituation to human structures and activities; increased risk of collisions with power lines, communication towers, and other artificial structures; and ingestion of microtrash, are summarized below.

Loss of Foraging Habitat

As summarized in 4.1.3.2 above, the Service prepared a revised habitat suitability model for the California condor for consideration in this Supplemental Draft EIS. The revised habitat model indicates a total of 3,159 acres of condor foraging habitat occur in the Development Envelope associated with the CCH Avoidance MSHCP Alternative; no condor critical habitat would be located in the Development Envelope. Commercial and Residential Development Activities would result in 4,496 acres of permanent ground disturbance in the study area. Ground disturbance would result in the direct loss of all of the suitable foraging habitat (3,159 acres) within the Development Envelope, and indirect effects (i.e., effects on foraging habitat within 0.5 mile of the Development Envelope) on 3,494 acres of suitable foraging habitat, including 1,307 acres of suitable foraging habitat in the Tejon Ranch critical habitat unit. In total, approximately 6,653 acres of suitable foraging habitat would be directly lost and indirectly affected as a result of Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative.

Approximately 77,432 acres of suitable foraging habitat would be considered functional in the remaining open space of the study area. This includes all 23,000 acres of foraging habitat in the approximately 37,000-acre Condor Study Area. Additional habitat would be conserved in areas of the ranch outside of the study area through the Ranchwide Agreement.

As described for the Proposed TU MSHCP Alternative, to analyze potential effects on the condor population and its critical habitat, the Service also estimated potential food availability in the condor's range, focusing on the portion of the range currently used by the southern California subpopulation. The Service estimates there are currently more than enough potential carcasses from livestock, hunting, and other mortality of native ungulates and feral pigs in the condors' historic range in California to support not only the current condor population, but also one of the two free-flying population of 150 birds envisioned in the recovery plan and necessary to down list the condor to a threatened status (assuming mortality factors, particularly lead poisoning, are minimized or eliminated). Additionally, ranching and hunting is expected to continue at similar levels as currently exists under the No Action Alternative (i.e., 14,500 head of cattle), and is anticipated to provide ongoing food sources comparable to both the No Action Alternative and Proposed TU MSHCP Alternative, despite slight differences in open space areas under each alternative. The CCH Avoidance MSHCP Alternative would also conserve the historic and currently used traditional roost sites on Winters Ridge in the Condor Study Area and institute conservation measures that would further protect the condor, including the lead ban. Consequently, even with the Commercial and Residential Development Activities proposed in the study area under this alternative, given the estimated amount of foraging habitat that would remain on Tejon Ranch, and

the estimated food for condors that would be produced from cattle, pig, and native ungulate carcasses, and gut piles within foraging habitat in open space and other conserved areas on Tejon Ranch, it is likely that the ranch would continue to function as an essential and viable foraging area for the expanding condor population. Although the loss of foraging habitat resulting from Commercial and Residential Development Activities (direct/indirect loss of up to 6,653 acres of suitable foraging habitat) would be greater under this alternative than the No Action Alternative, this loss would not result in an substantial adverse effect on the condor population or its critical habitat.

Habituation

The potential effects of habituation on the California condor under this CCH Avoidance MSHCP Alternative would be similar to those under the Proposed TU MSHCP Alternative, however, at a somewhat reduced scale because of the smaller amount of development proposed under the this alternative. It is anticipated that conservation measures under an MSHCP to reduce the effects of habituation on condors (similar to those provided in the TU MSHCP) would further reduce these effects, and that the CCH Avoidance MSHCP Alternative would not result in a substantial adverse effect on the condor population or their critical habitat from habituation. The effects would be greater than those associated with the No Action Alternative, where habitation would be unlikely because development and associated infrastructure would not occur, and human presence/activity would not increase.

Collisions with Power Lines and Towers

Potential effects on the condor from collisions with power lines and vertical structures, such as transmission, communication, and cellular towers, under CCH Avoidance MSHCP Alternative would be similar to those associated with the Proposed TU MSHCP Alternative. As with the Proposed TU MSHCP Alternative, no new aboveground high-voltage towers/transmission lines, or aboveground structures/distribution lines would be built in the TMV Planning Area, although two existing lines could be permanently relocated within 1,000 feet of existing lines. All new transmission and distribution lines in the Development Envelope would be placed underground. Any future powerlines or towers proposed outside the Development Envelope would be subject to Service's review and approval. In consideration of these conservation measures, it is anticipated that the CCH Avoidance MSHCP Alternative would not result in a substantial adverse effect on the condor population or their critical habitat from collisions with powerlines or vertical structures. The potential for collision under this alternative would be greater than associated with the No Action Alternative, where no new power lines or towers would be constructed in the Development Envelope.

Ingestion of Microtrash

Potential effects associated with ingestion of microtrash under the CCH Avoidance MSHCP Alternative would be similar to those under the Proposed TU MSHCP Alternative, however, at a somewhat reduced scale because of the smaller amount of development proposed under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include conservation measures to reduce microtrash in the study area, and minimize the risk of increased exposure of condors to microtrash. In consideration of these conservation measures, it is anticipated that the CCH Avoidance MSHCP Alternative would not result in a substantial adverse effect on the condor population or their critical habitat from increased availability or ingestion of

microtrash. The potential for the occurrence of microtrash under this alternative would be greater than associated with the No Action Alternative, where no new development would occur, and human-related debris would not increase.

Plan-Wide Activities

Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would be the same as those discussed under the Proposed TU MSHCP Alternative, and would result in the same effects on the California condor, including anticipated benefits from livestock grazing (i.e., improved foraging habitat and provision of an ongoing for source for condors), and the potential for increased habituation and exposure to microtrash associated with increased human activity, construction work, and/or public access. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include conservation measures to reduce these potential effects, and the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) to govern these uses would continue to be implemented. Thus, while the level of condor activity on the ranch is expected to increase as their population continues to increase, it is anticipated the effects of Plan-Wide Activities on the California condor and its habitat would be minor given the conservation measures provided under the CCH Avoidance MSHCP Alternative. These effects would be somewhat greater than the No-Action Alternative, however, given the anticipated increased population of the condor and increased human presence in the study area under this alternative.

Other Covered Species

Table 4.1-7 provides a summary of the potential effects of the CCH Avoidance MSHCP Alternative on modeled habitat for each of the other Covered Species. Habitat modeling for the other Covered Species is briefly described in Section 3.1.7, Other Wildlife Species Considered for Conservation under the TU MSHCP, both in general terms and for each Covered Species, and fully described in Appendix D. The permanent and temporary direct and indirect effects of the Commercial and Residential Development Activities and the Plan-Wide Activities are discussed below.

Table 4.1-7. Potential Effects on Modeled Habitat of Other Covered Species—CCH Avoidance MSHCP Alternative

Species	Species Model	Acreage of Modeled Habitat in Study Area[1]	Acreage of Modeled Habitat Lost[2, 4]	Acreage of Modeled Habitat Conserved[3, 4]
Tehachapi slender salamander	Suitable habitat	4,071	85 (2%)	3,978 (98%)
Western spadefoot	Suitable habitat	1,176	25 (2%)	1,057 (90%)
Yellow-blotched salamander	Suitable habitat	35,220	603 (2%)	34,560 (98%)
American peregrine falcon	Foraging	26,745	1,932 (7%)	24,668 (92%)
	Breeding	80	0 (0%)	80 (100%)
Bald eagle	Foraging	518	4 (1%)	499 (96%)
	Wintering	1,438	533 (37%)	905 (63%)
Burrowing owl	Breeding/foraging	24,947	1,684 (7%)	23,201 (93%)

Species	Species Model	Acreage of Modeled Habitat in Study Area[1]	Acreage of Modeled Habitat Lost[2, 4]	Acreage of Modeled Habitat Conserved[3, 4]
	Secondary breeding/foraging	8,073	517 (6%)	7,556 (94%)
Golden eagle	Foraging	33,894	2,204 (7%)	31,618 (93%)
	Breeding/foraging	33,057	710 (2%)	32,306 (98%)
	Primary breeding	48,029	1,100 (2%)	46,864 (98%)
Least Bell's vireo	Breeding/foraging	615	7 (1%)	579 (94%)
Little willow flycatcher	Foraging/stopover	986	7 (1%)	951 (96%)
Purple martin	Breeding/foraging	85,881	1,837 (2%)	83,927 (98%)
Southwestern willow flycatcher	Breeding/foraging	986	7 (1%)	951 (96%)
Tricolored blackbird	Foraging	18,557	806 (4%)	17,662 (95%)
	Primary breeding	290	16 (5%)	216 (75%)
Western yellow-billed cuckoo	Breeding/foraging	986	7 (1%)	951 (96%)
White-tailed kite	Foraging	9,019	1,451 (16%)	7,451 (83%)
Yellow warbler	Breeding/foraging	986	7 (1%)	951 (96%)
	Secondary foraging	51,753	1,123 (2%)	50,565 (98%)
Valley elderberry longhorn beetle	Suitable habitat	2,597	0 (0%)	2,578 (99%)
Ringtail	Suitable Habitat	99,253	4,216 (4%)	94,802 (96%)
Tehachapi pocket mouse	Suitable habitat	1,920	0 (0%)	1,920 (100%)
Coast horned lizard (*frontale* and *blainvillii* populations)	Primary habitat	41,090	1,827 (4%)	39,201 (95%)
	Secondary habitat	62	1 (2%)	55 (88%)
Two-striped garter snake	Suitable habitat	364	33 (9%)	227 (62%)
Fort Tejon woolly sunflower	Suitable habitat	57,430	2,254 (4%)	55,152 (96%)
Kusche's sandwort	Suitable habitat	30,505	237 (1%)	30,268 (99%)
Round-leaved filaree	Suitable habitat	58,089	779 (1%)	57,283 (99%)
Striped adobe lily	Suitable habitat	32,217	482 (1%)	31,725 (98%)
Tehachapi buckwheat	Suitable habitat	2,579	0 (0%)	2,579 (100%)
Tejon poppy	Suitable habitat	12,676	81 (1%)	12,555 (99%)

[1] Acreages in this column are based on the study area encompassing 134,996 acres total, or the total acreage in the study area (141,886 acres) less the acreage in Other Lands (6,890 acres).

[2] Acreages in this column represent the acreage of modeled habitat lost in the 4,496-acre Development Envelope. Percentages represent the percent of modeled habitat lost relative to the acreage of modeled habitat in the study area.

Species	Species Model	Acreage of Modeled Habitat in Study Area[1]	Acreage of Modeled Habitat Lost[2, 4]	Acreage of Modeled Habitat Conserved[3, 4]

[3] Acreages in this column represent the acreage of modeled habitat conserved in Established Open Space, TMV Planning Area Open Space, and Existing Conservation Easement Areas. Percentages represent the percent of modeled habitat conserved relative to the acreage of modeled habitat in the study area.

[4] The percentages of modeled habitat conserved and lost may not sum to 100% for three possible reasons: (1) rounding error; (2) 75% of riparian/wetlands are assumed avoided in development areas, but avoided areas are not included in the open space acreages; and (3) 145 acres in the Lebec/Existing Headquarters Area are assumed not developed but are also not included in open space. As a result, is likely that modeled habitat conserved in the Lebec/Existing Headquarters Area is underestimated because the County land use designations for this area would only allow a small component of land in that area to be developed (see Section 4.1.1.2, Methods – Analytical Framework for Biological Effects). A more specific explanation for these differences is provided in the species-specific discussion below for the species where the sum is less than 90% (i.e., tricolored blackbird, coast horned lizard, and two-striped garter snake).

Commercial and Residential Development Activities

As described in Section 3.1, Biological Resources, modeled habitat is composed of vegetation communities supporting the life history requirements of the Covered Species, along with other habitat suitability criteria appropriate for a particular species, such as soils or elevation. Therefore, for the purposes of this EIS, permanent loss of modeled habitat is used to assess direct effects on species. In addition to permanent ground disturbance, construction-related effects, including noise, toxins, and lighting, and operations effects, including increased human presence and introduction of urban-type uses associated with development, could indirectly affect other Covered Species, as described below.

Loss of Habitat

Table 4.1-7 indicates the extent of the permanent loss of modeled habitat for each of the other Covered Species under the CCH Avoidance MSHCP Alternative, as well as the extent of modeled habitat that would be conserved in the study area. While only some portion of each of these modeled habitats would represent the most suitable habitat for the Covered Species, in the absence of more detailed species habitat information, they are used here to conservatively represent the extent of suitable habitat loss for each species. For each of the Covered Species, the following evaluation considers the loss of modeled habitat, potential effects on known species occurrences within the study area (where applicable), as well as the overall range and rarity of the species in relation to the potential loss of modeled habitat.

In general, the primary conservation measure under the CCH Avoidance MSHCP Alternative would be conservation and management of 130,339 acres of open space. In addition, species-specific conservation measures, similar to those provided under the Proposed TU MSHCP Alternative, would be implemented. Where conservation measures are provided specifically to offset the loss of modeled habitat, they are summarized for each species below.

Tehachapi Slender Salamander

Modeled habitat for the Tehachapi slender salamander would be reduced by 85 acres (2%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the Tehachapi slender salamander has been detected at five locations in the study area, is endemic to California, and has a limited range, only occurring in Kern County.

Potential effects on Tehachapi slender salamander are considered in the context of the species' limited range and the difficulty of detecting species presence during surveys. An estimated 3,978 acres (98%) of modeled habitat for this species would be conserved in open space under the CCH Avoidance MSHCP Alternative. Similar to the Proposed TU MSHCP Alternative, this alternative would include species-specific conservation measures to reduce potential effects on the Tehachapi slender salamander, including preconstruction surveys in suitable habitat, reasonable efforts by a Service-approved biologist to capture and relocate observed individuals to suitable habitat that is the closest distance to the Disturbance Area from where the individual was removed, construction monitoring by a Service-approved biologist, installation of exclusion fencing, if appropriate, to prevent Tehachapi slender salamanders from entering construction zones, and placement of culverts under road connections to reduce the potential for the species to enter on-site roads. These conservation measures, including preservation of 98% of modeled habitat in open space, would reduce the potential effects on this species from the loss of habitat. In consideration of the species limited range, it is anticipated that the loss of 2% of modeled habitat under the CCH Avoidance MSHCP Alternative would have a moderate effect on the Tehachapi slender salamander in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Western Spadefoot

Modeled habitat for the western spadefoot would be reduced by 25 acres (2%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the western spadefoot has not been detected in the TMV Planning Area and has low potential to occur in other parts of the study area. It is endemic to California and northern Baja California, and is primarily found below 3,000 feet amsl.

An estimated 1,057 acres (90%) of modeled habitat for this species would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on western spadefoot, including preconstruction surveys in suitable habitat, reasonable efforts by a Service-approved biologist to capture and relocate observed individuals to suitable habitat that is the closest distance to the Disturbance Area from where the individual was removed, buffers around egg masses and larvae if found during preconstruction surveys, and installation of exclusion fencing, if appropriate, to prevent western spadefoot from entering construction zones. In consideration of the low potential for occurrence in the study area, and because 90% of modeled habitat would be conserved in open space, it is anticipated that the loss of 2% of modeled habitat under the CCH Avoidance MSHCP Alternative would have a minor effect on western spadefoot in the study area (if they are present), and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Yellow-Blotched Salamander

Modeled habitat for the yellow-blotched salamander would be reduced by 603 acres (2%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the yellow-blotched salamander was detected in several drainages in the TMV Planning Area, and all known occurrences would be preserved generally north of Rising Canyon and south of Pastoria Canyon, east of Grapevine Peak in the vicinity of Silver, Monroe, and Squirrel

canyons, and along tributaries to Bear Trap Canyon. The species is endemic to California, specifically in Kern and Ventura Counties, and occurs at elevations between 1,400 and 7,496 feet amsl.

Potential effects on the yellow-blotched salamander are considered in the context of the species limited geographic range. An estimated 34,560 acres (98%) of modeled habitat for this species would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on yellow-blotched salamander, including preconstruction surveys in suitable habitat, reasonable efforts by a Service-approved Tejon Ranch Biologist to capture and relocate observed individuals to suitable habitat that is the closest distance to the Disturbance Area from where the individual was removed,, monitoring by a Service-approved biologist, and installation of exclusion fencing, if appropriate, to prevent yellow-blotched salamanders from entering construction zones. In consideration of these conservation measures, including preservation of 98% of modeled habitat in open space and preservation of all known occurrences, it is anticipated that the loss of 2% of modeled habitat under the CCH Avoidance MSHCP Alternative would have a minor effect on yellow-blotched salamander in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

American Peregrine Falcon

Modeled foraging habitat for the American peregrine falcon would be reduced by 1,932 acres (7%) in the study area under the CCH Avoidance MSHCP Alternative; no modeled breeding habitat would be lost under this alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the American peregrine falcon has not been documented to nest in the study area and has only been observed to be an occasional winter visitor. It has an extensive range that spans from Alaska south to northern Mexico and east across Arizona through Alabama, and is known to use a large variety of open habitats for foraging.

An estimated 24,668 acres (92%) of modeled foraging habitat and 80 acres (100%) of modeled breeding habitat for this species would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the American peregrine falcon, including preconstruction surveys in suitable breeding habitat, buffered protections around active nests, and monitoring by a Service-approved biologist. In consideration of the extensive range of the species, the fact that no known nesting populations would be affected by development activities, and because 92% of the modeled foraging habitat and 100% of modeled breeding habitat would be conserved and protected in open space, it is anticipated that the loss of 7% of modeled foraging habitat under the CCH Avoidance MSHCP Alternative would have a minor effect on American peregrine falcon that may nest or forage in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Bald Eagle

Modeled winter roosting habitat for the bald eagle would be reduced by 533 acres (37%) in the study area under the CCH Avoidance MSHCP Alternative; modeled foraging habitat would be reduced by 4 acres (1%) (Table 4.1-7). As described in Section 3.1, Biological Resources, the bald eagle has a widespread distribution in North America, wintering from Alaska eastward to Newfoundland and southward locally to Baja California, Sonora, Texas, and Florida. In California,

breeding populations are more limited and restricted primarily to the northern Sierra. Winter roosting habitat in the study area is concentrated around and within 1 mile of Castac Lake, particularly to the south and east where trees are sufficiently large to support roosting substrate for bald eagles.

An estimated 905 acres (63%) of modeled winter roosting habitat would be conserved in open space under the CCH Avoidance MSHCP Alternative; 499 acres (96%) of modeled foraging habitat would be preserved (Table 4.1-7). Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include conservation measures to protect winter foraging habitat, including a prohibition on removal of preferred diurnal perches and high quality roost trees from fuel modification zones within 1 mile of Castac Lake, avoidance of snags and large trees within 100 feet of the shoreline of Castac Lake, and establishment of a setback from preferred roosting areas by a Service-approved biologist. The loss of 37% of modeled winter roosting habitat would likely reduce the use of Castac Lake by wintering bald eagles. However, the bald eagle does not breed on site and surveys indicate that a large wintering population does not occur in the study area. In consideration of the extensive range of the species and the conservation measures that would be implemented to protect the remaining modeled foraging and wintering habitat in the study area, it is anticipated that the loss of 37% of modeled wintering habitat and 1% of modeled foraging habitat under the CCH Avoidance MSHCP Alternative would have a moderate effect on wintering and foraging bald eagles in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Burrowing Owl

Modeled breeding/foraging habitat for the burrowing owl would be reduced by 1,684 acres (7%) in the study area under the CCH Avoidance MSHCP Alternative; modeled secondary breeding/foraging habitat would be reduced by 517 acres (6%) (Table 4.1-7). As described in Section 3.1, Biological Resources, burrowing owls are infrequent winter visitor to the study area, and no breeding, resident, or wintering burrowing owls were detected on site during any of the focused surveys of the TMV Planning Area. In general, the burrowing owl is widespread in the United States and Canada, found in a wide variety of habitat types typically characterized by low-growing vegetation and burrows made by fossorial mammals, such as ground squirrels.

An estimated 23,201 acres (93%) of modeled breeding/foraging habitat and 7,556 acres (94%) of modeled secondary breeding/foraging habitat for this species would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on burrowing owl, including preconstruction surveys in suitable breeding habitat and protection of both non-nesting and nesting owls if observed on site. Given the extensive range of the species and their limited presence in the study area, and because 93% of the modeled breeding/foraging and 94% of modeled secondary breeding/foraging habitat would be protected in open space, it is anticipated that the loss of 7% of the modeled breeding/foraging and 6% of modeled secondary breeding/foraging habitat under the CCH Avoidance MSHCP Alternative would have a minor effect on burrowing owl in the study area (if present), and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Golden Eagle

Modeled foraging, breeding/foraging, and primary breeding habitat for the golden eagle would be reduced by 2,204 (7%), 710 acres (2%) and 1,100 acres (2%) in the study area, respectively, under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, within their range, golden eagles are sparsely distributed throughout most of California, occupying primarily mountain, foothill, and desert habitats. Golden eagles have been regularly observed in the TMV Planning Area since 1999 and are a documented breeding resident on site. Three active nest sites are currently known to occur in the study area.

An estimated 31,618 acres (93%) of modeled foraging habitat, 32,306 acres (98%) of modeled breeding/foraging habitat, and 46,864 acres (98%) of modeled primary breeding habitat for this species would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the golden eagle, including protection of all known active nests (primary and alternate) during the breeding season; preconstruction surveys (i.e., prior to approval of a grading plan to better incorporate avoidance planning and completion of baseline surveys in open space) to confirm nest activity and search for new nests; application of a view-shed analysis to any new nests discovered during preconstruction surveys; and implementation of development and recreational use setbacks and trail closures (during the nesting season) to avoid potential disturbance of golden eagle nests and associated foraging habitat. Given the extensive range of the species, the species-specific conservation measures that would be applied to active nest sites, and the combined high level of habitat conservation (i.e., 93% of the modeled foraging habitat, 98% of modeled breeding/foraging habitat, and 98% of primary breeding habitat would be conserved and protected), it is anticipated that the loss of modeled habitat under the CCH Avoidance MSHCP Alternative would have a minor effect on the golden eagle population in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Least Bell's Vireo

Modeled breeding/foraging habitat for the least Bell's vireo would be reduced by 7 acres (less than 1%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the least Bell's vireo has not been detected in the study area, and the study area is not an area of focus in the Least Bell's vireo recovery plan (U.S. Fish and Wildlife Service 1998). However, the least Bell's vireo has a very limited distribution, and low reproductive success due to loss of riparian habitat and cowbird nest parasitism. Therefore, loss of any potential breeding habitat is an important consideration for this species.

An estimated 579 acres (94%) of breeding/foraging habitat for this species would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the least Bell's vireo, including preconstruction surveys in and immediately adjacent to suitable breeding/foraging habitat during the breeding season, and creation of a 500-foot buffer around nests if construction cannot be avoided during the breeding season. Although the net loss of 7 acres of riparian habitat under the CCH Avoidance MSHCP Alternative could affect the least Bell's vireo if they occur on site, appropriate management of the remaining 94% of modeled habitat (maintenance of a high proportion of the riparian areas suitable for this species in an early successional state) would reduce this effect. In consideration of the conservation measures provided

under this alternative, including appropriate management of modeled breeding/foraging habitat in open space, it is anticipated that the loss of 1% of modeled breeding/foraging habitat under the CCH Avoidance MSHCP Alternative would have a minor effect on least Bell's vireo in the study area (if present) and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Little Willow Flycatcher

Modeled foraging/stopover habitat for the little willow flycatcher would be reduced by 7 acres (less than 1%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, suitable foraging and stopover habitat exists in the study area, and little willow flycatchers have been detected near Castac Lake, Cuddy Creek, Beartrap Canyon, Rising Canyon, and along Grapevine Creek. However, the entire breeding range of the little willow flycatcher is located outside of the study area, and only migrant flycatcher have been observed in the study area.

An estimated 951 acres (96%) of modeled foraging/stopover habitat for this species would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would species-specific conservation measures to reduce potential effects on little willow flycatcher, including incorporation of design features at the boundary between modeled habitat and development areas to minimize the introduction of nonnative species and urban runoff into adjacent natural areas, and to minimize the effects of lighting and glare on little willow flycatcher habitat. Given that little willow flycatchers on migration have more general habitat requirements than breeding individuals, and that 96% of modeled little flycatcher foraging/stopover habitat would be protected in open space, it is anticipated that the loss of 1% of modeled foraging/stopover habitat under the CCH Avoidance MSHCP Alternative would have a minor effect on little willow flycatcher stopping over and foraging in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Purple Martin

Modeled breeding/foraging habitat for the purple martin would be reduced by 1,837 acres (2%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the purple martin breeds locally from British Columbia, eastward to Nova Scotia, and southward to Baja California, central Mexico, and the Gulf Coast. In California, the breeding populations are highly localized, primarily inland and along the central and southern coast. In the Tehachapi Mountains, the purple martin nests regularly in oak woodland, and has been detected in the oak woodland and oak savannah communities in the study area. Airola and Williams (2008) found the Tehachapi Mountains support 100 to 200 pairs of purple martin, and may be the one remaining area in California where purple martins regularly nest in oak woodland.

An estimated 83,927 acres (98%) of modeled habitat for this species would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would likely affect breeding sites in the TMV Planning Area that have been used by purple martin in the past, and could indirectly affect breeding pairs through competition with starling. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on purple martin, including identification and protection of any nests and known breeding pairs in the study area, and

implementation of a European starling management plan by a Service-approved biologist if determined necessary. These conservation measures, including preservation of 98% of modeled breeding/foraging habitat in open space, would reduce potential effects on this species from the loss of habitat. Given the apparent importance of the Tehachapi Mountains to this species, it is anticipated that the loss of 2% of modeled habitat under the CCH Avoidance MSHCP Alternative would have a minor to moderate effect on breeding and foraging purple martin in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Southwestern Willow Flycatcher

Modeled breeding/foraging habitat for the southwestern willow flycatcher would be reduced by 7 acres (less than 1%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, southwestern willow flycatchers breed in Arizona, New Mexico, California, southwestern Colorado, southern Nevada and Utah, and western Texas. The total number of southwestern willow flycatcher territories in 2002 was estimated to be approximately 1,100 to 1,200, and these territories were distributed in a large number of small breeding populations. These small, isolated breeding populations make the species particularly vulnerable to local extirpation. No southwestern willow flycatchers have been observed in the study area and the study area is not an area of focus in the southwestern willow flycatcher recovery plan (U.S. Fish and Wildlife Service 2002). However, the southwestern willow flycatcher has a low reproductive success due to loss of riparian habitat and cowbird nest parasitism. Therefore, loss of any potential breeding habitat is an important consideration for this species.

An estimated 951 acres (96%) of modeled breeding/foraging habitat would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the southerwestern willow flycatcher, including preconstruction surveys in and immediately adjacent to suitable breeding/foraging habitat during the breeding season, and creation of a 500-foot buffer around any nests detected in preconstruction surveys if construction cannot be avoided entirely during the breeding season. Although the net loss of 7 acres of riparian habitat under the CCH Avoidance MSHCP Alternative could affect potential nesting southwestern willow flycatchers, appropriate management of the remaining 96% of modeled habitat (maintenance of a high proportion of the riparian areas suitable for the species in an early successional state) would reduce this effect. In consideration of the conservation measures provided under this alternative, including appropriate management of modeled breeding/foraging habitat in open space, it is anticipated that the loss of 1% of modeled breeding/foraging habitat under the CCH Avoidance MSHCP Alternative would have a minor effect on southwestern willow flycatcher in the study area (if present), and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Tricolored Blackbird

Modeled foraging and primary breeding habitat for the tricolored blackbird would be reduced by 806 acres (4%) and 16 acres (5%) in the study area, respectively, under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, tricolored blackbirds have been observed nesting in the study area adjacent to Castac Lake, and modeled breeding habitat is clustered around that lake. About 99% of the population is endemic to California, and in 2011,

tricolored blackbirds nesting in Tulare Basin in Kern County represented approximately 34% of the California population.

An estimated 216 acres (75%) of modeled breeding habitat and 17,662 acres (95%) of modeled foraging habitat would be conserved in open space under this alternative.[6] Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce effects on the tricolored blackbird, including preconstruction surveys for breeding birds and creation of a 500 foot buffer around any nesting colony if construction cannot be avoided entirely during the breeding season. The net loss of 16 acres of modeled breeding habitat under the CCH Avoidance MSHCP Alternative could affect nesting tricolored blackbird colonies in the study area. Appropriate management of the remaining 75% of modeled breeding habitat could reduce this effect, along with the species-specific conservation measures described above. In consideration of these conservation measures, and because the Development Envelope would not surround the entire lake under this alternative (although development would be more intensive around remaining areas of Castac Lake), it is anticipated that the loss of 4% of modeled foraging habitat and 5% of modeled breeding habitat under the CCH Avoidance MSHCP Alternative would have a moderate effect on tricolored blackbirds in the study area, and minor effect on population rangewide. This alternative would not substantially affect this species.

Western Yellow-Billed Cuckoo

Modeled breeding/foraging habitat for the western yellow-billed cuckoo would be reduced by 7 acres (less than 1%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the western yellow-billed cuckoo nests at scattered locations in California in dense, riparian woodlands and requires a wide band of riparian habitat. This species has not been detected in the study area, and although vegetation communities indicative of breeding habitat have been modeled, suitable patch size for nesting western yellow-billed cuckoos has not been found in the study area.

An estimated 951 acres (96%) of modeled breeding/foraging habitat would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the western yellow-billed cuckoo, including preconstruction surveys and protection of nesting cuckoos if observed on site. Given the lack of suitable patch size for nesting western-yellow billed cuckoos, and because 96% of modeled breeding/foraging habitat would be conserved in open space, it is anticipated that the loss of 1% of modeled breeding/foraging habitat under the CCH Avoidance MSHCP Alternative would have a minor effect on yellow-billed cuckoo in the study area (if present),

[6] The percentages of modeled primary breeding habitat conserved and lost for tricolored blackbird only sum to 80% under the CCH Avoidance MSHCP Alternative (Table 4.1-7). This is attributable to the assumptions in the habitat model specific to riparian areas (i.e., 75% of riparian/wetlands are assumed avoided in development areas, but avoided areas are not included in the open space acreages) and assumptions specific to future uses of the Lebec/Existing Headquarters Area (i.e., 145 acres in the Lebec/Existing Headquarters Area are assumed not developed, but are also not included in open space). It is likely that modeled primary breeding habitat conserved is underestimated because riparian areas have not been fully considered, and because the County land use designations in the Lebec/Existing Headquarters Area would only allow a small component of land in that area to be developed (see Section 4.1.1.2, Methods – Analytical Framework for Biological Effects).

and a minor effect on the population rangewide. This alternative would not substantially affect the species.

White-Tailed Kite

Modeled foraging habitat for the white-tailed kite would be reduced by 1,451 acres (16%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the white-tailed kite breeds in Oregon, Washington, and Texas, but the primary breeding populations are found in California, occupying most areas west of the Sierra Nevada foothills and outside of the southeast deserts. The white-tailed kite is an infrequent winter visitor to the study area and there are no breeding records and few occurrence records of the species in the study area.

An estimated 7,451 acres (83%) of modeled foraging habitat for this species would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on white-tailed kite, including preconstruction surveys for active white-tailed kite nests during the breeding season prior to grading. In addition, although the species is not expected to breed in the study area, any active nests would be conserved and protected by a 500-foot buffer. Given the large range of the species, its limited presence in the study area, and because 83% of the modeled foraging habitat would be conserved and protected in open space, it is anticipated that the loss of 16% of modeled foraging habitat under the CCH Avoidance MSHCP Alternative would have a minor effect on white-tailed kite visiting or wintering in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Yellow Warbler

Modeled breeding/foraging and secondary foraging habitat for the yellow warbler would be reduced by 7 acres (1%) and 1,123 acres (2%) in the study area, respectively, under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, in California, the yellow warbler has an extensive breeding range, nesting in riparian woodlands from coastal and desert lowlands up to 8,000 feet in the Sierra Nevada. Yellow warblers have been observed in the TMV Planning Area and are expected to occur in a regular distribution in the study area based on these observations. Although nests have not been documented, this species is expected to nest in the study area within suitable habitat.

An estimated 951 acres (96%) of modeled breeding/foraging habitat and 50,565 acres (98%) of secondary foraging habitat would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the yellow warbler, including preconstruction surveys in or adjacent to suitable breeding habitat and protection of nesting yellow warblers if observed on site. As noted above, yellow warblers are sensitive to decreases in deciduous habitat, heterogeneity of riparian habitat and riparian corridor width. They also have reduced reproductive success due to cowbird nest parasitism and nest predation. Given these factors, the net loss of riparian habitat is an important consideration for this species. However, despite many local declines, yellow warblers currently occupy most of their former breeding range with the exception of the Central Valley. Given the high level of habitat conservation and protection (96% of modeled breeding/foraging habitat and 98% of secondary foraging habitat), and with the appropriate management of conserved riparian habitat in open space, it is anticipated that the loss

of 1% of modeled breeding/foraging habitat and 2% of modeled secondary foraging habitat under the CCH Avoidance MSHCP Alternative would result in a minor effect on yellow warblers in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Valley Elderberry Longhorn Beetle

Modeled habitat for the valley elderberry longhorn beetle would not be lost in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the primary range of the valley elderberry longhorn beetle is in the Central Valley, although the species' distribution ranges from southern Shasta County to Fresno County. The host plants of the valley elderberry longhorn beetle are red or blue elderberry. Elderberry shrubs have been mapped at several locations in the TMV Planning Area, although no emergence holes were found on any shrub.

An estimated 2,578 acres (99%) of modeled habitat for the valley elderberry longhorn beetle would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the valley elderberry longhorn beetle, including development of an IPMP to protect elderberry shrubs. Given that no modeled habitat would be lost under this alternative and 99% of modeled habitat would be conserved in open space, it is anticipated that the CCH Avoidance MSHCP Alternative would have a minor effect on valley elderberry longhorn beetle in the study area (if present), and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Ringtail

Modeled habitat for the ringtail would be reduced by 4,216 acres (4%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the ringtail occurs in the southwestern United States and is widely distributed in California. Potential ringtail scat has been observed in the TMV Planning Area; however, the observation was unverified and no occurrences of the ringtail were recorded in the TMV Planning Area during the course of extensive camera/scent station surveys in 2007.

An estimated 94,802 acres (96%) of modeled habitat for this species would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the ringtail, including preconstruction surveys within 300 feet of a disturbance zone to determine if ringtail (or signs of ringtail) are present in the area, the protection of the detected ringtail during the breeding season, and implementation of CDFG-coordinated avoidance measures if ringtails (or signs of ringtail) are detected in the disturbance zone during the non-breeding season. In addition, construction in modeled riparian, wash, and wetland habitat would be avoided to the extent practicable with the exception of road crossings and culverts.

The loss of 4,216 acres of modeled habitat would, at a minimum, reduce the amount of potential habitat for ringtail in the study area; however, given the extensive range of the species, its unconfirmed presence (or likely limited distribution, if present) in the study area, and because 96% of the modeled habitat would be conserved in open space, it is anticipated the loss of 4% of modeled

habitat would have a minor to moderate effect on ringtail in the study area (if present), and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Tehachapi Pocket Mouse

Modeled habitat for the Tehachapi pocket mouse would not be reduced in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the Tehachapi pocket mouse is considered to be very rare and has only been documented in a few scattered localities in the Tehachapi Mountains. There are three CNDDB-documented occurrences of the Tehachapi pocket mouse along the southern edge of the TMV Planning Area. The species was also documented during trapping surveys in and adjacent to the study area as recently as 2010 (Cypher et. al. 2010, Dudek 2009); occurrences were in the southeastern portion of the TMV Planning Area between Oso and Dark Canyons near the southern border of the study area, and in and near the Bi-Centennial and Tri-Centennial conservation easement areas.

An estimated 1,920 acres (100%) of modeled habitat for this species would be conserved in open space under this alternative. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the Tehachapi pocket mouse, including a preconstruction live-trapping program in modeled habitat within 100 feet of the disturbance zone within 7 days of ground-disturbing activities. Construction activities would also be monitored in proximity to modeled habitat, and exclusion fencing could be installed to prevent Tehachapi pocket mice from entering construction zones. In addition, all currently known occurrences of Tehachapi pocket mouse would be conserved in the Oso Canyon area of the TMV Planning Area under this alternative.

As noted above, in general, surface-disturbing activities are incompatible with the persistence of native small mammal populations and as this species occurs in small, scattered populations, within a limited range, it is highly vulnerable to local extirpation from natural or human-related disturbance. However, given that no modeled habitat would be lost under this alternative and that all known occurrences of the species would be preserved in open space, it is anticipated that the CCH Avoidance MSHCP Alternative would have a minor effect on Tehachapi pocket mouse in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Coast Horned Lizard

Modeled primary and secondary habitat for the coast horned lizard would be reduced by 1,827 acres (4%) in the study area under the CCH Avoidance MSHCP Alternative; modeled secondary habitat would be reduced by 1 acre (2%) in the study area (Table 4.1-7). As described in Section 3.1, Biological Resources, the coast horned lizard is endemic to California and is broadly distributed through the foothills of the Sierra Nevada and throughout most of coastal, central and southern California. Coast horned lizards were observed in the TMV Planning Area and the northwestern corner of Castac Lake at Grapevine Creek.

An estimated 39,201 acres (95%) of modeled primary habitat and 55 acres (88%) of modeled secondary habitat for this species would be conserved in open space under this alternative.[7] Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on coast horned lizard, including conservation of 10 of the 12 known occurrences of the species in the southwestern portion of the TMV Planning Area (where the majority of the occurrences were found during surveys), installation of exclusion fencing around construction perimeters, and biological monitoring. Pre-construction surveys would be conducted in modeled primary and secondary habitat by a Service-approved biologist, and reasonable efforts to capture and relocate observed individuals to suitable habitat that is the closest distance to the Disturbance Area from where the individuals were removed would be taken.

Given the relatively widespread distribution of the coast horned lizard throughout the region, and because 95% of modeled primary habitat and 88% of modeled secondary habitat would be conserved and protected in open space, as well as 10 of the 12 known occurrences of the species in the study area, it is anticipated that the loss of 4% modeled primary habitat and 2% modeled secondary habitat under the CCH Avoidance MSHCP Alternative would result in a minor effect on coast horned lizard in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Two-Striped Garter Snake

Modeled habitat for two-striped garter snake would be reduced by 33 acres (9%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the two-striped garter snake is endemic to southern California and Baja California, Mexico. It is only found in about 60% of its historic range, and is now common only in eastern San Diego County. The two-striped garter snake has been observed in the TMV Planning Area east of Rising Canyon, in Dry Field Canyon, in Bear Trap Canyon, at Castac Lake, and at a stock pond south of Castac Lake; the species is expected to occur throughout modeled habitat in the study area.

An estimated 227 acres (62%) of modeled habitat for this species would be conserved in open space under this alternative.[8] Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce potential effects on the two-striped garter snake, including either daily preconstruction surveys, or the installation of an exclusion fence around the work zone. The Service-approved Tejon Ranch Biologist would make reasonable efforts to capture and relocate any observed individuals to suitable habitat that is the closest distance to the Disturbance Area from where the individuals were removed. In addition, all

[7] The percentages of modeled secondary habitat conserved and lost for coast horned lizard only sum to 90% under the CCH Avoidance MSHCP Alternative (Table 4.1-7). This is attributable to the assumptions in the habitat model specific to riparian areas (i.e., 75% of riparian/wetlands are assumed avoided in development areas, but avoided areas are not included in the open space acreages) and assumptions specific to future uses of the Lebec/Existing Headquarters Area (i.e., 145 acres in the Lebec/Existing Headquarters Area are assumed not developed, but are also not included in open space). It is likely that modeled secondary habitat conserved is underestimated because riparian areas have not been fully considered, and because the County land use designations in the Lebec/Existing Headquarters Area would only allow a small component of land in that area to be developed (see Section 4.1.1.2, Methods – Analytical Framework for Biological Effects).

[8] The percentages of modeled habitat conserved and lost for two-striped garter snake only sum to 71% under the CCH Avoidance MSHCP Alternative (Table 4.1-7). This is attributable to the assumption in the habitat model specific to riparian areas (i.e., 75% of riparian/wetlands are assumed avoided in development areas, but avoided areas are not included in the open space acreages). It is likely that modeled habitat conserved is underestimated because riparian areas have not been fully considered in the model.

currently known occurrences of two-striped garter snake in the southwestern and central portions of the TMV Planning Area east of Rising Canyon, in Dry Field Canyon, and in Bear Trap Canyon would be conserved under this alternative.

In consideration of the range of this species, and the above conservation measures, including conservation of 62% of modeled habitat in open space, it is anticipated that the loss of 9% of modeled habitat under the CCH Avoidance MSHCP Alternative would have a minor to moderate effect on two-striped garter snake in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Fort Tejon Woolly Sunflower

Modeled habitat for Fort Tejon woolly sunflower would be reduced by 2,254 acres (4%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the overall geographic distribution of Fort Tejon woolly sunflower is extremely restricted, with the range considered limited to the southern Tehachapi Mountains and the Sierra Madre Mountains in the southeastern-outer south Coast Ranges. Presence/absence surveys in 2007 detected 36 occurrences in the TMV Planning Area.

An estimated 55,152 acres (96%) of modeled habitat for Fort Tejon woolly sunflower would be preserved in open space under this alternative (Table 4.1-7). One of the 36 known occurrences of this species in the study area would be removed as a result of proposed development activities. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce effects on this species, including preconstruction surveys and establishment of protective barriers around known occurrences. Although the CCH Avoidance MSHCP Alternative would result in local effects on species abundance, given the conservation of 96% of modeled habitat and implementation of the above conservation measures, it is anticipated that the loss of 4% of modeled habitat under this alternative would have a minor effect on Fort Tejon woolly sunflower in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Kusche's Sandwort

Modeled habitat for Kusche's sandwort would be reduced by 237 acres (1%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described above, the overall geographic distribution of Kusche's sandwort is limited to the southern Sierra Nevada, western Transverse Ranges, and the San Gabriel Mountains. There are no CNDDB records of Kusche's sandwort in the study area, although seven occurrences were observed in the TMV Planning Area during presence/absence surveys completed in 2007.

An estimated 30,628 acres (99%) of modeled habitat for Kusche's sandwort would be preserved in open space under this alternative (Table 4.1-7). However, all known occurrences would be removed as a result of proposed development activities. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce effects on this species, including preconstruction surveys and establishment of protective barriers around known occurrences, outside of those initially affected. Although 99% of modeled habitat would be preserved in open space under the CCH Avoidance MSHCP Alternative, the loss of all known occurrences of this species would result in a substantial effect on Kusche's sandwort in the

study area, and minor to moderate effects on the rangewide population. This alternative would not substantially affect this species.

Round-Leaved Filaree

Modeled habitat for round-leaved filaree would be reduced by 779 acres (1%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the round-leaved filaree extends from Baja California to Oregon. While apparently well distributed in central and northern California, it is very rare in southern California. There are no CNDDB records of round-leaved filaree in the study area, although 11 occurrences were observed in the TMV Planning Area during presence/absence surveys completed in 2007.

An estimated 57,283 acres (99%) of modeled habitat for round-leaved filaree would be preserved in open space under this alternative (Table 4.1-7), as would all known occurrences of this species in the study area. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce effects on this species, including preconstruction surveys and establishment of protective barriers around known occurrences during construction. Given the conservation of 99% of modeled habitat in open space, the preservation of all known occurrences in the study area, and implementation of the above conservation measures, it is anticipated that the loss of 1% of modeled habitat under the CCH Avoidance MSHCP Alternative would result in a minor effect on round-leaved filaree in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Striped Adobe Lily

Modeled habitat for striped adobe lily would be reduced by 482 acres (1%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the distribution of striped adobe lily is extremely limited, within only 23 occurrences known in the state. There are three CNDDB records of striped adobe lily in the study area, although presence/absence surveys completed in 2007 did not detect any occurrences in the TMV Planning Area.

An estimated 31,725 acres (98%) of modeled habitat for striped adobe lily would be preserved in open space under this alternative (Table 4.1-7), as would all known occurrences of this species in the study area. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce effects on this species, including preconstruction surveys and establishment of protective barriers around known occurrences during construction. Given the conservation of 98% of modeled habitat in open space, the preservation of all known occurrences in the study area, and implementation of the above conservation measures, it is anticipated that the loss of 1% of modeled habitat under CCH Avoidance MSHCP Alternative would result in a minor effect on striped adobe lily in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Tehachapi Buckwheat

Modeled habitat for Tehachapi buckwheat in the study area would not be reduced under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the distribution of Tehachapi buckwheat is extremely limited, within only a single CNDDB record

reported within the Lebec USGS 7.5-minute quadrangle. This species was observed in 31 locations during presence/absence surveys in the TMV Planning Area completed in 2007.

All (2,579 acres) of the modeled habitat for Tehachapi buckwheat would be preserved in open space under this alternative (Table 4.1-7), as would all known occurrences of this species in the study area. Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce effects on this species, including preconstruction surveys, establishment of protective barriers around known occurrences during construction, habitat avoidance within 325 feet of known occurrences, construction monitoring, and specific measures to preclude invasion by Argentine ants. Given the conservation of all of the modeled habitat in open space, the preservation of all known occurrences in the study area, and implementation of the above conservation measures, it is anticipated that the CCH Avoidance MSHCP Alternative would result in a minor effect on Tehachapi buckwheat in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Tejon Poppy

Modeled habitat for Tejon poppy would be reduced by 81 acres (1%) in the study area under the CCH Avoidance MSHCP Alternative (Table 4.1-7). As described in Section 3.1, Biological Resources, the distribution of Tejon poppy is extremely limited, where it is endemic to central and western Kern County. The CNDDB includes 58 occurrences of this species; however no occurrences of Tejon poppy were observed in the study area during presence/absence surveys in the TMV Planning Area completed in 2007.

An estimated 12,555 acres (99%) of modeled habitat for Tejon poppy would be preserved in open space under this alternative (Table 4.1-7). Similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include species-specific conservation measures to reduce effects on this species, including preconstruction surveys and establishment of protective barriers around known occurrences during construction. Given the conservation of 99% of modeled habitat in open space and implementation of the above conservation measures, it is anticipated that the loss of 1% of modeled habitat under the CCH Avoidance MSHCP Alternative would result in minor effect on Tejon poppy in the study area (if present), and a minor effect on the population rangewide . This alternative would not substantially affect this species.

Construction and Operations Effects

Construction and operations effects that could affect the other Covered Species under the CCH Avoidance MSHCP Alternative would be similar to those described under the Proposed TU MSHCP Alternative, although they would be somewhat reduced due to the smaller development footprint associated with this alternative. Potential effects related to fuel modification would also be similar to those described under the Proposed TU MSHCP Alternative.

Similar to the Proposed TU MSHCP Alternative, species-specific conservation measures would be implemented under the CCH Avoidance MSHCP Alternative to reduce potential construction and operation-related effects on other Covered Species. In addition, construction-related BMPs, prescribed by the local jurisdiction as part of the construction, grading, or building permit review processes, would likely be required to minimize potential effects resulting from ground-disturbing activities. A list of representative BMPs is provided in the MMRP from the TMV EIR (Kern County

2009a), which is included as Appendix J to this EIS. The requirement that any proposed development or ground-disturbing activity comply with local jurisdiction requirements is provided in Section 4.1.5.4, Mitigation Measures. In consideration of the species specific conservation measures associated with this alternative, the additional mitigation measures likely required through Federal, state, or local permitting process, and the conservation and management of 130,339 acres of open space, it is unlikely that construction or operation of developed areas under the CCH Avoidance MSHCP Alternative would substantially affect any of the other Covered Species.

Plan-Wide Activities

Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would have a limited potential to affect the other Covered Species. Grazing activities would have the potential to degrade habitat or water quality in areas where livestock congregate, or where overgrazing occurs. Ground-disturbing activities would have the potential to affect vegetation and habitat quality through erosion, compaction, and sedimentation of surface waters, or degradation or riparian or wetland habitats, which, in turn could affect other Covered Species using those areas for breeding or foraging. Potential effects on wildlife movement and connectivity from Plan-Wide Activities are described in the Section 4.1.5.3, Wildlife Movement and Connectivity below.

As described for the Proposed TU MSHCP Alternative, other Covered Species typical of grassland communities are the most likely to be affected by grazing. Similarly, birds, amphibians, and reptiles that fulfill one or more of their life history requirements in riparian areas could also be directly affected by livestock use of water sources, or indirectly affected by sedimentation, erosion, or other adverse water quality affects associated with grazing and/or limited ground disturbance. Finally, plant species could be trampled or otherwise damaged by ground-disturbing activities.

The BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would continue to be implemented under the CCH Avoidance MSHCP Alternative and would include provisions to minimize potential effects on sensitive vegetation communities (i.e., riparian and wetland areas) and other Covered Species in grassland areas as a result of Plan-Wide Activities. For example, the Interim RWMP requires that a site evaluation be performed prior to any ground-disturbing activities to avoid sensitive resources to the extent practical, including special-status or unique or sensitive vegetation communities and the wildlife typical of those communities. In addition, potential effects on riparian and wetland habitats associated with Plan-Wide Activities that could result in ground disturbance would be required to comply with state and local grading requirements, as described in Section 4.1.5.4, Mitigation Measures. Potential effects on riparian and wetland habitats associated with Plan-Wide Activities that could result in ground disturbance are expected to be minor, and would comply with state and local grading requirements, as described in Section 4.1.5.5, Mitigation Measures, below. Ground disturbance would also be limited by tThe Ranchwide Agreement restrictions and BMPs, as currently exemplified in the BMPs prescribed in the Interim RWMP, such as the requirement that a site evaluation be performed prior to any ground-disturbing activities to avoid sensitive resources to the extent practical, would also reduce potential effects on special-status or unique or sensitive vegetation communities, including the wildlife typical of those communities, as well as the conservation measures similar to those provided in the Proposed TU MSHCP Alternative, above, that require preactivity surveys. Other Plan-Wide Activities, such as road and utility repair and maintenance, ancillary ranch activities, film production, and private

recreation, are expected to continue to occur mostly in existing disturbed areas, roads, or trails, and would have only minor, temporary affects on other Covered Species.

Although Plan-Wide Activities under the CCH Avoidance MSHCP Alternative could result in minor effects on other Covered Species, these effects would be reduced through implementation of use restrictions and BMPs required pursuant to the Ranchwide Agreement, and any minimization measures prescribed as part of the Federal, state, or local permitting processes (Section 4.1.5.5, Mitigation Measures) As such, Plan-Wide Activities would not be anticipated to substantially affect any of the other Covered Species. These effects would be comparable to those associated with Existing Ranch Uses under the No Action Alternative, although they may be slightly less given the acreage limitation for ground disturbance (200 acres) provided under the CCH Avoidance MSHCP Alternative.

Other Special-Status Species

Other special-status species known to occur, or with the potential to occur, in the study area are summarized in Table 3.1-5 in Section 3.1, Biological Resources. These species are not proposed for coverage (wildlife) / conservation (plants) under the CCH Avoidance MSHCP Alternative because they have low potential to occur in the study area based on known ranges or on specific habitat or life history requirements; they have taxonomic issues or life history traits that make coverage difficult; and/or they meet the criteria for species covered by the TU MSHCP but are not likely to be affected by the Covered Activities.

Commercial and Residential Development Activities

Similar to the Proposed TU MSHCP Alternative, permanent effects on other special-status species resulting from Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative were generally quantified by analyzing the vegetation communities identified in Table 3.1-5 as habitat associations for these species. Potential effects on these species by habitat type are provided in Table 4.1-8.

The level of effects for the other special-status species would be relatively minor, ranging from 2% of potential habitat loss for several species to 7% for northern harrier. Conservation would range from 86% of potential habitat for yellow-breasted chat to 98% for several of the other special-status species. As noted above, construction-related BMPs, prescribed by the local jurisdiction as part of the construction, grading, or building permit review processes, would likely be required to minimize potential effects resulting from ground-disturbing activities, which could benefit special-status species (Appendix J; Section 4.1.2.4, Mitigation Measures). In addition, similar to the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would include a conservation measure to protect active bird nests, some which could be associated with special-status species. Other conservation measures provided for Covered Species would also likely benefit other special-status species. For example, erection of exclusion fencing to limit Tehachapi slender salamanders from entering exclusion zones could benefit other reptiles and amphibians, such as silvery legless lizard.

In consideration of these conservation measures, additional mitigation measures likely required through Federal, state, or local permitting process, and the conservation and management of 130,339 acres of open space, it is unlikely the CCH Avoidance MSHCP Alternative would substantially affect any other special-status species. These effects would, however, be greater than the No Action Alternative where no development would occur.

Commercial and Residential Development Activities under this alternative could also result in indirect effects on other special-status species. Indirect effects for other special-status species under the CCH Avoidance MSHCP Alternative would be similar to those described for the other Covered Species.

Plan-Wide Activities

Under this alternative, Plan-Wide Activities would continue to occur in similar areas and at similar levels as Existing Ranch Uses under the No-Action Alternative. Potential effects on special-status species and their habitat would the same as those described in Section 4.1.5.1, Vegetation Communities, above, as those communities relate to the habitat types of individual species. The effects would be comparable to the No Action Alternative, although they could be somewhat less given the acreage limitation on ground disturbance associated with this alternative.

4.1.5.3 Wildlife Movement and Connectivity

Commercial and Residential Development Activities

With respect to wildlife movement and habitat connectivity, the CCH Avoidance MSHCP Alternative would limit Commercial and Residential Development Activities to the southwestern portion of the study area, with the proposed commercial and resort residential uses densely clustered around I-5 and Castac Lake. It would also include the Lebec/Existing Headquarters Area and West of the Freeway developments in the northern portion of the study area. Similar to the Proposed TU MSHCP Alternative, urban-type development in the western portion of the study area around I-5 would generally represent a constraint to local wildlife movement due to land uses and infrastructure that are incompatible with maintaining wildlife habitat and use, as well as indirect effects associated with lighting, noise, increased human activity, pets, and increased vehicle collisions.

Open space established under the CCH Avoidance MSHCP Alternative in the western portion of the study area would provide a substantial unconstrained habitat linkage in and north of the proposed developed area to convey east–west wildlife movement. Along the northern boundary of the study area, the minimum width of the open space habitat linkage would be approximately 2 miles and would contain more habitat than the Proposed TU MSHCP Alternative due to the additional open space in the northern portion of the TMV Planning Area.

Table 4.1-8. Potential Effects on Vegetation Communities for Other Special Status Species—CCH Avoidance MSHCP Alternative

	Scrubs		Chaparrals		Grasslands		Savannahs		Woodlands		Conifer Forest		Riparian/ Wetland		Riparian Woodland		Wash		Agriculture		Total Acreage		Percent	
Total Acreage in Study Area[1]	7,841		14,145		24,947		33,121		48,745		3,956		703		60		863		232					
	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost
	7,548	292	14,140	271	23,201	1,684	32,369	710	47,577	1,102	3,933	23	607	20	47	3	853	3	7	225	130,282	4,333		
Other Special-Status Species																								
California spotted owl																								
Cooper's hawk									x	x	x	x			x	x					51,557	1,128	98%	2%
Long-eared owl									x	x	x	x			x	x					51,557	1,128	98%	2%
Northern harrier									x	x	x	x			x	x					51,557	1,128	98%	2%
Prairie falcon	x (foraging)	x			x (foraging)	x							x (nesting)	x					x (foraging)	x	31,363	2,221	93%	7%
Yellow-breasted chat	x	x			x	x	x	x	x	x	x	x	x	x	x	x			x	x	115,289	4,059	96%	3%
American badger													x	x	x	x					654	23	86%	3%
San Bernardino ringneck snake	x	x			x	x	x	x	x	x	x	x			x	x	x	x	x	x	115,535	4,042	96%	3%
Silvery legless lizard	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	130,282	4,333	97%	3%
Aromatic canyon gooseberry	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				130,275	4,108	97%	3%
Calico monkeyflower			x	x	x	x	x	x	x	x	x	x									121,243	3,790	97%	3%
Delicate bluecup	x	x	x	x					x	x	x	x			x	x					105,614	2,401	98%	2%
Flax-like monardella			x	x					x	x					x	x					61,764	1,376	98%	2%
Golden violet			x	x					x	x	x	x									65,650	1,376	98%	2%
Pale-yellow layia	x	x	x	x					x	x	x	x									105,567	2,398	98%	2%
Palmer's mariposa lily					x	x	x	x	x	x											103,147	3,496	97%	3%
Piute Mountains navarretia			x	x			x	x	x	x	x	x	x	x	x	x					98,673	2,129	98%	2%
San Bernardino aster	x	x	x	x	x	x	x	x	x	x	x	x							x	x	128,775	4,307	97%	3%

[1] Acreages in this table derived from Table 4.1-6.

Although the habitat linkage along the northern boundary of the study area would be unconstrained, wildlife movement and dispersal through habitat located between Castac Lake and the northern boundary of the development area would be notably constrained. Development in this area would be intensified consistent with the Kern County General Plan designations, potentially resulting in greater habitat fragmentation and more obstacles to wildlife movement (i.e., lower permeability) in this area, compared to the Proposed TU MSHCP Alternative. In addition, deed restrictions to conserve habitat values in the TMV Specific Plan Area would not be provided under this alternative. As such, wildlife moving through mountain residential use areas may be forced to the northern habitat linkage because of the decreased area of interstitial habitat with the more compact development area.

The effects of development under the CCH Avoidance MSHCP Alternative on California condor habitat connectivity and overflight would be the same as those described for the Proposed TU MSHCP Alternative. Although the ranch does serve as an important linkage between historic condor habitat areas east and west of the ranch, the proposed development on Tejon Ranch would not prevent condors from continuing to fly over Tejon Ranch, or to access areas further to the east or west of the ranch for the following reasons. The free-flying condors in the southern California subpopulation have been recorded flying over communities in the Tehachapi Mountains that have rural residential densities similar to or greater than that proposed under the CCH Avoidance MSHCP Alternative. Such flyovers have resulted in no measurable ill effects with respect to continued condor use of historical and current foraging, roosting, and nesting areas, as evidenced by Service GPS tracking data. Furthermore, a recent USGS statistical analysis of condor GPS data collected from 2004 to 2009 for spatial behavior patterns in six management units in southern California supports the conclusion that condors regularly fly over developed areas and that these areas, based on the GPS data, are part of their estimated home ranges. As such, the Service does not expect condors to avoid flying over similar areas on the ranch after buildout, particularly over the more outlying areas farther north from Castac Lake that would be characterized by lower residential development densities.

Based on the above, it is anticipated that Commercial and Residential Development under the CCH Avoidance MSHCP Alternative would result in moderate effect on wildlife movement and connectivity, particularly in western portion of the study area where development would be intensified, and no effect on condor overflight of the study area. Although the northern habitat linkage would provide for movement across a large portion of the study area, these effects would be greater than the No Action Alternative, where no development would occur.

Plan-Wide Activities

Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would have a limited potential to affect wildlife movement and habitat connectivity in the study area. Specifically, existing roads that provide access to ranch infrastructure, hunting, other recreational activities or emergency vehicle access, could adversely affect species movement through direct mortality from vehicle strikes and/or loss of habitat connectivity. Other Plan-Wide Activities, such as utility lines and fences, may affect bird (i.e., collisions) or wildlife movement across the Covered Lands The BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would continue to be implemented under the CCH Avoidance MSHCP Alternative and would include provisions to

minimize the effects of roads, utility lines, and fences on wildlife movement and habitat connectivity. For example, these BMPs would include implementation of a dust control plan to reduce particulate matter emissions on well-traveled roads; maintenance of berms on dirt roads to handle minor stormwater flows; and construction of "wildlife-friendly" fencing of the type and design necessary to allow for passage of wildlife, where possible (Tejon Ranch Company 2009). In addition, similar to the Proposed TU MSHCP Alternative, conservation measures including restrictions on utility lines and fencing design, would be implemented in open space areas, which would further minimize effects on wildlife connectivity.

Given the limited existing/proposed road network within open space areas under the CCH Avoidance MSHCP Alternative, and the BMPs and use restriction required pursuant to the Ranchwide Agreement, it is anticipated that Plan-Wide Activities would result in minor effects on wildlife movement and connectivity. These effects would be comparable to those associated with Existing Ranch Uses under the No Action Alternative, except they may be slightly less given the acreage limitation for ground disturbance (200 acres) provided under the CCH Avoidance MSHCP Alternative.

4.1.5.4 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the CCH Avoidance MSHCP Alternative on vegetation communities and wildlife. Species-specific conservation measures, similar to those provided in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP Alternative, would also be implemented to avoid, minimize, and mitigate the effects of the Covered Activities on the Covered Species, each of which would enforceable under the ESA through the ITP and applicable conservation easements.

The mitigation measure listed in Section 4.1.3.4, Mitigation Measures, for the Proposed TU MSHCP Alternative are also applicable to the CCH Avoidance MSHCP Alternative.

4.1.6 Kern County General Plan Buildout Alternative

4.1.6.1 Vegetation Communities

Table 4.1-9 provides a summary of effects on vegetation communities for the Kern County General Plan Buildout Alternative. Permanent and temporary direct and indirect effects of Commercial and Residential Development Activities and Plan-Wide Activities are discussed below.

Commercial and Residential Development Activities

Construction associated with Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would result in moderate effects on vegetation communities, particularly agricultural lands. As shown in Table 4.1-9, about 14,490 acres (11%) of upland communities and 33 acres (2%) of riparian/wetland/wash communities would be permanently affected by construction-related ground disturbance. Of these, many of the upland communities (excluding agriculture, disturbed/nonnative grassland, and developed) and all of the riparian/wetland/wash communities are considered to be special-status by Federal, state or local resource agencies. However, approximately 95% of total scrub vegetation, 92% of chaparrals, 94% of grasslands (excluding disturbed/nonnative grasslands), 86% of savannahs, 90% of woodlands,

95% of conifer forest, 96% of riparian/wetland, 98% of riparian woodland, and 99% of wash communities would be conserved in open space and Restricted Open Space under this alternative (Table 4.1-9). Areas protected in Restricted Open Space would be available for mitigation on a project-by-project basis. To the extent these lands would be used as project-by-project mitigation, they would be permanently protected and managed in accordance with mitigation requirements. Approximately 227 acres (98%) of agricultural lands, a non-sensitive land cover, would be permanently disturbed by Commercial and Residential Development Activities.

Table 4.1-9. Potential Effects on Vegetation Communities—Kern County General Plan Buildout Alternative

Vegetation Community[1]	Total Acreage in Study Area[2]	Acreage in Retained Open Space[3,6]	Acreage in Restricted Open Space[4,6]	Acreage Removed for Development[5,6]
Upland Communities				
Scrubs				
Alluvial scrub	36	26	0	10
Mojavean scrub	6,951	3,556	3,310	85
Saltbush/buckwheat scrub	290	257	0	33
Scrub	564	281	0	283
Total Scrubs	*7,841*	*4,120*	*3,310*	*411*
Chaparrals				
Brewer's oak scrub	2,720	60	2,566	94
Chaparral	11,050	2,822	7,255	973
Scrub oak	641	438	66	137
Undetermined chaparral	4	0	4	0
Total Chaparrals	*14,415*	*3,320*	*9,891*	*1,204*
Grasslands				
Annual grassland	—	—	0	0
Disturbed/nonnative grassland	6,411	3,888	299	2,224
Grassland	17,387	4,267	12,054	1,066
Native grassland	1,146	478	550	118
Total Grasslands	*24,944*	*8,633*	*12,903*	*3,408*
Savannahs				
Black oak savannah	29	0	28	1
Blue oak savannah	5,114	509	4,364	241
Canyon oak savannah	432	0	390	42
Gray pine savannah	64	0	62	2
Interior oak savannah	276	0	267	9
Mixed oak savannah	11,997	323	10,808	866
Oak savannah	5,603	3,640	0	1,963
Undetermined savannah	678	128	514	36
White oak savannah	8,927	607	6,990	1,330
Total Savannahs	*33,120*	*5,207*	*23,423*	*4,490*

Vegetation Community[1]	Total Acreage in Study Area[2]	Acreage in Retained Open Space[3,6]	Acreage in Restricted Open Space[4,6]	Acreage Removed for Development[5,6]
Woodland				
Black oak woodland	2,701	638	1,649	414
Blue oak woodland	9,089	4,699	2,322	2,068
California buckeye woodland	338	44	284	10
Canyon oak woodland	6,193	1,666	4,255	272
Gray pine woodland	109	0	99	10
Interior oak woodland	761	44	672	45
Mixed oak woodland	28,086	2,447	23,771	1,868
Oak woodland	147	141	0	6
Pinyon pine woodland	285	60	189	36
Undetermined woodland	153	0	148	5
White oak woodland	874	96	740	38
Total Woodland	*48,736*	*9,835*	*34,129*	*4,772*
Conifer Forest				
Conifer/mixed oak	912	249	570	93
Incense-cedar stand	4	0	4	0
Intermixed conifer	1,059	0	1,023	36
White fir stand	320	0	311	9
White fir/mixed oak	1,661	0	1,594	67
Total Conifer Forest	*3,956*	*249*	*3,502*	*205*
Total Upland Communities	***133,012***	***31,364 (24%)***	***87,158 (66%)***	***14,490 (11%)***
Riparian/Wetland/Wash Communities[7]				
Riparian/Wetland				
Riparian scrub	76	55	16	5
Riparian/wetland	10	4	4	2
Wetland	281	195	64	22
Lake	336	335	1	0
Total Riparian/Wetland	*703*	*589*	*85*	*29*
Riparian Woodland				
Riparian woodland	43	38	4	1
Oak riparian	16	16	0	0
Total Riparian Woodland	*59*	*54*	*4*	*1*
Wash				
Desert wash/riparian/seeps	841	435	404	2
Wash	22	20	1	1
Total Wash	*863*	*455*	*405*	*3*
Total Riparian/Wetland/Wash Communities	***1,625***	***1,098 (68%)***	***494 (30%)***	***33 (2%)***

Vegetation Community[1]	Total Acreage in Study Area[2]	Acreage in Retained Open Space[3,6]	Acreage in Restricted Open Space[4,6]	Acreage Removed for Development[5,6]
Nonnative Land Covers				
Agriculture	232	5	0	227
Developed	127	38	1	88
Total Nonnative Land Covers	***359***	***43 (12%)***	***1(<1%)***	***315 (88%)***
Total[1]	**134,996**	**32,505 (24%)**	**87,653 (65%)**	**14,838 (11%)**

[1] Slight differences between acreages presented in Table 4.1-1 and Table 4.1-9 may occur due to rounding and small slivers in shapefiles in the GIS analysis of vegetation communities (e.g., sliver polygons occur when different GIS coverages overlap but do not match exactly). These discrepancies are minor and do not alter the overall conclusions of the analysis or comparison of the relative merits of various alternatives and scenarios.

[2] Acreages in this column are based on the study area encompassing 134,996 acres, or the total acreage in the study area (141,886 acres) less the acreage in Other Lands (6,890 acres).

[3] Acreages in this column are based on an assumed acreage of permanently conserved open space of approximately 32,512 acres. This acreage is slightly different than the 32,505 acres presented in this table due to the nature of the GIS analysis. This acreage is less than the acreage described in Chapter 2, Proposed TU MSHCP and Alternatives, Table 2-6 (34,130 acres) because of the larger Development Envelope area used to assess biological effects. This acreage does not include Restricted Open Space, which is addressed in the next column. TMV Planning Area Open Space also includes 4,430 acres of vegetation clearing/thinning for fuel modification in accordance with the fire protection plan (Dudek 2008a) developed for the TMV Project.

[4] Restricted Open Space consists of those lands in the 8.2, 8.3, 8.5 (minimum 20/80 acre parcel size) and 5.7 (minimum 5 gross acres/unit) Kern County general plan land use designations, which are not expected to be developed with single family structures. It is assumed that Restricted Open Space would be available for mitigation on a project-by-project basis. This acreage is slightly different than the acreage described in Chapter 2, Proposed TU MSHCP and Alternatives, Table 2-6 (85,262 acres) due to the nature of the GIS analysis.

[5] Development includes Commercial and Residential Development Activities in the TMV Planning Area and Lebec/Existing Headquarters Area. Acreages in this column are based on an assumed Development Envelope of 14,934 acres for this alternative. See Section 4.1.1.2, Methods, for a discussion of how the Development Envelope was developed for each alternative and how it applies to the effects analysis in this section.

[6] The percentages of modeled habitat conserved and lost may not sum to 100% for three possible reasons: (1) rounding error; (2) 75% of riparian/wetlands are assumed avoided in development areas, but avoided areas are not included in the open space acreages; and (3) 3,317acres of mineral/petroleum designated areas and other state/Federal lands are not developed but are not included in open space.

[7] The analysis assumes 75% avoidance of effects on riparian/wetland vegetation communities. The total development acres for each alternative reflect this assumption, as well as the development acres for riparian vegetation communities and species models that are based on these riparian communities. The total development acreage presented in this table for the Kern County General Plan Buildout Alternative is 96 acres less than the total development acreage presented in Table 4.1-1 for this reason.

In addition, under this alternative, approximately 4,430 acres of development-related fuel modification (e.g., vegetation clearing and thinning) could occur in designated fuel modification zones. Since specific development plans are not available for this alternative, the locations of fuel modification zones cannot be determined, and an acreage breakdown of effects on specific vegetation communities associated with fuel modification cannot be calculated. In general, it is anticipated that fuel modification effects would be roughly proportional to the distribution of vegetation communities in the study area, with about 98% occurring in upland communities, about 1% in riparian/wetland/wash communities, and about 1% in agricultural land. In the TMV Planning Area, as required by the existing TMV Project Approvals (Kern County 2009c), fuel modification would occur in accordance with a fire protection plan approved by Kern County (this level of management is assumed for all development under this alternative). Fuel modification in open space areas would extend up to 200 feet from proposed structures and only mowing and thinning would

be permitted in these portions of the fuel modification areas. Thinned areas would not be markedly different in appearance from the adjacent natural areas not subject to thinning, and fuel modification would not be expected to substantially affect vegetation communities or to degrade existing habitat.

Finally, increased human presence and introduction of urban-type uses associated with development could degrade vegetation communities supporting Covered Species and other special-status species. These indirect effects are discussed in the analysis of effects on species presented below.

All development under the Kern County General Plan Buildout Alternative would be subject to project-specific approvals, including any species-specific measures required by the Service as part of the ESA compliance process, as applicable. Permanent or temporary effects on special-status vegetation communities, such as wetlands (regulated by USACE and RWQCB) or oak woodlands (protected under Kern County oak tree ordinances), would require approval by Federal, state, or local jurisdictions. In consideration of the proposed open space areas under the Kern County General Plan Buildout Alternative, and with implementation of the mitigation measure discussed in Section 4.1.6.4, Mitigation Measures, it is anticipated that potential effects on sensitive vegetation communities from Commercial and Residential Development Activities would be minor, would not substantially degrade unique or sensitive habitats, and would not exceed a standard or criteria provided under another Federal, state, or local statute. These effects would be greater than the No Action Alternative where no development would occur.

Existing Ranch Uses

Similar to Existing Ranch Uses under the No Action Alternative, Existing Ranch Uses under the Kern County General Plan Buildout Alternative would have a limited potential to adversely affect vegetation communities. Grazing would be expected to continue on about 117,774 acres[9] of the study area, including permanently protected open space and Restricted Open Space, and could damage vegetation in areas where livestock congregate and trample vegetation, or in areas where overgrazing occurs. Similarly, Existing Ranch Uses that could result in ground disturbance, such as repair and maintenance of back-country cabins, could affect vegetation communities through erosion or compaction. Other Existing Ranch Uses, such as film production and recreation, are expected to continue to occur mostly in existing disturbed areas, roads, or trail, and would generally only result in minor, temporary effects on vegetation communities.

As described in Chapter 2, Proposed TU MSHCP and Alternatives, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices, as currently reflected in the Interim RWMP, are anticipated to continue (although they cannot be assured). Additionally, compliance with Federal, state, and local requirements governing ground disturbance in sensitive vegetation communities (e.g., wetlands, oak woodlands) would apply, and could include implementation of species-specific conservation measures required by the Service as part of the ESA compliance process, as applicable. In addition, restrictions imposed by the TMV Project Approvals and by easement language in the Existing

[9] As described in Table 4.1-1, this acreage of open space (117,774 acres) is less than the open space acreage associated with the Kern County General Plan Buildout Alternative described in Chapter 2, Proposed TU MSHCP and Alternatives (119,392 acres) because of the larger Development Envelope area considered to assess direct biological effects.

Conservation Easement Areas would apply under the Kern County General Plan Buildout Alternative.

Although Existing Ranch Uses under the Kern County General Plan Buildout Alternative could result in minor effects on vegetation communities, these effects would be reduced through implementation of the BMPs prescribed as part of the Federal, state, or local permitting processes (Section 4.1.5.5, Mitigation Measures), or as required by TMV Project Approvals, and would not degrade unique or sensitive habitats, or exceed a standard or criteria provided under another Federal, state, or local statute. The effects of Existing Ranch Uses under this alternative would be comparable to those described for the No Action Alternative.

4.1.6.2 Wildlife and Plant Species

California Condor

Commercial and Residential Development Activities

Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would have the potential to result in adverse effects on California condors, similar to those described for the other action alternatives. Adverse effects would be associated with the loss of foraging habitat; habituation to human structures and activities; risk of collisions with power lines, communication towers, and other artificial structures; and ingestion of microtrash.

Loss of Foraging Habitat

Within the TMV Specific Plan Area, a similar amount of suitable foraging habitat would be lost under the Kern County General Plan Buildout Alternative compared to the Proposed TU MSHCP Alternative, given that both alternatives include the TMV Project. Additionally, while the Kern County General Plan Buildout Alternative would not include future development in Oso Canyon, it would include development of more specific plan zoned areas and would potentially affect more suitable condor foraging habitat than the Proposed TU MSHCP Alternative. Specifically, the mix of fragmented and more intensive development allowed under General Plan land use designations 5.7, 8.2, 8.3, and 8.5 would result in both direct effects (i.e., loss of foraging habitat within the Disturbance Area) and indirect effects (e.g., activities that would preclude condors from foraging and/or feeding in close proximity to developed areas, assumed to be within 0.5 mile of suitable foraging habitat) on suitable condor foraging habitat. However, because a Development Envelope does not exist for this alternative outside of the TMV Specific Plan Area Development Envelope, it is not known where development would occur within the 20- and 80-acre parcels. Therefore the extent of direct and indirect effects on suitable condor foraging habitat cannot be determined.

Approximately 85,262 acres of Restricted Open Space would not be developed under this alternative and may be used for project-specific mitigation proposed in the study area. Although it is anticipated that large portions of Restricted Open Space would be suitable for foraging by condors, the amount of suitable foraging habitat actually conserved in Restricted Open Space cannot be determined because it would depend on the location of the private dwelling units in the 20- and 80-acre parcels allowed under this alternative, and the extent of indirect effects associated with each of these units.

As described for the other action alternatives, to analyze potential effects on the condor population and its critical habitat, the Service also estimated potential food availability in the condor's range,

focusing on the portion of the range currently used by the southern California subpopulation. The Service estimates there are currently more than enough potential carcasses from livestock, hunting, and other mortality of native ungulates and feral pigs in the condors' historic range in California to support not only the current condor population, but also one of the two free-flying population of 150 birds envisioned in the Recovery Plan and necessary to down list the condor to a threatened status (assuming mortality factors, particularly lead poisoning, are minimized or eliminated). Additionally, grazing on the ranch is anticipated to continue in open space at levels similar to what currently exists, and hunting would continue on at least permanently protected open space areas (approximately 32,512 acres[10]). Permanent protection of other ranch areas outside the study area pursuant to the Ranchwide Agreement is not ensured under this alternative; however, the ranch hunting program is expected to continue on those lands. Along with wild carrion, these activities would continue to provide important food resources for condors using the ranch.

Because the Service cannot calculate the amount or exact location of direct and indirect effects on foraging habitat in the areas where the Development Envelope has not be determined, it is not known how much suitable foraging habitat would be available for condors under the Kern County General Plan Buildout Alternative. Nevertheless, it is anticipated that this alternative would have greater direct and indirect effects on condor foraging habitat, resulting in less conserved suitable foraging habitat available for condors on the ranch, compared to the other action alternatives and the No Action Alternative. In addition, although approximately the same amount of food would occur on the ranch under this alternative compared to the No Action Alternative, there would be less foraging habitat available under this alternative due to the area set aside for development. Although the Service is unable to determine exactly how much suitable habitat would be lost under the Kern County General Plan Buildout Alternative, a substantial adverse effect on the condor population or its critical habitat is not anticipated.

Habituation, Collision with Power Lines and Towers, and Microtrash

The potential for habituation, collision, and microtrash ingestion to affect condors under the Kern County General Plan Buildout Alternative would be similar or higher to that described for the Proposed TU MSHCP Alternative due to increased and more dispersed development, which may increase these risks under this alternative, as well as the lack of protective measures under the Ranchwide Agreement . Although a coordinated MSHCP like the TU MSHCP would not occur under this alternative, the conservation measures prescribed on a project-by-project basis by the Service as part of the ESA compliance process, or by DFG as part of the CESA compliance process, would apply, which could lessen the effects. These effects would be greater than those associated with the No Action Alternative, where development would not occur, infrastructure would not be constructed, and the potential for habituation from human presence/activity would not increase.

Taken together, the risks of habituation, collision, or harm through microtrash ingestion are difficult to determine for this alternative, but would range from minor to moderate for the population, depending on the conservation measures required for individual projects.

[10] As described in Table 4.1-1, this acreage of permanently protected open space (32,512 acres) is less than the open space acreage associated with the Kern County General Plan Buildout Alternative and described in Chapter 2, Proposed TU MSHCP and Alternatives (34,130 acres) because of the larger Development Envelope area considered to assess direct biological effects.

Existing Ranch Uses

Existing Ranch Uses under the Kern County General Plan Buildout Alternative would include ongoing grazing and ranching operations as well as other activities, such as road and utility repair and maintenance, film production, and use and maintenance of ancillary ranch structures and backcountry cabins. Recreation, primarily trail use and guided tours, would also occur under this alternative. The potential effects on condors associated with these uses would be similar to those described under the No Action Alternative. Although the limitations of the Ranchwide Agreement would not apply under this alternative, conservation measures prescribed on a project-by-project basis by the Service as part of the ESA compliance process, or by DFG as part of the CESA compliance process, would apply, and historic ranch practices as currently reflected in the Interim RWMP are anticipated to continue (although they cannot be assured). While the level of condor activity on the ranch is expected to increase as their population continues to increase, it is anticipated the effects of Existing Ranch Uses on the California condor and its habitat would be minor under the Kern County General Plan Buildout Alternative. The effects would be somewhat greater than the No-Action Alternative, however, given the anticipated increased population of the condor and increased human presence in the study area under this alternative.

Other Covered Species

Table 4.1-10 provides a summary of the potential effects of the Kern County General Plan Buildout Alternative on modeled habitat for each of the other Covered Species. Permanent and temporary direct and indirect effects of Commercial and Residential Development Activities and Existing Ranch Uses are discussed below.

Commercial and Residential Development Activities

As described in Section 3.1, Biological Resources, modeled species habitat is composed of vegetation communities supporting the life history requirements of the Covered Species, along with other habitat suitability criteria appropriate for a particular species, such as soils or elevation. Therefore, for the purposes of this EIS, permanent loss of modeled habitat is used to assess direct effects on species. In addition to permanent ground disturbance, construction-related and operations effects could indirectly affect other Covered Species, as described below.

Loss of Habitat

Table 4.1-10 indicates the extent of the permanent loss of modeled habitat for each of the other Covered Species under the Kern County General Plan Buildout Alternative, as well as the extent of modeled habitat that would be conserved in the study area. While only some portion of each of these modeled habitats would represent the most suitable habitat for the Covered Species, in the absence of more detailed species habitat information, they are used here to conservatively represent the extent of suitable habitat lost for each species. For each of the Covered Species, the following evaluation considers the loss of modeled habitat, potential effects on known species occurrences within the study area (where applicable), as well as the overall range and rarity of the species in relation to the potential loss of modeled habitat.

Table 4.1-10. Potential Effects on Modeled Habitat for Other Covered Species—Kern County General Plan Buildout Alternative

Species	Species Model	Acreage of Modeled Habitat in the Study Area[1]	Acreage of Modeled Habitat Lost[2,5]	Acreage of Modeled Habitat Conserved in Permanently Protected Open Space[3,5]	Acreage of Modeled Habitat Conserved in Restricted Open Space[4,5]
Tehachapi slender salamander	Suitable habitat	4,071	237 (6%)	1,056 (26%)	2,770 (68%)
Western spadefoot	Suitable habitat	1,175	31 (3%)	762 (65%)	287 (24%)
Yellow-blotched salamander	Suitable habitat	35,213	2,085 (6%)	6,309 (18%)	26,773 (76%)
American peregrine falcon	Foraging	26,742	3,187 (12%)	9,682 (36%)	13,728 (51%)
	Breeding	80	3 (4%)	7 (9%)	70 (88%)
Bald eagle	Foraging	518	5 (1%)	499 (96%)	0 (0%)
	Wintering	1,438	834 (58%)	604 (42%)	0 (0%)
Burrowing owl	Breeding/foraging	24,944	2,929 (12%)	8,633 (35%)	13,329 (53%)
	Secondary Breeding/foraging	8,073	638 (8%)	4,126 (51%)	3,309 (41%)
Golden eagle	Foraging	33,891	3,571 (10%)	13,217 (39%)	17,038 (50%)
	Breeding/foraging	33,056	2,871(9%)	5,206 (16%)	24,939 (75%)
	Primary breeding	48,019	3,769 (8%)	9,748 (20%)	34,453 (72%)
Least Bell's vireo	Breeding/foraging	614	8 (1%)	502 (82%)	78 (13%)
Little willow flycatcher	Foraging/stopover	986	10 (1%)	548 (56%)	3998 (40%)
Purple martin	Breeding/foraging	85,870	6,888 (8%)	15,345 (18%)	63,544 (74%)
Southwestern willow flycatcher	Breeding/foraging	986	10 (1%)	548 (56%)	3998 (40%)
Tricolored blackbird	Foraging	18,553	1,437 (8%)	7,090 (38%)	9,952 (54%)
	Primary breeding	289	23 (8%)	198 (68%)	0 (0%)
Western yellow-billed cuckoo	Breeding/foraging	986	10 (1%)	548 (56%)	399 (40%)
White-tailed kite	Foraging	9,009	1,988 (22%)	3,445 (38%)	3,524 (39%)
Yellow warbler	Breeding/foraging	986	10 (1%)	548 (56%)	399 (403%)
	Secondary	51,743	3,958 (8%)	9,981 (19%)	37,755 (73%)

Species	Species Model	Acreage of Modeled Habitat in the Study Area[1]	Acreage of Modeled Habitat Lost[2,5]	Acreage of Modeled Habitat Conserved in Permanently Protected Open Space[3,5]	Acreage of Modeled Habitat Conserved in Restricted Open Space[4,5]
	foraging				
Valley elderberry longhorn beetle	Suitable habitat	2,597	75 (3%)	388 (15%)	2,115 (81%)
Ringtail	Suitable habitat	99,253	10,310 (10%)	26,058 (26%)	62,649 (63%)
Tehachapi pocket mouse	Suitable habitat	1,931	82 (4%)	937 (48%)	912 (47%)
Coast horned lizard (*frontale* and *blainvillii* populations)	Primary habitat	41,083	4,822 (12%)	10,752 (26%)	25,458 (62%)
	Secondary habitat	62	3 (5%)	51(82%)	0 (0%)
Two-striped garter snake	Suitable habitat	364	34 (9%)	254 (70%)	0 (0%)
Fort Tejon woolly sunflower	Suitable habitat	57,430	6,552 (11%)	14,284 (25%)	36,578 (64%)
Kusche's sandwort	Suitable habitat	30,505	2,859 (9%)	3,744 (12%)	23,901 (78%)
Round-leaved filaree	Suitable habitat	58,073	6,265 (11%)	13,969 (24%)	37,839 (65%)
Striped adobe lily	Suitable habitat	32,213	3,439 (11%)	7,443 (23%)	21,331 (66%)
Tehachapi buckwheat	Suitable habitat	2,579	77 (3%)	422 (16%)	2,079 (81%)
Tejon poppy	Suitable habitat	12,672	361 (3%)	4,595 (36%)	7,686 (61%)

[1] Acreages in this column are based on the study area encompassing 134,996 acres, or the total acreage of the study area (141,886) less the acreage in Other Lands (6,890 acres).

[2] Acres in this column represent the acre of modeled habitat lost in the 14,934 acre Development Envelope, and includes approximately 12,142 acres of additional habitat lost as a result of ground disturbance in general plan designated areas, the exact location of which is not known. The models were calculated assuming 75% avoidance of riparian habitat.

[3] Acres in this column represent the acreage of suitable habitat conserved in permanently protected open space, including lands in TMV Planning Area Open Space and Existing Conservation Easement Areas. Restricted Open Space is assumed to be available for mitigation and is addressed in the next column.

[4] Acres in this column represent the acreage of suitable habitat conserved in Restricted Open Space, or lands in the 8.2, 8.3, 8.5 (minimum 20- or 80-acre parcel size) and 5.7 (minimum 5 gross acres/unit) general plan land use designations. These lands not expected to be developed with single family structures, but would be available for mitigation on a project-by-project basis.

[5] The percentages of modeled habitat conserved (in both open space and Restricted Open Space) and lost may not sum to 100% for three possible reasons: (1) rounding error; (2) 75% of riparian/wetlands are assumed avoided in development areas, but avoided areas are not included in the open space acreages; and (3) 145 acres in the Lebec/Existing Headquarters Area are assumed not developed, but are also not included in open space. As a result, is likely that modeled habitat conserved in the Lebec/Existing Headquarters Area is underestimated because the County land use designations for this area would only allow a small component of land in that area to be developed (see Section 4.1.1.2, Methods – Analytical Framework for Biological Effects). A more specific explanation for these differences is provided in the species-specific discussion below for the species where the sum is less than 90% (i.e., tricolored blackbird, coast horned lizard, and two-striped garter snake).

In general, the primary conservation measure under the Kern County General Plan Buildout Alternative would be conservation and management of 119,392 acres of open space. Species specific conservation measures would be developed and implemented on a project-by-project basis through either the ESA Section 10 or ESA Section 7 process.

Tehachapi Slender Salamander

Modeled habitat for the Tehachapi slender salamander would be reduced by 237 acres (6%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the Tehachapi slender salamander has been detected in five locations in the study area, is endemic to California, and has a limited range, only occurring in Kern County.

Potential effects on Tehachapi slender salamander are considered in the context of the species' limited range and the difficulty of detecting species presence during surveys. An estimated 3,826 acres (94%) of modeled habitat for this species would be conserved in open space (including Restricted Open Space) under the Kern County General Plan Buildout Alternative. Outside of those provided as part of the TMV Project Approvals,, no specific conservation measures for Tehachapi slender salamander would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by CDFG during the CESA compliance process, and by the local jurisdiction during the environmental review and approval process, given that the species is listed in California as threatened and would be considered a special-status species under CEQA. These anticipated conservation measures, including preservation of 94% of modeled habitat in open space, would reduce potential effects on this species from the loss of habitat. In consideration of the species limited range, it is anticipated that the loss of 6% of modeled habitat under the Kern County General Plan Buildout Alternative would have a moderate effect on Tehachapi slender salamander in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Western Spadefoot

Modeled habitat for the western spadefoot would be reduced by 31 acres (3%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the western spadefoot has not been detected in the TMV Planning Area and has low potential to occur in other parts of the study area. It is endemic to California and northern Baja California, and is primarily found below 3,000 feet amsl.

An estimated 1,049 acres (89%) of modeled habitat for this species would be conserved in open space (including Restricted Open Space) under this alternative. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the western spadefoot would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species is a CDFG Species of Special Concern and would be considered a special-status species under CEQA. Because of the low potential for occurrence in the study area, and because 89% of modeled habitat would be conserved in open space, it is anticipated that the loss of 3% of modeled habitat under the Kern County General Plan Buildout Alternative would have a minor effect on western spadefoot in the study area (if present), and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Yellow-Blotched Salamander

Modeled habitat for the yellow-blotched salamander would be reduced by 2,085 acres (6%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the yellow-blotched salamander is endemic to California, specifically within Kern and Ventura Counties, and occurs at elevations between 1,400 and 7,496 feet amsl. This species was detected in several drainages in the TMV Planning Area. All known occurrences in the study area would be preserved under this alternative.

Potential effects on the yellow-blotched salamander are considered in the context of the species limited geographic range. An estimated 33,082 acres (94%) of modeled habitat for this species would be conserved in open space (including Restricted Open Space) under this alternative. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the yellow-blotched salamander would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species is a CDFG Species of Special Concern and would be considered a special-status species under CEQA. In consideration of the preservation of 94% of modeled habitat in open space, and the likely conservation measures that would implemented by the local jurisdiction, it is anticipated that the loss of 6% of modeled habitat under the Kern County General Plan Buildout Alternative would have a minor effect on yellow-blotched salamander in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

American Peregrine Falcon

Modeled foraging habitat for the American peregrine falcon would be reduced by 3,187 acres (12%) in the study area under the Kern County General Plan Buildout Alternative; 3 acres (4%) of modeled breeding habitat would be lost under this alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the American peregrine falcon has not been documented to nest in the study area and has only been observed to be an occasional winter visitor. It has an extensive range that spans from Alaska south to northern Mexico and east across Arizona through Alabama, and is known to use a large variety of open habitats for foraging.

An estimated 23,410 acres (87%) of modeled foraging habitat and 77 acres (97%) of modeled breeding habitat for this species would be conserved in open space (including Restricted Open Space) under this alternative. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the American peregrine falcon would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by CDFG and the local jurisdiction during the environmental review and approval process, given that the species is state fully protected species and would be considered a special-status species under CEQA. In consideration of the extensive range of the species, the preservation of 87% of the modeled foraging habitat and 97% of modeled breeding habitat, and the likely conservation measures that would implemented by the local jurisdiction through the CEQA process, it is anticipated that the loss of 12% of modeled foraging habitat and 4% of modeled breeding habitat under the Kern County General Plan Buildout Alternative would have a minor effect on American peregrine falcon that may nest or forage in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Bald Eagle

Modeled winter roosting habitat for the bald eagle would be reduced by 834 acres (58%) in the study area under the Kern County General Plan Buildout Alternative; modeled foraging habitat would be reduced by 5 acres (1%) (Table 4.1-10). As described in Section 3.1, Biological Resources, the bald eagle has a widespread distribution in North America, wintering from Alaska eastward to Newfoundland and southward locally to Baja California, Sonora, Texas, and Florida. In California, breeding populations are more limited and restricted primarily to the northern Sierra. Winter roosting habitat in the study area is concentrated around and within 1 mile of Castac Lake, particularly to the south and east where trees are sufficiently large to support roosting substrate for bald eagles.

An estimated 604 acres (42%) of modeled winter roosting habitat and 499 acres (96%) of modeled foraging habitat for this species would be conserved in open space (including Restricted Open Space) under this alternative. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the bald eagle would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by CDFG and the local jurisdiction during the CESA and environmental review and approval process, given that the species is state-listed as endangered, is a state fully protected species, and would be considered a special-status species under CEQA. Similarly, conservation measures, in compliance with the BGEPA, may be required by the Service if project could result in the direct take of an individual bald eagle. The loss of 58% of available modeled winter roosting habitat would likely reduce the use of Castac Lake by wintering bald eagles. However, the bald eagle does not breed on site and surveys indicate that a large wintering population does not occur in the study area. In consideration of the extensive range of the species and the conservation measures that would likely be implemented to protect the remaining modeled foraging and wintering habitat in the study area, it is anticipated that the loss of 58% of modeled wintering habitat and 1% of modeled foraging habitat under the Kern County General Plan Buildout Alternative would have a moderate effect on bald eagle in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Burrowing Owl

Modeled breeding/foraging habitat for the burrowing owl would be reduced by 2,929 acres (12%) in the study area under the Kern County General Plan Buildout Alternative; modeled secondary breeding/foraging habitat would be reduced by 638 acres (8%) (Table 4.1-10). As described in Section 3.1, Biological Resources, burrowing owls are infrequent winter visitors to the study area, and no breeding, resident, or wintering burrowing owls were detected on site during any of the focused surveys of the TMV Planning Area. In general, the burrowing owl is widespread in the United States and Canada, found in a wide variety of habitat types typically characterized by low-growing vegetation and burrows made by fossorial mammals, such as ground squirrels.

An estimated 21,962 acres (88%) of modeled breeding/foraging habitat and 7,435 acres (92%) of modeled secondary breeding/foraging habitat for this species would be conserved in open space (including Restricted Open Space) under this alternative. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the burrowing owl would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species is a state Species of Special Concern and would be

considered a special-status species under CEQA. Given the extensive range of the burrowing owl, their limited presence in the study area, and because approximately 88% of the modeled breeding/foraging habitat and 92% of modeled secondary breeding/foraging habitat would be conserved and protected in open space, it is anticipated that the loss of 12% of the modeled breeding/foraging habitat and 8% of modeled secondary breeding/foraging habitat under the Kern County General Plan Buildout Alternative would have a minor effect on burrowing owl in the study area (if present), and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Golden Eagle

Modeled foraging, breeding/foraging, and primary breeding habitat for the golden eagle would be reduced by 3,571 acres (10%), 2,871 acres (9%), and 3,769 acres (8%) in the study area, respectively, under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, golden eagles have been regularly observed in the TMV Planning Area since 1999 and are a documented breeding resident on site. Three active nest sites are currently known to occur in the study area. Within their range, golden eagles are sparsely distributed throughout most of California, occupying primarily mountain, foothill, and desert habitats.

An estimated 30,255 acres (89%) of modeled foraging habitat, 30,145 acres (91%) of modeled breeding/foraging habitat, and 44,201 acres (92%) of modeled primary breeding habitat for this species would be conserved in open space (including Restricted Open Space) under this alternative. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the golden eagle would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by CDFG and the local jurisdiction during the environmental review and approval process, given that the species is a state Species of Special Concern and is state fully protected, and would be considered a special-status species under CEQA. Similarly, conservation measures, in compliance with the BGEPA, may be required by the Service if the project could result in the direct take of an individual golden eagle. In consideration of the extensive range of the species, the combined high level of habitat conservation (89% of the modeled foraging habitat, 91% of modeled breeding/foraging habitat, and 92% of primary breeding habitat would be conserved and protected), and the likely conservation measures that would implemented by CDFG and the local jurisdiction through the environmental review and approval process, it is anticipated that the loss of modeled habitat under the Kern County General Plan Buildout Alternative would have a minor effect on the golden eagle population in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Least Bell's Vireo

Modeled breeding/foraging habitat for the least Bell's vireo would be reduced by 8 acres (less than 1%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the least Bell's vireo has not been detected in the study area, and the study area is not an area of focus in the least Bell's vireo recovery plan (U.S. Fish and Wildlife Service 1998). However, the least Bell's vireo has a very limited distribution, and low reproductive success due to loss of riparian habitat and cowbird nest parasitism. Therefore, loss of any potential breeding habitat is an important consideration for this species.

An estimated 580 acres (95%) of breeding/foraging habitat for this species would be conserved in open space (including Restricted Open Space) under this alternative. Outside of those conservation measures provided as part of the TMV Project Approvals, no specific conservation measures for the least Bell's vireo would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by CDFG and the local jurisdiction during the CESA and environmental review and approval process, however, given that the species is state-listed as endangered and considered a special-status species under CEQA. In addition, because this species is federally-listed as endangered, proposed development with the potential to affect the species would require either ESA Section 7 or ESA Section 10 authorization from the Service.

Although the net loss of 8 acres of riparian habitat under the Kern County General Plan Buildout Alternative could affect the least Bell's vireo if they occur on site, appropriate management of the remaining 95% of modeled habitat (i.e., maintenance of a high proportion of riparian areas suitable for this species in an early successional state) would reduce this effect, assuming such management measures would be implemented in the future by Kern County, CDFG, and/or the Service. In consideration of the likely conservation measures provided under this alternative, including appropriate management of modeled breeding/foraging habitat in open space, it is anticipated that the loss of 1% of modeled breeding/foraging habitat under the Kern County General Plan Buildout Alternative would have a minor effect on least Bell's vireo in the study area (if present), and a minor effect on the rangewide population. This alternative would not substantially affect this species.

Little Willow Flycatcher

Modeled foraging/stopover habitat for the little willow flycatcher would be reduced by 10 acres (1%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described above, suitable foraging and stopover habitat exists in the study area, and little willow flycatchers have been detected near Castac Lake, Cuddy Creek, Beartrap Canyon, Rising Canyon, and along Grapevine Creek. However, the entire breeding range of the little willow flycatcher is located outside of the study area.

An estimated 947 acres (96%) of modeled foraging/stopover habitat for this species would be conserved in open space under this alternative. Outside of those conservation measures provided as part of the TMV Project Approvals, no specific conservation measures for the least Bell's vireo would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by CDFG and the local jurisdiction during the CESA and environmental review and approval process, however, given that the species is state-listed as endangered and considered a special-status species under CEQA. Given that little willow flycatchers on migration have more general habitat requirements than breeding individuals, and that 96% of the available modeled foraging/stopover habitat would be conserved and protected in open space areas, it is anticipated that the loss of 1% of modeled foraging/stopover habitat under the Kern County General Plan Buildout Alternative would have a minor effect on little willow flycatcher stopping over and foraging in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Purple Martin

Modeled breeding/foraging habitat for the purple martin would be reduced by 6,888 acres (8%) under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1,

Biological Resources, the purple martin breeds locally from British Columbia, eastward to Newfoundland, and southward to Baja California, central Mexico, and the Gulf Coast. In California, the purple martin occurs as a summer resident and migrant; the breeding populations are highly localized, primarily inland and along the central and southern coast. In the Tehachapi Mountains, the purple martin nests regularly in oak woodland, and has been detected in oak woodland and oak savannah communities in the study area. Airola and Williams (2008) found the Tehachapi Mountains support 100 to 200 pairs of purple martin, and may be the one remaining area in California where purple martins regularly nest in oak woodland.

An estimated 78,889 acres (92%) of modeled breeding/foraging habitat for this species would be conserved in open space (including Restricted Open Space) under this alternative. Similar to the other action alternatives, the Kern County General Plan Buildout Alternative would likely affect breeding sites that have been used by purple martin in the past, and could indirectly affect breeding pairs through competition with starlings. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the purple martin would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species is a state Species of Special Concern and would be considered a special-status species under CEQA. These conservation measures, if implemented, including preservation of 92% of modeled breeding/foraging habitat in open space, would reduce potential effects on this species from the loss of habitat. Given the apparent importance of the Tehachapi Mountains to this species, it is anticipated that the loss of 8% of modeled habitat under the Kern County General Plan Buildout Alternative would have a minor to moderate effect on breeding and foraging purple martin in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Southwestern Willow Flycatcher

Modeled breeding/foraging habitat for the southwestern willow flycatcher would be reduced by 10 acres (1%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, southwestern willow flycatchers breed in Arizona, New Mexico, California, southwestern Colorado, southern Nevada and Utah, and western Texas. The total number of southwestern willow flycatcher territories in 2002 was estimated to be approximately 1,100 to 1,200, and these territories were distributed in a large number of small breeding populations. These small, isolated breeding populations make the species particularly vulnerable to local extirpation. No southwestern willow flycatchers have been observed in the study area and the study area is not an area of focus in the southwestern willow flycatcher recovery plan (U.S. Fish and Wildlife 2002). However, the southwestern willow flycatcher has low reproductive success due to loss of riparian habitat and cowbird nest parasitism. Therefore, loss of any potential breeding habitat is an important consideration for this species.

An estimated 947 acres (96%) of modeled breeding/foraging habitat would be conserved in open space (including Restricted Open Space) under this alternative. Outside of those conservation measures provided as part of the TMV Project Approvals, no species-specific conservation measures for the southwestern willow flycatcher would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by CDFG and the local jurisdiction during the CESA and environmental review and approval process, given that the species is state-listed as endangered and would be considered a special-status species under

CEQA. In addition, because the species is federally-listed as endangered, proposed development with the potential to affect the species would require either ESA Section 7 or ESA Section 10 authorization from the Service.

Although the net loss of 10 acres of modeled breeding/foraging habitat under the Kern County General Plan Buildout Alternative could affect southwestern willow flycatchers on site, appropriate management of the remaining 96% of modeled habitat (maintenance of a high proportion of the riparian areas suitable for the species in an early successional state), assuming it would be implemented in the future by Kern County, CDFG, and/or the Service, would reduce this effect. In consideration of the likely conservation measures provided under this alternative, including appropriate management of modeled breeding/foraging habitat in open space, it is anticipated that the loss of 1% of modeled breeding/foraging habitat under the Kern County General Plan Buildout Alternative would have a minor effect on southwestern willow flycatcher in the study area (if present), and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Tricolored Blackbird

Modeled foraging and primary breeding habitat for the tricolored blackbird would be reduced by 1,437 acres (8%) and 23 acres (8%) in the study area, respectively, under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, tricolored blackbirds have been observed nesting in the study area adjacent to Castac Lake, and modeled breeding habitat is clustered around that lake. About 99% of the population is endemic to California, and in 2011, tricolored blackbirds nesting in Tulare Basin in Kern County represented approximately 34% of the California population.

An estimated 198 acres (68%) of modeled breeding habitat and 17,042 acres (92%) of modeled foraging habitat would be conserved in open space (including Restricted Open Space) under this alternative.[11] Outside of those conservation measures provided as part of the TMV Project Approvals, no specific conservation measures for the tricolored blackbird would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species is a state Species of Special Concern and would be considered a special-status species under CEQA.

The net loss of 8% of modeled primary breeding habitat under the Kern County General Plan Buildout Alternative could affect nesting tricolored blackbird colonies in the study area. Under this alternative, development would surround a significant portion of Castac Lake, which is the primary body of water in the study area and is also the location of current breeding colonies. Appropriate

[11]The percentages of modeled primary breeding habitat conserved (in both open space and Restricted Open Space) and lost for tricolored blackbird only sum to 76% under the Kern County General Plan Alternative (Table 4.1-10). This is attributable to the assumptions in the habitat model specific to riparian areas (i.e., 75% of riparian/wetlands are assumed avoided in development areas, but avoided areas are not included in the open space acreages) and assumptions specific to future uses of the Lebec/Existing Headquarters Area (i.e., 145 acres in the Lebec/Existing Headquarters Area are assumed not developed, but are also not included in open space). It is likely that modeled primary breeding habitat conserved is underestimated because riparian areas have not been fully considered, and because the County land use designations in the Lebec/Existing Headquarters Area would only allow a small component of land in that area to be developed (see Section 4.1.1.2, Methods – Analytical Framework for Biological Effects).

management of the remaining 68% of modeled breeding habitat, along with implementation of the above conservation measures, would reduce this effect. If appropriate management is implemented, it is anticipated that the loss of 8% of modeled foraging habitat and 8% of modeled breeding habitat under the Kern County General Plan Buildout Alternative would have a moderate effect on tricolored blackbirds in the study area, and minor effect on the population rangewide. This alternative would not substantially affect the species.

Western Yellow-Billed Cuckoo

Modeled breeding/foraging habitat for the western yellow-billed cuckoo would be reduced by 10 acres (1%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the western yellow-billed cuckoo nests at scattered locations in California in dense, riparian woodlands and requires a wide band of riparian habitat. This species has not been detected in the study area and although vegetation communities indicative of breeding habitat have been modeled, a suitable patch size for nesting western yellow-billed cuckoos has not been found in the study area.

An estimated 947 acres (96%) of modeled breeding/foraging habitat would be conserved in open space (including Restricted Open Space) under this alternative. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the western yellow-billed cuckoo would be provided under the Kern County General Plan Buildout Alternative. However, comparable measures to protect this species would likely be required by CDFG and the local jurisdiction during the CESA and environmental review and approval process, given that the species is state listed as endangered and a candidate for federal listing, and would be considered a special-status species under CEQA. Given the lack of suitable patch size for nesting western-yellow billed cuckoos, and because 96% of modeled breeding/foraging habitat would be conserved and protected in open space, it is anticipated that the loss of 1% of modeled breeding/foraging habitat under the Kern County General Plan Buildout Alternative would have a minor effect on western yellow-billed cuckoo in the study area (if present), and a minor effect on the rangewide population. This alternative would not substantially affect this species.

White-Tailed Kite

Modeled foraging habitat for the white-tailed kite would be reduced by 1,988 acres (22%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the white-tailed kite breeds in Oregon, Washington, and Texas, but the primary breeding populations are found in California, occupying most areas west of the Sierra Nevada foothills and outside of the southeast deserts. The species is an infrequent winter visitor to the study area and there are no breeding records and few occurrence records of the species in the study area.

An estimated 6,969 acres (77%) of modeled foraging habitat would be conserved in open space (including Restricted Open Space) under this alternative. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the white-tailed kite would be provided under the Kern County General Plan Buildout Alternative. However, comparable measures to protect this species would likely be required by CDFG and the local jurisdiction during the environmental review and approval process, given the species is a state fully protected species and would be considered a special-status species under CEQA. Given the large range of the species, their limited presence in the study area, and because 77% of the modeled foraging habitat would be

conserved and protected in open space, it is anticipated that the loss of 22% of modeled foraging habitat under the Kern County General Plan Buildout Alternative would have a minor effect on white-tailed kite visiting or wintering in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Yellow Warbler

Modeled breeding/foraging habitat for the yellow warbler would be reduced by 10 acres (1%) under the Kern County General Plan Buildout Alternative; modeled secondary foraging habitat would be reduced by and 3,958 acres (8%) (Table 4.1-10). As described in Section 3.1, Biological Resources, in California, the yellow warbler has an extensive breeding range, nesting in riparian woodlands from coastal and desert lowlands up to 8,000 feet amsl in the Sierra Nevada. Yellow warblers have been detected during surveys in the TMV Planning Area and are expected to occur throughout the study area within suitable habitat.

An estimated 947 acres (96%) of modeled breeding/foraging habitat and 47,736 acres (92%) of secondary foraging habitat would be conserved in open space (including Restricted Open Space) under this alternative. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the yellow warbler would be provided under the Kern County General Plan Buildout Alternative. However, comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species is a state Species of Special Concern and would be considered a special-status species under CEQA.

As noted above, yellow warblers are sensitive to decreases in deciduous habitat, heterogeneity of riparian habitat and riparian corridor width. They also have reduced reproductive success due to cowbird nest parasitism and nest predation. Given these factors, the net loss of riparian habitat is an important consideration for this species. However, despite many local declines, yellow warblers currently occupy most of their former breeding range with the exception of the Central Valley. Given the high level of habitat conservation and protection (96% of modeled breeding/foraging habitat and 92% of secondary foraging habitat), and with the appropriate management of conserved riparian habitat in open space, it is anticipated that the loss of 1% of modeled breeding/foraging habitat and 8% of modeled secondary foraging habitat under the Kern County General Plan Buildout Alternative would have a minor effect on yellow warblers in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Valley Elderberry Longhorn Beetle

Modeled habitat for the valley elderberry longhorn beetle would be reduced by 75 acres (3%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the primary range of the valley elderberry longhorn beetle is in the Central Valley, although the species' distribution ranges from southern Shasta County to Fresno County. Elderberry shrubs, the host plants for the beetle, have been mapped at several locations within the TMV Planning Area, although no emergence holes were found on any shrub.

An estimated 2,503 acres (96%) of modeled habitat for the valley elderberry longhorn beetle would be conserved in open space (including Restricted Open Space) under this alternative. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the valley elderberry longhorn beetle would be provided under the Kern County General Plan Buildout

Alternative. However, comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species is considered a special-status species under CEQA. In addition, because the species is federally-listed as threatened, proposed development with the potential to affect the species would require either ESA Section 7 or ESA Section 10 authorization from the Service.

Given that 96% of modeled habitat would be preserved under this alternative, it is anticipated that the Kern County General Plan Buildout Alternative would have a minor effect on valley elderberry longhorn beetle in the study area (if present), and a minor effect on the rangewide population. This alternative would not substantially affect this species.

Ringtail

Modeled habitat for the ringtail would be reduced by 10,310 acres (10%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the ringtail occurs in the southwestern United States and is widely distributed in California. Potential ringtail scat has been observed in the TMV Planning Area, however, the observation was unverified and no occurrences of ringtail were recorded in the TMV Planning Area during the course of extensive camera and scent surveys in 2007.

An estimated 88,707 acres (89%) of modeled habitat for this species would be conserved in open space under this alternative. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the ringtail would be provided under the Kern County General Plan Buildout Alternative. However, comparable measures to protect this species would likely be required by CDFG and the local jurisdiction during the environmental review and approval process given that the species is a state fully protected species and would be considered a special-status species under CEQA. Given the extensive range of the species, their l unconfirmed (and likely limited) presence in the study area, and because 89% of the modeled habitat would be conserved in open space, it is anticipated that the loss of 10% of modeled habitat under the Kern County General Plan Buildout Alternative would have a minor to moderate effect on ringtail in the study area (if present), and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Tehachapi Pocket Mouse

Modeled habitat for the Tehachapi pocket mouse would be reduced by 82 acres (4%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the Tehachapi pocket mouse is considered to be very rare, and has only been documented in a few scattered localities in the Tehachapi Mountains. There are three CNDDB-documented occurrences of the Tehachapi pocket mouse along the southern edge of the TMV Planning Area. The Tehachapi pocked mouse was also documented during trapping surveys in and adjacent to the study area as recently as 2010 (Cypher et al. 2010; Dudek 2009).

An estimated 1,849 acres (96%) of modeled habitat for this species would be conserved in open space (including Restricted Open Space) under this alternative. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the Tehachapi pocket mouse would be provided under the Kern County General Plan Buildout Alternative. However, comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species is a state Species of Special

Concern and would be considered a special-status species under CEQA. It is unclear if the known occurrences of this species in Oso Canyon would be preserved under this alternative; however, it is possible that development would occur in that area.

As described above, in general, surface-disturbing activities are incompatible with the persistence of native small mammal populations and as this species occurs in small, scattered populations within a limited range, it is highly vulnerable to local extirpation from natural or human-related disturbance. Given the limited and concentrated range of the species, its known occurrence in the TMV Project Area, and because little is known about the ecology of the species, the loss of 3% of modeled habitat (and possibly two known occurrences) under this Kern County General Plan Buildout Alternative would have a moderate effect on the Tehachapi pocket mouse in the study area, and a moderate effect on the population rangewide. This alternative would not substantially affect this species.

Coast Horned Lizard

Modeled primary habitat for the coast horned lizard would be reduced by 4,822 acres (12%) under the Kern County General Plan Buildout Alternative; modeled secondary habitat would be reduced by 3 acres (5%) (Table 4.1-10). As described in Section 3.1, Biological Resources, the coast horned lizard is endemic to California and is broadly distributed through the foothills of the Sierra Nevada and throughout most of coastal, central and southern California. Coast horned lizards were observed in the TMV Planning Area and the northwestern corner of Castac Lake at Grapevine Creek.

An estimated 36,210 acres (88%) of modeled primary habitat and 51 acres (82%) of modeled secondary habitat for this species would be conserved in open space (including Restricted Open Space) under this alternative.[12] Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the coast horned lizard would be provided under the Kern County General Plan Buildout Alternative. However, comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species is a state Species of Special Concern and would be considered a special-status species under CEQA. It is anticipated that eight of the 12 known occurrences of this species in the study area would be conserved in open space under this alternative.

Given the relatively wide-spread distribution of the coast horned lizard throughout the region, and because 88% of modeled primary habitat and 82% of modeled secondary habitat would be conserved and protected in open space, as well as eight out of the 12 known occurrences, it is anticipated that the loss of 12% of modeled primary habitat and 5% of modeled secondary habitat under the Kern County General Plan Buildout Alternative would result in a minor effect on coast horned lizard in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

[12] The percentages of modeled secondary habitat conserved (in both open space and Restricted Open Space) and lost for coast horned lizard only sum to 87% under the Kern County General Plan Buildout Alternative (Table 4.1-10). This is attributable to the assumptions in the habitat model specific to riparian areas (i.e., 75% of riparian/wetlands are assumed avoided in development areas, but avoided areas are not included in the open space acreages) and assumptions specific to future uses of the Lebec/Existing Headquarters Area (i.e., 145 acres in the Lebec/Existing Headquarters Area are assumed not developed, but are also not included in open space). It is likely that modeled secondary habitat conserved is underestimated because riparian areas have not been fully considered, and because the County land use designations in the Lebec/Existing Headquarters Area would only allow a small component of land in that area to be developed (see Section 4.1.1.2, Methods – Analytical Framework for Biological Effects).

Two-Striped Garter Snake

Modeled habitat for the two-striped garter snake would be reduced by 34 acres (9%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the two-striped garter snake is endemic to southern California and Baja California, Mexico. It is only found in about 60% of its historic range, and is now common only in eastern San Diego County. Two-striped garter snakes have been observed in the TMV Planning Area east of Rising Canyon, in Dry Field Canyon, in Bear Trap Canyon, at Castac Lake, and at a stock pond south of Castac Lake; the species is expected to occur throughout modeled habitat in the study area.

An estimated 254 acres (70%) of modeled habitat for this species would be conserved in open space (including Restricted Open Space) under this alternative.[13] Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for the two-striped garter snake would be provided under the Kern County General Plan Buildout Alternative. However, comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species is a state Species of Special Concern and would be considered a special-status species under CEQA.

In consideration of the range of this species, and the above likely conservation measures that would be implemented to reduce effects on the species, including conservation of 70% of modeled habitat in open space, it is anticipated that the loss of 9% of modeled habitat under the Kern County General Plan Buildout Alternative would have a minor to moderate effect on two-striped garter snake in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect the species.

Fort Tejon Woolly Sunflower

Modeled habitat for Fort Tejon woolly sunflower would be reduced by 6,552 acres (11%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the overall geographic distribution of Fort Tejon woolly sunflower is extremely restricted, with the range considered limited to the southern Tehachapi Mountains and the Sierra Madre Mountains in the southeastern-outer south Coast Ranges. Presence/absence surveys in 2007 detected 36 occurrences in the TMV Planning Area.

An estimated 50,862 acres (89%) of modeled habitat for Fort Tejon woolly sunflower would be preserved in open space (including Restricted Open Space) under this alternative (Table 4.1-10), as would all known occurrences in the study area. Outside of the conservation measures provided as part of the TMV Project Approvals, no specific conservation measures for Fort Tejon woolly sunflower would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species has a CRPR of 1B.1 and a California Heritage Element Ranking of S1 and would be considered a special-status species under

[13] The percentages of modeled habitat conserved (in both open space and Restricted Open Space) and lost for two-striped garter snake only sum to 79% under the Kern County General Plan Buildout Alternative (Table 4.1-10). This is attributable to the assumption in the habitat model specific to riparian areas (i.e., 75% of riparian/wetlands are assumed avoided in development areas, but avoided areas are not included in the open space acreages). It is likely that modeled habitat conserved is underestimated because riparian areas have not been fully considered in the model.

CEQA. In consideration of the likely conservation measures that would be implemented to reduce the effects on this species, and the conservation of 89% of modeled habitat in open space and all known occurrences of the species in the study area, it is anticipated that the loss of 11% of modeled habitat under the Kern County General Plan Buildout Alternative would have a minor effect on Fort Tejon woolly sunflower in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Kusche's Sandwort

Modeled habitat for Kusche's sandwort would be reduced by 2,859 acres (9%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the overall geographic distribution of Kusche's sandwort is limited to the southern Sierra Nevada, western Transverse Ranges, and the San Gabriel Mountains. There are no CNDDB records of Kusche's sandwort in the study area, although seven occurrences were observed in the TMV Planning Area during presence/absence surveys completed in 2007.

An estimated 27,645 acres (90%) of modeled habitat for Kusche's sandwort would be preserved in open space (including Restricted Open Space) under this alternative (Table 4.1-10), as would all known occurrences in the study area. Outside of the conservation measures provided as part of the TMV Project Approvals, no specific conservation measures for Kusche's sandwort would be provided under the Kern County General Plan Buildout Alternative. It is also unknown if comparable measures to protect this species would be required by the local jurisdiction during the environmental review and approval process because this species currently has no listing status and would not be considered a special-status species under CEQA. Therefore, it is anticipated that the Kern County General Plan Buildout Alternative could have a moderate effect on Kusche's sandwort in both the study area and regionwide, depending on the extent of potential disturbance or loss of additional undocumented populations.

Round-Leaved Filaree

Modeled habitat for round-leaved filaree would be reduced by 6,265 acres (11%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the round-leaved filaree extends from Baja California to Oregon. While apparently well distributed in central and northern California, it is very rare in southern California. There are no CNDDB records of round-leaved filaree in the study area, although 11 occurrences were observed in the TMV Planning Area during presence/absence surveys conducted in 2007.

An estimated 51,808 acres (89%) of modeled habitat for round-leaved filaree would be preserved in open space (including Restricted Open Space) under this alternative (Table 4.1-10). Of the 11 known occurrences of this species, 10 are located in mineral and petroleum general plan designations and are not considered to be subject to development; one known occurrence would be directly affected by construction activities associated with the Kern County General Plan Buildout Alternative. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for round-leaved filaree would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species has a CRPR of 1B.1 and a California Heritage Element Ranking of S2 and would be considered a special-status species under CEQA. Nevertheless, the Kern County General Plan Buildout Alternative would result in potential substantial local effects on species abundance. In consideration of the

conservation of 89% of modeled habitat and likely implementation of the above avoidance and minimization measures, it is anticipated that the loss of 11% of modeled habitat and the loss of one known occurrence in the study area, would have a minor effect on the local population of round-leaved filaree, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Striped Adobe Lily

Modeled habitat for striped adobe lily would be reduced by 3,439 acres (11%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the distribution of striped adobe lily is extremely limited, with only 23 occurrences known in the state. There are three CNDDB records of striped adobe lily in the study area, although presence/absence surveys in 2007 did not detect any occurrences in the TMV Planning Area.

An estimated 28,754 acres (89%) of modeled habitat for striped adobe lily would be preserved in open space (including Restricted Open Space) under this alternative (Table 4.1-10), as would all known occurrences of this species in the study area. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for striped adobe lily would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species has a CRPR of 1B.2 and California Heritage Element Ranking of S2.1 and would be considered a special-status species under CEQA. Given the conservation of 89% of modeled habitat, preservation of all known occurrences, and likely implementation of the avoidance and minimization measures to reduce potential effects on the species, it is anticipated that the loss of 11% of modeled habitat under Kern County General Plan Buildout Alternative would result in a minor effect on striped adobe lily in the study area, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Tehachapi Buckwheat

Modeled habitat for Tehachapi buckwheat would be reduced by 77 acres (3%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biological Resources, the distribution of Tehachapi buckwheat is extremely limited, within only a single CNDDB record reported within the Lebec USGS 7.5-minute quadrangle. This species was observed in 31 locations during presence/absence surveys in the TMV Planning Area.

An estimated 2,501 acres (97%) of modeled habitat for Tehachapi buckwheat would be preserved in open space (including Restricted Open Space) under this alternative (Table 4.1-10). Six of the 31 known occurrences in the study area would be preserved in TMV Planning Area Open Space, and the remaining 25 known occurrences would be located in mineral and petroleum general plan designations and are not considered to be subject to development. Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for Tehachapi buckwheat would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species has a CRPR of 1B.1 and California Heritage Element Ranking of S1 and would be considered a special-status species under CEQA. In consideration of the conservation of 97% of modeled habitat, conservation of all known occurrences of the species in the study area, and likely implementation of the above avoidance and minimization measures, it is

anticipated that the loss of 3% of modeled habitat under this alternative would have a minor effect on the local population of Tehachapi buckwheat, and a minor effect on the population rangewide. This alternative would not substantially affect this species.

Tejon Poppy

Modeled habitat for Tejon poppy would be reduced by 361 acres (3%) in the study area under the Kern County General Plan Buildout Alternative (Table 4.1-10). As described in Section 3.1, Biolgoical Resources, the distribution of Tejon poppy is extremely limited, where it is endemic to central and western Kern County. The CNDDB includes 58 occurrences of this species; however no occurrences of Tejon poppy were observed in the study area during presence/absence surveys in the TMV Planning Area.

An estimated 12,281 acres (97%) of modeled habitat for Tejon poppy would be preserved in open space (including Restricted Open Space) under this alternative (Table 4.1-10). Outside of those provided as part of the TMV Project Approvals, no specific conservation measures for Tejon poppy would be provided under the Kern County General Plan Buildout Alternative. Comparable measures to protect this species would likely be required by the local jurisdiction during the environmental review and approval process, given that the species has a CRPR of 1B.1 and California Heritage Element Ranking of S1 and would be considered a special-status species under CEQA. Given the preservation of 97% of modeled habitat for this species in open space and the avoidance and minimization measures that would likely be implemented to reduce effects on occurrences should they be detected prior to construction, it is anticipated the loss of 3% of modeled habitat under the Kern County General Plan Buildout Alternative would have a minor effect on Tejon poppy in the study area (if present), and minor effect on the population rangewide. This alternative would not substantially affect this species.

Construction and Operations Effects

Construction and operations effects that could affect other Covered Species under the Kern County General Plan Buildout Alternative would be similar to those described under the other action alternatives, although they would be somewhat greater given the larger Development Envelope associated with this alternative. Although species-specific conservation measures have not specifically been identified for this alternative, comparable measures to protect the other Covered Species during construction and operation of developed areas could be required by Federal, state, or local jurisdictions during the environmental and permitting review processes, depending on status of the species and the habitat affected. Similarly, construction-related BMPs, prescribed by the local jurisdiction as part of the construction, grading, or building permit review processes, would likely be required to minimize potential effects resulting from ground-disturbing activities (Section 4.1.6.4, Mitigation Measures). The mitigation measures likely required through Federal, state, or local permitting process, and/or as part of any required ESA compliance process, in combination with the conservation and management of 119,392 acres of open space, make it unlikely that construction or operation of developed areas under the Kern County General Plan Buildout Alternative would substantially affect any of the other Covered Species.

Existing Ranch Uses

Similar to Existing Ranch Uses under the No Action Alternative, Existing Ranch Uses under the Kern County General Plan Buildout Alternative would have a limited potential to adversely affect other

Covered Species. As described above, grazing activities would have the potential to degrade habitat or water quality in areas where livestock congregate, or where overgrazing occurs. Ground-disturbing activities would have the potential to affect vegetation and habitat quality through erosion, compaction, and sedimentation of surface waters, or degradation of riparian or wetland habitats, which, in turn could affect other Covered Species using those areas for breeding or foraging. Potential effects on wildlife movement and connectivity from Existing Ranch Uses are described in Section 4.1.6.3, Wildlife Movement and Connectivity, below.

As described for the No Action Alternative, other Covered Species typical of grassland communities would be the most likely to be affected by grazing. Similarly, birds, amphibians, and reptiles that fulfill one or more of their life history requirements in riparian areas could also be directly affected by livestock use of water sources, or indirectly affected by sedimentation, erosion, or other adverse water quality affects associated with grazing and/or limited ground disturbance. Finally, plant species could be trampled or otherwise damaged by ground-disturbing activities.

As noted above, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as currently reflected in the Interim RWMP are anticipated to continue (although they cannot be assured), and compliance with Federal, state, and local requirements governing ground disturbance in sensitive vegetation communities (e.g., wetlands, oak woodlands) would apply. In addition, restrictions imposed by the TMV Project Approvals and by appropriate conservation easement restrictions would apply under the Kern County General Plan Buildout Alternative. Finally, although species-specific conservation measures have not specifically been identified for this alternative, comparable measures to protect the other Covered Species during ground disturbing Existing Ranch Uses could be required by Federal, state, or local jurisdictions during the environmental and permitting review processes, depending on status of the species and the habitat affected.

Potential effects on other Covered Species from Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be minor and would be reduced through implementation of BMPs prescribed as part of the Federal, state, or local permitting processes (Section 4.1.6.4, Mitigation Measures), or as required by TMV Project Approvals. The effects of Existing Ranch Uses under this alternative would be comparable to those described for the No Action Alternative.

Other Special-Status Species

Other special-status species known to occur, or with the potential to occur, in the study area are summarized in Table 3.1-5 in Section 3.1, Biological Resources.

Commercial and Residential Development Activities

Similar to the Proposed TU MSHCP Alternative, permanent effects on special status species resulting from Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative were generally quantified by analyzing the vegetation communities identified in Table 3.1-5 as habitat associations for these species. Potential effects on these species by habitat type are provided in Table 4.1-11.

Table 4.1-11. Potential Effects on Vegetation Communities for Other Special Status Species— Kern County General Plan Buildout Alternative

	Scrubs		Chaparrals		Grasslands		Savannahs		Woodlands		Conifer Forest		Riparian/ Wetland		Riparian Woodland		Wash		Agriculture		Total Acreage		Percent	
Total Acreage in Study Area	7,841		14,145		24,947		33,121		48,745		3,956		703		59		863		232					
	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost	Cons.	Lost
	7,430	411	13,211	1,204	21,536	3,408	28,630	4,490	43,964	4,772	3,751	205	674	29	58	1	860	3	5	227	120,119	14,750		
Other Special-status Species																								
California spotted owl									x	x	x	x			x	x					47,773	4,978	91%	9%
Cooper's hawk									x	x	x	x			x	x					47,773	4,978	91%	9%
Long-eared owl									x	x	x	x			x	x					47,773	4,978	91%	9%
Northern harrier	x (foraging)	x			x (foraging)	x							x (nesting)	x					x (foraging)	x	29,645	4,075	88%	12%
Prairie falcon	x	x			x	x	x	x	x	x	x	x	x	x	x	x			x	x	106,048	13,543	89%	11%
Yellow-breasted chat													x	x	x	x					732	30	96%	4%
American badger	x	x			x	x	x	x	x	x	x	x			x	x	x	x	x	x	106,234	13,517	89%	11%
San Bernardino ringneck snake	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	120,119	14,750	89%	11%
Silvery legless lizard	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				120,114	14,523	89%	11%
Aromatic canyon gooseberry			x	x	x	x	x	x	x	x	x	x									111,297	14,079	89%	11%
Calico monkeyflower	x	x	x	x					x	x	x	x			x	x					97,044	11,083	90%	10%
Delicate bluecup			x	x					x	x					x	x					57,233	5,977	91%	9%
Flax-like monardella			x	x					x	x	x	x									60,926	5,977	91%	9%
Golden violet	x	x	x	x					x	x	x	x									96,986	11,082	90%	10%
Pale-yellow layia					x	x	x	x	x	x											94,130	12,670	88%	12%
Palmer's mariposa lily			x	x			x	x	x	x	x	x	x	x	x	x					90,288	10,701	90%	11%
Piute Mountains navarretia	x	x	x	x	x	x	x	x	x	x	x	x							x	x	118,527	14,717	89%	11%
San Bernardino aster	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x			106,903	13,319	89%	11%

The level of effects for the other special-status species would be somewhat greater than the other action alternatives, and the loss of potential habitat would be greater than 10% for several species, including northern harrier, prairie falcon, American badger, San Bernardino ringneck snake, silvery legless lizard, aromatic canyon gooseberry, pale-yellow layia, Palmer's mariposa lily, Piute Mountains navarretia, and San Bernardino aster. As noted above, construction-related BMPs, prescribed by the local jurisdiction as part of the construction, grading, or building permit review processes, would likely be required to minimize potential effects resulting from ground-disturbing activities, which could benefit special-status species (Appendix J, Section 4.1.6.4, Mitigation Measures).

Although the limitations of the Ranchwide Agreement would not apply under this alternative, historic ranch practices as currently reflected in the Interim RWMP are anticipated to continue (although they cannot be assured), and compliance with Federal, state, and local requirements governing ground disturbance in sensitive vegetation communities (e.g., wetlands, oak woodlands) would apply. In addition, restrictions imposed by the TMV Project Approvals and by appropriate conservation easement restrictions would apply under the Kern County General Plan Buildout Alternative. In consideration of these measures and restrictions, and the conservation and management of 119,392 acres of open space, it is unlikely the Kern County General Plan Buildout Alternative would substantially affect any special-status species. These effects would, however, be greater than under the No Action Alternative where no development would occur.

Existing Ranch Uses

Under this alternative, Existing Ranch Uses would continue to occur in similar areas and at similar levels as Existing Ranch Uses under the No Action Alternative. Potential effects on special-status species and their habitat would the same as those described in Section 4.1.6.1, Vegetation Communities, above, as those communities relate to the habitat types of individual species. The effects would be comparable to the No Action Alternative.

4.1.6.3 Wildlife Movement and Connectivity

Commercial and Residential Development Activities

Under the Kern County General Plan Buildout Alternative, development would be consistent with the current Kern County General Plan, and the most intense commercial and residential land uses would be land use designations 3.3, 4.1, 4.3, and 6.3 (Figure 2-7). Most of the study area would be subject to rural development on lots ranging in size from 20 to 80 acres (with 2-acre graded lots) (i.e., land use designations 8.2, 8.3, and 8.5; Figure 2-7). Management of the Restricted Open Space areas associated with rural/estate-type residential development could occur to the extent that these lands would be used as mitigation for individual projects. As such, this alternative would potentially allow greater residential densities and overall habitat disturbances compared to the other alternatives.

The potential for habitat fragmentation and reduced wildlife movement through the study area would be increased under the Kern County General Plan Buildout Alternative given the checkerboard development pattern associated with the above described rural/estate-type residential development areas. While many wildlife species likely would inhabit and move through the interstitial open space in the study area, provided there was adequate distances between residences (e.g., at least several hundred feet; see discussion of wildlife movement through low-

density development above for the Proposed TU MSHCP Alternative), species sensitive to habitat fragmentation would be more likely to be adversely affected by such a scattered development pattern. In addition, the Specific Plan required designations in the western and southern portions of the study area could substantially constrain wildlife movement between the study area and the Los Padres National Forest to the west and the Angeles National Forest to the south. Similarly, the Specific Plan Required designations in the northeast portion of the study area could disrupt movement between the study area and the Sequoia National Forest.

The effects of development under the Kern County General Plan Buildout Alternative on California condor habitat connectivity and overflight would be the same as those described for the Proposed TU MSHCP Alternative. Although the ranch does serve as an important linkage between historic condor habitat areas east and west of the ranch, the proposed development on Tejon Ranch would not prevent condors from continuing to fly over Tejon Ranch, or to access areas further to the east or west of the ranch for the following reasons. The free-flying condors in the southern California subpopulation have been recorded flying over communities in the Tehachapi Mountains that have rural residential densities similar to or greater than development proposed under the Kern County General Plan Buildout Alternative. Such flyovers have resulted in no measurable ill effects with respect to continued condor use of historical and current foraging, roosting, and nesting areas, as evidenced by Service GPS tracking data. Furthermore, a recent USGS statistical analysis of condor GPS data collected from 2004 to 2009 for spatial behavior patterns in six management units in southern California supports the conclusion that condors regularly fly over developed areas and that these areas, based on the GPS data, are part of their estimated home ranges. As such, the Service does not expect condors to avoid flying over similar areas on the ranch after buildout.

Based on the above, it is anticipated that Commercial and Residential Development under the Kern County General Plan Buildout Alternative would result in moderate to high effects on wildlife movement and connectivity. These effects would be greater than the No Action Alternative, where no development would occur. This alternative would have no effect on condor overflight of the study area.

Existing Ranch Uses

Similar to Existing Ranch Uses under the No Action Alternative, Existing Ranch Uses under the Kern County General Plan Buildout Alternative would have a limited potential to affect wildlife movement and habitat connectivity in the study area. Specifically, existing roads that provide access to ranch infrastructure, hunting, other recreational activities or emergency vehicle access, could adversely affect species movement through direct mortality from vehicle strikes and/or loss of habitat connectivity. Other Plan-Wide Activities, such as utility lines and fences, may affect bird (i.e., collisions) or wildlife movement across the Covered Lands.

As noted above, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as currently reflected in the Interim RWMP are anticipated to continue (although they cannot be assured), which include BMPs to minimize the effects of roads, utilities, and fences on wildlife movement and connectivity (e.g., establishment of “wildlife-friendly fences”, implementation of a dust control plan on well traveled roads). In addition, restrictions imposed by the TMV Project Approvals and by appropriate conservation easement restrictions would apply under the Kern County General Plan Buildout Alternative.

Given the limited existing /proposed road network within open apace areas under the Kern County General Plan Buildout Alternative, and the BMPs provided through the TMV Project Approvals and conservation easement restrictions, it is anticipated that Existing Ranch Uses would result in minor effects on wildlife movement and connectivity. These effects would be comparable to those associated with Existing Ranch Uses under the No Action Alternative.

4.1.6.4 Mitigation Measures

As described above, the limitations of the Ranchwide Agreement would not apply under the Kern County General Plan Buildout Alternative. However, even in the absence of the Ranchwide Agreement, BMPs (as currently set forth in the Interim RWMP) are anticipated to continue (although they cannot be assured). Restrictions imposed by the TMV Project Approvals and by easement language in the Existing Conservation Easement Areas would apply under the Kern County General Plan Buildout Alternative. Comparable measures to those provided in Tables 2-3 and 2-4 in Chapter 2, Propose TU MSHCP and Alternatives, would likely be implemented to avoid, minimize, and mitigate effects on special-status species (i.e., state or federally-listed species, species protected as 'special-status' under CEQA). These measures would be anticipated as part of either the CESA or CEQA processes, or through a project-specific consultation with the Service completed in accordance with either ESA Section 10 or Section 7.

The mitigation measure listed in Section 4.1.3.4, Mitigation Measures, for the Proposed TU MSHCP Alternative are also applicable to the Kern County General Plan Buildout Alternative.

4.1.7 Cumulative Effects

Cumulative effects on biological resources may result from increased development and changes in land use. The effects on biological resources considered in this Supplemental Draft EIS include direct effects associated with the issuance of the ITP, as well as indirect effects related to the Commercial and Residential Development Activities that would be facilitated by issuance of the ITP. In addition, Plan-Wide Activities/Existing Ranch Uses have the potential to affect biological resources; however, cumulative effects are more likely to occur from development activities. Whether or not the combined effects of the action alternatives (in conjunction with other reasonably foreseeable actions) would result in cumulative adverse effects is primarily dependent on the conservation measures, BMPs, and adaptive management put in place through the alternative itself, as well as the relevant individual development project review and requirements imposed by other Federal, local, and state authorities pursuant to their approval processes for other reasonably foreseeable actions.

As described in Section 4.0.4.1, Cumulative Effects Analysis Area, for most biological resources, the cumulative effects analysis area generally encompasses the Tehachapi Uplands portion of the Southern California Mountains Ecoregion, and the valley and foothill areas outside the Tehachapi Uplands, where adjacent projects have the potential to affect local breeding and/or migratory populations of other covered species. This area was selected for the cumulative effects analysis because, for biological resources, cumulative effects are generally more likely to occur in areas where vegetation, elevational, geographical, and climate conditions are similar to the study area. Specifically, in the Tehachapi Uplands, Gorman Post Ranch is located in the western Tehachapi Mountains above 3,400 feet (Harmsworth 2006) and Frazier Park Estates is located in the Transverse Mountains above 3,900 feet (Kern County 2009d). Potential effects associated with the more urban-type development in the valley and foothill areas are also evaluated in this section,

including development associated with the Centennial, Grapevine, and Tejon Ranch Commerce Center projects.

For California condors, the cumulative effects analysis area has been expanded to represent the range of the California population of condors, including the southern California subpopulation, which generally occurs between San Luis Obispo County and Ventura County, through the Tehachapi Mountains and into the southern Sierra Nevada, and the northern California subpopulation, which generally occurs between the Big Sur Coast in Monterey County and Pinnacles National Monument in San Benito County. The cumulative effects analysis area for the condor has been expanded because the Service anticipates that there will be more intermixing between the northern and southern California subpopulations of the condor over the 50 year ITP term as the species increases in numbers, and condor use of its historic range in California continues to expand.

Finally, the following additional projects in the Tehachapi Uplands beyond the boundaries of Tejon Ranch and Gorman Post Ranch are also considered in this section because they have the potential to cumulatively affect one or more biological resources, and in particular the condor. The Service is not aware of any large scale development projects in Monterey or San Benito Counties.

- **Wind Projects**. Kern County is currently considering applications for 16 different wind energy projects in the Tehachapi Wind Resource Area (Kern County 2011; Figure 4.0-1). Between 2005 and September 2011, four of these projects were approved by Kern County. The remaining projects are being reviewed by the County in compliance with CEQA, with a decision from Kern County pending. Additional area within the Tehachapi Wind Resources Area is zoned for wind energy projects and is likely to be developed over the term of the 50-year ITP. For the purposes of this Supplemental Draft EIS analysis, it is assumed that all wind energy projects within the Tehachapi Wind Resource Area are within the range of condors. Several additional wind projects east of the Tehachapi Wind Resource Area are also considered in this section because they are within the range of the condor (Figure 4.0-1). There are no reasonably foreseeable wind projects in Monterey and San Benito Counties.
- **Tehachapi Renewable Transmission Project**. A 173-mile transmission line project is proposed to run from San Bernardino County to Kern County, portions of which occur near areas used by condors (Figure 4.0-1).
- **Newhall Ranch Development Project**. The Newhall Ranch development project would include construction of residential, commercial and public facilities on approximately 3,500 acres, and preservation of approximately 10,200 acres of open space in Los Angeles and eastern Ventura Counties (Figure 4.0-1). The Service provided USACE (the Federal lead permitting agency for the project) with a biological opinion for this project in June 2011 that addressed three of the Covered Species considered in this EIS: California condor, least Bell's vireo and southwestern willow flycatcher, as well as potential effects on California condor critical habitat (U.S. Fish and Wildlife Service 2011a). The biological opinion exempted take of one condor as a result of habituation.

  Because the Newhall Ranch Development Project is located well south of the Covered Lands (outside the general cumulative effects analysis area for biological resources), the cumulative effects of this project are only considered for the California condor.

- **Oil and Gas Lease Expansion Project - Los Padres National Forest**. In compliance with the Onshore Oil and Gas Leasing Reform Act of 1987, the U.S. Forest Service has delineated three specific high oil and gas potential areas within the Los Padres National Forest where oil and gas exploration, development, and production may be authorized for the next 10 to 15 years for activities to be conducted over a likely 50-year period. These three areas encompass 106,584 acres and are located adjacent to areas where oil and gas operations are already occurring on Los Padres National Forest lands. The Service provided the U.S. Forest Service with a biological opinion for this project in September 2011 that addressed three of the Covered Species considered in this EIS: California condor, least Bell's vireo and southwestern willow flycatcher, as well as potential effects on California condor critical habitat (U.S. Fish and Wildlife Service 2011b). The biological opinion exempted take of one condor as a result of habituation.

  Similar to the Newhall Ranch Development Project, because the oil and gas lease expansion project would be located well west of the Covered Lands (outside the general cumulative effects analysis area for biological resources), the cumulative effects of this project are only considered for the California condor.

- **Panoche Valley Solar Farm.** The Panoche Valley Solar Farm would include construction and operation of a 420 megawatt photo-voltaic solar power plant in unincorporated eastern San Benito County. Solar panels would be installed over an area of approximately 4,885 acres (7.6 square miles) and would include construction of 4 million solar arrays, a substation, onsite access roads, and buried electrical collection conduit. Electricity generated onsite would be transmitted to the State's electrical grid through two existing Pacific Gas and Electric Company (PG&E) transmission lines. About 23,300 acres would be preserved in open space under this project, and low density grazing (likely sheep) would generally continue after the solar panels are installed. To minimize potential effects on condors, the project applicant would be required to construct all transmission facilities, towers, poles, and lines to minimize avian electrocutions (San Benito County 2010).

  Similar to the Newhall Ranch Development Project, because the Panoche Valley Solar Farm Project would be located well west of the Covered Lands (outside the general cumulative effects analysis area for biological resources), the cumulative effects of this project are only considered for the California condor.

As described in Section 4.0.4.2, Other Reasonably Foreseeable Projects, in addition to the potential development described above, ongoing management of several substantial areas of open space and public lands in the vicinity of the study area are considered in this analysis. Specifically, to the north and east of the study area, in the Sierra Nevada Ecoregion, there are large areas of public land (mostly Bureau of Land Management and U.S. Forest Service [i.e., Sequoia National Forest] properties). To the west of I-5 and south of SR 138, comprising the northern extent of the Southern California Mountains Ecoregion, are both private and public open space lands, including the Wind Wolves Preserve, the Los Padres National Forest, and the Angeles National Forest. Ongoing management of these lands is likely to cumulatively benefit several wildlife species, in particular condors.

4.1.7.1 Vegetation Communities

As described above, ground disturbance associated with Commercial and Residential Development Activities and Exiting Ranch Uses/Plan-Wide Activities under each of the alternatives would result in direct (i.e., loss of habitat) and indirect (e.g., introduction of nonnative species, erosion) effects on vegetation communities, including several communities that are considered special-status by Federal, state, or local resources agencies; (i.e., alluvial scrub, native grasslands, oak savannahs, and oak woodlands [upland communities] and all of the riparian/wetland/wash communities). As described in Section 3.1, Biological Resources, the predominant vegetation communities in the study area are woodlands and savannahs, which comprise 61% of the total cover of special-status vegetation communities (Table 3.1-1). Grasslands (excluding nonnative grasslands) comprise approximately 13% of special-status vegetation communities in the study area, and scrub and chaparral total approximately 6% and 11%, respectively (Table 3.1-1). Conifer communities comprise about 3% of the study area and primarily occur at higher elevations in the eastern portion of the study area. Riparian/wetland/wash communities are a relatively small component of the vegetation communities in the study area, comprising only 1% of the total cover of special-status vegetation communities (Table 3.1-1). Of these communities, desert wash/riparian/seeps and lake (Castac Lake) are the largest components, accounting for 74% of the total.

Under the No Action Alternative, no development would occur and there would be no meaningful contribution to cumulative effects on vegetation communities from development. Although effects on vegetation could occur from Existing Ranch Uses (i.e., trampling of vegetation from livestock grazing, limited ground disturbance from maintenance of existing infrastructure), these effects would be reduced through implementation of the BMPs and use restrictions required pursuant to the Ranchwide Agreement, and would not contribute to a substantial cumulative effect on vegetation communities.

Under the action alternatives, development in the Tehachapi Uplands, including development associated with the alternatives considered in this Supplemental Draft EIS, would primarily affect woodland and savannah vegetation communities, while development in valley and foothill areas would primarily affect grassland communities. This highlights the fact that while the montane, valley, and foothill areas all support the general types of vegetation found in the study area, these broadly defined vegetation communities are differently represented in the montane and non-montane ecoregions within the cumulative effects analysis area. For this reason, effects on vegetation communities associated with projects in the Tehachapi Uplands (i.e., Gorman Post Ranch and Frazier Park Estates) would be more similar to those associated with the Covered Activities, and more likely to result in a cumulative effect, than those associated with the valley and foothill projects (i.e., Centennial, Grapevine, Tejon Ranch Commerce Center), which would primarily affect grasslands. As such, the following discussion focuses on the potential cumulative effects of the Tehachapi Uplands projects—Frazier Park Estates and Gorman Post Ranch—on vegetation communities. For informational purposes, effects on special-status vegetation communities associated with the valley/foothill projects that can be quantified are also described below. The other reasonably foreseeable projects summarized above (i.e., wind projects, Tehachapi Renewable Transmission Project, Newhall Ranch Development Project, and the oil and gas lease expansion project in the Los Padres National Forest) are located far enough away from the study area and/or in different habitat types that cumulative effects on vegetation communities would not occur.

When considered in combination with Gorman Post Ranch and Frazier Park Estates projects, the Proposed TU MSHCP Alternative could cumulatively effect up to 4,867 acres of woodlands and

savannahs, 3,020 acres of grasslands, 845 acres of chaparral, 763 acres of scrub, 73 acres of conifer forest, and 54 acres of riparian/wetlands. The estimates of the areas cumulatively affected by these projects are highly speculative and do not take into account local, state, and Federal permitting processes and requirements designed to reduce potential effects on special-status vegetation communities (Section 4.1.1.1, Regulatory Setting). Additionally, cumulative effects on vegetation communities would be offset by lands set aside in open space in montane areas (e.g., together, the Proposed TU MSHCP Alternative, Frazier Park Estates, and Gorman Post Ranch would result in 128,334 acres of conserved vegetation communities in montane areas, or 93% of these communities located in the cumulative effects analysis area).

In addition, while not part of the Tehachapi Uplands, several of the valley/foothill projects considered in the cumulative effects analysis (i.e., Centennial and Tejon Ranch Commerce Center) could result in effects on approximately 7,233 acres of grasslands, 734 acres of scrub/chaparral, 122 acres of woodlands and savannahs, and 150 acres of riparian/wetlands.[14] As described above, grasslands represent the vast majority of the land cover in the valley and foothill project areas, and the Covered Activities in the study area would primarily affect woodlands and savannahs (i.e., less than 1% of grasslands [excluding nonnative grasslands] would be removed by development under the Proposed TU MSHCP Alternative). Nevertheless, development in the valley/foothill area would result in 8,759 acres of preserved open space encompassing all of the special-status vegetation communities, including grassland communities. In combination with the montane area projects, 137,093 acres of land would be conserved in open space, including 78,778 acres of woodlands and savannahs, 30,079 acres of grasslands, 22,515 acres of chaparral/scrub, 3,883 acres of conifer forest, and 1,838 acres of riparian wetlands. Land set aside as open space under these projects would be part of the larger 240,000 acres of open space conserved as part of the Ranchwide Agreement. As a result, the Proposed TU MSHCP Alternative, in combination with other reasonably foreseeable projects described above, is not expected to result in substantial cumulative effects on special-status vegetation communities.

Cumulative effects on vegetation communities under the Condor Only HCP Alternative would be the same as for the Proposed TU MSHCP Alternative, as described above.

Cumulative effects on vegetation communities under the CCH Avoidance MSHCP Alternative would be greater than the No Action Alternative, but less than the Proposed TU MSHCP and Condor Only HCP Alternatives because the acreage of ground disturbance, and the resulting loss of vegetation, would be less (Table 4.1-1). Similarly the cumulative contribution to effects on vegetation communities would be greater under the Kern County General Plan Buildout Alternative compared to the No Action, Proposed TU MSHCP, Condor Only HCP, or CCH Avoidance MSHCP Alternatives because the acreage of ground disturbance would be greater. Nonetheless, given the open space that would be set aside and the BMPs and/or mitigation measures to reduce ground-disturbing effects anticipated to be part of the project-by-project approvals, it is not expected that the Kern County General Plan Buildout Alternative would result in a substantial cumulative effect on special-status vegetation communities.

[14] As noted above, these estimates are speculative and do not take into account local, state, and Federal permitting processes and requirements designed to reduce potential effects on special-status vegetation communities (Section 4.1.1.1, Regulatory Setting).

4.1.7.2 Wildlife and Plant Species

As described above, ground disturbance associated with Commercial and Residential Development Activities and Exiting Ranch Uses/Plan-Wide Activities under each of the alternatives would result in direct (i.e., loss of habitat) and indirect (e.g., introduction of nonnative species, disturbance, exposure to microtrash) effects on wildlife and plant species. Cumulative effects on the Covered Species and wildlife movement are described below.

California Condor

Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative have the potential to adversely affect the California condor and their habitat through loss of foraging habitat; habituation to human structures and activities; increased risk of collisions with power lines, communication towers, and other artificial structures; and ingestion of microtrash. Similarly, some Existing Ranch Uses/Plan-Wide Activities, such as filming, recreation, and limited utility construction, would have the potential to result in disturbance of roosting or feeding condors, generation of microtrash, or increased risk of collision, which could adversely affect condors. However, ongoing livestock grazing and hunting activities on the ranch would continue to provide a food source for condors, which would benefit the species. The following considers these effects in combination with similar effects associated with the other reasonably foreseeable projects in the cumulative effects analysis area.

Under the No Action Alternative, no development would occur and there would be no meaningful contribution to cumulative effects on condors from development. Although effects on condors could occur from Existing Ranch Uses (i.e., generation of microtrash in areas used by humans, disturbance of roosting condors), these effects would be reduced through implementation of the BMPs and use restrictions required pursuant to the Ranchwide Agreement, and would not contribute to a substantial cumulative effect on the species.

The Proposed TU MSHCP Alternative and Condor Only HCP Alternative would result in the direct loss of and indirect effects on 17,995 acres of suitable foraging habitat for the condor. Similarly, about 6,653 acres of suitable foraging habitat would be directly lost and indirectly affected under the CCH Avoidance MSHCP Alternative. The extent of effects on suitable foraging habitat under the Kern County General Plan Buildout Alternative cannot be determined because the location of the entire Development Envelope is unknown; however, it is likely that the effects would be greater than the other action alternatives given the larger Disturbance Area and the dispersed nature of the proposed development. For each of the alternatives, the Service considered food availability in the condor's range as part of the analysis of the loss of suitable foraging habitat and estimated that the there is sufficient food resources from grazing, hunting, and native ungulate populations within the condors historic range to support not only the current population of condors, but also one of the two free-flying populations of 150 birds envisioned in the California Condor Recovery Plan. Consequently, even with the Commercial and Residential Development Activities proposed under the alternatives, given the estimated amount of foraging habitat that would remain on Tejon Ranch, and the estimated food for condors that would be produced from cattle, pig, and native ungulate carcasses on that foraging habitat, it is likely that the ranch would continue to function as an essential and viable foraging area for the expanding condor population.

From a cumulative perspective and with respect to the loss of foraging habitat, condors have been known to fly over the Centennial, Grapevine, and Tejon Ranch Commerce Center land areas,

although not as frequently as the study area (Johnson et. al. 2010, U.S. Fish and Wildlife Service 2011a). While some suitable grassland foraging habitat may be lost as a result of proposed development in these areas, the acreage of suitable foraging habitat that would be preserved under the alternatives (and, presumably, in some portion of the 137,093 acres of open space preserved as a result of the montane area projects [i.e., Proposed TU MSHCP Alternative, Frazier Park Estates, and Gorman Post Ranch] and valley/foothill area projects [i.e., Centennial, Tejon Ranch Commerce Center]), and the continued availability of adequate food supplies, would reduce the potential for a substantial adverse cumulative effect on food supplies for the condor. About 5,722 acres would be preserved in open space under Newhall Ranch development project, which would continue to provide suitable foraging habitat for condors in permanent conservation easements (USFWS 2011a). Similarly, about 23,300 acres would be preserved in open space under Panoche Valley Solar Farm project, and livestock grazing would continue to be allowed after the solar panels are installed. The wind energy projects listed above, as well as the northernmost reaches of the Tehachapi transmission line, would also be in areas considered suitable for condor foraging or general flyover movements (CPUC and USDA Forest Service, Final EIR/EIS Southern California Edison's Application for the Tehachapi Renewable Transmission Project, Application No A.07-06-031. SCH No. 2007081156). Although these projects could result in direct and indirect effects on suitable condor foraging habitat, they are not anticipated to substantially affect condors' ability to find food in the cumulative effects analysis area. The ongoing availability of open space and food resources in public and private lands within the historic range of the condor in California would further reduce any cumulative effect on suitable foraging habitat in the cumulative effects analysis area. Although there would be a cumulative loss of foraging habitat associated with each of the action alternatives when considered in combination with the other reasonably foreseeable projects, it is anticipated that the amount of foraging habitat conserved under the action alternatives and other reasonably foreseeable projects would reduce the effect. None of the proposed action alternatives would result in a cumulatively substantial effect on the population rangewide for a loss of foraging habitat.

The Service does not expect the alternatives to have an effect on condor nesting habitat (i.e., there are no known nesting sites in the study area or on Tejon Ranch), and, therefore, would not result in a cumulative effect. Condors would not be precluded from accessing existing nest sites and nesting habitat outside of the study area as a result of the Covered Activities.

From a cumulative perspective and with respect to habituation, both the Newhall Ranch Development Project and the oil and gas lease expansion in the Los Padres National Forest have the potential to result in habituation of condors (U.S. Fish and Wildlife Service 2011a, 2011b). The Service has exempted take (i.e., habituation) of one condor under each of these projects. These projects include measures to minimize adverse effects on the condor, and the associated biological opinions include measures to minimize the effects of the take (U.S. Fish and Wildlife Service 2011a, 2011b). Similarly, the Proposed TU MSHCP Alternative, Condor Only HCP Alternative, and CCH Avoidance MSHCP Alternative would include measures to reduce the potential for habituation of condors, including a provision that a dedicated, onsite Service-approved biologist respond to negative interactions between humans and condors quickly using Service-approved measures for hazing.

The habituation of four condors under the Proposed TU MSHCP Alternative over the term of the permit (as well as the other action alternatives), when considered in combination with the assumed habituation of two condors (total) under the Newhall Ranch Development Project and oil and lease expansion project in the Los Padres National Forest, have the potential to result in cumulative

adverse effect. However, the Service has determined that the habituation of up to six condors as a result of the proposed action alternatives, Newhall Ranch project, and Los Padres National Forest oil and gas lease expansion project would be reasonable, given the expanding condor population, and would not result in a substantial adverse effect on the population. This conclusion is based on the Service's experience with previous undesirable interactions between humans and condors (i.e., typically juvenile birds that are receptive to hazing efforts; the unlikely habitation of a breeding bird, which would have a more substantial effect on the population; the conservation measures proposed under the action alternatives to reduce the potential for habituation [e.g., removal of microtrash, ongoing monitoring by a Service approved biologist]; and the avoidance and minimization measures that would be provided to reduce the potential for habituation from the other reasonably foreseeable projects [e.g., development of aviation protection plans that include requirements for disposal of microtrash]). For these reasons, the potential for the permanent removal of condors from the wild as a result of habituation is low. Habituation of six of condors over 50 years would not substantially affect the condor population, or result in a substantial cumulative effect.

From a cumulative perspective and with respect to collisions, wind farms can pose a threat to condors as rotating blades can strike a condor in flight. Wind turbines tend to be placed in areas (i.e., ridgetops, upper elevation slopes) that are often attractive to condors; the same strong winds that drive the turbines are also a source of lift for these large birds. As described in the effects analysis above, transmission lines pose collision risks to condors in flight, as well as electrocution risks for condors that may perch on transmission poles and towers. While detailed avian protection plans are required for wind projects to reduce adverse effects from collisions, and would similarly be required for the Panoche Valley Solar Farm Project, some level of effect on condors is possible.

As stated above, no new high-voltage towers or aboveground transmission lines would be constructed anywhere in the study area under any of the proposed action alternatives (although two existing lines may be relocated within 1,000 feet of their current location in the lower elevation of the ranch), and no wind farms would be constructed anywhere in the study area. TRC would also preclude the development of wind farms on the adjacent Gorman-Post Ranch in perpetuity through a negative easement they hold over this property. Only individual wind turbines intended to serve individual sites would be allowed, and the siting and design of these turbines would be subject to review and approval by the Service. The new emergency communication tower(s) (discussed above) would be limited in height and number to minimize effects on condors. The exact locations are yet to be determined, but the general proposed locations are not on the highest ridges. Additional efforts to site these towers in areas that further reduce the potential for collisions would be implemented, considering that the final tower locations must provide suitable emergency radio communication coverage for Kern County. Requirements to comply with aviation protection plans (wind projects) and, to construct all transmission facilities, towers, poles, and lines to minimize avian electrocutions (Panoche Valley Solar Farm Project), would further the reduce the potential for a cumulative effect.

Although there would be an increased potential for collisions with newly constructed infrastructure given the presence of additional towers (associated with the action alternatives), wind turbines (associated with reasonably foreseeable wind projects), and other transmission lines (associated with the Panoche Valley Solar Farm project), it is anticipated that the above minimization measures would reduce the potential for this cumulative effect so that it is not substantial.

Finally, an increase in human presence associated with development would be expected to increase the risk of microtrash occurring in areas currently not exposed to high levels of human activity. Conservation measures would be implemented under the Proposed TU MSHCP Alternative, Condor

Only Alternative, and CCH Avoidance MSHCP Alternative to minimize risks associated with the Covered Activities, including requirements that microtrash be removed from construction sites, recreational areas, outdoor filming projects, roads, and back-country areas where human presence occurs, and that education materials be provided to contractors, residents, and guests identifying the types of microtrash that could be ingested by condors. It is possible that similar measures would be required or implemented for the other reasonably foreseeable projects in the cumulative effects analysis area, although such measures could not be assured by the Service unless an ESA Section 7 or Section 10 process is required prior to project approval. In addition, although minimization measures would generally reduce the potential for condors to be exposed to microtrash, there would be an increased overall potential for microtrash to occur in the cumulative effects analysis area. Although there would be an increased potential for condors to be exposed to microtrash, it is anticipated that the above minimization measures would reduce the potential for this cumulative effect so that is not substantial.

These cumulative effects would be comparable under the Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives, but would be greater under the Kern County General Plan Buildout Alternative because minimization measures would not be provided or guaranteed in a habitat conservation plan. Conversely, cumulative effects associated with loss of foraging habitat, habitation, collisions with infrastructure, and increased exposure of condors to microtrash would not occur under the No Action Alternative because development and increased use of the study area by humans would not occur.

Other Covered Species

As described above, each of the alternatives would result in direct and indirect effects on the other Covered Species. Specifically, the Covered Activities could result in loss of modeled habitat as a result of development or ground-disturbing activities in open space; construction-related effects, such as generation of fugitive dust, construction noise and vibration, and degradation of water quality; operation-related effects, such as lighting, increased human activity, and presence of domestic pets; and erosion or compaction of vegetation and habitat as a result of grazing. Potential effects on wildlife movement are provided in the following Section 4.1.7.3, Wildlife Movement.

The discussion below analyzes whether the the alternatives, when considered in combination with the reasonably foreseeable projects in the cumulative effects analysis area, could result in substantial cumulative effects on the other Covered Species, depending on the habitat requirements of a particular species and the location of the other projects. Cumulative effects would be most likely for species most typical of montane habitats, given that effects associated with the alternatives would primarily occur in savannah and woodland habitats (see cumulative effects discussion for vegetation communities above). Nevertheless, because many species, such as birds, use a wide variety of habitat types, the discussion below considers the cumulative effects of the alternatives in combination with all the cumulative projects in the cumulative effects analysis area to capture potential cumulative effects that occur in a range of habitat types beyond montane communities.

Tehachapi Slender Salamander

Of the cumulative projects considered in this analysis, only the Frazier Park Estates project could affect this species. That project would result in a minimal loss (0.55 acre) of suitable habitat for the Tehachapi slender salamander and would conserve 84% of the suitable habitat on site (Kern County 2009d). No Tehachapi slender salamanders have been documented at Frazier Park Estates. In

consideration of the conservation of suitable habitat in open space in Frazier Park Estates (84%), the preservation and management of modeled habitat in the study area under the alternatives (i.e., between 96% and 98% of modeled habitat preserved in open space), and the conservation measures included for the alternatives to reduce potential effects on the species, it is anticipated that cumulative effects on Tehachapi slender salamander would be minor, and would not substantially affect the species rangewide.

Western Spadefoot

Of the cumulative projects listed, suitable habitat for foraging and dispersal (not breeding) of western spadefoot could exist at the Tejon Ranch Commerce Center and Grapevine (Kern County 2002). One adult western spadefoot was observed on the Tejon Ranch Commerce Center project site and another was observed on an adjacent parcel during surveys in 2000. However, sufficient water for reproduction does not occur on that site, and it is not known where the species is breeding locally. Therefore, it is likely this species only uses the Tejon Ranch Commerce Center for foraging and dispersal. Suitable foraging and dispersal habitat for the western spadefoot is being conserved in the 1,122-acre mitigation land that was set aside as a result of the ESA Section 7 biological opinion for that project. In addition, preconstruction surveys for western spadefoot are required for all projects proposed in the Tejon Ranch Commerce Center site and, if present, CDFG would be consulted to determine appropriate courses of action (e.g., translocation).

In consideration of the preservation and management of suitable habitat at the Tejon Ranch Commerce Center, the permitting and open space (3,300 acres per the Ranchwide Agreement) requirements that would apply to Grapevine when proposed, the preservation and management of modeled habitat under the alternatives (i.e., between 89% and 90% of modeled habitat preserved in open space), and the conservation measures included for the alternatives to reduce potential effects on the species, it is anticipated that cumulative effects on western spadefoot would be minor, and would not substantially affect the species rangewide.

Yellow-Blotched Salamander

Potential effects on yellow-blotched salamander habitat would be avoided on the Gorman Post Ranch project site. Yellow-blotched salamander was not observed on Centennial (BonTerra 2008); however, there is suitable habitat present in the heavily wooded drainage in the western portion of the site. The Centennial project could result in effects on approximately 122 acres, or 10%, of the mixed woodlands on site. There is also suitable habitat for this species on the Frazier Park Estates site, but the project's 348-acre nature preserve has been designed to protect special-status species on site, and no effects on yellow-blotched salamander were identified in the project's EIR (Kern County 2009d).

In consideration of the preservation and management of habitat occupied by yellow-blotched salamander on Gorman Post Ranch (Harmsworth Associates 2006), the limited effect (122 acres, 10%) on suitable habitat from the Centennial project (BonTerra 2008), the conservation and management of modeled habitat in the study area under the alternatives (i.e., between 89% and 98% of modeled habitat preserved in open space), and the conservation measures included for the alternatives to reduce potential effects on the species, it is anticipated that cumulative effects on yellow-blotched salamander would be minor, and would not substantially affect the species rangewide.

American Peregrine Falcon

Peregrine falcons have only been observed on one of the project sites considered in the cumulative effects analysis, Gorman Post Ranch (Harmsworth Associates 2009). There is no suitable breeding habitat for American peregrine falcons on any of the project sites. The Gorman Post Ranch project would result in the loss of 491 acres of suitable foraging habitat for the American peregrine falcon and would conserve 73% of the suitable foraging habitat for the falcon on site. Suitable foraging habitat exists on the Frazier Park Estates site, but the project's 348-acre nature preserve has been designed to protect special-status birds, and no effects on American peregrine falcon were identified in the project's EIR (Kern County 2009d). Wind projects proposed in the cumulative effects analysis area may also directly affect falcons if they are injured or killed by spinning turbine blades. While detailed avian protection plans are required for wind projects to avoid such effects, whether full avoidance can be achieved is unknown. These projects would not be expected to result in a substantial loss of foraging habitat, however, because of the small footprint of wind turbines on the landscape.

No wind farms would be constructed in the study area under any of the proposed action alternatives, and only individual wind turbine devices installed to serve electrical generation needs on site may be constructed in the study area, and only after review and approval by the Service. As a result, cumulative effects on American peregrine falcon from collisions with spinning blades would not be anticipated. In consideration of the habitat conserved on Gorman Post Ranch (73%) and Frazier Park Estates, the preservation and management of modeled habitat in the study area under the alternatives (i.e., between 87% and 92% of modeled foraging habitat and 97% to 100% of modeled breeding habitat preserved in open space), and the conservation measures included for the alternatives to reduce potential effects on the species, it is anticipated that cumulative effects on American peregrine falcon would be minor, and would not substantially affect the species rangewide.

Bald Eagle

Bald eagle was observed foraging adjacent to the Centennial project site (BonTerra 2008), and it is anticipated that project would result in a minimal loss of suitable foraging and perching habitat for bald eagle. The Centennial project would also result in the loss of approximately 150 acres of riparian/wetland communities, although 67% (312 acres) of the riparian/wetlands communities on site would be conserved (BonTerra 2008).[15] Wind projects proposed in the cumulative effects analysis area may also directly affect bald eagle if they are injured or killed by spinning turbine blades. While detailed avian protection plans are required for wind projects to avoid such effects, whether full avoidance can be achieved is unknown. These projects would not be expected to result in a substantial loss of foraging habitat, however, because of the small footprint of wind turbines on the landscape.

As noted above, only individual wind turbine devices installed to serve electrical generation needs on site may be constructed in the study area under the proposed action alternatives, and only after review and approval by the Service. As a result, cumulative effects on bald eagle from collisions with spinning blades would not be anticipated. In consideration of the preservation of riparian/wetlands communities on the Centennial project site (a minimum of 67%, which does not account for

avoidance that would be achieved through wetlands permitting processes), the preservation and management of modeled foraging habitat in study area under the alternatives (i.e., 96% modeled foraging habitat preserved in open space), the management of the remaining wintering habitat around Castac Lake under the alternatives (i.e., between 42% and 63% of modeled winter roosting habitat), and the other conservation measures included for the alternatives to reduce potential effects on this species, it is anticipated that cumulative effects on bald eagle would be minor, and would not substantially affect the species rangewide.

Burrowing Owl

As described in Section 3.1, Biological Resources, burrowing owl is found in many areas in California. On Centennial, potentially suitable foraging and nesting habitat exists throughout the site, but the species is expected to occur in low numbers based on its absence during focused burrowing owl surveys (BonTerra 2008). Similarly, no burrowing owls were observed on the Tejon Ranch Commerce Center project site at the time of project approval (Kern County 2002), although suitable burrowing owl habitat is being conserved in the 1,122-acre mitigation land that was set aside as a result of the ESA Section 7 biological opinion. In addition, preconstruction surveys for burrowing owl would be required for all projects proposed in the Tejon Ranch Commerce Center site and, if present, CDFG would be consulted to determine appropriate courses of action (e.g., avoidance during nesting season, translocation). Preconstruction surveys for burrowing owl would also be required for the Centennial project, and approximately 5,192 acres of grasslands considered suitable habitat for burrowing owl would be conserved and managed in open space (BonTerra 2008). Although the amount of suitable burrowing owl habitat at the Grapevine project site is not known, at least 3,300 acres of open space would be conserved and similar preconstruction surveys and measures would be required prior to construction.

Because of their use of ground burrows as nest sites, the construction/installation of wind turbine farms could affect existing active owl burrows. Once active, spinning turbine blades could also directly affect owls that may be flying in the same areas. However, potential effects on either nest burrows or individual owls would depend on the habitat in which the turbines are sited. Avoidance and minimization measures for burrowing owls have been identified in the draft CEQA documents for several wind projects (Alta-Oak Creek Mojave DEIR, Pacific Wind Energy DEIR, PdV Wind Energy Project DEIR), and would be expected to reduce project-specific effects on this species.

As noted above, only individual wind turbine devices installed to serve electrical generation needs on site may be constructed in the study area under the proposed action alternatives, and only after review and approval by the Service. As a result, cumulative effects on burrowing owl from collisions with spinning turbine blades would not be anticipated. Similarly, disturbance of active nests during construction of wind turbines in the study area would not be expected given the requirement for preconstruction surveys under all of the alternatives. In consideration of the preservation and management of suitable habitat at the Tejon Ranch Commerce Center site (1,122 acres of grassland) and Centennial project site (5,192 acres of grasslands), the conservation of 3,300 acres of open space associated with the Grapevine project, preservation and management of modeled habitat in the study area under the alternatives (i.e., between 88% and 93% of modeled primary breeding/foraging habitat preserved in open space and between 92% and 94% of modeled

[15] These acreage estimates are conservative in that they do not account for additional avoidance and minimization measures expected to be required in conjunction with future Federal CWA Section 404 and California Fish and Game Code Section 1600 permitting processes.

secondary breeding/foraging habitat), the requirements for preconstruction surveys and avoidance and minimization measures that are relevant to all sites, and the conservation measures included for the alternatives to reduce potential effects on this species, it is anticipated that cumulative effects on burrowing owl would be minor, and would not substantially affect the species rangewide.

Golden Eagle

Golden eagles are resident raptors in the cumulative effects analysis area, particularly in association with hilly terrain characterized by grasslands, oak savannahs, and oak woodlands. Golden eagles are not known to nest on the various project sites considered in this assessment; however, golden eagles were observed foraging on Gorman Post Ranch (Harmsworth Associates 2006). The Gorman Post Ranch project would result in the loss of approximately 717 acres of suitable foraging habitat for the golden eagle and would conserve approximately 2,000 acres (74%) of suitable foraging habitat for the species on site. Golden eagles were also observed foraging on the Centennial project site (BonTerra 2008). The Centennial project would conserve approximately 8,667 acres of natural areas suitable for golden eagles to forage, including 1,076 acres (90%) of suitable breeding habitat. Suitable roosting and foraging habitat also exists on the Frazier Park Estates site. The project's 348-acre nature preserve has been designed to protect special-status birds, and no effects on golden eagle were identified in the project's EIR (Kern County 2009a).

Similar to other bird species, golden eagles could potentially be directly affected by spinning turbine blades if flying or foraging in the same areas as active wind turbines. While detailed avian protection plans are required for wind projects to avoid such effects, whether full avoidance can be achieved is unknown. The potential for direct effects on individual golden eagles to occur would largely depend on the site-specific location of proposed wind turbines and associated habitat.

As noted above, only individual wind turbine devices installed to serve electrical generation needs on site may be constructed in the study area under the proposed action alternatives, and only after review and approval by the Service. As a result, cumulative effects on golden eagle from collisions with spinning blades would not be anticipated. Given the preservation and management of suitable foraging habitat on Gorman Post Ranch (2,000 acres), the Centennial project site (8,667 acres), and Frazier Park Estates; preservation and management of modeled habitat in the study area under the alternatives (i.e., between 89% and 93% of modeled foraging habitat, between 91% to 98% of modeled breeding/foraging habitat, and between 92% and 98% of modeled primary breeding habitat would be preserved in open space), and the conservation measures included for the alternatives to reduce potential effects on this species (including avoidance of all active nest sites, such that no breeding pairs would be disturbed), it is anticipated that cumulative effects on golden eagles would be minor, and would not substantially affect the species rangewide.

Least Bell's Vireo

There is no additional suitable breeding habitat for least Bell's vireo on other project sites considered in the cumulative effects analysis, although suitable foraging habitat, comprised of riparian/wetland communities, is found on the Centennial site. A single migrant male was observed on site in 2006; however focused breeding survey results concluded that least Bell's vireos do not nest on Centennial (BonTerra 2008). The Centennial project could result in the loss of approximately 150 acres of riparian/wetland communities and would conserve 67% (312 acres) of the riparian/wetlands communities on site.

In consideration of the preservation of riparian/wetlands communities on the Centennial site (312 acres), the preservation and management of modeled habitat in the study area under the alternatives (i.e., between 94% and 95% of modeled breeding/foraging habitat would be preserved in open space), and the conservation measures included for the alternatives to reduce potential effects on this species, cumulative effects on least Bell's vireo would be minor, and would not substantially affect the species rangewide.

Little Willow Flycatcher

Migrant willow flycatchers (unknown subspecies) have been observed on the Centennial project site (BonTerra 2008), which provides potentially suitable resting or stopover habitat for willow flycatcher in its wetlands/riparian communities. The Centennial project would result in the loss of approximately 150 acres of riparian/wetland communities on site, and would conserve 312 acres (67%). In consideration of the preservation and management of modeled habitat in the study area under the alternatives (i.e., between 96% and 97% of modeled foraging/stopover habitat would be preserved in open space), and the preservation of the riparian/wetlands communities on the Centennial site (312 acres), cumulative effects on little willow flycatchers would be minor, and would not substantially affect the species rangewide.

Purple Martin

Purple martin was observed and may nest in oak woodlands on the Centennial project site. Approximately 122 acres (10%) of potentially suitable breeding and foraging habitat for the species (oak woodlands on site) could be affected by construction of the Centennial project (BonTerra 2008). In addition, although not observed on site, suitable nesting and foraging habitat also exists on the Frazier Park Estates site (Kern County 2009d). However, the project's 348-acre nature preserve has been designed to protect special-status birds and no effects on purple martin were identified in the project's EIR (Kern County 2009d). In consideration of the effects on known occupied breeding habitat, preservation and management of modeled habitat in the study area under the alternatives (i.e., between 92% and 98% of modeled breeding/foraging habitat would be preserved in open space), and the preservation open space under the Frazier Park Estates project, cumulative effects on the purple martin would be minor to moderate, but would not substantially affect the species rangewide.

Southwestern Willow Flycatcher

As described for the little willow flycatcher above, migrant willow flycatchers (unknown subspecies) have been observed on the Centennial project site (BonTerra 2008), where approximately 150 acres of riparian/wetland communities would be lost, and 312 acres (67%) would be conserved. They have not been observed on other project sites within the cumulative effects analysis area.

In consideration of the preservation of the riparian/wetlands communities on the Centennial site (312 acres), the preservation and management of modeled habitat in the study area under the alternatives (i.e., between 96% and 97% of modeled breeding/foraging habitat would be preserved in open space), and the conservation measures included for the alternatives to reduce potential effects on this species, cumulative effects on southwestern willow flycatchers would be minor and would not substantially affect the species rangewide.

Tricolored Blackbird

Tricolored blackbird has been observed foraging and nesting on the Centennial project site (BonTerra 2008). To avoid direct effects on the species, and to minimize indirect effects on nesting areas, the applicant has committed to establishing a 500-foot buffer around all nesting areas at this project site. There is no suitable nesting habitat for tricolored blackbird on Gorman Post Ranch and the majority of tricolored blackbird foraging habitat would be avoided by that project (Harmsworth Associates 2006). Frazier Park Estates contains marginal nesting habitat and suitable foraging habitat for the species; however, the project's 348-acre nature preserve has been designed to protect special-status birds, and no effects on tricolored blackbird were identified in the project's EIR (Kern County 2009d). Tricolored blackbird also may forage on the Tejon Ranch Commerce Center site (Kern County 2002).

In consideration of the potential effects on breeding and foraging habitat, preservation and management of 23,977 acres of grassland foraging habitat on the Centennial project site, Gorman Post Ranch, and in the study area, the preservation of nesting habitat for tricolored blackbird on the Centennial project site, the preservation of 312 acres of riparian/wetlands communities on the Centennial project site, the preservation and management of modeled habitat in the study area under the alternatives (i.e., between 68% and 75% of modeled primary breeding habitat and between 92% and 95% of modeled foraging habitat would be preserved in open space), and the conservation measures included for the alternatives to reduce potential effects on this species, cumulative effects on the tricolored blackbirds would be minor to moderate, but would not substantially affect the species rangewide.

Western Yellow-Billed Cuckoo

There is no suitable breeding habitat for western yellow-billed cuckoo on any of the project sites considered in the cumulative effects analysis. BonTerra (2008) concluded that effects on western yellow-billed cuckoo were not expected to occur at Centennial because breeding was not documented on site during focused surveys. Western yellow-billed cuckoo may forage in riparian/wetland communities. The Centennial project would result in the loss of approximately 150 acres of riparian/wetland communities and would conserve 312 acres (67%) of the riparian/wetlands communities on site. In consideration of the preservation of riparian/wetlands communities on the Centennial site (312 acres), the preservation and management of modeled habitat under the alternatives (i.e., between 96% and 97% of modeled breeding/foraging habitat would be preserved in open space), and the conservation measures included for the alternatives to reduce potential effects on this species, cumulative effects on western yellow-billed cuckoo would be minor and would not substantially affect the species rangewide.

White-Tailed Kite

White-tailed kite are not known to nest on any of the project sites considered in this cumulative effects analysis, however effects on potential nesting habitat could occur at Frazier Park Estates and Gorman Post Ranch (Kern County 2009d, Harmsworth 2006). In addition, white-tailed kite was either observed foraging or presumed to be foraging on all of the project sites (BonTerra 2008; Harmsworth Associates 2006; Kern County 2002, 2009d). Effects on suitable foraging habitat for white-tailed kite would be avoided on the Gorman Post Ranch project site and potential effects from the Frazier Park Estates project would be mitigated through preconstruction nesting surveys and the establishment of no-disturbance buffers.

Similar to other bird species, white-tailed kite could potentially be directly affected by spinning turbine blades if flying or foraging in the same areas as active wind turbines. While detailed avian protection plans are required for wind projects to avoid such effects, whether full avoidance can be achieved is unknown. The potential for direct effects on individual white-tailed kite to occur would largely depend on the site-specific location of proposed wind turbines and associated habitat.

As noted above, only individual wind turbine devices installed to serve electrical generation needs on site may be constructed in the study area under the proposed action alternatives, and only after review and approval by the Service. As a result, cumulative effects on white-tailed kite from collisions with spinning blades would not be anticipated. In consideration of the preservation and management of approximately 26,583 acres of grasslands and riparian/wetlands communities on the Centennial site, Gorman Post Ranch, Tejon Ranch Commerce Center, and in the study area, the 3,300 acres of open space required as part of any future Grapevine project, the 348-acre nature preserve associated with the Frazier Park Estates development, preservation and management of modeled habitat under the alternatives (i.e., between 77% and 83% of modeled foraging habitat would be preserved in open space), the conservation measures included for the alternatives to reduce potential effects on this species, and because of the low number of kites expected to occur on these sites, cumulative effects on breeding and foraging white-tailed kites would be minor and would not substantially affect the species rangewide.

Yellow Warbler

A single migrant yellow warbler was detected in the oak woodlands outside of Gorman Post Ranch (Harmsworth Associated 2006). However, it was found outside the area of anticipated disturbance, and no project-specific effects on the yellow warbler are anticipated under that project. On the Centennial project site, yellow warbler was observed as a common migrant, but none remained to breed (BonTerra 2008). Moreover, the majority of suitable nesting habitat for the species on Centennial (e.g., dense riparian areas of Oso Creek) would not be affected by the proposed project. Yellow warbler was also observed on the Frazier Park Estates site, and suitable nesting habitat occurs on site; however, the project's 348-acre nature preserve has been designed to protect special-status birds, and no effects on yellow warbler were identified in the project's EIR (Kern County 2009d).

Given the preservation and management of approximately 1,076 acres (90%) of the oak woodlands and 312 acres (67%) of the riparian/wetlands communities on the Centennial project site, the preservation and management of modeled habitat in the study area under the alternatives (i.e., between 96% and 97% of modeled breeding/foraging habitat and between 92% and 98% of modeled secondary foraging habitat would be preserved in open space), and the conservation measures included for the alternatives to reduce potential effects on this species, cumulative effects on yellow warbler would be minor and would not substantially affect the species rangewide.

Valley Elderberry Longhorn Beetle

No effects on valley elderberry longhorn beetle have been identified for the other cumulative projects considered in this analysis. As such, cumulative effects are not anticipated. In general, preservation and management of modeled habitat in the study area under the alternatives (i.e., between 96% and 99% of modeled habitat preserved in open space), would minimize the potential for a substantial reduction or restriction in the species use of the cumulative effects analysis area.

Ringtail

No effects on ringtail have been identified for the other cumulative projects considered in this analysis. As such, cumulative effects are not anticipated. In general, preservation and management of modeled habitat in the study area under the alternatives (i.e., between 89% and 96% of modeled habitat preserved in open space), would minimize the potential for a substantial reduction or restriction in the species use of the cumulative effects analysis area.

Tehachapi Pocket Mouse

One individual Tehachapi pocket mouse was trapped on the Centennial project site, and suitable habitat is present in the western part of the site, in proposed open space (BonTerra 2008). Suitable habitat also exists on the Frazier Park Estates project site, although the project's 348-acre nature preserve has been designed to protect special-status mammals and their habitat, and no effects on Tehachapi pocket mouse were identified in the project's EIR (Kern County 2009d). Tehachapi pocket mouse was not observed on the Tejon Ranch Commerce Center project site (Kern County 2002), and the site is outside the range of the species.

Given the preservation and management of 5,192 acres of grasslands on the Centennial project and the preservation of suitable habitat on the Frazier Park Estates project site, the preservation and management of modeled habitat in the study area under the alternatives (i.e., between 97% and 100% of modeled habitat would be preserved in open space), and the conservation measures included for the alternatives to reduce potential effects on this species, including the requirement for preconstruction surveys and avoidance measures, it is anticipated cumulative effects on the Tehachapi pocket mouse would be moderate, but would not substantially affect the species rangewide.

Coast Horned Lizard

Coast horned lizards were observed on Gorman Post Ranch, the Centennial project site, and Frazier Park Estates (BonTerra 2008, Harmsworth Associates 2006, Kern County 2009d). Pre-construction surveys and minimization measures to avoid direct effects on coast horned lizard would be implemented under the Centennial project (BonTerra 2008), as well as under each of the alternatives. As part of the Frazier Park Estates project, the applicant would create a 348-acre open space preserve for all unaffected onsite habitat suited to horned lizards, including 190 acres of big sagebrush/rabbit brush scrub community (Kern County 2009d). In consideration of the preservation of suitable habitat at Frazier Park Estates (190 acres), Gorman Post Ranch (2,000 acres), and the Centennial project site (8,667 acres of natural lands), the preservation and management of modeled habitat in the study area under the alternatives (i.e., between 88% and 95% of modeled primary habitat and between 82% and 88% of modeled secondary habitat would be preserved in open space), and the conservation measures included for the alternatives to reduce potential effects on this species, including a requirement for preconstruction surveys, cumulative effects on coast horned lizard would be minor, and would not substantially affect the species rangewide.

Two-Striped Garter Snake

No effects on two-striped garter snake have been identified for the other cumulative projects considered in this analysis. As such, cumulative effects are not anticipated. In general, preservation and management of modeled habitat in the study area under the alternatives (i.e., between 62% and

70% of modeled habitat preserved in open space), would minimize the potential for a substantial reduction or restriction in the species use of the cumulative effects analysis area.

Fort Tejon Woolly Sunflower

No effects on Fort Tejon woolly sunflower have been identified for the other cumulative projects considered in this analysis. As such, cumulative effects are not anticipated. In general, preservation and management of suitable habitat in the study area under the alternatives (i.e., between 89% and 96% of modeled habitat preserved in open space), would minimize the potential for a substantial reduction or restriction in the species occurrence in the cumulative effects analysis area.

Kusche's Sandwort

No effects on Kusche's sandwort have been identified for the other cumulative projects considered in this analysis. As such, cumulative effects are not anticipated. In general, preservation and management of modeled habitat in the study area under the alternatives (i.e., between 90% and 99% of modeled habitat preserved in open space), would minimize the potential for a substantial reduction or restriction in the species occurrence in the cumulative effects analysis area.

Round-Leaved Filaree

Thirty-seven occurrences (27.8 acres) of round-leaved filaree would be affected by the Centennial project (BonTerra 2008). No effects on round-leaved filaree have been identified for the other cumulative projects in the cumulative effects analysis area (Harmsworth 2006, Kern County 2002, 2009d). For the Centennial project, a restoration plan that includes seed salvage and translocation prior to construction would be prepared for this species. Due to the preservation and management of 5,192 acres of grasslands on the Centennial project site, and the preservation and management of modeled habitat in the study area under the alternatives (i.e., between 89% and 99% of modeled habitat preserved in open space), as well as the conservation measures required by both the Centennial project and the proposed action alternative, cumulative effects on round-leaved filaree would be minor, and would not substantially affect the species.

Striped Adobe Lily

No effects on striped adobe lily have been identified for the other cumulative projects considered in this analysis. As such, cumulative effects are not anticipated. In general, preservation and management of suitable habitat in the study area under the alternatives (i.e., between 89% and 98% of modeled habitat preserved in open space), would minimize the potential for a substantial reduction or restriction in the species occurrence in the cumulative effects analysis area.

Tehachapi Buckwheat

No effects on Tehachapi buckwheat have been identified for the other cumulative projects considered in this analysis. As such, cumulative effects are not anticipated. In general, preservation and management of modeled habitat in the study area under the alternatives (i.e., between 97% and 100% of modeled habitat preserved in open space) would minimize the potential for a substantial reduction or restriction in the species occurrence in the cumulative effects analysis area.

Tejon Poppy

No effects on Tejon poppy have been identified for the other cumulative projects considered in this section. As such, cumulative effects are not anticipated. In general, preservation and management of modeled habitat in the study area under the alternatives (i.e., between 97% and 99% of modeled habitat preserved in open space) would minimize the potential for a substantial reduction or restriction in the species occurrence in the cumulative effects analysis area.

Summary

As noted in the discussion above, several of the other Covered Species and/or their habitats occur in the study area and the other project sites considered in this analysis. Taken together, these projects would affect relatively small numbers of the other Covered Species or their habitats and, in turn, would generally provide for habitat preservation and management of large areas of suitable habitat for these species. Given the relatively minor effects and the benefits of avoidance and mitigation, substantial cumulative effects on other Covered Species are not expected to occur. In addition, it is anticipated that all other reasonably foreseeable development would be subject to further review and evaluation in compliance with other Federal, state, and local regulations, including the ESA, BGEPA, MBTA, CESA, relevant California Fish and Game Code provisions, the Kern County General Plan, and CEQA. Thus, it is anticipated that additional mitigation would be imposed on these projects as a result of local entitlement and approval processes. Moreover, substantial protected open space supporting the other Covered Species surrounds the study area, include the Bureau of Land Management lands to the north, the Los Padres National Forest and Wind Wolves Preserve to the west and Angeles National Forest to the south. Thus, in general, the alternatives, considered in combination with other reasonably foreseeable projects, are not expected to result in cumulative effects on other Covered species.

Under the No Action Alternative, no development would occur and there would be no contribution to cumulative effects on other Covered Species from development. Similarly, Existing Ranch Uses would have minimal effects on other Covered Species, and would not contribute to a cumulative effect.

The cumulative effects on other Covered Species under the Condor Only HCP Alternative would be similar to those for the Proposed TU MSHCP Alternative; however, there would be less protection for other Covered Species than under the Proposed TU MSHCP Alternative because the Condor Only HCP Alternative would focus only on the condor. As a result, cumulative effects on some other Covered Species could be greater than the Proposed TU MSHCP Alternative and the No Action Alternative.

Cumulative effects on other Covered Species under the CCH Avoidance MSHCP Alternative would also be similar to the Proposed TU MSHCP Alternative, although somewhat reduced given the smaller area of ground disturbance associated with development. As such, cumulative effects on other Covered Species could be greater than the Proposed TU MSHCP Alternative, and would be greater than the No Action Alternative.

Because project-specific effects on Covered Species would be greater under the Kern County General Plan Buildout Alternative compared to the other action alternatives, largely associated with more ground disturbance, the cumulative contribution to effects on Covered Species would generally be greater. Similarly, the cumulative effects of the Kern County General Plan Buildout Alternative would be greater than the No Action Alternative.

4.1.7.3 Wildlife Movement

As described in Section 3.1.5, Wildlife Habitat Linkages and Corridors, the study area is located in the Tehachapi Uplands, which are at the confluence of four ecoregions, including Great Central Valley, Mojave Desert, Sierra Nevada, and south Coast Ranges (Hickman 1996) and, as such, provide connectivity linkages for montane and desert species as well as species associated with foothills and grasslands. Closely related to habitat linkages is the concept of movement corridors and crossings. Most of the study area currently provides a relatively unrestricted landscape for the movement of wildlife (including flyover habitat for California condors) and dispersal of plants; however, I-5, various highway fences, and other significant linear infrastructure, such as the California Aqueduct, bisect the Tehachapi Mountains for terrestrial wildlife species to the west of the study area.

As noted at the beginning of the cumulative effects section, growth in the mountain communities is anticipated to occur in the Tehachapi Uplands region, including Frazier Park Estates and Gorman Post Ranch. In combination with the open space to be conserved in the study area under the alternatives and/or as part of the Ranchwide Agreement(which could result in conservation of approximately 240,000 acres of open space under the Proposed TU MSHCP Alternative) the known projects in these areas would be anticipated to maintain wildlife corridors. Frazier Park Estates would include large blocks of contiguous open space (about 350 acres) adjacent to other conserved open space, including the Los Padres National Forest on the western edge of the Frazier Park Estates project (Kern County 2009d). Preliminary plans for the Gorman Ranch project 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 Associates 2006).

Additionally, with respect to the valley and foothill development, while the Centennial project is not located in the Tehachapi Uplands, it would include preservation of approximately 8,667 acres of natural lands strategically located between the developed portions of site 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). Similarly, Grapevine would be primarily located in the San Joaquin Valley, but would include preservation of approximately 3,300 acres of land strategically located between the developed portions of Grapevine and open space adjacent to the TMV Planning Area. This would include 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. That 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).

Implementation of the Proposed TU MSHCP Alternative, 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 Ranch Commerce Center) would result in a combined total of approximately 137,093 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 study area. 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 northeast. In addition, the Proposed TU MSHCP Alternative would include preservation of the approximately

37,000 acre Condor Study Area, which encapsulates the core of current and historic condor activity on the ranch and the northernmost ridges in the TMV Project, which also have been determined to be historically and currently heavily used by condors. These areas, when considered in combination, would conserve important flyover habitat that connects historic and current condor habitat further to the east in Tejon Ranch and to the northeast of Tejon Ranch (ultimately including historic habitat in the southern Sierra Nevada) with condor habitat associated with the Wind Wolves Preserve and open space lands to the west of Tejon Ranch.

In addition, it is anticipated that all other reasonably foreseeable development would be subject to review evaluation in compliance with other Federal, state and local regulatory processes, including the ESA, BGEPA, MBTA, CESA, relevant California Fish and Game Code provisions, the Kern County General Plan, and any CEQA mitigation imposed on these projects as a result of local entitlement and approval processes. Thus, the Proposed TU MSHCP Alternative, in combination with other reasonably foreseeable projects, is not expected to result in a substantial cumulative effect on wildlife movement.

Under the No Action Alternative, no development would occur and there would be no contribution to cumulative effects on wildlife movement from development. Similarly, Existing Ranch Uses would have a minimal effect on wildlife movement and would not contribute substantially towards cumulative effects.

Cumulative effects on wildlife movement under the Condor Only HCP Alternative would be the same as for the Proposed TU MSHCP Alternative and would be greater than those of the No Action Alternative.

Under the CCH Avoidance MSHCP Alternative, the urban-type development in the western portion of the study area around I-5 would be similar to the Proposed TU MSHCP Alternative but would have higher densities. This development would generally be a constraint to local wildlife movement. Although the habitat linkage along the northern boundary of the study area would be unconstrained under this alternative, wildlife movement and dispersal through habitat located between Castac Lake and the northern boundary of the development area may be more constrained under the CCH Avoidance MSHCP Alternative compared to the Proposed TU MSHCP and Condor Only HCP Alternatives due to higher density development. Although not likely to be substantial, the cumulative effects of the CCH Avoidance MSHCP Alternative would be greater than the No Action Alternative.

Cumulative effects on wildlife movement likely would be greater under the Kern County General Plan Buildout Alternative compared to the other action alternatives, largely due to more ground disturbance and a more dispersed pattern of development resulting in more habitat fragmentation. Therefore, the cumulative contribution of effects on wildlife movement from the Kern County General Plan Buildout Alternative would be greater than the other action alternatives, as well as the No Action Alternative.

4.1.8 Comparison of Alternatives

Effects on biological resources would vary among the alternatives primarily as a result of the varying acreages of ground disturbance associated with the Development Envelope/Disturbance Area for each alternative (Table 4.1-12), the species management regime (e.g., single-species

conservation plan or multiple-species conservation plan), and/or the project-by-project focus of management efforts.

Table 4.1-12. Proposed Development and Open Space under Each Alternative

	No Action Alternative	Proposed TU MSHCP/Condor Only HCP Alternatives	CCH Avoidance MSHCP Alternative	Kern County General Plan Buildout Alternative
Assumed Disturbance Area (acres)	0	5,533	4,496	12,142
Assumed Development Envelope (acres)	0	8,817	4,496	14,934
Cut-and-fill (cubic yards)	0	75 million	< 90 million	222 million
Population	0	11,441	9,957	22,800
Permanently preserved open space (acres)[1]	106,317[2]	126,034	130,339	117,774[3]

[1] Differences in the acreage of open space presented in this table, when compared to Table 2-6 in Chapter 2, Proposed TU MSHCP and Alternatives, are due to the greater Development Envelope area considered to assess biological effects. Please refer to Table 4.1-1.

[2] While conservation easements will be recorded over only 106,317 acres, existing uses will continue over the remaining Covered Lands (with no commercial or residential development).

[3] The Kern County General Plan Buildout Alternative includes both permanently preserved open space and Restricted Open Space.

Under the No Action Alternative, while no development is assumed to occur, there would be less open space permanently conserved than under the Proposed TU MSHCP Alternative, Condor Only HCP Alternative, and CCH Avoidance MSHCP Alternative (because the permanent protections in the TMV Planning Area would not be triggered), but more than would be permanently conserved under the Kern County General Plan Buildout Alternative. Additionally, because no development would occur under this alternative, the Tejon Ranch Conservancy may not receive full funding to implement permanent protection and management of the open space areas in perpetuity. Further, under the No Action Alternative, no GPS tracking, provision of trap and release sites or other recovery tasks would be funded under the TU MSHCP. Additionally, no monitoring, reporting or adaptive management actions would occur. Nevertheless, it is assumed that the No Action Alternative would result in no new commercial or residential development and Existing Ranch Uses would continue to occur as they do under existing conditions. Therefore, there would be only minor effects on biological resources as compared to existing conditions, and the No Action Alternative would have the least adverse effect on biological resources of any of the alternatives. The No Action Alternative would not substantially degrade unique or sensitive habitats; exceed a standard or criteria provided under another Federal, state or local statute; or substantially affect a Covered Species, special-status species, and/or their habitat, including critical habitat, either within the study area or within their range.

The remaining proposed action alternatives would all include Commercial and Residential Development Activities and Existing Ranch Uses / Plan-Wide Activities that could result in potential effects on biological resources, including California condors (i.e., loss of foraging habitat, habituation to human structures and activities, risk of collisions with power lines, communication towers, and other artificial structures, and ingestion of microtrash) and vegetation communities and special-

status species, including the other Covered Species (i.e., through direct effects (e.g., permanent ground disturbance, trampling by cattle, mortality from construction-equipment) and indirect effects (e.g., water quality degradation, noise, increased human presence, introduction of nonnative species), including constraints to wildlife movement). It is anticipated that the conservation measures incorporated in the habitat conservation plans anticipated under the Proposed TU MSHCP Alternative, Condor Only HCP Alternative, and CCH Avoidance MSHCP Alternative would reduce these effects. Additionally, food sources for the California condor are expected to be available throughout the range sufficient to support a recovering population, and avoidance and minimization measures to reduce the potential for habituation, disturbance, and exposure to microtrash would be included in the conservation plan.

Potential effects on vegetation communities and all Covered Species and other special-status species would be less under the CCH Avoidance MSHCP Alternative in comparison to the Proposed TU MSHCP and Condor Only HCP Alternatives because less acreage would be developed; however, effects would be greater with respect to wildlife connectivity under this alternative given the more intense development pattern allowing for less landscape permeability, especially around Castac Lake. Effects would be slightly higher for some of other Covered Species and other special-status species under the Condor Only HCP Alternative due to the absence of specific goals and objectives and monitoring and adaptive management for those species under the Condor Only HCP Alternative.

With respect to the Kern County General Plan Buildout Alternative, although food sources for California condors are expected to be available throughout their range sufficient to support a recovering population, and effects to the California condor and other Covered Species would likely be minimized through conditions imposed by Kern County as part of the project-by-project review and approval process, the more limited extent of open space anticipated under that alternative, along with potential habitat fragmentation and degradation effects associated with development activities and rural residential uses extending across the majority of the study area, would result in greater effects on biological resources than would occur under any of the other alternatives.

Overall, none of the action alternatives would result in the substantial degradation of unique or sensitive habitats; exceed a standard or criteria provided under another Federal, state or local statute; or substantially affect a Covered Species, special-status species, and/or their habitat, including critical habitat, either within the study area or within their range.

4.2 Water Resources

4.2.1 Overview

This section describes the regulatory setting applicable to water resources and the potential effects of the alternatives on water resources in the study area, including water quality, surface water drainage patterns, groundwater recharge, and wetlands. As described in Section 3.2, Water Resources, the study area includes all surface waters and wetlands within the Covered Lands, their associated watersheds, and the groundwater basins that underlie the Covered Lands. As described in Section 4.2.7, Cumulative Effects, the cumulative effects analysis area for water resources is concurrent with the study area.

4.2.1.1 Regulatory Setting

Activities proposed in the study area under all the alternatives would be required to conform to Federal, state, and local laws and regulations that protect water resources, as described below.

Federal Clean Water Act

The Federal Clean Water Act (CWA) was enacted to protect the nation's waters. It identifies water quality standards, criteria, and guidelines for protecting water quality, and requires a Federal permit for discharges to waters of the United States. Specifically, Section 404 of the CWA authorizes the Secretary of the Army, acting through the U.S. Army Corps of Engineers (USACE), to issue permits regulating the discharge of dredged or fill materials into the "navigable waters at specified disposal sites." Waters of the United States are broadly defined in the Code of Federal Regulations (CFR), Title 33, Section 328.3, subdivision (a) to include navigable waters, perennial and intermittent streams, lakes, rivers, and ponds, as well as wetlands, marshes, and wet meadows. Section 404 also extends additional protection to certain rare and/or sensitive aquatic habitats, including wetlands, which occur in the study area. Authorization to discharge dredge or fill materials into wetlands, or other waters of the United States, would require the applicant to demonstrate that the project has been designed to avoid, minimize and mitigate for all unavoidable effects on water of the United States, and comply with the Federal *no net loss of wetlands* policy (Compensatory Mitigation for Losses of Aquatic Resources, 73 *Federal Register* [FR] 19594 [April 10, 2008]; Executive Order 11990 [1977]). Of note, wetlands that are jurisdictional for CWA purposes may differ from habitat areas that include wetland values; for purposes of this Supplemental Draft EIS, the term wetland is used to describe wetland habitat areas and not only CWA jurisdictional wetlands.

Section 401 of the CWA requires an applicant requesting a Federal permit (including a Section 404 permit) for an activity that may result in any discharge into navigable waters to provide state certification that the proposed activity will not violate state and Federal water quality standards.

Finally, the CWA also establishes the National Pollutant Discharge Elimination System (NPDES), which is implemented by the state and regulates discharges of pollutants into waters of the United States. All proposed construction activities in the study area would be subject to the California NPDES General Construction Permit, which, among other things, requires the use of measures to replicate the preproject water balance so that surface flow runoff does not increase. Certain other activities could be subject to other general permits issued under the NPDES program, including any municipal separate storm sewer system (MS4) requirements. At present, no portion of the study area is subject to an adopted or proposed MS4 permit.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne) establishes nine regional water quality control boards (RWQCBs) under the auspices of the State Water Quality Control Board (SWRCB), each of which administers state and Federal water quality programs for discrete areas in California. As discussed in Section 3.2, Water Resources, most of the study area is subject to the jurisdiction of the Central Valley RWQCB and regulated under the Tulare Lake Basin Plan. The southeastern-draining portions of the study area are within the jurisdiction of the Lahontan RWQCB and are regulated under the Lahontan Basin Plan. In accordance with Porter-Cologne, the SWRCB implements the NPDES program through its RWQCBs and has jurisdiction to regulate discharges to wetlands or other waters of the state, including implementation of the state's *no net loss of wetlands* policy (Executive Order W-59-93). The RWQCB also issues Waste Discharge Requirements (WDRs) and the California General NPDES Construction Permit, through which they protect the beneficial uses of the state's waters as identified in the applicable basin plan.

California Department of Health Services

The California Department of Health Services (DHS) is responsible for enforcing Federal and state laws that protect drinking water quality. DHS also administers Title 22 of the California Code of Regulations (CCR), which regulates the treatment and discharge of wastewater.

Kern County Laws, Policies, Ordinances, Regulations, and Standards

Kern County has established several policies and requirements related to water quality. These development policies and implementation measures related to the protection of water quality are found in the Land Use, Open Space, Conservation Element and Safety Element of the Kern County General Plan (Kern County 2009a). Kern County also has construction and grading codes and standards to protect against water quality impacts (Kern County Grading Guidelines; Kern County Code of Building Regulations Chapter 17.28).

4.2.1.2 Methods

The analysis of direct, indirect, and cumulative effects on water resources is considered in terms of whether each alternative would exceed Federal or state water quality standards, result in hydromodification that would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels, or result in fill of wetlands that would fail to meet the Federal and state *no net loss of wetlands* policies. In general, potential effects on surface flow and groundwater recharge were assumed to be associated with ground-disturbing activities. Potential effects on wetlands were assumed to be associated with activities resulting in disturbance or fill of wetland areas, or activities that could result in erosion or runoff into these areas. Finally, water quality effects were assessed by analyzing the likely sources of contaminants in water flows, whether from construction, development-related uses, or Existing Ranch Uses or Plan-Wide Activities, as applicable.

4.2.2 No Action Alternative

4.2.2.1 Surface Water Flow and Groundwater Recharge

Commercial and Residential Development Activities

No Commercial or Residential Development Activities would occur under the No Action Alternative, and there would be no direct or indirect effects on surface water flow or groundwater recharge from such activities.

Existing Ranch Uses

As discussed in Section 3.2.1.2, Surface Water, surface waters in the study area are primarily ephemeral streams that flow for short periods of time following significant storm events. Most are dry the majority of the time. When surface flows occur, water can percolate through the pervious stream channel bottoms and recharge groundwater basins that underlie the watercourse. Potential effects on drainage and flow patterns can occur from modifying the extent of impervious surfaces, increasing the amount of precipitation that flows from the landscape, or reducing the rate of subsurface recharge or otherwise affecting groundwater levels.

Under the No Action Alternative, Existing Ranch Uses would continue to occur in similar areas and at similar levels as they do currently. Existing Ranch Uses that may affect surface water flows and groundwater recharge would be the ongoing use of stock ponds and irrigation for farming. Best management practices (BMPs) and use restrictions to protect and preserve existing conservation values, including water resources, would be implemented pursuant to the requirements of the Ranchwide Agreement, as currently set forth in the Interim Ranch-Wide Management Plan (Interim RWMP) (Tejon Ranch Company 2009). For example, the Interim RWMP currently includes water resource management BMPs that require water systems for livestock and farming be adequately maintained and used efficiently, and that drip irrigation and other water efficiency measures (e.g., miniature jet fan sprinklers) be employed to reduce water use in farmed areas. Furthermore, water diversion activities are limited by the Ranchwide Agreement, so there would be no significant expansion of groundwater extraction practices and no major alterations or improvements of the ranch surface for water storage, including water storage in underground aquifers. All future RWMPs would be required to similarly reflect BMPs that protect the conservation values of the land, and would be reflected in the conservation easements required by the Ranchwide Agreement.

Permanent ground disturbance associated with construction or maintenance of new infrastructure (ancillary ranch structures, back-country cabins) could also affect surface flow or groundwater recharge. These effects are expected to be minor, however, and would comply with state and local grading requirements (e.g., effects on jurisdictional surface waters would require a permit from USACE and/or the RWQCB, which require hydromodification limits and BMPs for adverse effects on surface water flows).

Other Existing Ranch Uses, such as road and utility repair and maintenance, ancillary ranch activities, film production, and private recreation, are expected to continue to occur mostly in existing disturbed areas, roads, or trails, and would not affect surface water flows or groundwater recharge. Similarly, grazing would not be expected to affect surface water flows or groundwater recharge, particularly given the BMPs and use restrictions required pursuant to the Ranchwide Agreement, , which would reduce potential grazing effects on riparian and stream areas (e.g., distribution of water sources across the study area to reduce demand for water from stream and riparian areas, and widespread distribution of salt and mineral supply blocks to draw livestock away from natural water sources and distribute them more evenly across the landscape).

The continuation of Existing Ranch Uses under the No Action Alternative would result in minor effects on surface water flows and groundwater recharge, all of which would be reduced through the implementation of BMPs and use restrictions required pursuant to the Ranchwide Agreement. Existing Ranch Uses under the No Action Alternative would not result in hydromodification that would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels.

4.2.2.2 Wetlands

Commercial and Residential Development Activities

No Commercial or Residential Development Activities would occur under the No Action Alternative, and there would be no direct or indirect effects on wetlands from such activities.

Existing Ranch Uses

As described above, Existing Ranch Uses would continue to occur in similar areas and at similar levels under the No Action Alternative. Wetlands could be affected by Existing Ranch Uses that result in ground disturbance (roads, utilities, back-country cabins) if construction or maintenance activities were to occur in or around wetland areas, or if construction runoff, sediment, or debris were to enter wetland areas. Grazing could generate nutrients, bacteria, and/or pathogens, which could be introduced to wetlands areas by surface water runoff. Grazing could also damage soil surfaces near wetlands, which could result in increased erosion and siltation of wetlands areas. Other ongoing activities, such as film production and private recreation, would occur mostly in existing disturbed areas, roads, and trails, outside of wetland areas.

Construction or maintenance activities that could result in temporary or permanent fill of wetland areas would be subject to Federal and state permitting requirements, including the requirement to meet the *no net loss of wetlands* policies. State or local grading permits, if needed, also require implementation of soil erosion and water quality protection measures that protect wetlands. Similarly, BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would continue to be implemented and would include provisions to minimize the effects of grazing on the landscape in general and sensitive communities in particular, such as the required rotation of livestock across Tejon Ranch using fences, distribution of salt and mineral supplements away from water sources, additional distribution of a variety of water sources across the land, and seasonal rotation of the livestock to lower elevations during winter and higher elevations during summer (Tejon Ranch Company 2009). These BMPs would minimize effects on wetlands from grazing.

The continuation of Existing Ranch Uses under the No Action Alternative could result in minor effects on wetlands; however, these effects would be reduced through the BMPs and use restrictions required by the Ranchwide Agreement and through the no net loss requirements and water quality protection requirements prescribed as part of the Federal, state, or local permitting processes. All proposed fill would be required to meet the *no net loss of wetlands* policy.

4.2.2.3 Water Quality

Commercial and Residential Development Activities

No Commercial or Residential Development Activities would occur under the No Action Alternative, and there would be no direct or indirect effects on water quality.

Existing Ranch Uses

Existing Ranch Uses would continue to occur under the No Action Alternative. Grazing would continue in the study area, and could contribute nutrients, bacteria, and/or pathogens to surface waters, or through the soil to the underlying groundwater basin. Grazing activities may also increase siltation in waters in the study area if animals trample or damage vegetation and soil surfaces near surface waters. Other ongoing activities that could involve construction, such as road and utility repair and maintenance and ancillary ranch activities, could contribute contaminated runoff during storm events. Private recreation and film production are expected to occur mostly in existing disturbed areas, ranch roads, and trails and are not likely to have an effect on water quality.

As described above, BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP), such as the selective use of fencing, distribution of salt and mineral supplements and water sources across the study area and away from stream and riparian corridors, and the seasonal rotation of livestock, would reduce potential water quality effects from grazing by limiting direct livestock interactions with natural water sources. Similarly, construction-related BMPs prescribed by Federal, state and local jurisdictions would limit adverse water quality effects resulting from construction or maintenance uses. As noted above, these BMPs could include requirements that soil erosion and water quality protection measures be implemented to protect water quality.

Existing Ranch Uses under the No Action Alternative would not exceed Federal or state water quality standards, and effects would be minor.

4.2.3 Proposed TU MSHCP Alternative

4.2.3.1 Surface Water Flow and Groundwater Recharge

Commercial and Residential Development Activities

Potential effects on drainage and flow patterns from Commercial and Residential Development Activities associated with the Proposed TU MSHCP Alternative could occur as a result of permanent ground disturbance of up to 5,533 acres. Specifically, development facilitated by the proposed action could contribute to surface water flow or groundwater effects by modifying the extent of impervious surfaces in the study area and increasing the amount of precipitation that flows from the landscape, or by reducing the rate of subsurface recharge or otherwise affecting groundwater levels. It is anticipated that the local approval process would include provisions to preserve natural open space and reduce impervious surfaces in developed areas. In addition the California NPDES General Construction Permit issued by the State Board requires, among other things, measures to replicate the preproject water balance so that the surface flow runoff does not increase. For example, Kern County's approval of the TMV Project required that reduced road widths and permeable paving surfaces be incorporated into the project design where feasible (Kern County 2009b, Mitigation Measure 4.8-34), and that the amount of directly connected impervious surfaces be reduced by using vegetated and open area buffers, including roadside swales and vegetation strips, to the extent feasible (Kern County 2009b) (Appendix J, Mitigation Measure 4.8-33).

Most of the residential development considered under the Proposed TU MSHCP Alternative would occur in the TMV Planning Area. Development in the TMV Planning Area would result in the provision of project-wide water supply services and implementation of restrictions regarding residential use of surface and groundwater. Specifically, the TMV Project Approvals, which establish Tejon Castac Water District (TCWD) for residential and commercial water supply, prohibit use of groundwater and establish a water budget for all residential uses (Appendix J, Mitigation Measures 4.16-1 through 4.16-5) (Kern County 2009b). Similarly, although specific development has not been

proposed in other portions of the study area (e.g., Lebec / Existing Headquarters Area), it is anticipated that provisions to protect surface water flow and groundwater recharge would be required for other developments. In all cases, groundwater is not expected to be the sole source of water supply for any development, and all development would be subject to review and approval by other Federal and state agencies and the local jurisdiction.

Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would have a moderate effect on surface water flows in developed areas due to increases in impervious surfaces. These effects would be reduced by minimization measures prescribed during the local permitting process (Section 4.2.3.4, Mitigation Measures), and would be further reduced by the conservation measures in the TU MSCHP, which include, for example, incorporating design features to avoid and minimize urban runoff. As such, Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would not result in hydromodification that would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels in the study area.

Plan-Wide Activities

The extent and nature of Plan-Wide Activities under the Proposed TU MSHCP Alternative would be similar to Existing Ranch Uses under the No Action Alternative, except permanent ground disturbance from these activities would be limited to 200 acres. Plan-Wide Activities would not substantially alter any drainage patterns or increase runoff, flooding, or groundwater recharge in the study area. Some Plan-Wide Activities, including the use of stock ponds and irrigation for farming, have the potential to affect surface water flow or groundwater recharge. However, similar to the No Action Alternative, BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would continue to require that water systems for livestock and farming be adequately maintained and used efficiently, reducing potential effects on surface water flows and groundwater recharge. In addition, these activities would be subject to the Ranchwide Agreement use restrictions, which limit water diversion activities beyond those in place at the time the Ranchwide Agreement was signed (June 17, 2008), and prohibits major alterations or improvements of the ranch surface for water storage, including water storage in underground aquifers.

As described for the No Action Alternative, permanent ground disturbance associated with construction or maintenance of infrastructure, ancillary ranch structures, or back-country cabins could also affect surface flow or groundwater recharge, but are expected to be minor and comply with state and local grading requirements. Plan-Wide Activities would occur mostly in existing disturbed areas, roads, or trails, and would not affect surface water flows or groundwater recharge. Similarly, grazing would not be expected to affect surface water flows or groundwater recharge, particularly given the Ranchwide Agreement BMPs and use restrictions intended to reduce grazing impacts in riparian and stream areas. As such, the effects of Plan-Wide Activities under the Proposed TU MSHCP are expected to be minor, and would be comparable to those described for the No Action Alternative, with the exception that they would be limited to a 200-acre disturbance area so may be somewhat reduced. These activities would not result in hydromodification that would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels.

4.2.3.2 Wetlands

Commercial and Residential Development Activities

The Proposed TU MSHCP Alternative would permanently disturb up to 5,533 acres of land in the study area, and require cut-and-fill of approximately 75 million cubic yards of material. Construction-related activities associated with development could result in the direct fill of

wetlands, or indirectly affect their existing function by introducing runoff, sediment, and/or construction debris into sensitive areas.

As noted previously, all development under the Proposed TU MSHCP Alternative would be subject to project-specific approvals from Federal and state agencies and local jurisdictions. Permanent or temporary fill of wetlands would require approval from USACE and RWQCB, both of which mandate *no net loss of wetlands*. While this Supplemental Draft EIS conservatively assumes disturbance of up to 25% of the wetlands in the study area (Section 4.1, Biological Resources), actual development effects on this habitat type would likely be much less. For example, the proposed TMV Project, as approved by Kern County (Kern County 2009b), would fully avoid all Federal jurisdictional wetlands and permanently affect up to 1.18 acres of state-jurisdictional wetlands after mitigation, or 1% of wetlands in the TMV Planning Area (Central Valley Regional Water Quality Control Board 2011). In addition, the Proposed TU MSHCP Alternative would conserve 129,318 acres of land in the study area, some of which is presumed to support existing wetland areas, which, in turn, would be preserved in perpetuity. Conservation measures in the TU MSHCP would further reduce effects on wetlands by requiring construction in wetland and riparian habitat for the Covered Species to be avoided to the maximum extent practicable (generally anticipated to be under 3 to 5% of modeled habitat).In consideration of the proposed open space areas under the Proposed TU MSHCP Alternative, and with implementation of the TU MSHCP conservation measures and the mitigation measures discussed in Section 4.2.3.4, Mitigation Measures, it is anticipated that potential effects on wetlands from proposed Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would be minor, and would not result in a net loss of wetland habitat.

Plan-Wide Activities

Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities under the Proposed TU MSHCP Alternative would have a limited potential to adversely affect wetland areas. Ground-disturbing activities (e.g., construction or maintenance of roads, ancillary structures, or back-country cabins) in or around wetland areas could introduce runoff, sediment, or debris into sensitive habitat types. Grazing would have the potential to contribute nutrients, bacteria, and/or pathogens to wetlands by surface water runoff, and could damage vegetation or increase erosion if cattle graze in wetlands areas. Other Plan-Wide Activities would occur mostly in existing disturbed areas, roads, and trails, outside of wetland areas.

Construction or maintenance activities with the potential to result in temporary or permanent fill of wetland areas would be subject to Federal and state permitting requirements, including *no net loss of wetlands* policies. In addition, construction-related BMPs prescribed by the local jurisdiction as part of the construction, grading, or building permit review processes, would likely be required to minimize potential water quality effects as a result of ground-disturbing activities (Appendix J). Ranchwide Agreement BMPs and use restrictions (as currently set forth in the Interim RWMP) would continue to be implemented and would include provisions to minimize the effects of grazing on sensitive communities, including riparian and stream areas.

Although Plan-Wide Activities under the Proposed TU MSHCP Alternative could result in minor effects on wetlands, these effects would be reduced through implementation of Ranchwide Agreement BMPs and use restrictions, conservation measures in the TU MSHCP that limit construction in wetlands and riparian areas, as well as requirements of the Federal, state, or local permitting processes (Section 4.2.3.4, Mitigation Measures)and would not result in a net loss of wetland habitat. These effects would be comparable to those associated with Existing Ranch Uses under the No Action Alternative, although they may be slightly less given the acreage limitation for ground disturbance (200 acres) provided under the Proposed TU MSHCP Alternative.

4.2.3.3 Water Quality

Commercial and Residential Development Activities

The total development disturbance acreage associated with Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would be approximately 5,533 acres and would be concentrated in two areas: the TMV Planning Area and the Lebec/Existing Headquarters Area. The population would increase by 11,441 persons. Construction-related water quality effects would be associated with erosion, increased turbidity in receiving waters, and introduction of debris and/or pollutants into surface waters, such as paint, chemicals, liquid products, petroleum products, or concrete. Operation of the developed areas and increased population could also result in the potential introduction of pollutants, such as sediment, oil, and grease from road runoff, household and commercial chemicals, and trash, to surface or groundwater.

Construction of the developed infrastructure would be subject to Federal, state, and local laws to protect water quality. Specifically, an NPDES permit from the RWQCB would be required prior to construction to protect the beneficial uses of the receiving waters through mandated protective construction practices. Construction-related BMPs prescribed by the local jurisdiction as part of the grading or building permit review processes would be required to minimize potential water quality effects. Representative construction BMPs to protect water quality could include use of soil stabilizers such as straw mulch or erosion control blankets to reduce the potential for erosion; use of designated onsite vehicle or equipment storage, repair and maintenance areas, located away from drainages, to minimize potential discharges of oil or hazardous materials into waters; and wet weather control measures that would be applied prior to an anticipated storm event to limit the exposure of disturbed soil areas to heavy rainfall (Appendix J). In addition, the conservation measures in the TU MSHCP would require design features at the development and habitat interface to minimize urban runoff into habitat areas, which would reduce associated water quality effects.

Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative could result in moderate construction and operation water quality effects, greater than those associated with the No Action Alternative (where no development is proposed). However, implementation of the mitigation discussed in Section 4.2.3.4, Mitigation Measures, and the conservation measures associated with the TU MSHCP, would reduce these effects and ensure that this alternative would not exceed Federal or state water quality standards.

Plan-Wide Activities

The effects of the Plan-Wide Activities on water quality under the Proposed TU MSHCP Alternative would be similar to those described for Existing Ranch Uses under the No Action Alternative. Some of these activities, including livestock grazing, farming, and irrigation, have the potential to adversely affect surface or groundwater quality by contributing nutrients, bacteria, and/or pathogens to surface waters or to the underlying groundwater basin, or through vegetation damage and soil compaction near surface waters. In addition, Plan-Wide Activities that involve construction, such as road and utility repair and maintenance, could result in effects on water quality from runoff.

Similar to the No Action Alternative, Ranchwide Agreement BMPs and use restrictions (as currently set forth in the Interim RWMP), such as the selective use of fencing, distribution of salt and mineral supplements and supplemental water sources across the study area and away from stream and riparian corridors, and the seasonal rotation of livestock, would reduce potential water quality effects associated with grazing by limiting direct livestock interactions with natural water sources. Additionally, the terms of the TU MSHCP would require review and approval of the BMPs in the RWMP by the Service, and would limit permanent ground disturbance effects associated with the

Plan-Wide Activities to 200 acres. Construction-related requirements prescribed by Federal, state, and the local jurisdiction, such as those summarized in Appendix J, would reduce adverse water quality effects resulting from construction or maintenance uses.

Water quality effects associated with Plan-Wide Activities would be minor, and could be less than those associated with the No Action Alternative given the above conservation measures and the 200-acre limitation of ground disturbance in open space under this alternative. The mitigation measures discussed in Section 4.2.3.4, Mitigation Measures, would further reduce water quality effects under the Proposed TU MSHCP Alternative and ensure that the Proposed TU MSHCP Alternative would not exceed Federal or state water quality standards, or have a substantial effect on water quality.

4.2.3.4 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP), would reduce the effects of the Proposed TU MSHCP Alternative on water resources. The Proposed TU MSHCP Alternative would also include species-specific conservation measures (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives), such as minimizing ground disturbance activities in riparian and wetland areas and incorporating design features to avoid and minimize urban runoff, which would further reduce potential effects on water resources. If the Service issues an ITP to TRC for incidental take of the 27 species covered under the TU MSCHP, these measures would be enforceable under the Endangered Species Act (ESA) through the incidental take permit (ITP) and applicable conservation easements.

The following mitigation measure would reduce potential effects on water resources that may be associated with the Proposed TU MSHCP Alternative.

- ***Comply with Applicable Federal, State, and Local Water Quality Protection Requirements.*** All development in the study area will comply, at a minimum, with applicable Federal, state, and local water quality protection laws and regulations, including the CWA, Porter-Cologne, basin plans adopted by the Central Valley RWQCB and the Lahontan RWQCB, and the Kern County General Plan. Specifically, all development will identify and implement structural and treatment BMPs, such as detention basins, bioswales, and stormwater filters or other project design features, as required by applicable Federal, state, and local water quality protection laws and regulations. In addition, development will avoid, minimize, and mitigate for effects on wetland areas, as required by applicable Federal, state, or local laws and regulations, and, as required by those laws and regulations, not result in a net loss of wetlands in the study area.

4.2.4 Condor Only HCP Alternative

4.2.4.1 Surface Water Flow and Groundwater Recharge

Commercial and Residential Development Activities

Potential surface water flow and groundwater recharge effects associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential surface water flow and groundwater recharge effects from Plan-Wide Activities under the Condor Only HCP Alternative would be the same as those associated with the Proposed TU MSHCP Alternative.

4.2.4.2 Wetlands

Commercial and Residential Development Activities

Potential effects on wetlands associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential effects on wetlands from Plan-Wide Activities under the Condor Only HCP Alternative would be the same as those associated with the Proposed TU MSHCP Alternative.

4.2.4.3 Water Quality

Commercial and Residential Development Activities

Potential water quality effects associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential water quality effects from Plan-Wide Activities under the Condor Only HCP Alternative would be the same as those associated with the Proposed TU MSHCP Alternative.

4.2.4.4 Mitigation Measures

The mitigation measure listed in Section 4.2.3.4, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the Condor Only HCP Alternative.

4.2.5 CCH Avoidance MSHCP Alternative

4.2.5.1 Surface Water Flow and Groundwater Recharge

Commercial and Residential Development Activities

The total development disturbance acreage associated with Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would be approximately 4,496 acres. Proposed development could contribute to surface water flow or groundwater recharge effects by modifying the extent of impervious surfaces in the study area and increasing the amount of precipitation that flows from the landscape, or by reducing the rate of subsurface recharge or otherwise affecting groundwater levels. It is anticipated that these effects would be reduced during the state and local approval process, which would likely require preservation of natural open space and a reduction of impervious surfaces in residential areas, to the extent possible (Appendix J), and through species-specific conservation measures that would likely, for example, require the incorporation of design features to avoid and minimize urban runoff. Finally, similar to the Proposed TU MSHCP Alternative, development under the CCH Avoidance MSHCP Alternative would rely on TCWD for its water supply, rather than individual groundwater wells, so groundwater supplies would not be depleted.

Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would have a moderate effect on surface water flows in developed areas due to increases in impervious surfaces, which would be greater than under the No Action Alternative, in which no development is proposed. These effects would be reduced by the minimization measures prescribed during the local permitting process (Section 4.2.5.4, Mitigation Measures), and the conservation measures prescribed by the TU MSHCP. As such, Commercial and Residential Development Activities would not result in hydromodification that would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels in the study area.

Plan-Wide Activities

The extent and nature of Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would be similar to Existing Ranch Uses under the No Action Alternative, except that permanent ground disturbance from these activities would be limited to 200 acres. Plan-Wide Activities would not substantially alter any drainage patterns or increase runoff, flooding, or groundwater recharge in the study area. Some Plan-Wide Activities, including the use of stock ponds and irrigation for farming, have the potential to affect surface water flow or groundwater recharge. However, similar to the No Action Alternative, Ranchwide Agreement BMPs and use restrictions (as currently set forth in the Interim RWMP) would continue to require that water systems for livestock and farming be adequately maintained and used efficiently, reducing potential effects on surface water flows and groundwater recharge. In addition, these activities would be subject to the limitations in the Ranchwide Agreement, which limits water diversion activities beyond those in place at the time the Ranchwide Agreement was signed, and prohibits major alterations or improvements of the ranch surface for water storage, including water storage in underground aquifers. As such, Plan-Wide Activities would not significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels in the study area.

4.2.5.2 Wetlands

Commercial and Residential Development Activities

Potential effects on wetlands associated with Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would be similar to those described for the Proposed TU MSHCP Alternative. This alternative would permanently disturb up to 4,496 acres of land in the study area, and construction activities could result in permanent fill of wetland areas or introduction of runoff into sensitive wetland areas. All development under the CCH Avoidance MSHCP Alternative would be subject to project-specific approvals from Federal and state agencies and local jurisdictions, as well as species-specific conservation measures that would protect wetland and riparian habitats. In addition, up to 130,339 acres of land in the study area would be preserved, some of which is presumed to support existing wetland areas, which, in turn, would be preserved in perpetuity. In consideration of the proposed open space areas provided under the CCH Avoidance MSHCP Alternative, and with implementation of the TU MSHCP conservation measures and mitigation measures discussed in Section 4.2.5.4, Mitigation Measures, it is anticipated that potential effects on wetlands from the proposed Commercial and Residential Development Activities would be minor, and would not result in a net loss of wetland habitat. Potential effects on wetlands would be greater than the No Action Alternative, however, because development would not occur under that alternative.

Plan-Wide Activities

Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would have a limited potential to adversely affect wetland areas.

Specifically, ground disturbing activities in or around wetland areas could introduce runoff, sediment, or debris into sensitive habitat types, and grazing could contribute nutrients, bacteria, or pathogens, and/or increase erosion if cattle graze in or near wetland areas. Construction or maintenance activities with the potential to result in temporary or permanent fill of wetland areas would be subject to Federal and state permitting requirements, and construction-related BMPs, prescribed by the local jurisdiction would likely be required to reduce potential water quality effects (Appendix J). Similarly, Ranchwide Agreement use restrictions and BMPs, as currently set forth in the Interim RWMP, would continue to be implemented and include provisions to minimize the effects of grazing on sensitive communities, including riparian and stream areas.

Although Plan-Wide Activities under the CCH Avoidance MSHCP Alternative could result in minor effects on wetlands, these effects would be reduced through implementation of Ranchwide Agreement BMPs and use restrictions, conservation measures in the TU MSHCP that limit construction in wetlands, as well as requirements of the Federal, state, or local permitting processes (Section 4.2.5.4, Mitigation Measures) and would not result in a net loss of wetland habitat. These effects would be comparable to those associated with Existing Ranch Uses under the No Action Alternative.

4.2.5.3 Water Quality

Commercial and Residential Development Activities

The total development disturbance acreage associated with Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would be approximately 4,496 acres and would occur in the Lebec/Existing Headquarters Area and the TMV Planning Area. The population would be anticipated to increase by 9,957. Construction-related water quality effects would be associated with erosion, increased turbidity in receiving waters, and introduction of debris and/or pollutants to surface waters. Operation of the developed areas and an increased population could also result in the potential introduction of pollutants, such as sediment, oil, grease from road runoff, household and commercial chemicals, and trash to surface or groundwater.

Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative could result in moderate construction and operation-related water quality effects. Similar to the Proposed TU MSHCP Alternative, all development would be subject to the project-specific approvals from Federal and state agencies and local jurisdictions, as provided in Section 4.2.5.4, Mitigation Measures, and ESA-related conservation measures prescribed by the TU MSHCP, which would reduce potential construction and/or operation related water quality effects. Implementation of these mitigation measures would reduce effects on water quality and ensure that this alternative would not exceed Federal or state water quality standards, or have a substantial effect on water quality. Potential water quality effects from Commercial and Residential Development Activities, however, would be greater than those associated with the No Action Alternative where development in the study area would not occur.

Plan-Wide Activities

The effects of the Plan-Wide Activities on water quality under the CCH Avoidance MSHCP Alternative would be similar to those described for Existing Ranch Uses under the No Action Alternative. These effects, which would generally be associated with livestock grazing, farming, irrigation, and limited ground disturbing activities, would be minor, subject to the limitations prescribed in the Ranchwide Agreement, further reduced by the mitigation measure discussed in Section 4.2.5.4, Mitigation Measures, and would not exceed Federal or state water quality standards.

4.2.5.4 Mitigation Measures

The mitigation measures in Section 4.2.3.4, Mitigation Measures for the Proposed TU MSHCP Alternative would also be implemented under the CCH Avoidance MSHCP Alternative.

4.2.6 Kern County General Plan Buildout Alternative

4.2.6.1 Surface Water Flow and Groundwater Recharge

Commercial and Residential Development Activities

The total development disturbance acreage associated with Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would be approximately 12,142 acres. Proposed development could alter existing drainage patterns and affect flows by modifying the extent of impervious surfaces in the study area or otherwise affect groundwater levels. Unlike the other action alternatives described above, development under this alternative would not be part of an integrated, planned project. As a result, it is possible that individual landowners could attempt to exercise riparian, appropriative, or groundwater rights to meet water demand, which could adversely affect surface water flows or groundwater supplies. Nevertheless, future groundwater use under this alternative is speculative, and cannot be estimated. All development activities would be subject to review and approval by Federal, state, and local agencies, which would likely require additional provisions to protect surface waters and groundwater resources (Appendix J).

Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would have a moderate effect on surface water flows in developed areas due to increases in impervious surfaces, and could have some level of effect on groundwater supplies if they are used to supply individual landowner lots. These effects would be reduced by the minimization measures prescribed during the Federal, state and/or local permitting process (Section 4.2.6.4, Mitigation Measures). Commercial and Residential Development Activities would not, therefore, result in hydromodification that would significantly change the pattern of runoff in the study area. Given the speculative nature of the development under this alternative, it is unknown if groundwater levels would be affected in the study area. Effects on surface water flow and groundwater recharge would be greater than those associated with the No Action Alternative where no development is proposed.

Existing Ranch Uses

The extent and nature of the Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be similar to the No Action Alternative. Existing Ranch Uses would not substantially alter any drainage patterns or increase runoff, flooding, or groundwater recharge in the study area. Some Existing Ranch Uses, including the use of stock ponds and irrigation for farming, or construction activities (i.e., permanent ground disturbance) have the potential to affect surface water flow or groundwater recharge. Other activities, such as road and utility repair and maintenance, ancillary ranch activities, and film production, are expected to occur mostly in existing disturbed areas, and are not likely to result in substantial effects on surface water flow or groundwater recharge.

As described in Chapter 2, Proposed TU MSHCP and Alternatives, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as reflected in the Interim RWMP are anticipated to continue

(although they cannot be assured), and compliance with legal requirements governing ground-disturbing activities directly affecting surface waters would apply.

Because most Existing Ranch Uses would have only minor effects on surface and ground water flows, it is unlikely that Existing Ranch Uses under the Kern County General Plan Buildout Alternative would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels in the study area. The effects of Existing Ranch Uses under this alternative would be comparable to those described for the No Action Alternative.

4.2.6.2 Wetlands

Commercial and Residential Development Activities

The Kern County General Plan Buildout Alternative would permanently disturb 12,142 acres of land in the study area and require cut-and-fill of approximately 222 million cubic yards of material. Construction-related activities associated with development could result in the direct fill of wetlands or indirect effects on existing functions by introducing runoff, sediment, or construction debris into sensitive wetland areas. As noted previously, all development activities would be subject to project-specific approvals from Federal, state, and local agencies, including provisions to ensure there is *no net loss of wetland* habitats. In addition, up to 119,392 acres of land in the study area could be preserved under this alternative, some of which is presumed to support existing wetland areas.

In consideration of the assumed open space areas under the Kern County General Plan Buildout Alternative, and with implementation of the mitigation measures discussed in Section 4.2.6.4, Mitigation Measures, it is anticipated that potential effects on wetlands from Commercial and Residential Development Activities would be minor, and would not result in a net loss of wetland habitat. These effects would be greater than the No Action Alternative, however, where no development is proposed.

Existing Ranch Uses

Similar to Existing Ranch Uses under the No Action Alternative, Existing Ranch Uses under the Kern County General Plan Buildout Alternative would have a limited potential to adversely affect wetlands in the study area. Potential effects would primarily be associated with ground-disturbing activities (e.g., roads and utilities), which could fill wetlands, and grazing, which could result in compaction, sedimentation, or nutrient loading of wetlands areas. As noted above, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as reflected in the Interim RWMP are anticipated to continue (although they cannot be assured).

Given that most Existing Ranch Uses would have only minor effects on wetlands, most of which would be minimized and mitigated through Federal, state, or local permitting and review processes (Section 4.2.6.4, Mitigation Measures), potential effects on wetlands from Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be minor, and *no net loss of wetlands* would occur. The effects of Existing Ranch Uses under this alternative would be comparable to those described for the No Action Alternative.

4.2.6.3 Water Quality

Commercial and Residential Development Activities

Under the Kern County General Plan Buildout Alternative, approximately 12,142 acres of the study area would be permanently disturbed by development, with development generally dispersed

across the study area. The population would increase by 22,800. Potential effects of construction and operation of the development under this alternative would be generally the same as those described for the Proposed TU MSHCP Alternative and would include construction-related erosion, increased turbidity in receiving waters, and introduction of debris and/or pollutants to surface waters.

The project-by-project development approach reflected in this alternative and the large number of dispersed rural development (one dwelling unit per 20 or 80 acres) that would occur in the study area would likely result in the permanent conversion of currently unpaved roads and vacant lands to permanent paved roads and other impervious surfaces, which have the potential to increase levels of runoff into surface waters. However, similar to the other alternatives, all development would be subject to project-specific approvals from Federal and state agencies and local jurisdictions.

It is anticipated that Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative could result in moderate construction and operation-related water quality effects, most of which would be reduced by the mitigation measure prescribed in Section 4.2.6.4, Mitigation Measures. Regardless, these effects would be greater than under the No Action Alternative where no development is proposed. This alternative would not exceed Federal or state water quality standards, or have a substantial effect on water quality.

Existing Ranch Uses

Similar to Existing Ranch Uses under the No Action Alternative, Existing Ranch Uses under the Kern County General Plan Buildout Alternative would have a limited potential to adversely affect water quality in the study area. Potential effects would primarily be associated with livestock grazing, farming, and irrigation, and ground-disturbing activities, such as construction and maintenance of roads and utility structures. As noted above, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as currently reflected in the Interim RWMP are anticipated to continue (although they cannot be assured).

Given that most Existing Ranch Uses would have only minor effects on water quality, and that construction in or near surface waters would likely be subject to Federal, state, or local permitting and review processes (Section 4.2.6.4, Mitigation Measures), potential effects on waters quality from Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be minor, and would not exceed state or Federal water quality standards. The effects of Existing Ranch Uses under this alternative would be comparable to those described for the No Action Alternative.

4.2.6.4 Mitigation Measures

The mitigation measures listed in Section 4.2.3.4, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the Kern County General Plan Buildout Alternative.

4.2.7 Cumulative Effects

Cumulative effects on water resources (surface and ground waters, wetlands, and water quality) may result from increased development and changes in land use. The cumulative effects analysis area for this section encompasses all surface waters and wetlands within the Covered Lands, their associated watersheds, and the groundwater basins that underlie the Covered Lands. Cumulative effects on water resources are analyzed in the context of the criteria discussed in Section 4.2.1.2, Methods, and consider whether each alternative, when considered in the context of other reasonably foreseeable actions, would exceed a Federal or state water quality standards, result in

hydromodification that would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels, or result in fill of wetlands that would fail to meet the Federal and state *no net loss of wetlands* policies. Cumulative effects on water resources are considered to be indirect effects of the proposed action, in that they are related to future development that may be facilitated by issuance of an ITP by the Service. Whether or not such effects are substantial cumulatively is primarily dependent on the mitigation measures put in place by other Federal, state, and local authorities pursuant to their project-specific approval process. Refer to Section 4.0.4, Methods for Assessing Cumulative Effects, for additional information on the approach summarized above and for a description of the reasonably foreseeable future projects considered in this cumulative effects analysis.

4.2.7.1 Surface Water Flow and Groundwater Recharge

As described in Section 3.2.1.1, Watersheds, most of the watersheds in the study area drain to the north and terminate in alluvial soils located in the foothills of the San Joaquin Valley. Figure 3.2-1 depicts the hydrologic regions and the major watercourses in the study area. Section 3.2.1.3, Groundwater, and Figure 3.2-2 describe the groundwater basins in the vicinity of the study area. The majority of the study area overlies the Castac Lake Valley Basin.

Cumulative changes to surface water and underlying groundwater hydrology are most likely to occur in the Tulare Hydrologic Region where most of the proposed development in the study area, as well as the approved Tejon Ranch Commerce Center and Frazier Park Estates projects and the conceptual Grapevine project, would occur. The No Action Alternative would not result in any development, and therefore would not result in a cumulative effect on water flow or groundwater recharge. Due to state law requirements that limit post-construction flows and protect water quality, effects on surface water and underlying groundwater are not expected to be cumulatively substantial for the Proposed TU MSHCP Alternative, Condor Only HCP Alternative, CCH Avoidance MSHCP Alternative, or Kern County General Plan Buildout Alternative. Additionally, while project-specific factors may differ based on the conditions existing at the particular location and actual land use, it is anticipated that all other reasonably foreseeable development projects would be subject to regulatory requirements similar to the development proposed under the action alternatives, including those required by the SWRCB under Porter-Cologne and the CWA (e.g., the California General Construction Permit), and by Kern and Los Angeles Counties under the California Environmental Quality Act (CEQA) and relevant ordinances and policies. Thus, the Proposed TU MSHCP Alternative, Condor Only HCP Alternative, CCH Avoidance MSHCP Alternative, and Kern County General Plan Buildout Alternative, in combination with other reasonably foreseeable projects, are not expected to result in substantial cumulative effects on surface water flow or groundwater recharge.

4.2.7.2 Wetlands

Several regional projects involve development that could affect regional wetlands. Cumulative changes to wetlands are most likely to occur in the Tulare Hydrologic Region watershed where most of the proposed development in the study area, as well as the approved Tejon Ranch Commerce Center and Frazier Park Estates projects and the conceptual Grapevine project, would occur. The Tejon Ranch Commerce Center would not affect any wetlands habitats under state and/or Federal jurisdiction, and the Frazier Park Estates project would fully mitigate its potential effects on jurisdictional areas. The final layout of the Grapevine project is unknown, but that project is expected to affect some regional wetlands.

All projects would be subject to Federal, state, and local *no net loss of wetlands* requirements. The No Action Alternative would not result in development, and therefore would not result in a cumulative effect on wetlands. Although the CCH Avoidance MSHCP Alternative would have the

smallest development footprint and population increase of the proposed action alternatives, the proposed development would be denser and concentrated around Castac Lake. As a result, development under this alternative may result in additional combined effects on wetlands when considered in combination with other regional projects in the Tulare Hydrologic Region watershed. The Proposed TU MSHCP Alternative and Condor Only HCP Alternative would have a larger development footprint and a larger population increase. As a result, development under these alternatives may result in additional combined effects on wetlands. Compliance with Federal and state laws and regulations focused on wetland protection, as well as implementation of the use restrictions and BMPs required pursuant to the Ranchwide Agreement and species-specific conservation measures (see Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives) that would indirectly benefit wetland habitats, no substantial cumulative effects are expected from the Proposed TU MSHCP, Condor Only, or CCH Avoidance MSHCP Alternatives. Finally, although the Kern County General Plan Buildout Alternative would have a larger development footprint, development under this alternative would also be subject to all applicable regulatory requirements, including *no-net-loss of wetlands* requirements. Because all potential fill of wetlands within the study area, as well as fill associated with other reasonably foreseeable projects, would meet the Federal and state *no net loss of wetlands* policies, cumulative effects on wetlands would not be anticipated.

4.2.7.3 Water Quality

As described in Section 3.2.1.1, Watersheds, most of the watersheds in the study area drain to the north and terminate in alluvial soils located in the foothills and lowlands of the San Joaquin Valley. The northerly draining portions of the study area are in the Tulare Lake Hydrologic Region, subject to the jurisdiction of Central Valley RWQCB. Portions of the study area located south of the Garlock fault range drain to the southeast in the Antelope Valley, an area in the South Lahontan Hydrologic Region and under the jurisdiction of Lahontan RWQCB.

In addition to expansion in the Tehachapi Uplands from the Frazier Park Estates and Gorman Post Ranch projects, more urban-type development is anticipated to occur in the valley and foothill areas outside the study area, including projects such as Centennial, Grapevine, and the Tejon Ranch Commerce Center. With respect to specific projects, the Tejon Ranch Commerce Center, Frazier Park Estates, and Grapevine projects are located in the Tulare Hydrologic Region, and the Centennial project is primarily located in the South Lahontan Hydrologic Region. Gorman Post Ranch and a small portion of the Centennial project are located in the South Coast Hydrologic Region and the Los Angeles–San Gabriel Hydrologic Region. Development-related effects in the study area would be concentrated in the Tulare Hydrologic Region, where the TMV Project would be located. With respect to the other projects located in this hydrologic region, the Tejon Ranch Commerce Center and the Frazier Park Estates projects have fully mitigated their effects as discussed in their respective environmental impact reports (EIRs) prepared in compliance with CEQA (Kern County 2002, Kern County 2009c). The Grapevine project is expected to be subject to the same level of mitigation required for the TMV Project, Tejon Ranch Commerce Center Project, and Frazier Park Estates Project, such that they would not together exceed state or Federal water quality standards in the Tulare Hydrologic Region. Thus, although project-specific effects of such other developments would be different based on actual conditions and land use, it is anticipated that all other reasonably foreseeable development would be subject to the water quality standards provided in the CWA, Porter-Cologne, DHS regulations, and Kern County and Los Angeles County ordinances and policies, and that water quality effects would be required to be mitigated.

From a cumulative effects perspective, the No Action Alternative is not anticipated to result in a cumulative effect on water quality because no development would occur. Despite varying levels of developed area, development under the Proposed TU MSCHP, Condor Only HCP, CCH Avoidance MSHCP, and Kern County General Plan Buildout Alternatives would comply with all required laws and regulations, and would not contribute to a substantial cumulative adverse effect on water

quality either during construction, or after proposed infrastructure is in place. The Ranchwide Agreement use restrictions and BMPs as currently set forth in the Interim RWMP, as well as species-specific conservation measures, as applicable for each alternative, would further reduce the potential for water quality effects from the proposed alternatives, and, subsequently, for a cumulative effect to occur.

4.2.8 Comparison of Alternatives

Because the exact contours, locations, and building designs of the commercial and residential areas are not known, this comparison is based on the acreage of disturbance and estimates of cut-and-fill in the development areas, as well as the area that would be preserved as open space under each alternative, as summarized in Table 4.2-1.

Table 4.2-1. Proposed Disturbance and Open Space under Each Alternative

	No Action Alternative	Proposed TU MSHCP/Condor Only HCP Alternatives	CCH Avoidance MSHCP Alternative	Kern County General Plan Buildout Alternative
Ground disturbance (acres)	0	5,533	4,496	12,142
Cut-and-fill (cubic yards)	0	75 million	< 90 million	222 million
Population	0	11,441	9,957	22,800
Permanently preserved open space (acres)[1]	106,317 (75%)[2]	129,318 (91%)	130,339 (92%)	119,392 (84%)[3]

[1] Percentage representative of percentage of total study area (Covered Lands) (141,886 acres).

[2] While conservation easements would be recorded over only 106,317 acres, existing uses would continue over the remaining Covered Lands (with no commercial or residential development).

[3] The Kern County General Plan Buildout Alternative includes both permanently preserved open space (34,130 acres) and Open Space (85,262 acres).

The No Action Alternative would not result in any new or substantial effects on water quality, surface water drainage patterns, groundwater recharge, or wetlands. No development would occur, and permanent ground disturbance would be limited (although not specifically limited to 200 acres, as under the Proposed TU MSHCP, Condor Only, and CCH Avoidance MSHCP Alternatives). Conversely, this alternative would result in fewer acres of area protected in conservation easements, and the Service would not have review and approval authority over the RWMP. However, because the Existing Ranch Uses would continue to be subject to BMPs and ultimately a comprehensive RWMP for permanently preserved open space areas, and because ground-disturbing activities would continue to be limited by the Ranchwide Agreement to be consistent with preserving and protecting conservation values, only minor effects on water resources from the No Action Alternative are anticipated. These effects would be less than those anticipated under the proposed action alternatives.

The Proposed TU MSHCP Alternative and the Condor Only HCP Alternative would permanently preserve more open space compared to the No Action Alternative, but would include commercial and residential development, which would result in up to 5,533 acres of permanent ground disturbance. Such ground disturbance could adversely affect surface drainage patterns and groundwater recharge, and could result in direct and indirect effects on wetlands. Additionally, development could result in effects on water quality from more urban runoff. Compliance with the proposed mitigation measure in Section 4.2.3.4, Mitigation Measures, would reduce the potential

effects associated with the Proposed TU MSHCP and Condor Only HCP Alternatives. Thus, although ground disturbance under these alternatives would be higher than the No Action Alternative, only minor to moderate effects on water resources are anticipated, none of which would exceed Federal or state water quality standards, substantially change the pattern of runoff or groundwater recharge, or otherwise affect groundwater levels, or result in a net loss of wetland habitat.

The CCH Avoidance MSHCP Alternative would permanently preserve more open space compared to the No Action Alternative, but would include commercial and residential development, which would result in up to 4,496 acres of permanent ground disturbance. It would also result in less acreage developed, but more cut-and-fill, than the Proposed TU MSHCP and Condor Only HCP Alternatives, as well as more permanently preserved open space. However, development would be consolidated and intensified in the southwestern portion of the study area around I-5 and Castac Lake, and would result in an increase in contiguous impervious surfaces in these areas. This alternative could result in an increased effect on water resources compared to the No Action Alternative and the Proposed TU MSHCP and Condor Only HCP Alternatives (with the more intense cut-and-fill near Castac Lake, where many stream systems exist, it would not be possible to avoid all the streams in the Development Area), although mitigation (compliance with Federal, state and local regulations) would reduce this effect. This alternative would not result in an exceedance of Federal or state water quality standards, substantially change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels in the study area, or result in a net loss of wetland habitat.

Finally, the Kern County General Plan Buildout Alternative would have greater effects on water resources than the No Action, Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives. With respect to Existing Ranch Uses, because there would be no limits imposed by the Ranchwide Agreement, or guarantee that BMPs and use restrictions required pursuant to the Ranchwide Agreement would be continued, it is possible that ranch practices could change and result in additional or more severe effects on water resources in the future. Development-related effects under the Kern County General Plan Buildout Alternative could also be greater because of the larger disturbance area, and because development under this alternative would occur on a project-by-project basis, in a dispersed pattern across the landscape, and potentially in the vicinity of a greater number of stream systems and watersheds. The dispersed nature of development would result in the need for more roads and more impervious surfaces, therefore resulting in greater effects on water resources. Although this alternative would likely employ mitigation measures similar to other proposed action alternatives and would comply with all relevant Federal, state, and local rules and regulations, effects would still be moderate. It is anticipated that this alternative would not exceed Federal or state water quality standards or result in a net loss of wetland habitat. It is unclear what effect this alternative would have on the pattern of runoff, groundwater recharge, or groundwater levels, given that the general dispersed nature of the development is unknown, although these effects would likely be reduced through the Federal, state, and local permit processes.

4.3 Air Quality

4.3.1 Overview

This section describes the methods applicable to analyzing the potential effects of the alternatives on air quality in the study area. The regulations that govern air quality in the study area are addressed in Section 3.3, Air Quality. As described in Section 3.3, Air Quality, the study area for the analysis of direct and indirect effects includes the three air basins in the vicinity of the Covered Lands: the San Joaquin Valley Air Basin (SJVAB), the Mojave Desert Air Basin (MDAB), and the South Coast Air Basin (SCAB). The cumulative effects analysis area consists of the same area. The cumulative effects of the proposed action are discussed in Section 4.3.7, Cumulative Air Quality Effects.

4.3.1.1 Methods

The analysis of the effects and the magnitude of direct, indirect, and cumulative effects on air quality are considered in terms of whether each alternative would contribute to an exceedance of any applicable air quality thresholds, as a result of construction, operations or both; expose sensitive receptors to unacceptable levels of risk from exposure to toxic air contaminants (TACs) or to carbon monoxide (CO) hotspots; or expose people to an unmitigable objectionable odor. In general, potential effects were assumed to be associated with construction and operation emissions, exposure of sensitive receptors to substantial pollutant concentrations from construction or operation, and the creation of objectionable odors associated with Commercial and Residential Development.

Applicable Thresholds

As discussed in Section 3.3, Air Quality, air quality in the study area is regulated by the San Joaquin Valley Air Pollution Control District (SJVAPCD), the Eastern Kern Air Pollution Control District (EKAPCD), and the South Coast Air Quality Management District (SCAQMD). With respect to evaluation of criteria pollutant emissions, the emissions resulting from each alternative are compared against the appropriate significance thresholds depending on where emissions would be assumed to occur. These thresholds are shown in Table 4.3-1. Given the absence of Service-specific air quality significance criteria, the Service believes that the air district thresholds provide a useful method of assessing the magnitude of air quality effects of the various alternatives. Although these thresholds have been developed by the air districts for purposes of conducting analysis pursuant to the California Environmental Quality Act (CEQA), and are not specifically intended for use in National Environmental Policy Act (NEPA) analyses, they provide a helpful point of measurement to determine the magnitude of an alternative's effects on air resources. In addition, these thresholds represent the generally accepted approach to determining whether a project's emissions would result in a substantial contribution to existing violations of California or National Ambient Air Quality Standards (CAAQS or NAAQS) as presented in Section 3.3, Air Quality, and are generally considered the most stringent thresholds available.

As discussed in Section 3.3.2.1, Federal Laws, Regulations, and Standards, a general conformity analysis pursuant to the Federal Clean Air Act need not be conducted. Thus, the conformity *de minimis* thresholds are not relevant to this analysis.

Table 4.3-1. Air District Air Emissions Thresholds (tons per year)

	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
SJVAPCD Threshold	10[1]	10[1]	—[2]	—[3]	15[1]	—[4]
EKAPCD Threshold	25[5]	25[5]	—[6]	—[7]	15[5]	—[8]
SCAQMD Threshold[9]	10	10	100	27.5	27.4	10

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District; EKAPCD = Eastern Kern Air Pollution Control District; SCAQMD = South Coast Air Quality Management District

1 ROG and NO_X CEQA thresholds: San Joaquin Valley Air Pollution Control District 2002. PM_{10} CEQA threshold is recommended by SJVAPCD staff. The San Joaquin Valley Air Basin is designated nonattainment (state) and attainment (Federal) for PM_{10}; exceedance of that threshold contributes to basin nonattainment status. ROGs and NO_X are precursors to ozone, and the San Joaquin Valley Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status.

2 The Kern County portion of the San Joaquin Valley Air Basin is designated attainment (state) or unclassifiable/attainment (Federal) for CO.

3 The Kern County portion of the San Joaquin Valley Air Basin is designated attainment for SO_2.

4 The San Joaquin Valley Air Basin is designated nonattainment for $PM_{2.5}$; because ROGs and NO_X are precursors to $PM_{2.5}$ and PM_{10} includes $PM_{2.5}$, exceedance of those thresholds contributes to the basin nonattainment status.

5 CEQA significance thresholds from Damo pers.comm. 2008. ROG and NO_X are precursors to ozone, and the Mojave Desert Air Basin is designated ROGs nonattainment for 8-hr ozone (state and Federal) standards; exceedance of those thresholds contributes to the basin nonattainment status.

6 The Mojave Desert Air Basin is designated as unclassified (state) or unclassifiable/attainment (Federal) for CO.

7 The Mojave Desert Air Basin is designated as attainment (state) or unclassifiable (Federal) for SO_2.

8 The Mojave Desert Air Basin is designated as unclassified (state) or unclassifiable/attainment (Federal) for $PM_{2.5}$.

9 Significance thresholds from SCAQMD 2011 converted to tons per year.

General Basis of Analysis

The potential emissions of the alternatives are quantitatively analyzed using the California Emissions Estimator Model (CalEEMod; all references to CalEEMod are Version 2011.1.1). Emissions estimates are provided for comparative analysis of alternatives addressed in this EIS and do not represent specific emissions estimates such as would likely occur on a project-specific basis when development plans and construction scenarios (phasing, staging, equipment number and type, construction scheduling) and operation characteristics (trip assignment and distribution, vehicle mix, arrangement of land uses) would be more specifically known.

Emissions for each alternative are compared against emissions present under the No Action Alternative. Emissions for the No Action Alternative are compared to existing conditions. Under existing conditions, the primary sources of air emissions are associated with ongoing Existing Ranch Uses. Some of these uses involve activities that generate a small amount of construction or operation emissions. Construction emissions could occur as a result of road and utility maintenance, construction of new roads or utilities, and construction or maintenance of ancillary ranch structures or back-country cabins. Existing residential and commercial uses are limited, but could potentially result in minor amounts of operation emissions. In addition, general ranch operations result in a nominal level of criteria pollutant emissions from, for example, security vehicles, hunting and film programs, and agricultural operations. However, the criteria pollutant emissions associated with Existing Ranch Use construction and operations are nominal. Because these activities generate only incidental, insubstantial criteria pollutants, the existing condition is assumed to result in negligible emissions on the Covered Lands that are compliant with existing applicable regulations.

Construction Assumptions

The construction-related effects analysis relies primarily on the default construction assumptions in CalEEMod because construction phasing under the alternatives is not known. While these assumptions are representative for many development projects, use of the default construction assumptions in CalEEMod may over- or underestimate the activity levels associated with actual development under the alternatives. Therefore, revisions were made in an attempt to simulate reasonably expected activity levels without deviating significantly from the basic CalEEMod methodology.

Air emissions were designated to the appropriate air basin depending on where construction would occur to ensure potential air emissions were compared against the appropriate thresholds. Commercial and Residential Development Activities under the Proposed TU MSHCP and Condor Only HCP Alternatives would occur primarily in the SJVAB where the proposed development would largely be located. Under these alternatives, some small area of development could also occur in the MDAB, associated with developing a portion of Oso Canyon (approximately 262.7 acres in the MDAB). However, this area would only be developed if an equivalent area were not developed in the SJVAB. Therefore, as discussed in greater detail in Section 4.3.3, Proposed TU MSHCP Alternative, construction-related emissions are compared to the more stringent SJVAPCD thresholds for these alternatives.

Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would not occur in Oso Canyon or the MDAB and are also compared to the SJVAPCD thresholds. Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would occur in the SJVAB and the MDAB and are calculated for each air basin and compared to the appropriate thresholds. No construction is proposed in the SCAB under any alternatives.

Construction for all alternatives were assumed to occur over seven, 4-year-long phases, beginning in January 2013 and lasting for a total of 28 years. Assumptions for construction phasing are consistent with the approach used in the Tejon Mountain Village Environmental Impact Report (TMV EIR) (Kern County 2009), which assumed the TMV Project would be built out over 18 years in six construction phases varying in length from 2 to 5 years. Because the TMV EIR identified a nonuniform construction schedule (i.e., the amount of development under construction would vary from year to year), the construction levels (e.g., residential units under construction) in each phase were developed for this analysis to approximate those in the TMV EIR. Construction in the TMV Specific Plan Area was assumed to occur in five 4-year phases (20 total years). For any alternatives with Commercial and Residential Development Activities outside the TMV Specific Plan Area, construction would begin in 2021, 8 years after commencement of the construction of land uses in the TMV Specific Plan Area, and would also continue in five 4-year phases for a total of 20 years. Because the development plans for areas outside the TMV Specific Plan Area are unknown, the construction levels were assumed to be uniform from year to year.

For the purposes of air emission modeling, it is assumed that each 4-year phase of construction would commence in January and would last approximately 48 months, ending in December. For example, the first phase of construction would begin in January 2013 and proceed through December 2016. Within each 4-year phase, the following assumptions were made regarding the timing of the construction subphases:

- Grading activities would begin at the beginning of each 4-year construction phase and continue for 6 months.
- Trenching activities for utility installation would occur for 3 months during the first year of each 4-year construction phase and would overlap with the grading phase for 1 month.
- Paving activities would occur following completion of the trenching phase and would last 3 months during the first year of each 4-year construction phase.
- Building construction would commence 9 months into the first year (2013) and reach completion 3 months prior to final construction buildout in year 2040. Thus, building construction would occur November 2013 to September 2040. Architectural coating would start in the second month of the second year of construction (2014), following initial construction of residences and/or commercial buildings, and continue through the end of 2040. Thus, architectural coating activities would occur February 2014 to December 2040.

All construction equipment types were estimated using CalEEMod default values based on the proposed development. CalEEMod default values for equipment daily operating hours and numbers of worker and delivery truck trips and trip lengths were assumed. Construction would occur 5 days a week, approximately 22 days per month. CalEEMod-generated assumptions for total acres disturbed during grading were used.

The number of total residential units and area of commercial space (thousand square feet [ksf]) by alternative are shown in Table 4.3-2.

Additional details regarding the methodology and assumptions used to estimate construction emissions are found in Appendix F, Air Quality and Greenhouse Gas Assessment.

Operation Assumptions

CalEEMod was also used to calculate stationary and mobile sources of operation emissions, requiring input assumptions for the various emissions-generating activities based on different land uses for each alternative. Specific assumptions are discussed in greater detail below. Similar to construction-related air emissions, operation emissions were designated to the appropriate air basin depending on where Commercial and Residential Development would be located and where related travel would occur to ensure potential air emissions were compared against the appropriate thresholds.

With respect to stationary sources, operation emissions from Commercial and Residential Development under the Proposed TU MSHCP and the Condor Only HCP Alternatives were assumed to primarily occur in the SJVAB. Under these alternatives, some small area of development could also occur in the MDAB, associated with developing a portion of Oso Canyon (approximately 262.7 acres within the MDAB). However, this area development would only occur under these alternatives if an equivalent area of development did not occur within the SJVAB. Therefore, as discussed in greater detail in the effects analyses, stationary sources of operation emissions are compared to the more stringent SJVAPCD thresholds for these alternatives.

Commercial and Residential Development Activities resulting in stationary sources of operations emissions under the CCH Avoidance MSHCP Alternative would occur entirely in the SJVAB because no development would occur in Oso Canyon. Stationary sources of operations emissions from Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would occur in the SJVAB and the MDAB, depending on the location of the proposed development.

Table 4.3-2. Commercial and Residential Distribution for All Alternatives

		Activity by Air Basin[1]	
Alternative/Construction Activity	Total	San Joaquin Valley Air Basin	Mojave Desert Air Basin
No Action Alternative			
Residential (units)	0	0	0
Retail Space (ksf)	0	0	0
Office Space (ksf)	0	0	0
Hotel (ksf)	0	0	0
Support Uses (ksf)	0	0	0
Proposed TU MSHCP/Condor Only HCP Alternatives			
Residential (units)	3,632	3,632	0
Retail Space (ksf)	488.878	488.878	0
Office Space (ksf)	1,644.39	1,644.39	0
Hotel (ksf)	450	450	0
Support Uses (ksf)	350	350	0
CCH Avoidance MSHCP Alternative			
Residential (units)	3,161	3,161	0
Retail Space (ksf)	488.878	488.878	0
Office Space (ksf)	1,644.39	1,644.39	0
Hotel (ksf)	450	450	0
Support Uses (ksf)	350	350	0
Kern County General Plan Buildout Alternative			
Residential (units)	7,238	5,797	1,441
Retail Space (ksf)	556.962	546.151	10.811
Office Space (ksf)	1,587.848	1,544.606	43.242
Hotel (ksf)	450	450	0
Support Uses (ksf)	350	350	0

Notes: ksf = thousand square feet

[1] Only the San Joaquin Valley Air Basin and Mojave Desert Air Basin are addressed in this table, because no construction would occur in the South Coast Air Basin.

For all proposed action alternatives, the mobile sources of operation emissions were apportioned to air basins within the study area as follows. Emissions from vehicle trips associated with the Commercial and Residential Development Activities that would be located in the SJVAB portion of Kern County were split between the SJVAB and the SCAB. It was assumed that 36.3% of the vehicle-miles travelled would occur in the SJVAB and 63.7% would occur in the SCAB (Austin-Foust Associates 2011). While some emissions from vehicles traveling to and from development in the SJVAB could also occur in the MDAB related to the proposed Centennial Project, as discussed in greater detail under the effects analysis, because the Centennial Project is still somewhat

speculative, potential trips that could occur in the MDAB are attributed to the SCAB and compared to the SCAQMD thresholds for the purposes of this analysis.

Area source emissions from landscape maintenance, natural gas combustion, fireplaces, consumer products, and maintenance use of architectural coatings were assigned to the air basin in which the Commercial and Residential Development Activities would occur. As noted in the construction assumptions, construction would be completed in December 2040 for all alternatives. Full operation would occur in 2041.

The default values in CalEEMod were used to estimate most operation emissions for landscape maintenance, consumer products, and natural gas combustion for space and water heating. Adjustments of the CalEEMod default assumptions were made to fireplaces, water, and wastewater, as further explained in Appendix F, to better reflect the development scenarios (i.e., a mix of urban-type and rural residential development).

The following additional assumptions were made for vehicle trips for all proposed action alternatives:

- Trip generation rates for uses within the TMV Specific Plan Area were taken from the TU MSHCP Traffic Study (Austin-Foust Associates 2011) (Appendix H, TU MSHCP Traffic Study). Single-family dwelling units in the TMV Specific Plan Area were assigned a trip generation rate of 9.57 vehicle trips per dwelling unit, and multi-family dwelling units were assigned a trip generation rate of 6.65 vehicle trips per dwelling unit. Retail uses were assigned trip generation rates of 57.61 vehicle trips per 1,000 square feet. Hotel uses were assigned a rate of 8.17 vehicle trips per room, and support uses were assigned a rate of 5.63 vehicle trips per 1,000 square feet.
- Trip generation rates for uses outside the TMV Specific Plan Area were also taken from the TU MSHCP Traffic Study (Austin-Foust Associates 2011) (Appendix H). All residential units outside the TMV Specific Plan Area would be single-family dwelling units with a trip generation rate of 9.57 vehicle trips per dwelling unit. All commercial space outside the TMV Specific Plan Area would be 80% office space and 20% retail space with trip generation rates of 11.01 trips and 42.94 trips, respectively, per 1,000 square feet. For all alternatives, the average vehicle trip length was estimated at 28.8 miles per trip for commercial and residential vehicle trips originating in or passing through the SJVAB and the MDAB. The average vehicle trip length is a weighted composite of local trips, trips going north on Interstate 5 (I-5) in Kern County, and trips going south on I-5 to Los Angeles County.
- Under the Kern County General Plan Buildout Alternative, a portion of the trips in the MDAB were considered to be local and were assigned an average of distance of 5.3 miles per trip, using the value from the traffic report for local trips (Austin-Foust Associates 2011) (Appendix H).

Additional details regarding the methodology and assumptions used to estimate operations emissions are found in Appendix F.

4.3.2 No Action Alternative

4.3.2.1 Construction Emissions

Commercial and Residential Development Activities

No Commercial and Residential Development Activities would occur under the No Action Alternative. There would be no direct or indirect effects on air quality during construction from these activities.

Existing Ranch Uses

Under the No Action Alternative, Existing Ranch Uses would continue in a manner similar to existing conditions, subject to the best management practices (BMPs) and use restrictions required by the Ranchwide Agreement (as currently set forth in the Interim RWMP) to preserve and protect conservation values. These BMPs and use restrictions require that Tejon RanchCorp (TRC) work with the SJVAPCD to minimize air quality effects in a variety of ways (e.g., achieving energy code compliance with regard to signs and structures, and utilizing off-grid technologies to the extent feasible) (Tejon Ranch Company 2009). The Ranchwide Agreement requires that all subsequent RWMPs must similarly reflect BMPs that maintain the conservation values of the land and that such restrictions are carried through in the conservation easements required by the Ranchwide Agreement.

Existing Ranch Uses would generate only incidental, insubstantial criteria pollutant emissions associated primarily with construction and maintenance of road and utility infrastructure, ancillary ranch structures, and back-country cabins. As described in Section 4.3.1.1, Methods, for the purposes of this NEPA analysis, it is assumed existing activities within the Covered Lands would result in essentially no emissions because the extent of these activities is limited. Given that existing conditions are assumed to result in very minor emissions that are currently in compliance with applicable regulations, and because the No Action Alternative would not represent a substantial change over existing conditions, the continuation of Existing Ranch Uses under this alternative would not be expected to result in exceedance of air quality standards due to the small scale and infrequency of the activities.

4.3.2.2 Operation Emissions

Commercial and Residential Development Activities

No Commercial and Residential Development Activities would occur under the No Action Alternative. There would be no operation-related direct or indirect effects on air quality from these activities.

Existing Ranch Uses

As mentioned previously, under the No Action Alternative, Existing Ranch Uses would continue in a manner similar to current conditions and would be subject to the BMPs and use restrictions required by the Ranchwide Agreement (as currently set forth in the Interim RWMP) to preserve and protect conservation values. These BMPs and use restrictions require TRC to work with the SJVAPCD to minimize air quality effects in a variety of ways (e.g., implementing a no-burn policy for agricultural

trimmings, implementing a dust control plan, and ensuring all farming equipment is maintained in good condition).

As described above, Existing Ranch Uses would result in minimal emissions on the Covered Lands. Some minor emissions could occur associated with existing residential, commercial, and agricultural land uses and ongoing activities associated with filming and recreational access. However, these emissions would be minor and would continue to be in compliance with applicable regulations. As such, the continuation of Existing Ranch Uses under the No Action Alternative would not be expected to result in exceedance of air quality standards due to the small scale and infrequency of these activities.

4.3.2.3 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

Commercial and Residential Development Activities

Construction

No Commercial and Residential Development Activities would occur under the No Action Alternative, and there would be no direct or indirect effects that would affect sensitive receptors during construction associated with Commercial and Residential Development Activities.

Operations

No Commercial and Residential Development Activities would occur under the No Action Alternative. There would be no direct or indirect long-term exposure of sensitive receptors to operation emissions associated with Commercial and Residential Development Activities.

Existing Ranch Uses

Currently, few sensitive receptors are present in the immediate vicinity of the Covered Lands, limiting the potential for such receptors to be exposed to pollutant from Existing Ranch Uses. The exceptions would be near the existing El Tejon School playground, Tejon Fields and the residences near the north end of Lebec Road.

Under the No Action Alternative, Existing Ranch Uses would continue at existing levels and would not represent a substantial change over existing conditions. The continuation of Existing Ranch Uses, as described above, would not be expected to result in substantial emission concentrations near sensitive receptors. As discussed in Section 3.3, Air Quality, very minor emissions from limited construction and operation activities associated with existing land uses would continue. Due to the small scale and infrequency of the activities, the risk that Existing Ranch Uses would result in exposure of sensitive receptors to substantial concentrations of pollutants is minor.

4.3.2.4 Objectionable Odors

Commercial and Residential Development Activities

Construction

No Commercial and Residential Development Activities would occur under the No Action Alternative. There would be no direct or indirect effects associated with odors during construction of development infrastructure.

Operations

No Commercial and Residential Development Activities would occur under the No Action Alternative. There would be no direct or indirect effects associated with odors during operation of facilities associated with development.

Existing Ranch Uses

Currently, few sensitive receptors are present in the immediate vicinity of the Covered Lands, limiting the potential for such receptors to be exposed to substantial objectionable odors. The exceptions would be near the existing El Tejon School playground, Tejon Fields and the residences near the north end of Lebec Road.

Under the No Action Alternative, Existing Ranch Uses would continue at existing levels and would not result in any increases in the potential creation of additional objectionable odors. As discussed in Section 3.3, Air Quality, very minor sources of objectionable odors, such as cattle grazing and other agricultural activities, would continue and would be spread-out and located far from the majority of sensitive receptors. Therefore, the likelihood that the No Action Alternative would result in the exposure of sensitive receptors to substantial sources of objectionable odors is minor.

4.3.3 Proposed TU MSHCP Alternative

4.3.3.1 Construction Emissions

Commercial and Residential Development Activities

Construction of the Proposed TU MSHCP Alternative would occur primarily in the SJVAB. Some small construction-related emissions (2.24 tons per year of reactive organic gas [ROG]; 8.12 tons per year of oxides of nitrogen (NO_X); and 0.66 tons per year of particulate matter greater than 10 microns in diameter [PM_{10}]) could occur in the MDAB associated with potential development of Oso Canyon (approximately 262.7 acres).[1] However, as mentioned in Section 4.3.1.1, Methods, above, development of this area would only occur if an equivalent area of development did not occur in the SJVAB. Therefore, construction-related emissions for the entire Disturbance Area (including the

[1] 262.7 acres of the 506-acre Oso Canyon area lie within the MDAB. Emission levels were calculated by assuming a similar density to that proposed for the TMV Planning Area; namely 173 residential units. Construction that would occur during the first phase (2013 to 2016) was scaled to a level associated with 173 units. It should be noted that these estimates likely over-predict the emissions associated with development in the MDAB portion of the Oso Canyon area because, for example, the development within the TMV Planning Area involves more than just residential development compared to what might be developed in Oso Canyon. A more refined analysis based on specific development plans would likely generate lower emission estimates. Additional details about this analysis are found in Appendix F.

portion of Oso Canyon within the MDAB) were modeled and compared to the more stringent thresholds of the SJVAB. Nevertheless, even if the emissions listed above were attributed to the MDAB, they would not exceed the EKAPCD significance thresholds. No construction would occur in the SCAB.

Table 4.3-3 summarizes potential construction emissions associated within the Proposed TU MSHCP Alternative. Under the Proposed TU MSHCP Alternative, construction activities associated with Commercial and Residential Development Activities would generate ozone precursor emissions (ROG, NO_X) from heavy-duty construction equipment operating on construction sites, from mobile-source emissions attributed to construction workers that would travel to and from the construction site, and from haul/delivery trucks that would travel to and from the construction site. In addition, ROG emissions would occur during each finishing phase of construction activity, during asphalt paving, and during the application of architectural coatings (i.e., paints). The largest quantity of fugitive PM_{10} emissions would occur during periods of site grading and excavation activities. Air pollutant emissions during construction would vary substantially from day to day, depending on the level of construction activity, the specific type of operation and, for fugitive PM_{10}, prevailing weather conditions. However, as indicated in Table 4.3-3, modeled construction emissions would exceed the SJVAPCD thresholds for ROG and NO_X even assuming mandatory emissions reductions of NO_X required pursuant to Rule 9510.

All Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would be subject to Federal, state, and local air quality protection requirements as indicated in Section 4.3.3.6, Mitigation Measures. As part of the project-level approval process, it is anticipated that the local jurisdiction would require the implementation of mitigation and BMPs to reduce air emissions as part of its environmental review process. For example, Kern County's approval of the TMV Project requires, among other things, that emissions not exceed 2 tons per year of NO_X or 2 tons per year of PM_{10} (total project construction and operation). Kern County also requires submittal and implementation of a dust control plan approved by the SJVAPCD, including specific dust control BMPs; compliance with all other requirements of the SJVAPCD Fugitive Dust Rules; use of alternative fuel technologies for construction vehicles; and selection of sustainable construction materials (Appendix J, MMs 4.3-1 through 4.3-5) (Kern County 2009). In addition, conservation measures in the TU MSHCP (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives) would further reduce air quality effects from construction by, for example, requiring dust suppression measures.

In addition, the majority of the Commercial and Residential Development included in the Proposed TU MSHCP Alternative would occur in the TMV Planning Area, which is part of a planned development. This would provide more opportunity to mitigate potential emissions effects related to construction. For example, a coordinated dust control plan would apply to almost all construction activities, as would commitments regarding the use of lower-emitting and well-controlled construction equipment in accordance with California Air Resources Board (CARB) and air district regulations (Appendix J).

Even with implementation of required mitigation measures and BMPs and coordination of construction activities to reduce air emissions, it is likely SJVAPCD thresholds would be exceeded during certain periods of construction under the Proposed TU MSHCP Alternative, resulting in substantial effects.

Table 4.3-3. Construction Emissions (tons per year)—Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2013	3.56	25.76	15.36	0.03	1.87	1.52
2014	7.03	22.76	17.76	0.04	2.10	1.31
2015	7.12	20.67	17.20	0.04	1.97	1.17
2016	6.87	18.73	16.68	0.04	1.85	1.04
2017	9.98	39.85	34.20	0.07	3.62	2.25
2018	6.60	16.79	17.94	0.04	1.91	0.86
2019	6.38	15.18	17.54	0.04	1.79	0.75
2020	6.22	13.80	17.27	0.04	1.70	0.65
2021	7.98	26.17	30.50	0.07	2.57	1.31
2022	5.53	11.07	16.23	0.04	1.38	0.47
2023	5.42	10.09	16.05	0.04	1.31	0.41
2024	5.36	9.32	16.02	0.04	1.27	0.36
2025	14.00	32.90	52.55	0.13	4.04	1.45
2026	10.84	16.27	29.47	0.08	2.61	0.61
2027	10.84	16.27	29.47	0.08	2.61	0.61
2028	10.80	16.21	29.36	0.08	2.60	0.61
2029	13.03	32.08	51.42	0.13	3.55	1.41
2030	9.37	11.21	27.51	0.07	1.89	0.34
2031	9.37	11.21	27.51	0.07	1.89	0.34
2032	9.41	11.25	27.62	0.07	1.89	0.34
2033	1.37	2.81	5.66	0.02	0.45	0.10
2034	1.06	1.60	3.01	0.01	0.33	0.05
2035	1.04	1.41	2.96	0.01	0.32	0.04
2036	1.05	1.41	2.97	0.01	0.32	0.04
2037	1.32	2.32	5.58	0.02	0.42	0.08
2038	1.04	1.41	2.96	0.01	0.32	0.04
2039	1.04	1.40	2.95	0.01	0.32	0.04
2040	0.96	1.02	2.26	0.01	0.25	0.03
Maximum Annual Emissions	**14.00**	**32.90**	**52.55**	**0.13**	**4.04**	**1.45**
Rule 9510 Reduction	—	5.90	—	—	0.55	—
Net Emissions	14.00	27.00	52.55	0.13	3.49	1.45
SJVAPCD Threshold	10[1]	10[1]	—[2]	—[3]	15[1]	—[4]

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District

[1] ROG and NO_X CEQA significance thresholds: San Joaquin Valley Air Pollution Control District 2002. PM_{10} CEQA threshold is recommended by SJVAPCD staff. PM_{10} CEQA threshold is recommended by SJVAPCD staff. The San Joaquin Valley Air Basin is designated nonattainment (state) and attainment (Federal) for PM_{10}; exceedance of that threshold contributes to basin nonattainment status. ROGs and NO_X are precursors to ozone, and the San Joaquin Valley Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status.

[2] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment (state) or unclassifiable/attainment (Federal) for CO.

[3] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment for SO_2.

[4] The San Joaquin Valley Air Basin is designated nonattainment for $PM_{2.5}$; because ROGs and NO_X are precursors to $PM_{2.5}$ and PM_{10} includes $PM_{2.5}$, exceedance of those thresholds contributes to the basin nonattainment status.

The emissions shown in this table are based on the assumptions discussed in Section 4.3.1.1, Methods. The estimated emissions associated with a particular construction plan may be higher or lower, depending on the activity levels (e.g., equipment types and number, daily graded acreage) for that construction plan.

Plan-Wide Activities

The extent and nature of Plan-Wide Activities under the Proposed TU MSHCP Alternative would be similar to Existing Ranch Uses under the No Action Alternative, except permanent ground disturbance from these activities would be limited to 200 acres. Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities would be subject to BMPs and use restrictions required by the Ranchwide Management Plan (as currently set forth in the Interim RWMP) to preserve and protect conservation values. These BMPs and use restrictions would require TRC to work with the SJVAPCD to minimize air quality effects in a variety of ways (e.g., achieving energy code compliance with regard to signs and structures, and utilizing off-grid technologies to the extent feasible) (Tejon Ranch Company 2009). In addition, under the Proposed TU MSHCP Alternative, conservation measures requiring dust suppression near construction areas would further minimize effects on air quality.

Plan-Wide Activities would generate only incidental, insubstantial criteria pollutant emissions associated with construction and maintenance of road and utility infrastructure, ancillary ranch structures, and back-country cabins. Development-related infrastructure in open space is analyzed from an air quality perspective in association with the commercial and residential development activities; thus, any construction emissions related to these activities are accounted for in the analysis above. Because ground disturbance would be limited under the Proposed TU MSHCP Alternative to 200 acres, construction emissions associated with Plan-Wide Activities would be no greater than would occur under the No Action Alternative and would not be expected to exceed applicable air quality standards.

4.3.3.2 Operation Emissions

Commercial and Residential Development Activities

Under the Proposed TU MSHCP Alternative, Commercial and Residential Development Activities would generate on-road vehicle travel, which would result in mobile-source emissions that include ozone precursor pollutants (i.e., ROGs and NO_X), PM_{10}, particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and CO. In addition, emissions would result from stationary sources of air emissions associated with commercial and residential land uses (e.g., onsite landscaping equipment, natural gas combustion for cooking and heating, use of consumer products).

Stationary sources of operation emissions were assumed to occur entirely within the SJVAB. As mentioned above, some small amount of development (262.7 acres) could occur in the MDAB if Oso Canyon is developed, which could result in stationary sources of operation emissions within the MDAB (4.51 tons per year of ROG [versus 25 tons per year threshold]; 12.51 tons per year of NO_X [versus 25 tons/year threshold]; and 8.41 tons per year of PM_{10} [versus 15 tons/year threshold][2]; however, this development would only occur if an equivalent area of development did not occur in the SJVAB. Therefore, for the purposes of this analysis, it was assumed that all stationary sources of

[2] As noted above, these emission levels were calculated by scaling the operational emissions at full buildout for the TMV Planning Area to a level associated with a 262.7-acre development footprint. It should be noted that these estimates likely over-predict the emissions associated with development in the MDAB portion of the Oso Canyon area because, for example, the development in the TMV Planning Area involves more than just residential development compared to what might be developed in Oso Canyon. A more refined analysis based on specific development plans would likely generate lower emission estimates. Additional details about this analysis are found in Appendix F.

air emissions would occur in the SJVAB and were compared to the more stringent SJVAPCD thresholds.

Mobile sources of emissions were assumed to occur in the SJVAB and the SCAB and were apportioned between the two basins as discussed above under Operation Assumptions. While it is possible that some travel projected under the Proposed TU MSHCP Alternative could also occur in the MDAB, it would be speculative to apportion any particular amount of vehicle miles travelled (or associated emissions) to this basin. This is because the primary attractant of vehicle trips to and from the MDAB would be associated with the Centennial Project, which would be partially located in the Antelope Valley portion of the MDAB. Planning for the Centennial Project is still in its early stages (for example, a draft EIR has not been released) and exactly where development might occur is not known. However, even if all the daily vehicle trips projected to occur along State Route (SR) 138 (23,069 trips in Austin-Foust Associates 2011) (Appendix H) were to travel half the 6-mile long Centennial Project corridor and emissions were assumed to occur within the Antelope Valley portion of the MDAB, these emissions would still not exceed the thresholds set by the Antelope Valley Air Quality Management District (Antelope Valley Air Quality Management District 2011): 4.20 tons per year of ROG (versus 25 tons per year threshold); 20.98 tons per year of NO_X (versus 25 tons per year threshold); 34.26 tons per year of CO (versus 100 tons per year threshold); 0.16 tons per year of SO_X (versus 25 tons per year threshold); 14.52 tons per year of PM_{10} (versus 15 tons per year threshold); and 1.06 tons per year of $PM_{2.5}$ (versus 15 tons per year threshold).Therefore, for the purposes of the analysis that follows, these trips are attributed to the SCAB and compared to SCAQMD thresholds.[3]

The results of air quality modeling for the buildout condition and key years are presented below. Table 4.3-4 presents the total estimated operation emissions (mobile and stationary) assumed to occur in the SJVAB. Table 4.3-5 presents the total estimated operation emissions (mobile sources only) assumed to occur in the SCAB. Table 4.3-6 presents the total operation emissions for the SJVAB and the SCAB combined. Without mitigation, the ROG, NO_X, and PM_{10} emissions estimated for the SJVAPCD would exceed the SJVAPCD thresholds (and, by implication, the $PM_{2.5}$ emissions would contribute to the SJVAB nonattainment status). The ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$ emissions estimated for the SCAB would exceed the SCAQMD thresholds. The total combined ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$ unmitigated air emissions for both air basins would exceed each air district's thresholds. This would be the case even assuming compliance with Rule 9510 emission reduction requirements of NO_X and PM_{10}.

As mentioned above, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal and state agencies and local jurisdictions as indicated in Section 4.3.3.6, Mitigation Measures. Prior to issuance of any permits or approvals, it is anticipated the local jurisdiction would require demonstration of BMPs to minimize and mitigate operation effects on air quality. For example, Kern County's approval of the TMV Project requires that emissions not exceed 2 tons per year of NO_X or 2 tons per year of PM_{10} (total project construction and operation). Kern County also requires implementation of specific measures to reduce operation

[3] If the development described above were to occur within the Oso Canyon area, and all trips associated with the Centennial Project described above occurred within the MDAB, total emissions for stationary and mobile sources combined within the MDAB would exceed either the EKAPCD's and AVAQMD's thresholds for NO_x and PM_{10}. However, as indicated previously, stationary sources of emissions would be regulated by the EKPACD and mobile sources by the AVAQMD under which each jurisdiction's threshold would not be exceeded. In addition, for the reasons described above, this scenario is considered unlikely, and the emissions are attributed to the SJVAB and SCAB, respectively.

emissions such as incorporating measures into the design to ensure energy efficiency beyond the 2008 Title 24 Standards; providing transit connection on site; providing alternative transportation infrastructure; requiring best available alternative fuel technology for community service vehicles; requiring builders, developers, and custom lot owners to include high-speed communication technology to encourage telecommuting and working from home; and implementing specific measures to encourage ride-sharing and use of alternative fuel vehicles. The TMV Project applicant also committed to a voluntary emissions reduction agreement (VERA) with the SJVAPCD that commits it to fully offsetting its entire NO_X, ROG and PM_{10} emissions in the SJVAB (Appendix J, MMs 4.3-6 through 4.3-14) (Kern County 2009).

In addition, Commercial and Residential Development Activities included in the Proposed TU MSHCP Alternative would occur in the TMV Planning Area, which is a planned development. This would provide more opportunities to mitigate potential emissions effects related to operation. For example, overall commitments can be made to energy efficiency and renewable energy sources that apply across planned developments, voluntary emission reduction agreements can be executed, and requirements can be imposed for encouraging the use of alternative transportation (Appendix J).

Even with implementation of required mitigation measures and BMPs and coordination of planning and development, it is likely that the operation emissions under the Proposed TU MSHCP Alternative would exceed the SJVAPCD thresholds for ROG, NO_x, and PM_{10} (and, by implication, the $PM_{2.5}$ emissions would contribute to the SJVAB's nonattainment status) and SCAQMD thresholds for ROG, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ during certain periods of operation, resulting in substantial effects.

Table 4.3-4. Operation Emissions from Stationary and Mobile Sources in the San Joaquin Valley Air Basin—Proposed TU MSHCP and Condor Only HCP Alternatives (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	9.10	37.86	48.98	0.11	10.76	1.91
2021	24.44	88.10	127.46	0.39	34.95	3.81
2025	36.31	115.00	180.46	0.65	57.73	5.36
2029	65.18	191.64	317.76	1.28	113.21	9.48
2033	89.31	255.42	425.91	1.70	150.70	12.67
2037	91.13	253.83	431.03	1.84	163.32	12.97
Proposed TU MSHCP Alternative Buildout Year 2041						
Area Sources	44.04	8.86	31.80	0.05	0.94	0.94
Operation—On Road	50.76	253.83	414.49	1.93	175.66	12.85
Year 2041 Totals	**94.80**	**262.69**	**446.29**	**1.98**	**176.60**	**13.79**
Maximum Annual Emissions	**94.80**	**262.69**	**446.29**	**1.98**	**176.60**	**13.79**
Rule 9510 Reduction	—	87.48	—	—	88.30	—
Net Emissions	94.80	175.21	446.29	1.98	88.30	13.79
SJVAPCD Significance Threshold	10[1]	10[1]	—[2]	—[3]	15[1]	—[4]

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter

[1] ROG and NO_X CEQA significance thresholds: San Joaquin Valley Air Pollution Control District 2002. PM_{10} CEQA threshold is recommended by SJVAPCD staff. The San Joaquin Valley Air Basin is designated nonattainment (state) and attainment (Federal) for PM_{10}; exceedance of that threshold contributes to basin nonattainment status. ROGs and NO_X are precursors to ozone, and the San Joaquin Valley Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status.

[2] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment (state) or unclassifiable/attainment (Federal) for CO.

[3] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment for SO_2.

[4] The San Joaquin Valley Air Basin is designated nonattainment for $PM_{2.5}$; because ROGs and NO_X are precursors to $PM_{2.5}$ and PM_{10} includes $PM_{2.5}$, exceedance of those thresholds contributes to the basin nonattainment status.

Table 4.3-5. Operation Emissions from Mobile Sources in the South Coast Air Basin—Proposed TU MSHCP and Condor Only HCP Alternatives (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	10.06	65.31	81.61	0.20	18.75	3.22
2021	26.15	151.38	210.81	0.66	60.97	6.33
2025	37.08	196.67	296.75	1.10	100.76	8.85
2029	64.65	326.00	521.07	2.17	197.58	15.56
2033	86.03	433.77	693.32	2.89	262.89	20.70
2037	85.91	430.41	701.45	3.14	284.99	21.15
2041	89.08	445.42	727.36	3.39	308.24	22.54
Maximum Annual Emissions	**89.08**	**445.42**	**727.36**	**3.39**	**308.24**	**22.54**
SCAQMD Significance Threshold[1]	10	10	100	27.4	27.4	10

Notes: ROG = reactive organic gases; NOx = oxides of nitrogen; CO = carbon monoxide; SOx = sulfur oxides; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter; SCAQMD = South Coast Air Quality Management District

[1] CEQA significance thresholds from South Coast Air Quality Management District 2011 converted to tons per year.

Table 4.3-6. Total Operation Emissions in the San Joaquin Valley and South Coast Air Basin Combined—Proposed TU MSHCP and Condor Only Alternatives (tons per year)[1]

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	19.16	103.17	130.59	0.31	29.51	5.13
2021	50.59	239.48	338.27	1.05	95.92	10.14
2025	73.39	311.67	477.21	1.75	158.49	14.21
2029	129.83	517.64	838.83	3.45	310.79	25.04
2033	175.34	689.19	1,119.23	4.59	413.59	33.37
2037	177.04	684.24	1,132.48	4.98	448.31	34.12
Proposed TU MSHCP Alternative Buildout Year 2041						
Area Sources	44.04	8.86	31.8	0.05	0.94	0.94
Operation—On Road	139.84	699.25	1,141.85	5.32	483.90	35.39
Year 2041 Totals	**183.88**	**708.11**	**1,173.65**	**5.37**	**484.84**	**36.33**
Maximum Annual Emissions	**183.88**	**708.11**	**1,173.65**	**5.37**	**484.84**	**36.33**
SJVAPCD Threshold	10[1]	10[2]	—[3]	—[4]	15[2]	—[5]
SCAQMD Threshold[6]	10	10	100	27.4	27.4	10

Notes: ROG = reactive organic gases; NOx = oxides of nitrogen; CO = carbon monoxide; SOx = sulfur oxides; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District; SCAQMD = South Coast Air Quality Management District

[1] The emissions shown do not account for the emission reductions required under Rule 9510, which were shown previously in Table 4.3-4 for the operation emissions in the San Joaquin Valley Air Basin.

[2] ROG and NOX CEQA significance thresholds: San Joaquin Valley Air Pollution Control District 2002. PM10 CEQA threshold is recommended by SJVAPCD staff. The San Joaquin Valley Air Basin is designated nonattainment (state) and attainment (Federal) for PM10; exceedance of that threshold contributes to basin nonattainment status. ROGs and NOX are precursors to ozone, and the San Joaquin Valley Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status.

[3] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment (state) or unclassifiable/attainment (Federal) for CO.

[4] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment for SO_2.

[5] The San Joaquin Valley Air Basin is designated nonattainment for PM2.5; because ROGs and NO_X are precursors to $PM_{2.5}$ and PM_{10} includes $PM_{2.5}$, exceedance of those thresholds contributes to the basin nonattainment status.

[6] CEQA significance thresholds: from South Coast Air Quality Management District 2011 converted to tons per year.

Due to the nature of development under the Proposed TU MSHCP Alternative, there would be a period when portions of the Disturbance Area would be occupied, but construction would still continue. Unlike many development projects where construction and operations represent two distinct phases, under this development scenario, the two phases would overlap and result in combined emissions in the SJVAB. Emissions in the SCAB would be entirely associated with operation activities and are shown in Table 4.3-5 as discussed previously. It is therefore important to consider emissions that could occur during these overlaps. Construction is assumed to be completed in 2040; thus, concurrent operation and construction emissions are assumed to begin once the first units are completed and occupied up to 2040. Table 4.3-7 shows the combined construction and operation emissions for key years after beginning construction (corresponding to construction phasing assumptions) in the SJVAB.

As stated previously and discussed in Section 4.3.3.5, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal and state agencies and local jurisdictions. With respect to the specific development approvals, it is anticipated the local jurisdiction would require incorporation of mitigation measures and BMPs into construction practices to minimize and mitigate effects on air quality, as discussed above.

Even with implementation of required mitigation measures and BMPs, it is likely the combined construction and operation emissions associated with the Proposed TU MSHCP Alternative would exceed the SJVAPCD thresholds for ROG, NO_x, and PM_{10} (and, by implication, the $PM_{2.5}$ emissions would contribute to the SJVAB's nonattainment status) during certain periods of operation, resulting in substantial effects.

Table 4.3-7. Combined Construction and Operation Emissions in the San Joaquin Valley Air Basin—Proposed TU MSHCP and Condor Only Alternatives (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	19.08	77.71	83.18	0.18	14.38	4.16
2021	32.42	114.27	157.96	0.46	37.52	5.12
2025	50.31	147.90	233.01	0.78	61.77	6.81
2029	78.21	223.72	369.18	1.41	116.76	10.89
2033	90.68	258.23	431.57	1.72	151.15	12.77
2037	92.45	256.15	436.61	1.86	163.74	13.05
2041	95.76	263.71	448.55	1.99	176.85	13.82
Maximum Annual Emissions	**95.76**	**263.71**	**448.55**	**1.99**	**176.85**	**13.82**
SJVAPCD Threshold	10[1]	10[1]	—[2]	—[3]	15[1]	—[4]

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District

1 ROG and NO_X CEQA significance thresholds from thresholds: San Joaquin Valley Air Pollution Control District 2002 . PM_{10} CEQA threshold is recommended by SJVAPCD staff. The San Joaquin Valley Air Basin is designated nonattainment (state) and attainment (Federal) for PM_{10}; exceedance of that threshold contributes to basin nonattainment status. ROGs and NO_X are precursors to ozone, and the San Joaquin Valley Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status.

2 The Kern County portion of the San Joaquin Valley Air Basin is designated attainment (state) or unclassifiable/attainment (Federal) for CO.

3 The Kern County portion of the San Joaquin Valley Air Basin is designated attainment for SO_2.

4 The San Joaquin Valley Air Basin is designated nonattainment for $PM_{2.5}$; because ROGs and NO_X are precursors to $PM_{2.5}$ and PM_{10} includes $PM_{2.5}$, exceedance of those thresholds contributes to the basin nonattainment status.

With respect to lead, sulfates, hydrogen sulfide, and vinyl chloride, buildout of the Proposed TU MSHCP Alternative would result in generation of a negligible amount, if any, of these pollutants. Such pollutant emissions are generally associated with industrial land uses that would require air district permits prior to construction or operation; no such land uses are included in the Proposed TU MSHCP Alternative. In addition, the ambient air concentrations for each of these pollutants throughout the study area are below their respective state and/or Federal ambient air quality standards. Therefore, the Proposed TU MSHCP Alternative would not result in substantial emissions of lead, sulfates, hydrogen sulfide, and vinyl chloride.

Plan-Wide Activities

The majority of the Plan-Wide Activities under the Proposed TU MSHCP Alternative would be similar to Existing Ranch Uses under the No Action Alternative, and would result in only minor air emissions. Similar to Existing Ranch Uses, Plan-Wide Activities would be subject to the BMPs and use restrictions required by the Ranchwide Agreement (as currently set forth in the Interim RWMP). These BMPs and use restrictions would include ensuring activities such as farming are conducted in a manner to minimize effects on air quality consistent with the rules and regulations, and in consultation with, the SJVAPCD. To this end, TRC would continue to implement a no-burn policy for agricultural trimmings, implements a dust control plan, and ensure all farming equipment is maintained in good condition.

Some Plan-Wide Activities under the Proposed TU MSHCP would be different compared to the No Action Alternative and could result in additional emissions. For example, recreation access could be expanded under the Proposed TU MSHCP Alternative, which could generate new motor vehicle emissions compared to Existing Ranch Uses under the No Action Alternative. Tours and hikes conducted by the Tejon Ranch Conservancy could be expanded to as many as 30 participants per day above the current level. Assuming each participant would drive a single-passenger vehicle, this activity would generate 60 new one-way trips per day. Compared to the daily trips generated by the Commercial and Residential Development Activities (estimated to be 79,514), the additional trips would be minor and would also result in minor air emissions.. In addition, mitigation, monitoring, and management activities could also generate a small amount of operation emissions relative to existing conditions. These activities would be conducted by the staff biologist on site, and that vehicle use would be minor. Even if Plan-Wide Activities result in 60 one-way new vehicle trips per day, the associated emissions would not contribute substantially (less than 0.08%) to the operation emissions related to the Commercial and Residential Development Activities. Therefore, Plan-Wide Activities would not be expected to result in exceedance of any air district thresholds due to the small scale and infrequency of these activities, similar to the No Action Alternative.

4.3.3.3 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

Commercial and Residential Development Activities

Construction

Currently, few sensitive receptors are present in the immediate vicinity of the Covered Lands, limiting the potential for such receptors to be exposed to pollutants during construction. The exceptions would be near the existing El Tejon School playground, Tejon Fields and the residences near the north end of Lebec Road. As construction progresses, new residents and workers associated with the proposed Commercial and Residential Development Activities would have potential to be exposed to air pollutant concentrations, namely diesel particulate emissions from onsite construction equipment.

A screening level health risk assessment (HRA) was prepared to estimate the potential cancer risks associated with diesel particulate matter resulting from off-road equipment. The purpose of the analysis was to determine whether sensitive receptors would be exposed to a cancer risk of greater than 10 in one million[4] and to determine an allowable proximity of future construction activity to sensitive receptors to avoid substantial health effects if the risk exceeded this threshold. Additional details regarding the HRA are provided in Appendix G, Health Risk Assessment.

Due to the uncertainty of the location of actual construction, the associated diesel particulate matter from construction equipment and heavy-duty trucks, and the location of potential receptors, it was not possible to determine exactly where future receptors (either residences or workplaces) would be located at any given time over the course of the construction phase. As a result, a scenario was developed to estimate the cancer risks to potential sensitive receptors[5] resulting from ongoing

[4] This analysis looks to the SJVAPCD guidance, which provides that cancer risks are significant if the probability of contracting cancer for the Maximally Exposed Individual exceeds 10 in 1 million.

[5] Cancer risks to sensitive receptors, such as residents, were determined for this analysis because such receptors are assumed to be exposed for a longer period (e.g., 24 hours per day, 350 days per year) than workplace receptors (e.g., 8 hours per day, 245 hours per year).

construction activities in their general vicinity. In this scenario, a 5-acre construction site was selected to represent a reasonable simulation of the average acreage in which construction activity (e.g., grading, building construction) would occur over an extended period.

The HRA found that the maximum cancer risk resulting from construction activities associated with Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would be 0.6 in one million, which would not exceed a cancer risk of 10 in one million. In addition, as identified in Section 4.3.3.6, Mitigation Measures, Commercial and Residential Development Activities in the Covered Lands would be subject to Federal, state, and local air quality protection requirements. As part of the project-level approval process, it is anticipated that the local jurisdiction would require the implementation of mitigation and BMPs to reduce air emissions. For example, Kern County's approval of the TMV Project requires limiting construction near schools to specific hours and days (Appendix J, MM 4.3-15) (Kern County 2009). Compliance with these requirements would further reduce development-related air quality effects on sensitive receptors. The risk of exposing sensitive receptors to substantial pollutant concentrations during commercial and residential construction under the Proposed TU MSHCP Alternative would be minor.

Operations

Proposed Commercial and Residential Development Activities are not anticipated to include land uses that involve substantial operation sources of TACs (e.g., power plants, chrome plating shops); rather, operation sources of TAC would be associated with CO from vehicle exhaust. The highest CO concentrations are generally found close to congested intersection locations. Under typical meteorological conditions, CO concentrations tend to decrease as distance from the emissions source (i.e., congested intersection) increases.

To analyze CO hotspots (measured by whether concentrations near an intersection or roadway could exceed the 1-hour or 8-hour CAAQS for CO), it is necessary to know the intersection locations, traffic levels, and adjacent land uses; this information is not known for all the Commercial and Residential Development Activities. Given the rural environment, low background CO concentrations, and decreasing CO emissions from motor vehicles over time, it is unlikely that a CO hotspot area could be created. Use of motor vehicles by residents and end users in development on the Covered Lands would be subject to several Federal and state vehicle and fuel standards, which are intended to reduce emissions of CO and other pollutants. In addition, traffic congestion would be limited through local requirements to avoid adverse conditions (i.e., achieve a good level of service). For example, Kern County's approval of the TMV Project requires the implementation of specific measures to address traffic congestion and limit residential development near I-5 (Appendix J) (Kern County 2009). Compliance with these requirements would reduce development-related air quality effects on sensitive receptors. The risk of exposing sensitive receptors to substantial pollutant concentrations during operation of commercial and residential infrastructure under the Proposed TU MSHCP Alternative would be minor.

Plan-Wide Activities

Plan-Wide Activities are expected to continue at levels similar to Existing Ranch Uses under the No Action Alternative, with the exception that permanent ground disturbance would be limited to 200 acres. As discussed in Section 4.3.2.3, Exposure of Sensitive Receptors to Substantial Pollutant Concentrations, Existing Ranch Uses would result in a minor risk of exposing sensitive receptors to pollutants. As discussed in Section 4.2.3.2, Operation Emissions, additional Plan-Wide Activities under the Proposed TU MSHCP Alternative would result in some minor emissions from expansion of

public recreation and implementation of mitigation, monitoring, and management activities. These minor emissions would not be expected to expose sensitive receptors to substantial additional pollutant concentrations because these activities would be very limited. Therefore, the risk of exposing sensitive receptors to substantial pollutant concentrations from Plan-Wide Activities would be minor, similar to the No Action Alternative.

4.3.3.4 Objectionable Odors

Commercial and Residential Development Activities

Construction

Currently, few sensitive receptors are present in the immediate vicinity of the Covered Lands, limiting the potential for such users to be exposed to objectionable odors during construction. The exceptions would be near the existing El Tejon School playground, Tejon Fields, the residences near the north end of Lebec Road, and residents and workers that move into the Covered Lands as development progresses. Potential sources that may emit odors during construction activities associated with Commercial and Residential Development Activities include the use of architectural coatings and solvents.

Commercial and Residential Development Activities would be subject to several Federal, state, and local air quality protection requirements as indicated in Section 4.3.3.6, Mitigation Measures. As part of the project-level approval process, it is anticipated that the local jurisdiction would require the implementation of mitigation and BMPs to reduce air emissions. For example, compliance with SJVAPCD Rule 4601 would be required, which would limit the amount of volatile organic compounds (VOCs) from architectural coatings and solvents. Therefore, the likelihood that construction associated with Commercial and Residential Development Activities would expose sensitive receptors to substantial objectionable odors under the Proposed TU MHSCP Alternative would be minor.

Operations

According to the SJVAPCD, land uses that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. While most of these uses would not be present in the Covered Lands under the Proposed TU MSHCP Alternative, Commercial and Residential Development Activities may include wastewater treatment facilities, equestrian centers, commercial refuse receptacles, and restaurant uses, which could result in the creation of objectionable odors.

As mentioned previously, Commercial and Residential Development Activities would be subject to several Federal, state, and local air quality protection requirements as indicated in Section 4.3.3.6, Mitigation Measures. For example, Kern County's approval of the TMV Project requires that potential odor problems associated with equestrian or water reclamation facilities be addressed adequately by the project applicant (Kern County 2009, Mitigation Measures 4.3-16 and 4.3-17). Therefore, potential sources of objectionable odors would be addressed and minimized, and the likelihood that operation of commercial and residential infrastructure would expose sensitive receptors to substantial objectionable odors would be minor.

Plan-Wide Activities

Plan-Wide Activities are expected to continue at existing levels similar to Existing Ranch Uses under the No Action Alternative. As discussed in Section 4.3.2.4, Objectionable Odors, Existing Ranch Uses would result in minor emissions associated primarily with agricultural operations and cattle ranching. Additional Plan-Wide Activities under the Proposed TU MSHCP Alternative would also be spread out and located far away from the majority of sensitive receptors. Therefore, the risk that the Proposed TU MSHCP Alternative would result in a substantial increase in the creation of objectionable odors would be minor, similar to the No Action Alternative.

4.3.3.5 Mitigation Measures

BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the Proposed TU MSHCP Alternative on air quality. The Proposed TU MSHCP Alternative would also include species-specific conservation measures (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives), such as dust control requirements, which would reduce potential effects on air quality. If the Service issues an ITP to TRC for incidental take of the 27 species covered under the TU MSHCP, these measures would be enforceable under the ESA through the ITP and applicable conservation easements. In addition, the following mitigation measure is proposed to minimize the air quality effects that may be associated with the Proposed TU MSHCP Alternative.

- ***Comply with Applicable Federal, State, and Local Air Quality Requirements.*** Activities in the Covered Lands will comply with applicable state, Federal, and local air quality protection laws and regulations, including the Federal Clean Air Act, the California Clean Air Act, and all applicable SJVAPCD, EKAPCD, and SCAQMD rules and regulations. Compliance with these Federal, state and local requirements will be translated into a suite of specific measures that would be imposed at the time individual development projects are approved.
- Generally, air quality protection laws under the Federal and state Clean Air Acts and most Federal air quality regulations adopted by the U.S. Environmental Protection Agency (EPA) are implemented at the state and local levels through adoption of air quality management plans and rules and regulations implemented by the local air pollution control districts. Commercial and Residential Development Activities and any relevant Plan-Wide Activities in the jurisdiction of the SJVAPCD, EKAPCD, and the SCAQMD would be required to meet the rules and regulations of the applicable air quality management plans during individual project-level permitting at the local level.

4.3.4 Condor Only HCP Alternative

4.3.4.1 Construction Emissions

Commercial and Residential Development Activities

Construction emissions associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Construction emissions associated with Plan-Wide Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

4.3.4.2 Operation Emissions

Commercial and Residential Development Activities

Operation emissions associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Operation emissions associated with Plan-Wide Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

4.3.4.3 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

Commercial and Residential Development Activities

Construction

The potential for exposure of sensitive receptors to substantial pollutant concentrations associated with construction emissions from Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Operations

The potential for exposure of sensitive receptors to substantial pollutant concentrations associated with operation emissions from Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

The potential for exposure of sensitive receptors to substantial pollutant concentrations associated with Plan-Wide Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

4.3.4.4 Objectionable Odors

Commercial and Residential Development Activities

Construction

The potential for the emission of objectionable odors associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Operations

The potential for emissions of objectionable odors associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

The potential for the emission of objectionable odors associated with Plan-Wide Activities would be the same as described for the Proposed TU MSHCP Alternative.

4.3.4.5 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP), would reduce the effects of the Condor Only HCP Alternative on air quality. However, only the species-specific conservation measures for California condor (Table 2-3 in Chapter 2, Proposed TU MSHCP and Alternatives) would be implemented under this alternative. The mitigation measures listed in Section 4.3.3.5, Mitigation Measures, for the Proposed TU MSHCP Alternative are also applicable to the Condor Only HCP Alternative.

4.3.5 CCH Avoidance MSHCP Alternative

4.3.5.1 Construction Emissions

Commercial and Residential Development Activities

Under the CCH Avoidance MSHCP Alternative, Commercial and Residential Development Activities would affect a slightly smaller Disturbance Area. Under this alternative, 4,496 acres would be developed compared with 5,553 acres under the Proposed TU MSHCP Alternative. This would represent approximately 1,037 fewer acres of development and 471 fewer residential units. The smaller amount of development and Disturbance Area would tend to result in slightly lower construction emissions than the Proposed TU MSHCP Alternative. However, because Commercial and Residential Development would be concentrated outside of California condor critical habitat under this alternative, grading would occur in steeper terrain than under the Proposed TU MSHCP Alternative and would require the cut-and-fill of additional soil (approximately 90 million cubic yards) compared with the Proposed TU MSHCP Alternative (75 million cubic yards), which could increase annual emissions during the periods in which grading would occur, depending on the grading schedule and construction activity levels.

Nonetheless, given the similarities between the CCH Avoidance MSHCP Alternative and the Proposed TU MSHCP Alternative, the analysis presented in the Section 4.3.3.1, Construction Emissions, would generally apply to the CCH Avoidance MSHCP Alternative. Similar to the Proposed TU MSHCP Alternative, construction emissions under the CCH Avoidance MSHCP Alternative would have the potential to exceed applicable local jurisdiction air quality thresholds during certain periods of construction even with implementation of the mitigation measure listed in Section 4.3.5.6, Mitigation Measures, resulting in substantial effects.

Plan-Wide Activities

The extent and nature of Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would be similar to Existing Ranch Uses under the No Action Alternative, except permanent ground

disturbance from these activities would be limited to 200 acres. Similar to Existing Ranch Uses, Plan-Wide Activities would be subject to BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP). These BMPs and use restrictions would require that Plan-Wide Activities be conducted in a manner to minimize effects on air quality consistent with the rules and regulations of the SJVAPCD (e.g., achieving energy code compliance with regard to signs and structures, utilizing off-grid technologies to the extent feasible).

Plan-Wide activities would generate only incidental, insubstantial criteria pollutant emissions associated with filming activities and construction and maintenance of road and utility infrastructure, ancillary ranch structures, and back-country cabins. Development-related infrastructure in open space is analyzed from an air quality perspective in association with the commercial and residential development activities; thus, any construction emissions related to these activities are accounted for in the analysis above. Because ground disturbance would be limited under the CCH Avoidance MSHCP Alternative to 200 acres and also subject to the Ranchwide Agreement use restrictions and BMPs, as well as dust suppression requirements that would be included as an ESA-related conservation measure, construction emissions associated with Plan-Wide Activities would be no greater than would occur under the No Action Alternative and, similarly, would not be expected to result in exceedance of air quality standards.

4.3.5.2 Operation Emissions

Commercial and Residential Development Activities

Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would generate stationary and mobile sources of emissions. Stationary emissions would be associated with sources such as onsite landscaping equipment, natural gas combustion (to facilitate cooking and heating), and use of consumer products. Mobile sources would include on-road vehicle travel. Similar to the Proposed TU MSHCP and Condor Only HCP Alternatives, mobile sources of emissions were assumed to occur in the SJVAB and the SCAB and apportioned between the two basins as discussed above under Operation Assumptions. While it is possible that some travel projected under the CCH Avoidance MSHCP Alternative could also occur in the MDAB, it would be speculative to attempt to apportion any particular amount of vehicle miles travelled (or associated emissions) to this basin. This is because the primary attraction of vehicle trips to and from the MDAB would be associated with the Centennial Project, which is proposed to be partially located within the Antelope Valley portion of the MDAB. Planning for the Centennial Project is still in its early stages and exactly where development might occur is not known. Even if all the daily vehicle trips projected to occur along SR 138 (21,752 trips from Austin-Foust Associates 2011) (Appendix H) were to occur in the MDAB, emissions would still not exceed the thresholds set by the AVAQMD: 3.96 tons per year of ROG (versus 25 tons per year threshold); 19.79 tons per year of NO_X (versus 25 tons per year threshold); 32.31 tons per year of CO (versus 100 tons per year threshold); 0.15 tons per year of SO_X (versus 25 tons per year threshold); 13.69 tons per year of PM_{10} (versus 15 tons per year threshold); and 1.00 tons per year of $PM_{2.5}$ (versus 15 tons per year threshold). Therefore, for the purposes of the analysis that follows, these trips are apportioned to the SCAB and compared to SCAQMD thresholds.

The results of air quality modeling for long-term emissions for the buildout condition and key years are presented below in Table 4.3-8 for the total estimated operation emissions (mobile and stationary) assumed to occur within the SJVAB. Table 4.3-9 presents the total estimated operation emissions (mobile sources only) assumed to occur within the SCAB. Table 4.3-10 presents the total

estimated operation emissions for the SJVAB and the SCAB combined. Without mitigation, the ROG, NO_X, and PM_{10} emissions would exceed the SJVAPCD thresholds (and, by implication $PM_{2.5}$ emissions would contribute to the basin's nonattainment status), the ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$ emissions would exceed the SCAQMD thresholds. The total combined emissions would exceed both air districts' thresholds. This would be the case even assuming compliance with Rule 9510 emission reduction requirements of NO_X and PM_{10}.

As mentioned above and discussed in Section 4.3.5.6, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal, and state agencies and local jurisdictions. Prior to issuance of any specific development-related permits or approvals, it is anticipated the local jurisdiction would require demonstration of BMPs to minimize operation effects on air quality. For example, although this alternative does not include the TMV Project per se, Kern County's approval of the TMV Project requires that emissions shall not exceed 2 tons per year of NOx or 2 tons per year of PM_{10} (total project construction and operation). Kern County also requires implementation of specific measures to reduce operation emissions such as incorporating measures into the design to ensure energy efficiency beyond the 2008 Title 24 Standards; providing transit connection on site; providing alternative transportation infrastructure; requiring best available alternative fuel technology for community service vehicles; requiring builders, developers, and custom lot owners to include high-speed communication technology to encourage telecommuting and working from home; and implementing specific measures to encourage ride-sharing and use of alternative fuel vehicles (Appendix J, MMs 4.3-6 through 4.3-14) (Kern County 2009). Similar requirements are anticipated to be imposed for development under this alternative.

In addition, the Commercial and Residential Development Activities included in the CCH Avoidance MSHCP Alternative would occur as a planned development. This would provide more opportunities to mitigate potential emissions effects related to operation. For example, overall commitments can be made to energy efficiency and renewable energy sources that apply across planned developments, voluntary emission reduction agreements can be executed, and requirements can be imposed for encouraging the use of alternative transportation (Appendix J).

Even with implementation of these mitigation measures, the operation emissions associated with the CCH Avoidance MSHCP Alternative would likely exceed the SJVAPCD thresholds for ROG, NOx and PM10 (and, by implication PM2.5 emissions would contribute to the SJVAB's nonattainment status), and the SCAQMD thresholds for ROG, NOX, CO, SOX, PM10, and PM2.5, resulting in substantial effects.

Table 4.3-8. Operation Emissions (Stationary and Mobile Sources) in the San Joaquin Valley Air Basin—CCH Avoidance MSHCP Alternative (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	8.29	34.77	44.89	0.10	9.88	1.75
2021	22.27	81.51	117.62	0.36	32.35	3.51
2025	33.30	107.25	167.81	0.61	53.90	4.99
2029	60.12	180.04	297.56	1.20	106.46	8.89
2033	81.71	238.01	395.59	1.58	140.57	11.79
2037	83.80	237.90	402.62	1.73	153.24	12.12
CCH Avoidance MSHCP Alternative Buildout Year 2041						
Area Sources	39.72	7.99	27.92	0.05	0.84	0.84
Operation—On Road	47.88	239.44	390.99	1.82	165.70	12.12
Year 2041 Totals	**87.60**	**247.43**	**418.91**	**1.87**	**166.54**	**12.96**
Maximum Emissions	**87.60**	**247.43**	**418.91**	**1.87**	**166.54**	**12.96**
Rule 9510 Reduction	—	82.39	—	—	83.27	—
Net Emissions	87.60	165.04	418.91	1.87	83.27	12.96
SJVAPCD Significance Threshold	10[1]	10[1]	—[2]	—[3]	15[1]	—[4]

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District.

[1] ROG and NO_X CEQA significance thresholds from SJVAPCD 2002. PM_{10} CEQA threshold is recommended by SJVAPCD staff. The San Joaquin Valley Air Basin is designated nonattainment (state) and attainment (Federal) for PM_{10}; exceedance of that threshold contributes to basin nonattainment status. ROGs and NO_X are precursors to ozone, and the San Joaquin Valley Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status.

[2] The Kern County portion of the SJVAB is designated attainment (state) or unclassifiable/attainment (Federal) for CO.

[3] The Kern County portion of the SJVAB is designated attainment for SO_2.

[4] The SJVAB is designated nonattainment for $PM_{2.5}$; because ROGs and NO_X are precursors to $PM_{2.5}$ and PM_{10} includes $PM_{2.5}$, exceedance of those thresholds contributes to the basin nonattainment status.

Table 4.3-9. Operation Emissions (Mobile Sources) within the South Coast Air Basin—CCH Avoidance MSHCP Alternative (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	9.25	59.99	74.96	0.18	17.22	2.96
2021	24.22	140.20	195.24	0.61	56.47	5.86
2025	34.62	183.65	277.10	1.03	94.09	8.27
2029	60.81	306.65	490.14	2.04	185.85	14.63
2033	80.27	404.75	646.93	2.70	245.30	19.31
2037	80.63	404.00	658.40	2.95	267.50	19.86
2041	84.03	420.17	686.12	3.20	290.77	21.27
Maximum Emissions	**84.03**	**420.17**	**686.12**	**3.20**	**290.77**	**21.27**
SCAQMD Threshold[1]	10	10	100	27.4	27.4	10

Notes:
ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SCAQMD = South Coast Air Quality Management District

[1] CEQA significance thresholds from SCAQMD 2011 converted to tons per year.

Table 4.3-10. Total Operation Emissions—Proposed CCH Avoidance MSHCP Alternative (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	17.54	94.76	119.85	0.28	27.10	4.71
2021	46.49	221.71	312.86	0.97	88.82	9.37
2025	67.92	290.90	444.91	1.64	147.99	13.26
2029	120.93	486.69	787.70	3.24	292.31	23.52
2033	161.98	642.76	1,042.52	4.28	385.87	31.10
2037	164.43	641.90	1,061.02	4.68	420.74	31.98
CCH Avoidance MSHCP Alternative Buildout Year 2041						
Area Sources	39.72	7.99	27.92	0.05	0.84	0.84
Operation—On Road	131.91	659.61	1,077.11	5.02	456.47	33.39
Year 2041 Totals	**171.63**	**667.60**	**1,105.03**	**5.07**	**457.31**	**34.23**
Maximum Emissions	**171.63**	**667.60**	**1,105.03**	**5.07**	**457.31**	**34.23**
SJVAPCD Threshold	10[1]	10[1]	—[2]	—[3]	15[1]	—[4]
SCAQMD Threshold[5]	10	10	100	27.4	27.4	10

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District; SCAQMD = South Coast Air Quality Management District.

1 ROG and NO_X CEQA significance thresholds from SJVAPCD 2002. PM_{10} CEQA threshold is recommended by SJVAPCD staff. The San Joaquin Valley Air Basin is designated nonattainment (state) and attainment (Federal) for PM_{10}; exceedance of that threshold contributes to basin nonattainment status. ROGs and NO_X are precursors to ozone, and the San Joaquin Valley Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status.

2 The Kern County portion of the SJVAB is designated attainment (state) or unclassifiable/attainment (Federal) for CO.

3 The Kern County portion of the SJVAB is designated attainment for SO_2.

4 The SJVAB is designated nonattainment for $PM_{2.5}$; because ROGs and NO_X are precursors to $PM_{2.5}$ and PM_{10} includes $PM_{2.5}$, exceedance of those thresholds contributes to the basin nonattainment status.

5 CEQA significance thresholds from SCAQMD 2011 converted to tons per year.

As discussed above, due to the nature of development under the CCH Avoidance MSHCP Alternative, there would be a period when portions of the Disturbance Area would be occupied, but construction would still continue. Thus, unlike many development projects where construction and operations represent two distinct phases, under this development scenario, the two phases would overlap and result in combined construction and operation emissions within the SJVAB. Emissions in the SCAB would be entirely associated with operation activities and are shown in Table 4.3-9 as discussed previously. It is therefore important to consider emissions that could occur during these overlaps. Construction is assumed to be completed in 2040; concurrent operation and construction emissions are assumed to begin once the first units are completed and occupied up to 2040. Table 4.3-11 shows the combined construction and operation emissions at four-year intervals after beginning construction (corresponding to construction phasing assumptions) in the SJVAB.

As stated previously, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal, and state agencies and local jurisdictions. Specifically, a building or grading permit would be required from the local jurisdiction prior to construction. It is anticipated that prior to issuance of the required permits, the local jurisdiction will require demonstration of incorporation of BMPs into construction practices to minimize effects on air quality as discussed above.

The emissions shown in Table 4.3-11 do not account for the emission reductions required under Rule 9510, which were shown previously in Tables 4.3-3 and 4.3-8 for the construction and operation emissions, respectively, in the SJVAB. Even with implementation of required mitigation measures and BMPs, it is likely the combined construction and operation emissions associated with the Proposed TU MSHCP Alternative would exceed the SJVAPCD thresholds for ROG, NO_x, and PM_{10} (and, by implication, the $PM_{2.5}$ emissions would contribute to the SJVAB's nonattainment status) during certain periods of operation, resulting in substantial effects.

Table 4.3-11. Combined Construction and Operation Emissions within the San Joaquin Valley Air Basin—CCH Avoidance MSHCP Alternative (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	18.27	74.62	79.09	0.17	13.50	4.00
2021	30.25	107.68	148.12	0.43	34.92	4.82
2025	47.30	140.15	220.36	0.74	57.94	6.44
2029	73.15	212.12	348.98	1.33	110.01	10.30
2033	83.08	240.82	401.25	1.60	141.02	11.89
2037	85.12	240.22	408.20	1.75	153.66	12.20
2041	87.60	247.43	418.91	1.87	166.54	12.96
Maximum Emissions	**87.60**	**247.43**	**418.91**	**1.87**	**166.54**	**12.96**
SJVAPCD Significance Threshold	10[1]	10[1]	—[2]	—[3]	15[1]	—[4]

Notes: ROG = reactive organic gases; NOx = oxides of nitrogen; CO = carbon monoxide; SOx = sulfur oxides; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District.

[1] ROG and NO_X CEQA thresholds from SJVAPCD 2002. PM10 CEQA threshold is recommended by SJVAPCD staff. The San Joaquin Valley Air Basin is designated nonattainment (state) and attainment (Federal) for PM_{10}; exceedance of that threshold contributes to basin nonattainment status. ROGs and NO_X are precursors to ozone, and the SJVAB is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status.

[2] The Kern County portion of the SJVAB is designated attainment (state) or unclassifiable/attainment (Federal) for CO.

[3] The Kern County portion of the SJVAB is designated attainment for SO_2.

[4] The SJVAB is designated nonattainment for $PM_{2.5}$; because ROGs and NO_X are precursors to $PM_{2.5}$ and PM_{10} includes $PM_{2.5}$, exceedance of those thresholds contributes to the basin nonattainment status.

With respect to lead, sulfates, hydrogen sulfide, and vinyl chloride, buildout of the CCH Avoidance MSHCP Alternative would result in a negligible amount, if any, of these pollutants. Such pollutant emissions are generally associated with industrial land uses that would require air district permits prior to construction or operation; no such land uses are included in the CCH Avoidance MSHCP Alternative. In addition, the ambient air concentrations for each of these pollutants throughout the study area are below their respective state and/or Federal ambient air quality standards.

Plan-Wide Activities

The majority of the Plan-Wide Activities that would occur under the CCH Avoidance MSHCP Alternative would be similar to Existing Ranch Uses under the No Action Alternative, and would result in only minor air emissions. Similar to Existing Ranch Uses, Plan-Wide Activities would be subject to the BMPs and use restrictions required by the Ranchwide Agreement (as currently set forth in the Interim RWMP). These BMPs and use restrictions include ensuring activities such as farming are conducted in a manner to minimize effects on air quality consistent with the rules and regulations of, and in consultation with, the SJVAPCD. To this end, TRC would continue to implement a no-burn policy for agricultural trimmings, implement a dust control plan, and ensure all farming equipment is maintained in good condition.

Some Plan-Wide Activities under the Proposed TU MSHCP would be different compared to the No Action Alternative and could result in additional emissions. For example, recreational access could be expanded under the CCH Avoidance MSHCP Alternative, which could generate new motor vehicle emissions compared to Existing Ranch Uses under the No Action Alternative. Tours and hikes conducted by the Tejon Ranch Conservancy could be expanded to as many as 30 participants per day above the current level. Assuming each participant would drive a single-passenger vehicle, this activity would generate 60 new one-way trips per day. Compared to the daily trips generated by Commercial and Residential Development Activities (estimated to be 75,066 trips per day), the additional trips would be minor and would also result in minor air emissions. In addition, mitigation, monitoring, and management activities could also generate a small amount of operation emissions relative to existing conditions. These activities would be conducted by the staff biologist on site, and that vehicle use would be minor.

If it is assumed that Plan-Wide Activities could contribute approximately 60 one-way new vehicle trips per day, the associated emissions would not contribute substantially (0.08%) to the operation emissions related to the Commercial and Residential Development Activities. Thus, overall, Plan-Wide Activities would not be expected to result in exceedance of any air district thresholds due to the small scale and infrequency of these activities similar to the No Action Alternative.

4.3.5.3 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

Commercial and Residential Development Activities

Construction

Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would be similar to those that would occur under the Proposed TU MSHCP Alternative except there would be 471 fewer residential units. Although there would be fewer units constructed, the overall density of the development would be greater. Because of the similarities between the Proposed TU MSHCP and the CCH Avoidance MSHCP Alternatives, the HRA conducted for the Proposed TU MSHCP Alternative provides a conservative scenario that would also apply to the CCH Avoidance MSHCP Alternative. As discussed under Section 4.3.3.3, Exposure of Sensitive Receptors to Substantial Pollutant Concentrations, the HRA found that the potential construction-related emissions effects would not exceed cancer risk thresholds. Additional details regarding the HRA are provided in Appendix G, Health Risk Assessment.

In addition, as identified in Section 4.3.5.6, Mitigation Measures, development in the Covered Lands would be subject to several Federal, state, and local air quality protection requirements. As part of the project-level approval process, it is anticipated that the local jurisdiction would require the implementation of mitigation measures and BMPs to reduce air emissions. For example, although this alternative does not include the TMV Project per se, Kern County's approval of the TMV Project requires limiting construction near schools to specific hours and days (Appendix J, MM 4.3-15) (Kern County 2009). Compliance with these requirements would further reduce development-related air quality effects on sensitive receptors. Similar requirements are anticipated to be imposed for development under this alternative. The risk of exposing sensitive receptors to substantial pollutant concentrations during construction under the CCH Avoidance MSHCP Alternative would be minor.

Operations

Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would be similar to those that would occur under the Proposed TU MSHCP Alternative except there would be 471 fewer residential units. Commercial and Residential Development is not anticipated to include land uses that involve substantial operation sources of TACs (e.g., power plants, chrome plating shops); rather, operation sources of TAC would be associated with CO from vehicle exhaust. The highest CO concentrations are generally found close to congested intersection locations.

As noted in Section 4.3.3.3, Exposure of Sensitive Receptors to Substantial Pollutant Concentrations, to analyze CO hotspots, it would be necessary to know intersection locations, traffic levels, and adjacent land uses, information that is not known for all of the Commercial and Residential Development Activities proposed under this alternative. Given the low background CO concentrations and decreasing CO emissions from motor vehicles over time, it is unlikely that a CO hotspot area could be created. Use of motor vehicles by residents and end users in developed areas of the Covered Lands would be subject to several Federal and state vehicle and fuel standards, which are intended to reduce emissions of CO and other pollutants. In addition, traffic congestion would be limited through local requirements to avoid adverse conditions (i.e., achieve a good level of service). For example, although this alternative does not include the TMV Project per se, Kern County's approval of the TMV Project requires the implementation of specific measures to address traffic congestion and limit residential development near I-5 (Appendix J) (Kern County 2009). Compliance with these requirements would reduce development-related air quality effects on sensitive receptors. Similar requirements are anticipated to be imposed for development under this alternative. The risk of exposure of sensitive receptors to substantial pollutant concentrations from operation of developed infrastructure under the CCH Avoidance MSHCP Alternative would be minor.

Plan-Wide Activities

Plan-Wide Activities are expected to continue at levels similar to Existing Ranch Uses under the No Action Alternative. As discussed in Section 4.3.2.3, Exposure of Sensitive Receptors to Substantial Pollutant Concentrations, Existing Ranch Uses would result in a low risk of exposing sensitive receptors to pollutants. As discussed in Section 4.3.5.2, Operation Emissions, additional Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would result in some minor emissions from expansion of public recreation and implementation of mitigation, monitoring, and management activities. These minor emissions would not be expected to exposure sensitive receptors to substantial pollutant concentrations because these activities would be very limited and infrequent. Therefore, the risk of exposure of sensitive receptors to substantial pollutant concentrations from Plan-Wide Activities would be minor, similar to the No Action Alternative.

4.3.5.4 Objectionable Odors

Commercial and Residential Development Activities

Construction

Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would be similar to those that would occur under the Proposed TU MSHCP Alternative except that there would be 471 fewer residential units. Currently, few sensitive receptors are present in the immediate vicinity of the Covered Lands, limiting the potential for such users to be exposed to objectionable odors during construction. The exceptions would be near the existing El Tejon School

playground, Tejon Fields, the residences near the north end of Lebec Road, and residents and workers that move into the Covered Lands as development progresses. Potential sources that may emit odors during construction activities associated with Commercial and Residential Development Activities include the use of architectural coatings and solvents.

Commercial and Residential Development Activities would be subject to several Federal, state, and local air quality protection requirements as indicated in Section 4.3.5.6, Mitigation Measures. As part of the project-level approval process, it is anticipated that the local jurisdiction would require the implementation of mitigation measures and BMPs to reduce air emissions. For example, compliance with SJVAPCD Rule 4601 would be required, which would limit the amount of VOCs from architectural coatings and solvents. Therefore, the likelihood of construction activities associated with Commercial and Residential Development Activities exposing sensitive receptors to substantial objectionable odors would be minor.

Operations

According to the SJVAPCD, land uses that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. While most of these uses would not be present in the Covered Lands under the CCH Avoidance MSHCP Alternative, Commercial and Residential Development Activities may include wastewater treatment facilities, equestrian centers, commercial refuse receptacles, and restaurant uses, which could result in the creation of objectionable odors.

As mentioned previously, Commercial and Residential Development Activities would be subject to several Federal, state, and local air quality protection requirements. For example, Kern County's approval of the TMV Project requires that potential odor problems associated with equestrian or water reclamation facilities be addressed adequately by the project applicant (Kern County 2009, Mitigation Measures 4.3-16 and 4.3-17). Therefore, potential sources of objectionable odors would be addressed and minimized, and the likelihood that operation of developed infrastructure under the CCH MSHCP Avoidance Alternative would expose sensitive receptors to substantial objectionable odors would be minor.

Plan-Wide Activities

Plan-Wide Activities are expected to continue at existing levels similar to Existing Ranch Uses under the No Action Alternative. As discussed in Section 4.3.2.4, Objectionable Odors, Existing Ranch Uses would result in minor emissions associated primarily with agricultural operations and cattle ranching. Additional Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would also be spread out and located far away from the majority of sensitive receptors. Therefore, the risk of creating objectionable odors under the CCH Avoidance MSHCP Alternative would be minor, similar to the No Action Alternative.

4.3.5.5 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the CCH Avoidance MSHCP Alternative on air quality. Species-specific conservation measures, similar to those provided in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP Alternative, would also be implemented to avoid, mitigate, and minimize the effects of the Covered Activities on the Covered Species, which would also benefit air quality (e.g., dust suppression measures). Conservation measures would be

enforceable under the ESA. In addition, the mitigation measure listed in Section 4.3.3.6, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the CCH Avoidance MSHCP Alternative.

4.3.6 Kern County General Plan Buildout Alternative

4.3.6.1 Construction Emissions

Commercial and Residential Development Activities

Construction in the Covered Lands under the Kern County General Plan Buildout would occur in the SJVAB and the MDAB. Construction would generate the same types of air emissions as discussed under the Proposed TU MSHCP Alternative (ozone precursor emissions from construction, mobile source emissions, and diesel emissions); however, there would be additional emissions associated with the greater Disturbance Area associated with Commercial and Residential Development Activities. Air pollutant emissions during construction would vary substantially from day to day, depending on the level of construction activity, the specific type of operation, and prevailing weather conditions.

Table 4.3-12 summarizes potential construction emissions in the SJVAB. Table 4.3-13 summarizes the potential construction emissions in the MDAB, and Table 4.3-14 summarizes the potential construction emissions in both air basins combined. Without mitigation, ROG and NO_X emissions in the SJVAB would exceed the SJVAPCD thresholds. The total NO_X emissions would exceed the EKAPCD threshold. As further indicated in Table 4.3-12, this would be the case even assuming mandatory emissions reductions of NO_X required pursuant to Rule 9510.

As noted previously and discussed in Section 4.3.6.6, Mitigation Measures, all Commercial and Residential Development Activities would be subject to Federal, state, and local air quality protection requirements. As part of the project-level approval process, it is anticipated that the local jurisdiction would require the implementation of mitigation measures and BMPs to reduce air emissions as part of its environmental review process. For example, Kern County's approval of the TMV Project requires that emissions not exceed 2 tons per year of NO_X or 2 tons per year of PM_{10} (total project construction and operation). Kern County also requires submittal and implementation of a Dust Control Plan approved by the SJVAPCD, including specific dust control BMPs; compliance with all other requirements of the SJVAPCD Fugitive Dust Rules; use alternative fuel technologies for construction vehicles; and selection of sustainable construction materials (Appendix J, MMs 4.3-1 through 4.3-5) (Kern County 2009).

Because some development under the Kern County General Plan Buildout Alternative may not be part of a larger planned development, there would not be the same potential to coordinate mitigation efforts to reduce construction emissions compared with the other proposed action alternatives. In addition, smaller-lot developments may not result in the same requirements to implement BMPs during construction that would be triggered by a larger planned development; however, it is anticipated that similar measures would be required during review and approval of a local grading or building permit.

Even with implementation of required mitigation measures and BMPs, it is likely SJVAPCD and EKAPCD thresholds would be exceeded during certain periods of construction under the Kern County General Plan Buildout Alternative, resulting in substantial effects.

Table 4.3-12. Construction Emissions in the San Joaquin Valley Air Basin—Kern County General Plan Buildout Alternative (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2013	3.56	25.76	15.36	0.03	1.87	1.52
2014	7.03	22.76	17.76	0.04	2.10	1.31
2015	7.12	20.67	17.20	0.04	1.97	1.17
2016	6.87	18.73	16.68	0.04	1.85	1.04
2017	9.98	39.85	34.20	0.07	3.62	2.25
2018	6.60	16.79	17.94	0.04	1.91	0.86
2019	6.38	15.18	17.54	0.04	1.79	0.75
2020	6.22	13.80	17.27	0.04	1.70	0.65
2021	10.05	26.92	31.70	0.08	2.98	1.34
2022	7.58	11.78	17.36	0.04	1.78	0.50
2023	7.47	10.76	17.12	0.04	1.72	0.44
2024	7.42	9.96	17.04	0.04	1.68	0.39
2025	18.24	44.75	71.47	0.18	5.14	1.95
2026	13.91	22.02	40.13	0.11	3.20	0.82
2027	13.91	22.02	40.13	0.11	3.20	0.82
2028	13.86	21.94	39.98	0.11	3.18	0.82
2029	15.07	32.70	52.39	0.13	3.95	1.44
2030	11.40	11.76	28.34	0.08	2.29	0.37
2031	11.40	11.76	28.34	0.08	2.29	0.37
2032	11.44	11.81	28.45	0.08	2.30	0.37
2033	4.38	8.90	19.37	0.05	1.05	0.29
2034	3.75	5.99	13.63	0.03	0.81	0.16
2035	3.67	5.32	13.53	0.03	0.77	0.12
2036	3.69	5.34	13.58	0.03	0.77	0.12
2037	4.64	9.00	23.47	0.06	1.13	0.25
2038	3.74	5.68	14.66	0.04	0.77	0.12
2039	3.72	5.66	14.60	0.04	0.77	0.12
2040	3.45	4.09	10.99	0.03	0.59	0.08
Maximum Annual Emissions	**18.24**	**44.75**	**71.47**	**0.18**	**5.14**	**1.95**
Rule 9510 Reduction	—	8.14	—	—	0.76	—
Net Emissions	18.24	36.61	71.47	0.18	4.38	1.95
SJVAPCD Significance Threshold	10[1]	10[1]	—[2]	—[3]	15[1]	—[4]

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District

[1] ROG and NO_X CEQA significance thresholds: San Joaquin Valley Air Pollution Control District 2002. PM_{10} CEQA threshold is recommended by SJVAPCD staff. The San Joaquin Valley Air Basin is designated nonattainment (state) and attainment (Federal) for PM_{10}; exceedance of that threshold contributes to basin nonattainment status. ROGs and NO_X are precursors to ozone, and the San Joaquin Valley Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status.

[2] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment (state) or unclassifiable/attainment (Federal) for CO.

[3] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment for SO_2.

[4] The San Joaquin Valley Air Basin is designated nonattainment for $PM_{2.5}$; because ROGs and NO_X are precursors to $PM_{2.5}$ and PM_{10} includes $PM_{2.5}$, exceedance of those thresholds contributes to the basin nonattainment status.

Table 4.3-13. Construction Emissions in the Mojave Desert Air Basin—Kern County General Plan Buildout Alternative (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2021	3.49	8.37	9.92	0.02	0.75	0.42
2022	2.67	3.44	5.14	0.01	0.38	0.15
2023	2.63	3.13	5.08	0.01	0.36	0.13
2024	2.62	2.88	5.07	0.01	0.34	0.11
2025	3.30	6.41	9.97	0.02	0.77	0.36
2026	2.59	2.63	5.01	0.01	0.33	0.10
2027	2.59	2.63	5.01	0.01	0.33	0.10
2028	2.58	2.62	4.99	0.01	0.33	0.10
2029	3.21	5.83	9.60	0.02	0.59	0.26
2030	2.50	1.92	4.87	0.01	0.29	0.06
2031	2.50	1.92	4.87	0.01	0.29	0.06
2032	2.51	1.93	4.89	0.01	0.29	0.06
2033	3.00	4.05	9.31	0.02	0.48	0.15
2034	2.49	1.92	4.85	0.01	0.29	0.06
2035	2.47	1.68	4.80	0.01	0.27	0.04
2036	2.48	1.69	4.82	0.01	0.27	0.04
2037	2.92	3.28	9.20	0.02	0.44	0.11
2038	2.47	1.68	4.80	0.01	0.27	0.04
2039	2.46	1.67	4.79	0.01	0.27	0.04
2040	2.37	1.22	3.64	0.01	0.21	0.03
Maximum Annual Emissions	**3.30**	**6.41**	**9.97**	**0.02**	**0.77**	**0.36**
EKAPCD Significance Threshold	25[1]	25[1]	—[2]	—[3]	15[1]	—[4]

Notes: ROG = reactive organic gases; NO_x = oxides; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; EKAPCD = Eastern Kern Air Pollution Control District

[1] CEQA significance thresholds: Damo pers. comm. 2008. ROG and NO_X are precursors to ozone, and the Mojave Desert Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status. The Mojave Desert Air Basin is designated nonattainment for PM10 (state and Federal); exceedance of that threshold contributes to the basin nonattainment status.

[2] The Mojave Desert Air Basin is designated as unclassified (state) or unclassifiable/attainment (Federal) for CO.

[3] The Mojave Desert Air Basin is designated as attainment (state) or unclassifiable (Federal) for SO_2.

[4] The Mojave Desert Air Basin is designated as unclassified (state) or unclassifiable/attainment (Federal) for $PM_{2.5}$.

Table 4.3-14. Total Construction Emissions in the San Joaquin Valley Air Basin and the Mojave Desert Air Basin Combined—Kern County General Plan Buildout Alternative (tons per year)[1]

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2013	3.56	25.76	15.36	0.03	1.87	1.52
2014	7.03	22.76	17.76	0.04	2.10	1.31
2015	7.12	20.67	17.20	0.04	1.97	1.17
2016	6.87	18.73	16.68	0.04	1.85	1.04
2017	9.98	39.85	34.20	0.07	3.62	2.25
2018	6.60	16.79	17.94	0.04	1.91	0.86
2019	6.38	15.18	17.54	0.04	1.79	0.75
2020	6.22	13.80	17.27	0.04	1.70	0.65
2021	13.54	35.29	41.62	0.10	3.73	1.76
2022	10.25	15.22	22.50	0.05	2.16	0.65
2023	10.10	13.89	22.20	0.05	2.08	0.57
2024	10.04	12.84	22.11	0.05	2.02	0.50
2025	21.54	51.16	81.44	0.20	5.91	2.31
2026	16.50	24.65	45.14	0.12	3.53	0.92
2027	16.50	24.65	45.14	0.12	3.53	0.92
2028	16.44	24.56	44.97	0.12	3.51	0.92
2029	18.28	38.53	61.99	0.15	4.54	1.70
2030	13.90	13.68	33.21	0.09	2.58	0.43
2031	13.90	13.68	33.21	0.09	2.58	0.43
2032	13.95	13.74	33.34	0.09	2.59	0.43
2033	7.38	12.95	28.68	0.07	1.53	0.44
2034	6.24	7.91	18.48	0.04	1.10	0.22
2035	6.14	7.00	18.33	0.04	1.04	0.16
2036	6.17	7.03	18.40	0.04	1.04	0.16
2037	7.56	12.28	32.67	0.08	1.57	0.36
2038	6.21	7.36	19.46	0.05	1.04	0.16
2039	6.18	7.33	19.39	0.05	1.04	0.16
2040	5.82	5.31	14.63	0.04	0.80	0.11
Maximum Annual Emissions	**21.54**	**51.16**	**81.44**	**0.20**	**5.91**	**2.31**
SJVAPCD Significance Threshold	10[2]	10[2]	—[3]	—[4]	15	—[5]
EKAPCD Significance Threshold	25[6]	25[6]	—[7]	—[8]	15[6]	—[9]

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District; EKAPCD = Eastern Kern Air Pollution Control District

1 The emissions shown in Table 4.3-14 do not account for the emission reductions required under Rule 9510, which were shown previously in Table 4.3-12 for the construction emissions in the San Joaquin Valley Air Basin.

2 ROG and NO_X CEQA significance thresholds: San Joaquin Valley Air Pollution Control District 2002. PM_{10} CEQA threshold is recommended by SJVAPCD staff. The San Joaquin Valley Air Basin is designated nonattainment (state) and attainment (Federal) for PM_{10}; exceedance of that threshold contributes to basin nonattainment status. ROGs and NO_X are precursors to ozone, and the San Joaquin Valley Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status.

[3] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment (state) or unclassifiable/attainment (Federal) for CO.

[4] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment for SO_2.

[5] The San Joaquin Valley Air Basin is designated nonattainment for $PM_{2.5}$; because ROGs and NO_X are precursors to $PM_{2.5}$ and PM_{10} includes $PM_{2.5}$, exceedance of those thresholds contributes to the basin nonattainment status.

[6] CEQA significance thresholds from Damo pers. comm. 2008. ROG and NO_X are precursors to ozone, and the Mojave Desert Air Basin is designated ROGs and NO_X are precursors to ozone, and the Mojave Desert Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status. The Mojave Desert Air Basin is designated nonattainment for PM_{10} (state and Federal); exceedance of that threshold contributes to the basin nonattainment status.

[7] The Mojave Desert Air Basin is designated as unclassified (state) or unclassifiable/attainment (Federal) for CO.

[8] The Mojave Desert Air Basin is designated as attainment (state) or unclassifiable (Federal) for SO_2.

[9] The Mojave Desert Air Basin is designated as unclassified (state) or unclassifiable/attainment (Federal) for $PM_{2.5}$.

Existing Ranch Uses

The extent and nature of the Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be similar to those under the No Action Alternative. Existing Ranch Uses would generate only incidental, insubstantial criteria pollutant emissions associated with filming activities and construction and maintenance of road and utility infrastructure, ancillary ranch structures, and back-country cabins.

As described in Chapter 2, Proposed TU MSHCP and Alternatives, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as reflected in the Interim RWMP are anticipated to continue (although they cannot be assured), and compliance with legal requirements governing ground disturbing activities directly affecting air quality would apply. In addition, because most Existing Ranch Uses would have only minor effects on air quality, it is unlikely that Existing Ranch Uses under the Kern County General Plan Buildout Alternative would result in emissions that would exceed applicable air quality standards.

4.3.6.2 Operation Emissions

Commercial and Residential Development Activities

Under the Kern County General Plan Buildout Alternative, Commercial and Residential Development Activities would generate onroad vehicle travel, which would result in mobile-source emissions that include ozone precursor pollutants (ROG and NO_X), PM_{10}, $PM_{2.5}$, and CO. In addition, emissions would result from area sources such as onsite landscaping equipment, natural gas combustion (to facilitate cooking and heating), and use of consumer products. Although the development would be located solely in the SJVAB and the MDAB, vehicle trips could affect the SCAB, as described below.

Stationary sources of operation emissions would occur in the SJVAB and MDAB. Mobile sources of emissions were assumed to occur in the SJVAB, MDAB, and the SCAB and were apportioned between the two basins as discussed above under Operation Assumptions. Similar to the Proposed TU MSHCP Alternative, potential vehicle trips associated with the Centennial Project were attributed to the SCAB. This is because it would be speculative to attempt to apportion any particular amount of vehicle miles travelled (or associated emissions) related to this project. Planning for the Centennial Project is still in its early stages and exactly where development might occur is not known. If, however, all the daily vehicle trips projected to occur along SR 138 (34,784 in Austin-Foust Associates 2011) (Appendix H) were to occur within the MDAB, emissions would exceed the thresholds set by the AVAQMD for NO_x and PM_{10}: 6.07 tons per year of ROG (versus 25 tons per year

threshold); 30.26 tons per year of NO_X (versus 25 tons per year threshold); 49.45 tons per year of CO (versus 100 tons per year threshold); 0.24 tons per year of SO_X (versus 25 tons per year threshold); 21.41 tons per year of PM_{10} (versus 15 tons per year threshold); and 1.57 tons per year of $PM_{2.5}$ (versus 15 tons per year threshold). However, this is not considered likely to occur; therefore the analysis that follows attributes these motor vehicle emissions to the SCAB.

The results of air quality modeling for long-term emissions for the buildout condition and key years are presented below. Table 4.3-15 presents total estimated operation emissions (mobile and stationary) assumed to occur in the SJVAB. Table 4.3-16 presents the total estimated operation emissions (mobile and stationary) assumed to occur in the MDAB. Table 4.3-17 presents the total estimated operation emissions (stationary) assumed to occur in the SCAB. Table 4.3-18 presents the total estimated operation emissions for all air basins combined. Without mitigation, the ROG, NO_X, and PM_{10} emissions would exceed the SJVAPCD (and, by implication, $PM_{2.5}$ emissions would contribute to the SJVAB nonattainment status) and EKAPCD thresholds; ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$ emissions would exceed the SCAQMD thresholds; and the combined ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$ emissions would also exceed applicable thresholds. This would be the case even assuming compliance with Rule 9510 emission reduction requirements of NO_X and PM_{10}.

As mentioned above, all Commercial and Residential Development Activities would be subject to approvals from Federal and state agencies and local jurisdictions as indicated in Section 4.3.6.6, Mitigation Measures. Prior to issuance of any permits or approvals, it is anticipated the local jurisdiction would require demonstration of BMPs to minimize operation effects on air quality. For example, Kern County's approval of the TMV Project requires that emissions not exceed 2 tons per year of NO_X or 2 tons per year of PM_{10} (total project construction and operation). Kern County also requires implementation of specific measures to reduce operation emissions such as incorporating measures into the design to ensure energy efficiency beyond the 2008 Title 24 Standards; providing transit connection on site; providing alternative transportation infrastructure; requiring best available alternative fuel technology for community service vehicles; requiring builders, developers, and custom lot owners to include high-speed communication technology to encourage telecommuting and working from home; and implementing specific measures to encourage ride-sharing and use of alternative fuel vehicles. (Appendix J, MMs 4.3-6 through 4.3-14) (Kern County 2009).

Because some development under the Kern County General Plan Buildout Alternative may not be part of a larger planned development, there would not be the same potential to coordinate mitigation efforts to reduce operation emissions compared with the other proposed action alternatives. In addition, smaller-lot developments may not result in the same requirements to implement BMPs during operation that would be triggered by a larger planned development; however, it is anticipated that similar measures would be required during review and approval of a local grading or building permit.

Even with implementation of required mitigation measures and BMPs, it is likely operation emissions under the Kern County General Plan Buildout Alternative would exceed the SJVAPCD and EKAPCD thresholds for ROG, NO_X, and PM_{10} (and, by implication, $PM_{2.5}$) and SCAQMD thresholds for ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$, resulting in substantial effects.

Table 4.3-15. Operation Emissions in the San Joaquin Valley Air Basin—Kern County General Plan Buildout Alternative (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	9.10	37.86	48.98	0.11	10.76	1.91
2021	24.44	88.10	127.46	0.39	34.95	3.81
2025	73.40	147.40	264.59	0.85	79.57	11.66
2029	137.72	245.70	474.78	1.67	156.33	21.70
2033	197.97	336.50	661.30	2.31	215.37	30.99
2037	234.34	352.43	732.93	2.66	249.18	37.06
Kern County General Plan Buildout Alternative Buildout Year 2041						
Area Sources	199.37	14.93	217.05	0.15	24.85	24.85
Operation—On Road	73.43	366.16	598.40	2.85	259.02	18.97
Year 2041 Totals	**272.80**	**381.09**	**815.45**	**3.00**	**283.87**	**43.82**
Maximum Annual Emissions	**272.80**	**381.09**	**815.45**	**3.00**	**283.87**	**43.82**
Rule 9510 Reduction	—	126.90	—	—	141.94	—
Net Emissions	272.80	244.19	815.45	3.00	141.94	43.82
SJVAPCD Threshold	10[1]	10[1]	—[2]	—[3]	15[1]	—[4]

Notes: ROG = reactive organic gases; NOx = oxides of nitrogen; CO = carbon monoxide; SOx = sulfur oxides; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter

[1] ROG and NO_X CEQA significance thresholds: San Joaquin Valley Air Pollution Control District 2002. PM_{10} CEQA threshold is recommended by SJVAPCD staff. The San Joaquin Valley Air Basin is designated nonattainment (state) and attainment (Federal) for PM_{10}; exceedance of that threshold contributes to basin nonattainment status. ROGs and NO_X are precursors to ozone, and the San Joaquin Valley Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status.

[2] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment (state) or unclassifiable/attainment (Federal) for CO.

[3] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment for SO_2.

[4] The San Joaquin Valley Air Basin is designated nonattainment for $PM_{2.5}$; because ROGs and NO_X are precursors to $PM_{2.5}$ and PM_{10} includes $PM_{2.5}$, exceedance of those thresholds contributes to the basin nonattainment status.

Table 4.3-16. Operation Emissions in the Mojave Desert Air Basin—Kern County General Plan Buildout Alternative (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	—	—	—	—	—	—
2021	—	—	—	—	—	—
2025	23.31	12.98	43.38	0.05	6.53	3.47
2029	46.09	22.79	82.28	0.10	12.98	6.87
2033	69.21	34.23	123.57	0.14	19.50	10.32
2037	91.72	42.34	160.24	0.19	25.91	13.68
Kern County General Plan Buildout Alternative Buildout Year 2041						
Area Sources	105.50	3.93	123.27	0.06	15.92	15.92
Operation—On Road	8.64	46.12	73.98	0.17	16.42	1.14
Year 2041 Totals	**114.14**	**50.05**	**197.25**	**0.23**	**32.34**	**17.06**
Maximum Annual Emissions	**114.14**	**50.05**	**197.25**	**0.23**	**32.34**	**17.06**
EKAPCD Threshold	25[1]	25[1]	—[2]	—[3]	15[1]	—[4]

Notes: ROG = reactive organic gases; NO_x = oxides; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; EKAPCD = Eastern Kern Air Pollution Control District

[1] CEQA significance thresholds from Damo pers. comm. 2008. ROG and NO_X are precursors to ozone, and the Mojave Desert Air Basin is designated ROGs and NO_X are precursors to ozone, and the Mojave Desert Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status. The Mojave Desert Air Basin is designated nonattainment for PM_{10} (state and Federal); exceedance of that threshold contributes to the basin nonattainment status.

[2] The Mojave Desert Air Basin is designated as unclassified (state) or unclassifiable/attainment (Federal) for CO.

[3] The Mojave Desert Air Basin is designated as attainment (state) or unclassifiable (Federal) for SO_2.

[4] The Mojave Desert Air Basin is designated as unclassified (state) or unclassifiable/attainment (Federal) for $PM_{2.5}$.

Table 4.3-17. Operation Emissions in the South Coast Air Basin—Kern County General Plan Buildout Alternative (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	10.06	65.31	81.61	0.20	18.75	3.22
2021	26.15	151.38	210.81	0.66	60.97	6.33
2025	47.45	251.42	379.13	1.43	130.66	11.49
2029	82.80	416.59	666.44	2.82	256.46	20.20
2033	113.26	569.69	911.44	3.87	351.24	27.66
2037	119.07	594.95	971.05	4.43	402.07	29.86
2041	128.87	642.54	1,050.09	5.01	454.52	33.28
Maximum Annual Emissions	**128.87**	**642.54**	**1,050.09**	**5.01**	**454.52**	**33.28**
SCAQMD Threshold[1]	10	10	100	27.4	27.4	10

Note: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SCAQMD = South Coast Air Quality Management District

[1] Significance thresholds from South Coast Air Quality Management District 2011 converted to tons per year.

The total operation emissions shown in Table 4.3-18 do not account for the emission reductions required under Rule 9510, which were shown previously in Table 4.3-15 for the operation emissions in the SJVAB.

Table 4.3-18. Total Operation Emissions—Kern County General Plan Buildout Alternative (tons per year)

	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	19.16	103.17	130.59	0.31	29.51	5.13
2021	50.59	239.48	338.27	1.05	95.92	10.14
2025	144.16	411.80	687.10	2.33	216.76	26.62
2029	266.61	685.08	1,223.50	4.59	425.77	48.77
2033	380.44	940.42	1,696.31	6.32	586.11	68.97
2037	445.13	989.72	1,864.22	7.28	677.16	80.60
Kern County General Plan Buildout Alternative Buildout Year 2041						
Area Sources	304.87	18.86	340.32	0.21	40.77	40.77
Operation—On Road	201.94	1,054.82	1.722.47	8.03	729.96	53.39
Year 2041 Totals	**515.81**	**1,073.68**	**2,062.79**	**8.24**	**770.73**	**94.16**
Maximum Annual Emissions	**515.81**	**1,073.68**	**2,062.79**	**8.24**	**770.73**	**94.16**
SJVAPCD Threshold	10[1]	10[1]	—[2]	—[3]	15[1]	—[4]
EKAPCD Threshold	25[5]	25[5]	—[6]	—[7]	15[5]	—[8]
SCAQMD Threshold[9]	10	10	100	27.5	27.4	10

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District; EKAPCD = Eastern Kern Air Pollution Control District; SCAQMD = South Coast Air Quality Management District

[1] ROG and NO_X CEQA significance thresholds: San Joaquin Valley Air Pollution Control District 2002. PM_{10} CEQA threshold is recommended by SJVAPCD staff. The San Joaquin Valley Air Basin is designated nonattainment (state) and attainment (Federal) for PM_{10}; exceedance of that threshold contributes to basin nonattainment status. ROGs and NO_X are precursors to ozone, and the San Joaquin Valley Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status.

[2] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment (state) or unclassifiable/attainment (Federal) for CO.

[3] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment for SO_2.

[4] The San Joaquin Valley Air Basin is designated nonattainment for $PM_{2.5}$; because ROGs and NO_X are precursors to $PM_{2.5}$ and PM_{10} includes $PM_{2.5}$, exceedance of those thresholds contributes to the basin nonattainment status.

[5] CEQA significance thresholds from Damo pers.comm. 2008. ROG and NO_X are precursors to ozone, and the Mojave Desert Air Basin is designated ROGs and NO_X are precursors to ozone, and the Mojave Desert Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status. The Mojave Desert Air Basin is designated nonattainment for PM_{10} (state and Federal); exceedance of this threshold contributes to the basin nonattainment status.

[6] The Mojave Desert Air Basin is designated as unclassified (state) or unclassifiable/attainment (Federal) for CO.

[7] The Mojave Desert Air Basin is designated as attainment (state) or unclassifiable (Federal) for SO_2.

[8] The Mojave Desert Air Basin is designated as unclassified (state) or unclassifiable/attainment (Federal) for $PM_{2.5}$.

[9] Significance thresholds from SCAQMD 2011 converted to tons per year.

Due to the nature of development under the Kern County General Plan Buildout Alternative, there would be a period when portions of the Disturbance Area associated with Commercial and Residential Development Activities would be occupied, but construction would continue. Unlike many development projects where construction and operations represent two distinct phases, under this development scenario the two phases would overlap and would result in combined emissions in the SJVAB and the MDAB. Emissions in the SCAB would be entirely associated with operation activities and are shown in Table 4.3-17 as discussed previously. It is therefore important to consider emissions that could occur during these overlaps. Under this alternative, this would include combined construction and operation emissions in the SJVAB and MDAB. Construction is assumed to be completed in 2040; thus, there would be concurrent operation and construction emissions until the first units are completed and occupied up to 2040. Tables 4.3-19 and 4.3-20 show the combined construction and operation emissions at key years (corresponding to the analysis years shown in Tables 4.3-15 and 4.3-16 for the SJVAB and the MDAB, respectively).

As stated previously, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal, and state agencies and local jurisdictions. Specifically, a building or grading permit would be required from the local jurisdiction prior to construction. It is anticipated that prior to issuance of the required permits, the local jurisdiction would require demonstration of incorporation of BMPs into construction practices to minimize effects on air quality as discussed above.

The emissions shown in Table 4.3-14 do not account for the emission reductions required under Rule 9510, which were shown previously in Tables 4.3-12 and 4.3-15 for the construction and operation emissions, respectively, in the SJVAB. Even after mitigation, the combined construction and operation ROG, NO_X, and PM_{10} emissions are likely to exceed the SJVAPCD and EKAPCD thresholds (and, by implication, $PM_{2.5}$ emissions would contribute to the nonattainment status for these air basins), resulting in substantial effects.

Table 4.3-19. Combined Construction and Operation Emissions in the San Joaquin Valley Air Basin—Kern County General Plan Buildout Alternative (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	19.1	77.7	83.2	0.2	14.4	4.2
2021	34.5	115.0	159.2	0.5	37.9	5.1
2025	139.1	443.6	715.2	2.5	215.4	25.1
2029	235.6	695.0	1,193.6	4.6	416.7	43.3
2033	315.6	915.1	1,592.1	6.2	567.7	58.9
2037	358.1	956.4	1,727.5	7.2	652.4	67.2
2041	401.7	1,023.6	1,865.5	8.0	738.4	77.1
Maximum Annual Emissions	401.7	1,023.6	1,865.5	8.0	738.4	77.1
SJVAPCD Threshold	10[1]	10[1]	—[2]	—[3]	15[1]	—[4]

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter

[1] ROG and NO_X CEQA significance thresholds: San Joaquin Valley Air Pollution Control District 2002. PM_{10} CEQA threshold is recommended by SJVAPCD staff. The San Joaquin Valley Air Basin is designated nonattainment (state) and attainment (Federal) for PM_{10}; exceedance of that threshold contributes to basin nonattainment status. ROGs and NO_X are precursors to ozone, and the San Joaquin Valley Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status.

[2] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment (state) or unclassifiable/attainment (Federal) for CO.

[3] The Kern County portion of the San Joaquin Valley Air Basin is designated attainment for SO_2.

[4] The San Joaquin Valley Air Basin is designated nonattainment for $PM_{2.5}$; because ROGs and NO_X are precursors to $PM_{2.5}$ and PM_{10} includes $PM_{2.5}$, exceedance of those thresholds contributes to the basin nonattainment status.

Table 4.3-20. Combined Construction and Operation Emissions in the Mojave Desert Air Basin—Kern County General Plan Buildout Alternative (tons per year)

Analysis Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2017	—	—	—	—	—	—
2021	3.49	8.37	9.92	0.02	0.75	0.42
2025	26.61	19.39	53.35	0.07	7.30	3.83
2029	49.30	28.62	91.88	0.12	13.57	7.13
2033	72.21	38.28	132.88	0.16	19.98	10.47
2037	94.64	45.62	169.44	0.21	26.35	13.79
2041	114.14	50.05	197.25	0.23	32.34	17.06
Maximum Annual Emissions	**114.14**	**50.05**	**197.25**	**0.23**	**32.34**	**17.06**
EKAPCD Threshold	25[1]	25[1]	—[2]	—[3]	15[1]	—[4]

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter

[1] CEQA significance thresholds from Damo pers.comm. 2008. ROG and NO_X are precursors to ozone, and the Mojave Desert Air Basin is designated ROGs and NO_X are precursors to ozone, and the Mojave Desert Air Basin is designated nonattainment for the 8-hr ozone standards; exceedance of those thresholds contributes to the basin nonattainment status. The Mojave Desert Air Basin is designated nonattainment for PM10; exceedance of that threshold contributes to the basin nonattainment status.

[2] The Mojave Desert Air Basin is designated as unclassified (state) or unclassifiable/attainment (Federal) for CO.

[3] The Mojave Desert Air Basin is designated as attainment (state) or unclassifiable (Federal) for SO_2.

[4] The Mojave Desert Air Basin is designated as unclassified (state) or unclassifiable/attainment (Federal) for $PM_{2.5}$.

With respect to lead, sulfates, hydrogen sulfide, and vinyl chloride, buildout of the Kern County General Plan Buildout Alternative would generate a negligible amount, if any, of these pollutants. Such pollutant emissions are generally associated with industrial land uses that would require air district permits prior to construction; no such land uses are included in the Kern County General Plan Buildout Alternative. In addition, the ambient air concentrations for each of these pollutants throughout the study area are below their respective state and/or Federal ambient air quality standards. As such, potential effects associated with the generation of trace amounts, if any, of lead, sulfates, hydrogen sulfide, or vinyl chloride emissions would be minor. The Kern County General Plan Buildout Alternative would not result in substantial emissions of lead, sulfates, hydrogen sulfide, and vinyl chloride.

Existing Ranch Uses

The extent and nature of the Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be similar to those under the No Action Alternative. Existing Ranch Uses would generate only incidental, insubstantial criteria pollutant emissions associated with residential, commercial, and agricultural land uses.

As described in Chapter 2, Proposed TU MSHCP and Alternatives, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as reflected in the Interim RWMP are anticipated to continue (although they cannot be assured), and compliance with legal requirements governing ground disturbing activities directly affecting air quality would apply. In addition, because most Existing Ranch Uses would have only minor effects on air quality, it is unlikely that Existing Ranch Uses under the Kern County General Plan Buildout Alternative would result in emissions that would exceed applicable air standards.

4.3.6.3 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

Commercial and Residential Development Activities

Construction

Currently, few sensitive receptors are present in the immediate vicinity of the Covered Lands, limiting the potential for such receptors to be exposed to air pollutants during construction of Commercial and Residential Development under the Kern County General Plan Buildout Alternative. The exceptions would be near the existing El Tejon School playground, Tejon Fields, residences near the north end of Lebec Road, and, as construction progresses, new residents and workers associated with the proposed Commercial and Residential Development Activities would have potential to be exposed to air pollutants, namely diesel particulate emissions from onsite construction equipment.

As discussed in Section 4.3.3.3, Exposure of Sensitive Receptors to Substantial Pollutant Concentrations, a screening-level HRA was prepared to estimate the potential cancer risks associated with diesel particulate matter emissions resulting from offroad equipment that would be used during construction of Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative. The level of construction activity on a given site would be comparable to the Kern County General Plan Buildout Alternative. For example, the construction activity associated with a typical 5-acre construction site would involve similar amounts of offroad equipment for a given activity (e.g., grading, building construction) regardless of the extent of the proposed

development. Therefore, the HRA conducted for the Proposed TU MSHCP Alternative would also apply to the Kern County General Plan Buildout Alternative.

As discussed under Section 4.3.3.3, Exposure of Sensitive Receptors to Substantial Pollutant Concentrations, the HRA found that the potential construction-related emissions effects would not exceed cancer risk thresholds. Additional details regarding the HRA are provided in Appendix GAs identified in Section 4.3.5.6, Mitigation Measures, development in the Covered Lands would also be subject to several Federal, state, and local air quality protection requirements. As part of the project-level approval process, it is anticipated that the local jurisdiction would require the implementation of mitigation measures and BMPs to reduce air emissions. For example, Kern County's approval of the TMV Project requires limiting construction near schools to specific hours and days (Appendix J, MM 4.3-15) (Kern County 2009). Compliance with these requirements would further reduce development-related air quality effects to sensitive receptors. The risk of exposing sensitive receptors to substantial pollutant concentrations during construction of Commercial and Residential Development Activities would be minor.

Operations

Proposed Commercial and Residential Development Activities are not anticipated to include land uses that involve substantial operation sources of TACs (e.g., power plants, chrome plating shops). Rather, operation sources of TAC would be associated with CO from vehicle exhaust. The highest CO concentrations are generally found close to congested intersection locations. Under typical meteorological conditions, CO concentrations tend to decrease as distance from the emissions source (i.e., congested intersection) increases.

To analyze CO hotspots (measured by whether concentrations near an intersection or roadway could exceed the 1-hour or 8-hour CAAQS for CO), it is necessary to know the intersection locations, traffic levels, and adjacent land uses, information which is not known for the Kern County General Plan Buildout Alternative. Given the rural environment, low background CO concentrations, and decreasing CO emissions from motor vehicles over time, it is unlikely that a CO hotspot area could be created. Use of motor vehicles by residents and end users in development on the Covered Lands would be subject to several Federal and state vehicle and fuel standards, which are intended to reduce emissions of CO and other pollutants. In addition, traffic congestion would be limited through local requirements to avoid adverse conditions (i.e., achieve a good level of service). For example, Kern County's approval of the TMV Project requires the implementation of specific measures to address traffic congestion and limit residential development near I-5 (Appendix J). Compliance with these requirements would reduce development-related air quality effects on sensitive receptors. The risk of exposing sensitive receptors to substantial pollutant concentrations during operation of developed infrastructure under the Kern County General Plan Buildout Alternative would be minor.

Existing Ranch Uses

The extent and nature of the Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be similar to those under the No Action Alternative. Under the No Action Alternative, Existing Ranch Uses would continue at existing levels and would not represent a substantial change over existing conditions. The continuation of Existing Ranch Uses, as described above, would not be expected to result in substantial emission concentrations near sensitive receptors. As discussed in Section 3.3, Air Quality, very minor emissions associated with limited construction and operation activities associated with existing land uses would continue.

In addition, because most Existing Ranch Uses would have only minor effects on air quality, the risk that Existing Ranch Uses under the Kern County General Plan Buildout Alternative would result in exposing sensitive receptors to substantial pollutant concentrations would be minor.

4.3.6.4 Objectionable Odors

Commercial and Residential Development Activities

Construction

Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would be similar to those that would occur under the Proposed TU MSHCP Alternative except that there would be an additional 3,606 residential units and an additional 340,420 square feet of commercial development. As described above, few sensitive receptors are present in the immediate vicinity of the Covered Lands, limiting the potential for such users to be exposed to objectionable odors during construction. The exceptions would be near the existing El Tejon School playground, Tejon Fields, the residences near the north end of Lebec Road, and the residents and workers that move into the Covered Lands as development progresses. Potential sources that may emit odors during construction activities associated with Commercial and Residential Development Activities include the use of architectural coatings and solvents.

As noted previously, all Commercial and Residential Development Activities would be subject to several Federal, state, and local air quality protection requirements as indicated in Section 4.3.3.6, Mitigation Measures. As part of the project-level approval process, it is anticipated that the local jurisdiction would require the implementation of mitigation measures and BMPs to reduce air emissions. For example, compliance with SJVAPCD Rule 4601 and EKAPCD Rule 410.1 would be required, which would limit the amount of VOCs from architectural coatings and solvents. Therefore, the likelihood that construction activities or materials would expose sensitive receptors to substantial objectionable odors would be minor.

Operations

Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would be similar to those that would occur under the Proposed TU MSHCP Alternative except that there would be an additional 3,606 residential units and an additional 340,420 square feet of commercial development. According to the SJVAPCD, land uses that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. While most of these uses would not be present in the Covered Lands under the Kern County General Plan Buildout Alternative, Commercial and Residential Development Activities may include wastewater treatment facilities, equestrian centers, commercial refuse receptacles, and restaurant uses, which could result in the creation of objectionable odors. Additional residential and commercial development that would occur under this alternative would result in a greater potential to create objectionable odors when compared to the other proposed action alternatives.

As mentioned previously, Commercial and Residential Development Activities would be subject to several Federal, state, and local air quality protection requirements. For example, Kern County's approval of the TMV Project requires that potential odor problems associated with equestrian or water reclamation facilities be addressed adequately by the project applicant (Kern County 2009, Mitigation Measures 4.3-16 and 4.3-17). Therefore, potential sources of objectionable odors would

be addressed and minimized, and the likelihood that operation of developed infrastructure under the Kern County General Plant Buildout Alternative would expose sensitive receptors to substantial objectionable odors would be minor.

Existing Ranch Uses

The extent and nature of the Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be similar to those under the No Action Alternative. Existing Ranch Uses would continue at existing levels and would not represent a substantial change over existing conditions. As discussed in Section 3.3, Air Quality, very minor sources of objectionable odors, such as cattle grazing and other agricultural activities, would continue and would be spread-out and located far from the majority of sensitive receptors.

In addition, because most Existing Ranch Uses would have only minor effects on air quality, the risk that Existing Ranch Uses under the Kern County General Plan Buildout Alternative would result in the exposure of sensitive receptors to substantial odors would be minor.

4.3.6.5 Mitigation Measures

As described above, the limitations of the Ranchwide Agreement would not apply under the Kern County General Plan Buildout Alternative. However, even in the absence of the Ranchwide Agreement, BMPs and use restrictions (as currently set forth in the Interim RWMP) are anticipated to continue (although they cannot be assured). Restrictions imposed by the TMV Project Approvals and by easement language in the Existing Conservation Easement Areas would apply under the Kern County General Plan Buildout Alternative. Comparable measures to those provided in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives, would likely be implemented to avoid, minimize and mitigate effects on special-status species (i.e., state or federally-listed species, species protected as 'special-status' under CEQA) either as part of the CESA or CEQA processes or through a project-specific consultation with the Service completed in accordance with either ESA Section 10 or Section 7. These measures (e.g., dust suppression) could also help to reduce effects on air quality. In addition, the mitigation measure listed in Section 4.3.3.6, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the Kern County General Plan Buildout Alternative.

4.3.7 Cumulative Air Quality Effects

As indicated in Section 4.0.4, Methods for Assessing Cumulative Effects, the cumulative effects analysis area for air quality differs from the regional cumulative analysis area described in Section 4.0. As with direct and indirect effects described above, the cumulative effects analysis area for air quality has been expanded to include the area encompassed by those air basins that could be affected by the proposed action, including the SJVAB, the MDAB, and the SCAB. The thresholds set forth by the local air pollution control districts governing air quality in these basins are inherently cumulative because they establish a threshold above which emissions would contribute to that air basin's nonattainment status. As indicated in Section 4.3.1.1, Methods, cumulative effects on air quality may result from activities that would cause the local air basin to exceed established emissions thresholds; expose sensitive receptors to unacceptable levels of risk from TACs or to CO hotspots; or expose people to an unmitigable objectionable odor.

Cumulative effects on air quality are considered to be indirect effects of the proposed action, in that they are related to future development that may be facilitated by issuance of an incidental take

permit (ITP) by the Service. Whether or not such effects are substantial cumulatively is primarily dependent on the mitigation measures put in place by other Federal, state, and local authorities pursuant to their project-specific approval process.

As noted above, exceedance of the thresholds established by local air pollution control districts inherently results in a cumulatively substantial effect on air quality.

4.3.7.1 Construction Emissions

The No Action Alternatives would not include any Commercial and Residential Development Activities and would not result in any construction emissions associated with these activities that could contribute to a cumulative effect. Existing Ranch Uses or Plan-Wide Activities associated with any alternatives would not involve substantial construction emissions and would continue in compliance with applicable air quality thresholds. Therefore, these activities would not combine with any of the reasonably foreseeable projects discussed in Section 4.0.4, Methods for Assessing Cumulative Effects, to result in substantial cumulative air quality effects from construction.

Construction emissions from Commercial and Residential Development Activities proposed under all the action alternatives would result in cumulative effects. All the action alternatives are anticipated to exceed thresholds for ROG and NO_X, and the Kern County General Plan would also exceed thresholds for PM_{10} (and by implication could also result in a cumulatively substantial contribution of $PM_{2.5}$ emissions).

In addition to applicable BMPs and use restrictions required by the Ranchwide Agreement and any ESA-related conservation measures (e.g., dust control measures), all development would be required to comply with applicable Federal, state and local air quality requirements, as discussed above. Each development project, when proposed, would include project-specific reduction requirements that are likely to reduce the emissions substantially. For example, Kern County's approval of the TMV Project requires, among other things, that emissions not exceed 2 tons per year of NO_X or 2 tons per year of PM_{10} (total project construction and operation); a dust control plan be submitted and approved by the SJVAPCD, including specific dust control BMPs; compliance with all other requirements of the SJVAPCD Fugitive Dust Rules, use of alternative fuel technologies for construction vehicles; and selection of sustainable construction materials (Appendix J, MMs 4.3-1 through 4.3-5) (Kern County 2009). However, because it cannot be assured that all air emissions would be reduced below the local air districts' thresholds, the Service considers operations from all the action alternatives, when combined with other reasonably foreseeable projects, to result in a substantial cumulative effect on air quality.

4.3.7.2 Operation Emissions

As mentioned previously, the No Action Alternatives would not result in any commercial and residential development and would not result in any cumulative effects from these activities. Existing Ranch Uses or Plan-Wide Activities associated with any alternatives would not involve substantial operation emissions and would continue in compliance with applicable air quality thresholds. Therefore, these activities would not combine with any of the reasonably foreseeable projects discussed in Section 4.0.4, Methods for Assessing Cumulative Effects, to result in a substantial cumulative air quality effects from operation.

Operation emissions associated with Commercial and Residential Development Activities under all action alternatives would have the potential to exceed applicable air quality thresholds. The total

operation emissions for the SJVAB and SCAB combined under the Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives would exceed the SJVAPCD and SCAQMD standards for ROG, NO_X, and PM_{10} and the SCAQMD thresholds for CO, SO_X, and $PM_{2.5}$.[6] Under the Kern County General Plan Buildout Alternative, total operation emissions for the SJVAB, MDAB, and SCAB combined would exceed SJVAPCD, EKPACD, and SCAQMD thresholds would be exceeded for ROG, NO_X, and PM_{10} and the SCAQMD thresholds would be exceeded for CO and PM_{10}.

As mentioned in the analysis of effects, due to the nature of development under proposed action alternatives, there would be a period when portions of the planned development would be built and occupied, but construction would continue. Unlike many development projects where construction and operations represent two distinct phases, under this development scenario, the two phases would overlap. It is therefore important to consider emissions that could occur during these overlaps. For the total combined construction and operation emissions within the SJVAB, all proposed action alternatives would result in exceedance of SJVAPCD thresholds for ROG, NO_X, and PM_{10}. Additionally, the Kern County General Plan Alternative would also result in exceedance of EKPACD thresholds for ROG, NO_X, and PM_{10}.

In addition to applicable BMPs and use restrictions required by the Ranchwide Agreement (e.g., working with the SJVAPCD to minimize air quality effects from farming operations), through the local approval process, additional mitigation would be implemented in compliance with Federal, state, and local air quality regulations. Each development project, when proposed, would include project-specific reduction requirements that would be likely to reduce air emissions substantially. For example, Kern County's approval of the TMV Project requires that emissions not exceed 2 tons per year of NO_X or 2 tons per year of PM_{10} (total project construction and operation), and requires implementation of specific measures to reduce operation emissions, such as incorporating measures into the design to ensure energy efficiency beyond the 2008 Title 24 Standards; providing transit connection on site; providing alternative transportation infrastructure; requiring best available alternative fuel technology for community service vehicles; requiring builders, developers, and custom lot owners to include high-speed communication technology to encourage telecommuting and working from home; and implementing specific measures to encourage ride-sharing and use of alternative fuel vehicles (Kern County 2009). However, because it cannot be assured that all air emissions would be reduced below the local air districts' thresholds, the Service considers operation emissions from all the proposed action alternatives, when combined with other reasonably foreseeable projects, to result in a substantial cumulative effect.

4.3.7.3 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

Cumulative effects on sensitive receptors from exposure to TACs are analyzed in terms of the potential exposure of sensitive receptors—as a result of either construction or operations—to TACs from multiple sources at levels that pose unacceptable health risks. Cumulative effects on sensitive receptors from exposure to concentrations of CO are analyzed in terms of any likely potential

[6] As noted, above, if development under the Proposed TU MSHCP, Condor Only HCP, or CCH Avoidance MSHCP Alternatives were to occur within the Oso Canyon area, and all trips associated with the Centennial Project described above were occur within the MDAB, the combined stationary and mobile emissions within the MDAB would individually exceed the EKAPCD's or the AVAQMD's thresholds for NOx and PM_{10}. However for the reasons described in Section 4.3.2.2 above, this scenario is considered unlikely. Stationary emissions under these alternatives are considered in the context of the SJVAB and SJVAPCD thresholds and mobile sources are considered in the context of the SCAB and SCAQMD thresholds.

exposure of sensitive receptors to a CO hotspot. Because no development would occur under the No Action Alternative, and because the Existing Ranch Uses would not involve substantial TAC emission sources and are not likely to result in a CO hotspot, the No Action Alternative would not result in cumulative effects on air quality.

With respect to the proposed action alternatives, no existing or reasonably foreseeable sources of TACs are present in the vicinity of the Covered Lands (separate from the sources analyzed under each alternative) that would combine to create cumulative effects. Similarly, none of the proposed commercial and residential development associated with the alternatives would be anticipated to involve substantial operation sources of TACs (e.g., power plants, chrome plating shops), nor would any of the other reasonably foreseeable projects considered in this analysis. Therefore, it is unlikely that the effect of any of the alternatives, combined with other reasonably foreseeable projects, would result in a substantial cumulative contribution to pollutant concentrations, especially given the localized nature of TAC effects.

With respect to CO hotspots, it is not possible to conduct CO hotspots analyses for other development projects without knowing intersection locations and their traffic volumes. However, given the distance of the Covered Lands from the other projects described in Section 4.0.4, Methods for Assessing Cumulative Effects, low background CO concentrations, and decreasing CO emissions from motor vehicles over time, it is unlikely that cumulative CO hotspots would be experienced. Thus, effects on sensitive receptors from the Proposed TU MSHCP Alternative, Condor Only HCP Alternative, CCH Avoidance MSHCP Alternative, and Kern County General Plan Buildout Alternative are not considered cumulatively substantial.

4.3.7.4 Objectionable Odors

Although the No Action Alternative would include some existing land uses that could produce objectionable odors (e.g., ongoing ranch uses) the No Action Alternative would not result in an increase in objectionable odors. Furthermore, none of the reasonably foreseeable projects planned in the vicinity of the Covered Lands are expected to result in substantial odor problems. Therefore, the No Action Alternative would not result in a cumulative effect associated with objectionable odors.

As discussed above the proposed action alternatives would result in minor increases in objectionable odors. Future development associated with the other reasonably foreseeable projects could also result in increased odor problems. However, because potential land uses resulting in odors would be spread out and geographically separated by topography, none of the proposed action alternatives is anticipated to result in a substantial contribution to cumulative effects associated with objectionable odors.

4.3.8 Comparison of Alternatives

4.3.8.1 Construction Emissions

Table 4.3-21 summarizes the maximum annual construction emissions of criteria air pollutants in any year for development under each alternative and includes reductions as required by application of various rules and requirements, including the SJVAPCD's Rule 9510 (Indirect Source Review).

The No Action Alternative would not involve any Commercial and Residential Development. Existing Ranch Uses or Plan-Wide Activities associated with any alternatives would not involve substantial construction emissions or have the potential to exceed applicable air quality thresholds.

The Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternative would all generate approximately the same amount of criteria pollutants from construction associated with Commercial and Residential Development Activities, as shown in Table 4.3-21. As indicated in the discussion in Section 4.3.5.1, the CCH Avoidance MSHCP Alternative would have a slightly smaller Disturbance Area in comparison to the Proposed TU MSHCP and Condor Only HCP Alternatives, but would require additional cut and fill during grading. Overall, the construction emissions for the CCH Avoidance MSHCP Alternative would be similar to those for the Proposed TU MSHCP and Condor Only HCP Alternatives. Construction under the Kern County General Plan Buildout Alternative would generate the greatest amount of construction-related emissions, which would include an additional 7.54 tons ROG per year (54%), 16.02 tons NO_X per year (59%), 28.89 tons CO per year (55%), 0.07 tons SO_X per year (54%), 1.66 tons PM_{10} per year (48%), and 0.86 tons $PM_{2.5}$ per year (59%) compared to the other alternatives.

As noted in the discussions above, implementation of BMPs and mitigation measures to reduce the effects of the alternatives on air quality would further reduce emissions. However, even with implementation of these measures, emissions would still be expected to exceed applicable thresholds.

Table 4.3-21. Comparison of Total Construction Emissions (Criteria Pollutants) (maximum tons per year)

Alternative	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
No Action Alternative	—	—	—	—	—	—
Proposed TU MSHCP Alternative	14.00	27.00	52.55	0.13	3.49	1.45
Condor Only HCP Alternative	14.00	27.00	52.55	0.13	3.49	1.45
CCH Avoidance MSHCP Alternative	14.00	27.00	52.55	0.13	3.49	1.45
Kern County General Plan Buildout Alternative	21.54	43.02	81.44	0.20	5.15	2.31

4.3.8.2 Operations Emissions

Table 4.3-22 summarizes the annual operation emissions of criteria air pollutants at full buildout of Commercial and Residential Development under each alternative. For each proposed action alternative, the maximum annual emissions would occur at full buildout in 2041. This summary includes reductions as required by application of various rules and requirements, including SJVAPCD Rule 9510.

The No Action Alternative would not include commercial and residential development. Existing Ranch Uses or Plan-Wide Activities associated with any alternatives would not involve substantial operation emissions or have the potential to exceed applicable air quality thresholds.

The Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternative would all generate approximately the same amount of operation-related criteria pollutants from Commercial and Residential Development Activities, as shown in Table 4.3-22. The CCH Avoidance MSHCP

Alternative would generate slightly less emissions by comparison because a slightly smaller area would be developed. Operation under the Kern County General Plan Buildout Alternative would generate the highest emissions, which would include an additional 331.93 tons ROG per year (181%), 326.15 tons NO_X per year (53%), 889.14 tons CO per year (76%), 2.87 tons SO_X per year (53%), 232.25 tons PM_{10} per year (59%), and 57.83 tons $PM_{2.5}$ per year (159%) compared to the Proposed TU MSHCP and Condor-Only HCP Alternatives.

As noted in the discussions above, implementation of BMPs and mitigation measures to reduce the effects of the alternatives on air quality would further reduce emissions. However, even with implementation of these measures, emissions would still be expected to exceed applicable thresholds.

Table 4.3-22. Comparison of Total Operation Emissions (Criteria Pollutants) (maximum tons per year)

Alternative	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
No Action Alternative	—	—	—	—	—	—
Proposed TU MSHCP Alternative	183.88	620.63	1,173.65	5.37	396.54	36.33
Condor Only HCP Alternative	183.88	620.63	1,173.65	5.37	396.54	36.33
CCH Avoidance MSHCP Alternative	171.63	585.21	1,105.03	5.07	374.04	34.23
Kern County General Plan Buildout Alternative	515.81	946.78	2,062.79	8.24	628.79	94.16

Whereas the combined construction and operation emissions in key years were presented in the assessment of each alternative, the maximum annual emissions would occur at full buildout in 2041 after completion of construction. Thus, none of the prior years is anticipated to result in higher combined emissions than those that would occur in 2041, and the emissions in 2041 represent the maximum annual emissions for the purpose of comparing the alternatives.

4.3.8.3 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

None of the alternatives is expected to result in the exposure of sensitive receptors to substantial pollutant concentrations. Although all the alternatives result in varying degrees of activities that could result in minor emissions of criteria pollutants, none of the land uses would involve the use of or exposure to substantial TACs and given the rural environment, low background CO concentrations, and decreasing CO emissions from motor vehicles over time, it is unlikely that a CO hotspot area could be created.

4.3.8.4 Objectionable Odors

Some existing and proposed land uses under all the action alternatives associated with Commercial and Residential Development Activities and Existing Ranch Uses and Plan-Wide Activities have the potential to result in the creation of objectionable odors. Project approvals granted by Federal and state agencies or local jurisdictions would minimize these effects. Furthermore, most of these land uses would be located far from sensitive receptors. The proposed action alternatives would all result in a slightly greater potential for odor effects compared to the No Action Alternative because of the

proposal to include Commercial and Residential Development Activities. Of these alternatives, the Kern County General Plan Buildout Alternative would result in the greatest potential to create additional sources of objectionable odor because proposed development under this alternative would be greatest.

4.4 Geology and Soils

4.4.1 Overview

This section describes the regulatory setting applicable to geology and soil resources and hazards and the potential effects of the alternatives relating to exposure of people or structures to seismic risks and other geology- and soil-related effects in the study area. As described in Section 3.4, Geology and Soils, the study area for geology and soils is considered to include the Covered Lands and the surrounding fault system that could affect the Covered Lands. The cumulative effects analysis area for geology and soils considers the same area. A description of the cumulative effects analysis area is provided in Section 4.4.7, Cumulative Effects, along with a discussion of potential cumulative effects of the alternatives. Potential effects of the alternatives on mineral extraction are discussed in Section 4.7, Community Resources. Potential effects on paleontological resources are discussed in Section 4.5, Cultural Resources.

4.4.1.1 Regulatory Setting

The following state and local laws and policies would apply to all development in the study area and are designed to protect people against seismic risks.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) requires a California state geologist to identify areas in the state that are at risk from surface fault rupture. The primary purpose of the act is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. Under the act, the state establishes regulatory zones (Earthquake Fault Zones or Alquist-Priolo Zones) around the surface traces of active faults and issues appropriate maps of these zones. The maps are distributed to all affected cities, counties, and state agencies for their use in planning and controlling construction. Local agencies must regulate most development projects within the zones. Before a project can be permitted, a geologic investigation is required to demonstrate that proposed buildings would not be constructed across active faults. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault (generally 50 feet).

California State Seismic Hazards Mapping Act

The California State Seismic Hazards Mapping Act addresses hazards other than surface fault rupture, including liquefaction and seismically induced landslides. Through the act, the state establishes city, county, and state agency responsibilities for identifying and mapping seismic hazard zones and mitigating seismic hazards to protect public health and safety. It requires the California Department of Conservation, Division of Mines and Geology, to map seismic hazards and establishes specific criteria for project approval that apply in seismic hazard zones, including the requirement for a geological technical report. The California Department of Conservation has not mapped seismic hazards or established specific criteria for the study area.

California Building Code

The California Code of Regulations, Title 24 (California Building Code [CBC]) applies to all applications for residential building permits. The CBC has incorporated the Uniform Building Code (first enacted in 1927 and updated approximately every 3 years). The current CBC became effective

in 2007. (Portions of the code have been updated, including the Plumbing Code in 2007 and 2010, and the Electrical Code in 2010) (California Building Standards Commission 2011). Local agencies must ensure that development in their jurisdictions comply with guidelines contained in the CBC.

Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. The CBC identifies seismic factors that must be considered in structural design. Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, and Appendix A33 regulates grading activities, including drainage and erosion control and construction on unstable soils such as expansive soils and liquefaction areas.

Kern County Laws, Policies, Ordinances, Regulations, and Standards

Kern County has established several policies and requirements related to seismic failures, including development policies and implementation measures related to the avoidance of earthquake faults and fault zones, geologic hazards, and required geological and soils engineering investigations in the Land Use, Open Space, Conservation, and Safety Elements of the Kern County General Plan, in Kern County's Hillside Development Ordinance, and in the County Code of Building Regulations, as summarized below.

Seismically Induce Surface Rupture, Ground Shaking, and Ground Failure (Section 4.3 of the Kern County General Plan). This section includes policies and implementation measures to address seismic risks when constructing development. Structures are to be placed away from active faults, geologic and soil studies should be conducted prior to citing structures, and proper precautions should be implemented to reduce seismic hazards wherever possible.

Landslides, Subsidence, Seich, and Liquefaction (Section 4.5 of the Kern County General Plan). This section includes policies and implementation measures to address other geologic hazards. Liquefaction potential should be determined and proper mitigation should be developed. Risks from other geological and soil risks should be reduced through application of mitigation measures in the California Environmental Quality Act (CEQA) process.

Hillside Development Ordinance (Chapter 19.88 of Kern County Code of Ordinances). This ordinance requires various standards related to, for example, density, grading, drainage, and driveway and road design, to minimize risks associated with hillside development. With respect to development that would occur under the Proposed TU MSHCP, Condor Only HCP, or Kern County General Plan Buildout Alternatives within the TMV Specific Plan Area, the TMV Specific Plan includes a site-specific grading ordinance as part of the zoning change, which replaces Kern County's Hillside Development Ordinance within the TMV Specific Plan Area. Rather than regulating development on a lot-by-lot basis as occurs under the Hillside Development Ordinance, the TMV Specific Plan permits development in areas of the project site that can accommodate development given considerations related to slope, natural resources, and other constraints. The grading standards require appropriate setbacks, grading that respects natural contours on the project site, protection of significant resources and aesthetic features, imposition of best management practices (BMPs) to avoid erosion, incorporation of features to avoid unnatural appearances, adherence to existing road alignments, and other measures to minimize the effect of grading on hillsides.

Kern County Code of Building Regulations (Title 17 of Kern County Code of Ordinances). The Code of Building Regulations adopts many provisions of the CBC, but makes some modifications due to consideration of local climatic, geological or topographic conditions. This code includes grading provisions, that require consideration of geologic risks.

4.4.1.2 Methods

The analysis of the effects and magnitude of direct, indirect, and cumulative effects were considered in terms of whether each alternative would expose people or structures to substantial seismic risks or expose people or structures to other substantial risks related to soils and geology risks such as landslides, erosion, lateral spreading, subsidence, or collapse. In general, potential effects related to soils and geology were assumed to be associated with ground disturbance activities.

4.4.2 No Action Alternative

4.4.2.1 Exposure to Seismic Risks

Commercial and Residential Development Activities

No Commercial or Residential Development Activities would occur under the No Action Alternative; therefore, this alternative would not expose people or structures to seismic risks.

Existing Ranch Uses

There are some existing structures in the study area associated with Existing Ranch Uses; however, the use of most of these structures is, and would continue to be, limited. Most ancillary ranch structures are not occupied (although employees are housed in some buildings) and back-country cabins are visitor facilities used for occasional lodging. The existing ranch headquarters and ancillary ranch structures are located near Interstate 5 (I-5). These structures have been built in accordance with applicable seismic regulations. These few structures are spread out over the study area and are not concentrated on fault lines.

Existing Ranch Uses could result in the limited construction of new structures, such as ancillary ranch structures and back-country cabins, that could increase the exposure of people and structures to seismic risk. New construction for human occupancy associated with Existing Ranch Uses would be required to comply with state and local requirements to reduce seismic hazards, such as applicable building codes and design standards intended to reduce risks from seismic activity. The majority of the Covered Lands would be permanently preserved in open space (106,317 acres), and the remaining Covered Lands would continue to be limited to Existing Ranch Uses with no Commercial and Residential Development, which would further limit the potential exposure to seismic risk. Therefore, the No Action Alternative would result in minor risk of harm or injury from exposure to seismic risks, similar to existing conditions.

4.4.2.2 Exposure to Other Soils and Geology Risks

Commercial and Residential Development Activities

Commercial and Residential Development Activities are not proposed under the No Action Alternative; therefore, this alternative would not expose people or structures to other soils or geology risks, such as landslides, erosion, lateral spreading, subsidence, or collapse associated with these activities.

Existing Ranch Uses

Under the No Action Alternative, Existing Ranch Uses would continue similar to existing conditions, subject to the use restrictions and BMPs required per the Ranchwide Agreement (as currently set forth in the Interim RWMP) to maintain existing conservation values. Specifically, the Interim RWMP includes provisions to minimize erosion and soil compaction associated with the effects of grazing through seasonal livestock rotation; placing mineral supplements distant from water resources to prevent soil compaction, erosion, and contamination from congregating livestock; and placing water sources throughout the area to disperse livestock. The Ranchwide Agreement requires that all subsequent RWMPs must similarly reflect BMPs that protect the conservation values of the land and that such restrictions are carried through in the conservation easements required by the Ranchwide Agreement.

As noted above, there are some existing structures in the study area associated with Existing Ranch Uses that could result in the exposure of people to other soils and geology risks, such as landslides, lateral spreading, subsidence, or collapse; however, the use of most of these structures is limited. Most ancillary ranch structures are not occupied, and back-country cabins are visitor facilities used for occasional lodging. The existing ranch headquarters and associated housing are located near I-5. These structures have been located to minimize potential risk associated with unstable soils.

Existing Ranch Uses could result in the limited construction of new structures, such as ancillary ranch structures and back-country cabins. The placement of new structures in areas prone to other soil and geology risks could result in increased exposure of people and structures to harm or damage associated with these risks. Some Existing Ranch Uses, such as farming, construction and maintenance activities, and ranching, could result in increased erosion and contribute to the loss of topsoil, although these activities would be carried out in a manner consistent with the Ranchwide Agreement, which includes provisions to minimize the potential for erosion and soil compaction, as described above. In addition, Existing Ranch Uses would be required to comply with Federal, state, and local requirements to reduce risks associated with other soils and geology risks. For example, activities associated with Existing Ranch Uses that would require substantial ground disturbance would trigger the need for a local grading or building permit and possibly a National Pollutant Discharge Elimination System (NPDES) Permit. It is anticipated that prior to issuance of the required permits, the local jurisdiction would require demonstration that risks associated with geology and soils would be avoided or minimized, likely through incorporation of BMPs designed to protect those resources.

The majority of the Covered Lands would be permanently preserved in open space (106,317 acres), and the remaining Covered Lands would continue to be limited to Existing Ranch Uses (no Commercial and Residential Development), which would further limit the potential exposure to these risks. Therefore, although the No Action Alternative would result in some increased risk of exposing people and structures to other soils and geology risks, the potential effects would be minor and similar to existing conditions.

4.4.3 Proposed TU MSHCP Alternative

4.4.3.1 Exposure to Seismic Risks

Commercial and Residential Development Activities

Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would result in the disturbance of approximately 5,533 acres. These activities would include the construction of 3,632 dwelling units and 1,804,390 square feet of commercial development. In addition, the population would increase by 11,441 individuals under this alternative.

Implementation of the conservation measures included in the TU MSHCP (as presented in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives), would help to reduce the potential effects of exposure to seismic risk by requiring low-density development. However, Commercial and Residential Development Activities would still result in increased exposure of people or structures to harm or injury from seismic risks. Seismic risks arise from groundshaking events and risks to people are caused by exposure to unsafe structures in earthquake-prone areas that could result in major injury, or loss of life. Some low-density development would be located in the vicinity of the Garlock Fault zone. Other proposed development would be further away from the fault zone. Seismic activity along the San Andreas Fault system, where the nearest location of that system is approximately 2 miles southwest of the study area, or the Pleito Thrust Fault, approximately 3 miles north of the study area, could affect people and structures in the study area. There could be moderate to large earthquakes and horizontal ground accelerations that could result in structural damage, major injury, or loss of life. Secondary fault ruptures outside of the fault zones could also damage structures, as could groundshaking and other secondary seismic effects.

As noted in Section 4.4.3.3, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from state agencies and local jurisdictions as indicated in Section 4.4.3.3, Mitigation Measures. For example, in accordance with the Alquist-Priolo Act, local agencies would not allow habitable structures such as homes and commercial buildings in areas designated as active fault lines and buildings would need to be constructed in accordance with building code requirements. It is anticipated that the local jurisdiction would require provisions that would reduce the exposure of people and structures to seismic risks during project-level approval. For example, Kern County's approval of the TMV Project requires preparation of geotechnical studies prior to development; buffer zones of 50 feet around fault zones and a minimum setback of 300 feet around all critical facilities, such as fire stations; and design measures to minimize risks to new critical utilities that cross active fault traces (Appendix J, MM 4.6-1 through 4.6-4 and MM 4.6-6) (Kern County 2009). In addition, under the Proposed TU MSHCP Alternative, Commercial and Residential Development Activities would occur as an integrated, planned project. This would allow for more effective implementation of minimization and avoidance measures and would substantially reduce the potential for exposure of structures or humans to seismic risks.

In consideration of the above avoidance, minimization, and mitigation measures, it is anticipated that the potential for increased exposure to seismic risk under the Proposed TU MSHCP Alternative would be minor. This risk would be somewhat higher than the No Action Alternative, however, given the increased development footprint.

Plan-Wide Activities

Plan-Wide Activities under the Proposed TU MSHCP Alternative would be similar to Existing Ranch Uses under the No Action Alternative with the exception that permanent ground disturbance would be limited to 200 acres. As noted above, there are some existing structures in the study area associated with Plan-Wide Activities; however, the use of most of these structures is limited. Most ancillary ranch structures are not occupied and back-country cabins are visitor facilities used for occasional lodging. The existing ranch headquarters and ancillary ranch structures are located near I-5 and were constructed in accordance with local approvals and codes. Plan-Wide Activities could result in the limited construction of new structures (e.g., ancillary ranch structures) that could increase the exposure of people and structures to seismic risk. New construction for human occupancy associated with Plan-Wide Activities would be required to comply with state and local requirements to reduce seismic hazards, such as applicable building codes and design standards intended to reduce risks from seismic activity. Permanent ground-disturbing activities would be limited to 200 acres, which would further limit the exposure to seismic risk. Therefore, the Proposed TU MSHCP Alternative would result in a minor risk of harm or injury from exposure to seismic risks, similar to the No Action Alternative.

4.4.3.2 Exposure to Other Soils and Geology Risks

Commercial and Residential Development Activities

Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would result in the disturbance of approximately 5,533 acres, requiring grading and cut and fill or approximately 75 million cubic yards. These activities would include the construction of 3,632 dwelling units and 1,804,390 square feet of commercial development. In addition, the population would increase by 11,441 individuals under this alternative.

Implementation of conservation measures included in the TU MSHCP (as presented in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives), would help to reduce exposure to other soils and geology risks, including landslides, erosion, lateral spreading, subsidence, and collapse, by allowing only low-density development, incorporating design features to avoid and minimize urban runoff, and implementing erosion control measures. However, Commercial and Residential Development Activities could result in increased exposure of people or structures to harm or injury from other soils and geology risks as a result of placing structures on unstable soils, or by destabilizing soils through grading and earthmoving. Compressible or collapsible soils exist in areas with a higher groundwater table, such as around Castac Lake, and therefore may be more prone to lateral spreading in places. Landslides can occur in steep ridged areas throughout the TMV Planning Area and can be exacerbated by erosion or grading.

As indicated in Section 4.4.3.3, Mitigation Measures, Commercial and Residential Development Activities would be subject to project-specific approvals from state agencies and local jurisdictions. It is anticipated that the local approval process would include provisions that would reduce exposure of people and structures to other soils and geology risks, and minimize potential effects on soils from erosion through restricted building locations and requiring compliance with grading erosion controls and earthquake building codes. For example, Kern County's approval of the TMV Project requires grading and construction approaches to minimize risks associated with compressible and collapsible soils, landslides and debris flows; and preparation of a stormwater management plan and site-specific erosion controls (Appendix J, MM 4.6-19 through 4.6-21 and MM 4.6-25) (Kern County 2009). In addition, under the Proposed TU MSHCP Alternative, Commercial and Residential Development Activities would occur as an integrated, planned project. This would allow for more effective implementation of minimization and avoidance measures and would

substantially reduce the potential for exposure of structures or humans to other soils and geology risks, such as landslides, erosion, lateral spreading, subsidence, or collapse.

In consideration of the above avoidance, minimization, and mitigation measures, it is anticipated that the potential for increased exposure to other soils and geology risks under the Proposed TU MSHCP Alternative would be minor. These risks would be somewhat higher than the No Action Alternative, however, given the increased development footprint.

Plan-Wide Activities

Plan-Wide Activities would be similar to Existing Ranch Uses under the No Action Alternative, with the exception that permanent ground disturbance would be limited to 200 acres. Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities would be subject to use restrictions and BMPs required per the Ranchwide Agreement (as currently set forth in the Interim RWMP) to maintain the existing conservation values, including provisions to minimize erosion and soil compaction associated with the effects of grazing through seasonal livestock rotation; placing mineral supplements distant from water resources to prevent soil compaction, erosion, and contamination from congregating livestock; and placing water sources throughout the area to disperse livestock.

As noted above, there are some existing structures in the study area associated with Plan-Wide Activities that could result in the exposure of people to other soils and geology risks; however, the use of most of these structures would continue to be limited. Most ancillary ranch structures are not occupied and back-country cabins are visitor facilities used for occasional lodging. The existing ranch headquarters are located near I-5 and were constructed in accordance with local approvals and codes.

Plan-Wide Activities could result in the limited construction of new structures, such as ancillary ranch structures. The placement of new structures in areas prone to other soil and geology risks could result in increased exposure of people and structures to harm or damage associated with these risks. Some Plan-Wide Activities, such as farming, construction and maintenance activities, and ranching, could result in increased erosion and contribute to the loss of topsoil. These activities would continue to be carried out in a manner consistent with the Ranchwide Agreement, which includes provisions to minimize the potential for erosion and soil compaction, as described above. Additionally, conservation measures included in the TU MSHCP (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives) would further reduce other soil and geology risks by, for example, requiring erosion controls during ground disturbance, and BMPs, which would help mitigate against increased risk from exposure to other soils and geology risks. As indicated in Section 4.4.3.3, Mitigation Measures, all new construction for human occupancy associated with Plan-Wide Activities would be required to comply with Federal, state, and local requirements to reduce risks associated with other soils and geology risks. Under the Proposed TU MSHCP Alternative, an additional area of the Covered Lands would be preserved in open space compared to the No Action Alternative (approximately 23,001 additional acres) and permanent ground disturbance would be limited to 200 acres, which would further limit the potential exposure to risk. Therefore, although the Proposed TU MSHCP Alternative would result in some increased exposure of people and structures to other soils and geology risks, the potential effects would be minor and less than under the No Action Alternative where additional development would not be limited to 200 acres.

4.4.3.3 Mitigation Measures

As described above, BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP), would reduce the potential for increased exposure of people and structures to geology and soils risks under the Proposed TU MSHCP Alternative. The

Proposed TU MSHCP Alternative would also include species-specific conservation measures (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives), such as requirements to minimize ground disturbance activities in areas susceptible to erosion, which would further reduce some geology and soil-related effects. If the Service issues an incidental take permit (ITP) to TRC for incidental take of the 27 species covered under the TU MSCHP, these measures would be enforceable under the Endangered Species Act (ESA) through the ITP and applicable conservation easements. In addition, the following mitigation measures would reduce soils and geology effects that may be associated under this alternative.

- ***Comply with Applicable Federal, State, and Local Laws and Regulations Related to Geology and Soils.*** All development will comply with applicable state and local laws and policies to minimize seismic risks, including the Alquist-Priolo Act, the CBC, and applicable Kern County laws and policies. In addition, all ground disturbing activities will comply with applicable Federal, state, and local laws and polices requiring implementation of erosion-control BMPs, which include at a minimum, the standards set for by the NPDES Permit and associated preparation of a stormwater pollution prevention plan (SWPPP) with erosion-related BMPs.

4.4.4 Condor Only HCP Alternative

4.4.4.1 Exposure to Seismic Risks

Commercial and Residential Development Activities

The potential for exposure of humans and structures to seismic risks associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

The potential for exposure of humans and structures to seismic risks associated with Plan-Wide Activities under the Condor Only HCP Alternative would be same as described for the Proposed TU MSHCP Alternative.

4.4.4.2 Exposure to Other Soils and Geology Risks

Commercial and Residential Development Activities

The potential for exposure of humans and structures to other soil and geology risks associated with Commercial and Residential Development Activities under this alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

The potential for exposure of humans and structures to other soil and geology risks associated with Plan-Wide Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

4.4.4.3 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the potential for increased exposure of people and structures to geology and soils risks under the Condor Only HCP Alternative. However, only the species-specific conservation measures for California condor (Table 2-3 in Chapter 2,

Proposed TU MSHCP and Alternatives) would be implemented under this alternative. In addition, the mitigation measures listed in Section 4.4.3.3, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the Condor Only HCP Alternative.

4.4.5 CCH Avoidance MSHCP Alternative

4.4.5.1 Exposure to Seismic Risks

Commercial and Residential Development Activities

The potential effects from exposure to seismic risk under the CCH Avoidance MSHCP Alternative would be similar to those described for the Proposed TU MSHCP. The extent of the exposure overall would be slightly less than under the Proposed TU MSHCP Alternatives because the extent of proposed Commercial and Residential Development Activities would be slightly less.

There are some notable differences in where the Commercial and Residential Development Activities would be concentrated under the CCH Avoidance MSHCP Alternative compared to the Proposed TU MSHCP Alternative. Less Commercial and Residential Development Activities would occur in the immediate vicinity of the Garlock Fault compared to the Proposed TU MSHCP Alternative, but more development would be located closer to the San Andreas Fault (approximately 2 miles southwest of the study area) and the Pleito Thrust Fault (approximately 3 miles north of the study area).

Similar to the Proposed TU MSHCP Alternative, with implementation of mitigation presented in Section 4.4.5.3, Mitigation Measures, it is anticipated that the potential for increased exposure to seismic risks under the CCH Avoidance MSHCP Alternative would be minor. These risks would be somewhat higher than the No Action Alternative, however, given the increased development footprint.

Plan-Wide Activities

The potential effects from exposure to seismic risk under the CCH Avoidance MSHCP Alternative from Plan-Wide Activities would be the same as under the Proposed TU MSHCP Alternative.

4.4.5.2 Exposure to Other Soils and Geology Risks

Commercial and Residential Development Activities

Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would result in the disturbance of approximately 4,496 acres, requiring grading and cut-and-fill of approximately 90 million cubic yards. These activities would include the construction of 3,161 dwelling units and 1,804,390 square feet of commercial development. The population would increase by 9,957 individuals under this alternative.

Implementation of the conservation measures presented in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives, would reduce exposure to other soils and geology risks under the CCH Avoidance MSHCP Alternativ by incorporating design features to avoid and minimize urban runoff, and implementing erosion control measures. However, Commercial and Residential Development Activities could result in increased exposure of people or structures to harm or injury from other soils and geology risks by placing structures on unstable soils, or by destabilizing soils through grading and earthmoving. Compressible or collapsible soils exist in areas with a higher groundwater table, such as around Castac Lake, and therefore may be more prone to lateral

spreading in places. Landslides can occur in steep ridged areas throughout the TMV Planning Area and can be exacerbated by erosion or grading.

Commercial and Residential Development Activities would be more concentrated along the southern edge of the Covered Lands along the I-5 corridor and around Castac Lake, where compressible and collapsible soils may be present. Because more extensive grading would be required, it would be more difficult to avoid these areas under the CCH Avoidance MSHCP Alternative.

As indicated in Section 4.4.5.3, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from state agencies and local jurisdictions. For example, in accordance with the Alquist-Priolo Act, local agencies would not allow habitable structures, such as homes and commercial buildings, in areas designated as active fault lines and buildings would need to be constructed in accordance with building code requirements. It is anticipated that the local approval process would include provisions that would reduce exposure of people and structures to other soils and geology risks, and minimize potential effects on soils from erosion. For example, Kern County's approval of the TMV Project requires grading and construction approaches to minimize risks associated with compressible and collapsible soils, landslides and debris flows; and preparation of a stormwater management plan and site-specific erosion controls (Appendix J, MM 4.6-19 through 4.6-21 and MM 4.6-25) (Kern County 2009). Similar requirements are anticipated to be imposed for this alternative. In addition, under the CCH Avoidance MSHCP Alternative, Commercial and Residential Development Activities would occur as an integrated, planned project. This would allow for more effective implementation of minimization and avoidance measures and would substantially reduce the potential for exposure of structures or humans to other soils and geology risks.

Even with implementation of the above avoidance, minimization, and mitigation measures, increased risk of exposure to other soils and geology risks would occur from Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative. Because it would be difficult to avoid areas around Castac Lake, where compressible and collapsible soils may be present, and because more extensive and intensive grading would be required, there would be moderate increase in risk of exposure of people or structures to other soil and geology risks under the CCH Avoidance MSHCP Alternative. These risks would be higher than the No Action Alternative.

Plan-Wide Activities

The potential effects from exposure to other soil and geology risks under the CCH Avoidance MSHCP Alternative from Plan-Wide Activities would be the same as under the Proposed TU MSHCP Alternative.

4.4.5.3 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement would reduce the effects of the CCH Avoidance MSHCP Alternative related to the exposure of people and structures to seismic risks and other soils and geology hazards. Conservation measures, similar to those provided in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives, would also reduce effects on soils and geology by incorporating design features to avoid and minimize urban runoff and erosion. In addition. the mitigation measures listed in Section 4.4.3.3, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the CCH Avoidance MSHCP Alternative.

4.4.6 Kern County General Plan Buildout Alternative

4.4.6.1 Exposure to Seismic Risks

Commercial and Residential Development Activities

The effects from exposure to seismic risk under the Kern County General Plan Buildout Alternative would be similar to those described for the Proposed TU MSHCP. The extent of the exposure would be slightly greater than under the Proposed TU MSHCP Alternatives because there would be more Commercial and Residential Development Activities.

There are some notable differences in where Commercial and Residential Development Activities would be concentrated under the Kern County General Plan Buildout Alternative compared to the Proposed TU MSHCP Alternative. Under the Kern County General Plan Buildout Alternative, additional development would be scattered throughout the study area, and could include development close to the Garlock and White Wolf Fault zones.

Similar to the Proposed TU MSHCP Alternative, with implementation of mitigation presented in Section 4.4.6.3, Mitigation Measures, it is anticipated that the potential for increased exposure to seismic risks under the Kern County General Plan Buildout Alternative would be minor. These risks would be somewhat higher than the No Action Alternative, however, given the increased development footprint.

Existing Ranch Uses

As noted above, Existing Ranch Uses could result in the limited construction of new structures, such as ancillary ranch structures and back-country cabins that could increase the exposure of people and structures to seismic risk. New construction for human occupancy associated with Existing Ranch Uses would be required to comply with state and local requirements to reduce seismic hazards. Specifically, project permits would require conformance with applicable building codes and design standards intended to reduce risks from seismic activity. In addition, the majority of the Covered Lands would be preserved in open space (119,392 acres), which would further limit the potential exposure to seismic risk. Therefore, the Kern County General Plan Buildout Alternative would result in a minor risk of harm or injury from exposure to seismic risks, similar to the No Action Alternative.

4.4.6.2 Exposure to Other Soils and Geology Risks

Commercial and Residential Development Activities

Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would result in the disturbance of approximately 12,142 acres, requiring grading and cut and fill of approximately 222 million cubic yards. These activities would include the construction of 7,238 dwelling units and 2,144,810 square feet of commercial development. In addition, the population would increase by 22,800 individuals under this alternative.

Commercial and Residential Development Activities could result in increased exposure of people or structures to harm or injury from other soils and geology risks, such as landslides, erosion, lateral spreading, subsidence, or collapse. Risks could arise by placing structures on unstable soils, or by destabilizing soils through grading and earthmoving. Compressible or collapsible soils exist in areas with a higher groundwater table, such as around Castac Lake, and therefore may be more prone to lateral spreading in places. Landslides can occur in steep ridged areas throughout the TMV Planning Area and can be exacerbated by erosion or grading. Under the Kern County General Plan Buildout

Alternative, additional development would be scattered throughout the study area and would result in more grading and disturbance of soil compared to the other action alternatives.

As indicated in Section 4.4.6.3, Mitigation Measures, Commercial and Residential Development Activities would be subject to project-specific approvals from state agencies and local jurisdictions. For example, in accordance with the Alquist-Priolo Act, local agencies would not allow habitable structures such as homes and commercial buildings in areas designated as active fault lines and buildings would need to be constructed in accordance with building code requirements. It is anticipated that the local approval process would include provisions that would reduce exposure of people and structures to other soils and geology risks, and minimize potential effects on soils from erosion. For example, Kern County's approval of the TMV Project requires grading and construction approaches to minimize risks associated with compressible and collapsible soils, landslides and debris flows; and preparation of a stormwater management plan and site-specific erosion controls (Appendix J, MM 4.6-19 through 4.6-21 and MM 4.6-25) (Kern County 2009).

Even with implementation of mitigation, some increased exposure to soils and geology risks would occur from Commercial and Residential Development Activities. Because more extensive and dispersed grading would be required, there would be moderate increase in risk of exposure of people or structures to other soil and geology risks under the Kern County General Plan Buildout Alternative. These risks would be greater than those associated with the No Action Alternative.

Existing Ranch Uses

As noted above, Existing Ranch Uses could result in the limited construction of new structures, such as ancillary ranch structures , that could increase the exposure of people and structures to other geology and soils risks. As described in Chapter 2, Proposed TU MSHCP and Alternatives, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices , as currently reflected in the Interim RWMP, are anticipated to continue (although they cannot be assured), and compliance with legal requirements governing other soil and geology risks would apply.

New construction for human occupancy associated with Existing Ranch Uses would be required to comply with Federal, state, and local requirements to reduce risks associated with other soils and geology risks, as discussed above. The majority of the Covered Lands would be preserved in open space (119,392 acres), which would further limit the exposure to risk. Therefore, although the Kern County General Plan Buildout Alternative would result in some increased exposure of people and structures to other soils and geology risks, the potential effects would be minor and similar to the No Action Alternative.

4.4.6.3 Mitigation Measures

As described above, the limitations of the Ranchwide Agreement would not apply under the Kern County General Plan Buildout Alternative. However, even in the absence of the Ranchwide Agreement, BMPs (as currently set forth in the Interim RWMP) are anticipated to continue (although they cannot be assured). Restrictions imposed by the TMV Project Approvals and by easement language in the Existing Conservation Easement Areas would apply under the Kern County General Plan Buildout Alternative. Comparable measures to those provided in Tables 2-3 and 2-4 would likely be implemented to avoid, mitigate, and minimize effects on special-status species (i.e., state or federally listed species, species protected as special-status species under CEQA), which could also reduce effects on geology and soil resources. In addition, the mitigation measures listed in Section 4.4.3.3, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the Kern County General Plan Buildout Alternative.

4.4.7 Cumulative Effects

The approach for analyzing cumulative effects on geology and soils resources is described in Section 4.0.4, Methods of Assessing Cumulative Effects, which includes a list of reasonably foreseeable projects considered in this assessment. As noted above, the cumulative effects analysis area is the same as the study area for geology and soils and includes the Covered Lands and the surrounding fault system that could affect the Covered Lands. Specific to soils and geological considerations, the potential cumulative effects are assessed in the context of the criteria discussed in Section 4.4.1.2, Methods, which includes each alternative's potential to expose people or structures to substantial seismic risks or expose people or structures to other substantial risks related to other soil and geology risks, such as landslides, erosion, lateral spreading, subsidence, or collapse.

Cumulative effects related to soils and geology are indirect or secondary effects related to the future development that would be facilitated by issuance of an ITP by the Service. Whether or not such effects would be substantial cumulatively is primarily dependent on the avoidance, minimization and mitigation measures put in place by other Federal, local, and state authorities pursuant to their project approval process.

4.4.7.1 Exposure to Seismic Risks

As noted in Section 3.4, Geology and Soils, the region is seismically active. As noted above and in greater detail in Section 3.7, Community Resources, some limited development currently exists within the general vicinity of the Covered Lands. Past development within the cumulative effects analysis area has also resulted in the placement of additional structures and the development of land uses that have attracted more people to the area. To a large extent, the development is relatively dispersed and does not result in a substantial risk of exposure to people or structures to risk from seismic activities.

The No Action Alternative would not include any Commercial and Residential Development Activities and would not expose a substantial number of people to increased seismic risk. Therefore, the No Action Alternative would not contribute to a cumulative effect. Existing Ranch Uses or Plan-Wide Activities associated with any of the alternatives would not result in substantial increases in exposure to seismic risks. Therefore, these activities would not combine with any of the reasonably foreseeable projects to result in cumulative effects associated with seismic risk.

As noted above, the proposed action alternatives would result in additional development and associated population growth and would have the potential to contribute to a cumulative effect. However, seismic risks would vary depending on project location and would be site-specific. Like all development under any of the proposed action alternatives, each project in the region must individually meet building code and other local requirements (such as conducting engineering surveys and placing structures away from active faults). It is anticipated that other future development would also meet these requirements. Therefore, no additive effect would occur and no cumulatively substantial effect related to seismic risks would occur.

4.4.7.2 Exposure to Other Soils and Geology Risks

The existing exposure of people and structures to other soils and geology risks in the cumulative effects analysis area has also been influenced by past development. The placement of additional structures and the development of land uses have attracted more people to the area and resulted in changes in topography. However, to a large extent, the development is relatively dispersed and has not occurred in areas where substantial risk of erosion, landslides, lateral spreading, subsidence, or collapse are prevalent. Therefore, within the cumulative effects analysis area, the risk of exposure to people or structures to these hazards is relatively minor.

The No Action Alternative would not include any Commercial and Residential Development Activities and would expose a substantial number of people to increased soils and geology risks. Therefore, the No Action Alternative would not contribute to a cumulative effect. In addition, Existing Ranch Uses or Plan-Wide Activities associated with the alternatives would not result in substantial increases in risk of exposure to other soils and geology risks. Therefore, these activities would not combine with any of the reasonably foreseeable projects to result in a cumulative effect.

As noted above, the proposed action alternatives would result in additional development and associated population growth, and would have the potential to contribute to a cumulative effect. However, geologic formations and soils types vary depending on project location and are site-specific. Like all development under any of the proposed action alternatives, each project in the region must individually meet building code and other local requirements (such as grading and erosion control plans). It is anticipated that other future development would also meet these requirements. Therefore, no additive effect would occur and no cumulatively substantial effect related to soils or other geologic hazards would occur.

4.4.8 Comparison of Alternatives

Because the exact contours, locations, and building designs of the Commercial and Residential Development Activities are not known, the following comparison of alternatives is based on the acreage of disturbance and estimates of cut-and-fill in the development area as well as the area that would be preserved as open space, as summarized in Table 4.4-1.

Table 4.4-1. Proposed Development and Open Space under Each Alternative

	No Action Alternative	Proposed TU MSHCP/Condor Only HCP Alternatives	CCH Avoidance MSHCP Alternative	Kern County General Plan Buildout Alternative
Ground disturbance (acres)	0	5,533	4,496	12,142
Cut and fill (cubic yards)	0	75 million	90 million	222 million
Dwelling Units	0	3,632	3,161	7,238
Commercial Development (square feet)	0	1,804,390	1,804,390	2,144,810
Population	0	11,441	9,957	22,800
Permanently preserved open space (acres)[1]	106,317[2] (75%)	129,318 (91%)	130,339 (92%)	119,392[3] (84%)

[1] Percentage representative of percentage of total study area (141,886 acres).

[2] While conservation easements would be recorded over only 106,317 acres, Existing Ranch Uses would continue over the remaining Covered Lands (with no commercial or residential development).

[3] The Kern County General Plan Buildout Alternative includes both permanently preserved open space (34,130 acres) and Restricted Open Space (85,262 acres).

Commercial and Residential Development Activities would not occur under the No Action Alternative. Therefore, there would be no related effects associated with soils or geology from these activities. By comparison, the remaining alternatives would all result in potential effects on soils and geology from Commercial and Residential Development Activities.

Generally speaking, the potential for adverse effects from exposure to seismic risk would increase with the extent and intensity of the development. As indicated in Table 4.4-1, the CCH Avoidance MSHCP Alternative would result in the least amount of developed area. The Proposed TU MSHCP Alternative and the Condor Only HCP Alternative would result in the next greatest amount of permanent ground disturbance, and the Kern County General Plan Buildout Alternative would result

in the greatest amount of ground disturbance. However, as indicated in the discussions above, it is anticipated that the effects from exposure to seismic risk would be minor under all the alternatives, and reduced through implementation of state and local regulations and policies.

With respect to potential risks from exposure to other soil and geology risks, the CCH Avoidance MSHCP and Kern County General Plan Buildout Alternatives would result in the greatest effects. Although there would be less Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative, there would be more concentrated development around Castac Lake, where compressible and collapsible soils may be present. Due to the density of development and smaller area of surface disturbance under this alternative, Commercial and Residential Development Activities would be less likely to avoid areas with steeper slopes where landslides could be exacerbated by erosion. Under the Kern County General Plan Buildout Alternative, more extensive Commercial and Residential Development Activities and dispersed grading would result in greater potential for erosion. Therefore, the potential effects associated with other soil and geology risks for the CCH Avoidance MSHCP and Kern County General Plan Buildout Alternatives would be moderate. Although the Proposed TU MSHCP and Condor Only HCP Alternatives would result in increased risk compared to the No Action Alternative, the exposure to other soil and geology risks would be minor.

Existing Ranch Uses and Plan-Wide Activities under all the alternatives would result in minor to no effects on soils and geology. Effects from these activities would be generally the same across all alternatives. Under the Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives, the extent of ground disturbance from Plan-Wide Activities would be limited to 200 acres, which functions as a limit to ground disturbance that could result in geologic risks, and would result in fewer effects compared to the No Action Alternative. The No Action, Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives are all also subject to the use restrictions and BMPs required pursuant to the Ranchwide Agreement that protect conservation values, including protection from land use changes that would result in geologic risks. By comparison, because the Kern County General Plan Buildout Alternative would not be subject to the Ranchwide Agreement, it would result in slightly less open space preservation compared to the other proposed action alternatives, and would have a slightly greater potential for soils and geology effects. However, the potential effects of the Kern County General Plan Buildout Alternative would still be minor.

4.5 Cultural Resources

4.5.1 Overview

This section describes the regulatory setting applicable to cultural and paleontological resources and the potential effects of the alternatives on cultural and paleontological resources in the study area. As described in Section 3.5, Cultural Resources, the study area is considered concurrent with the Covered Lands. Cumulative effects occur at the landscape or regional level; therefore, for purposes of evaluating the cumulative effects of the alternatives, a region-scale analysis is focused on growth in the Tehachapi Uplands, generally encompassing the Tehachapi Uplands portion of the Southern California Mountains Ecoregion, and the valley and foothill areas outside the Tehachapi Uplands. A description of the cumulative effects analysis area is provided in Section 4.5.7, Cumulative Effects, along with a discussion of potential cumulative effects of the proposed action.

4.5.1.1 Regulatory Setting

Activities proposed under all the alternatives would be required to conform to Federal, state, and local laws and regulations that protect cultural resources, as described below. There are no Federal laws or regulations specific to paleontological resources; however, there is a relevant state law and local policy, which are also described below.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act requires Federal agencies to consider the effects of their actions on historic properties and provide the Advisory Council on Historic Preservation an opportunity to comment on their analyses. Historic properties are defined as resources determined to be eligible for inclusion on the National Register of Historic Places (NRHP). These resources can be determined eligible for inclusion if they possess integrity and meet one of four criteria from 36 Code of Federal Regulations (CFR) 60. The resource must:

- represent an important historic theme,
- be associated with an important person,
- illustrate a distinctive type of architecture or design, or
- yield information important in history or prehistory.

In the event that a lead Federal agency determines that its actions could adversely affect a historic property, the Federal agency would seek consultation with the State Historic Preservation Office (SHPO) to determine appropriate mitigation to minimize the effects. This process could result in a memorandum of agreement that details the methods to resolve any adverse effects. Consultation regulations are required by Section 106 of the National Historic Preservation Act and set forth in 36 CFR 800.

Native American consultation is also required. Specifically, Federal agencies are also required to consult with Native American tribes to assess whether their actions have the potential to affect Native American resources, as set forth in regulations found in 36 CFR 800.4.

The following describes the categories of cultural resources that can be evaluated under Section 106 of the National Historic Preservation Act.

- **Archaeological Properties.** Archaeological properties or resources are places where the remnants of past cultures survive in a physical context that allows for the interpretation of these remains.
- **Historic Properties.** Historic properties or resources are historic buildings or structures that are 50 years or older.
- **Native American Resources.** Native American resources are sacred sites, graves and cultural objects.

California Environmental Quality Act and California Health and Safety Code

Although actions of a Federal agency are not subject to the California Environmental Quality Act (CEQA), individual projects facilitated by Federal actions may be subject to CEQA compliance. CEQA requires consideration of historically significant resources, including paleontological resources (fossil remains of life that existed in prehistoric or geologic times, which can include plants, animals, and other organisms) that meet the criteria for listing on the California Register of Historic Resources. A resource may be determined eligible for listing in the California Register of Historic Resources if:

- the resource is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- the resource is associated with the lives of persons important in our past;
- the resource embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of an important creative individual or possesses high artistic values; or
- the resource has yielded, or may be likely to yield, information important in prehistory or history.

Human remains are also sometimes associated with archaeological sites and are subject to the requirements of the California Health and Safety Code Section 7050.5:

> …archaeological sites known to contain human remains shall be treated in accordance with the provisions of California Health and Safety Code Section 7050.5. If human remains are exposed during construction, California Health and Safety Code Section 7050.5 states that no further disturbance will occur until the County coroner has made the necessary findings as to origin and disposition pursuant to California Public Resources Code Section 5097.98. Construction must halt in the area of the discovery of human remains, the project proponent must ensure that the area is protected, and consultation and treatment will occur as prescribed by law.

Kern County General Plan Policies

In addition, the Kern County General Plan (Kern County 2009) includes policies related to cultural and paleontological resources, as listed below.

- The County will promote the preservation of cultural and historic resources, which provide ties with the past and constitute a heritage value to residents and visitors (Policy 25).
- The County will coordinate with the California State University, Bakersfield, Archaeology Inventory Center.
- The County shall address archaeological and historical resources for discretionary projects in accordance with CEQA (Implementation Measure L).
- In areas of known paleontological resources, the County should address the preservation of these resources where feasible (Implementation Measure M).

- The County shall develop a list of Native American organizations and individuals who desire to be notified of proposed discretionary projects. This notification will be accomplished through the established procedures for discretionary projects and CEQA documents (Implementation Measure N).
- On a project-specific basis, the County Planning Department shall evaluate the necessity for the involvement of a qualified Native American monitor for grading or other construction activities on discretionary projects that are subject to a CEQA document (Implementation Measure O).

4.5.1.2 Methods

The analysis of the effects and the magnitude of direct, indirect, and cumulative effects is considered in terms of whether each alternative would directly or indirectly result in destruction or disturbance of cultural resources eligible for listing in the NRHP or in the destruction or disturbance of paleontological resources. In addition, the analysis of effects considers whether the alternatives would directly or indirectly result in the alteration or destruction of the existing historic context of study area. In general, potential effects on cultural and paleontological resources were assumed to be associated with ground-disturbance activities.

4.5.2 No Action Alternative

4.5.2.1 Cultural and Paleontological Resources

Commercial and Residential Development Activities

No Commercial and Residential Development Activities would occur under the No Action Alternative. Therefore, there would be no direct or indirect effects on cultural or paleontological resources associated with Commercial and Residential Development Activities.

Existing Ranch Uses

Under the No Action Alternative, Existing Ranch Uses would continue to occur in the study area similar to existing conditions, and would be subject to the best management practices (BMPs) and use restrictions required pursuant to the Ranchwide Agreement, as currently set forth in the Interim Ranch-Wide Management Plan (RWMP) (Tejon Ranch Company 2009). All subsequent RWMPs would be required to similarly reflect BMPs that maintain the conservation values of the land, including cultural resources and the historic context of the lands, and would be reflected in the conservation easements required by the Ranchwide Agreement.

Existing Ranch Uses that involve new ground disturbance, such as farming and irrigation, and construction of roads, utilities, fences, ancillary ranch structures, and back-country cabins, could disturb cultural resources. Cultural resources are known to exist in the study area. As discussed in Section 3.5.2, Results of the Records Search, Field Surveys, and Native American Consultation, although no known cultural resources eligible for listing in the NRHP exist in the Lebec/Existing Headquarters Area, 22 sites eligible for listing in the NRHP are known to exist in the TMV Planning Area. Other resources located in TMV Planning Area Open Space as identified in the Phase I Report (W&S Consultants 2004) may also be eligible. In addition, the full remainder of the study area has not been surveyed, and cultural resource sites could also exist in those areas. As mentioned in Section 3.5.1.3, History, the continuation of Existing Ranch Uses is also important in terms of preserving the historic context of land uses.

In addition to the use restrictions and BMPs currently set forth in the Interim RWMP, Existing Ranch Uses would be required to comply with all applicable Federal, state, and local regulations on a

project-specific basis. For example, activities associated with Existing Ranch Uses that would require substantial ground disturbance would trigger the need for a local grading or building permit. It is anticipated that prior to issuance of the required permits, the local jurisdiction would require demonstration that potential effects on cultural resources would be avoided or minimized. Therefore, potential effects on cultural resources are considered to be minor.

Existing Ranch Uses that involve ground disturbance, such as farming and irrigation, and construction of roads, utilities, fences, ancillary ranch structures, and back-country cabins, could also disturb paleontological resources. As described in Section 3.5.3, Paleontological Setting, there are small areas near Castac Lake with features (older Pleistocene sediments, middens, or caves) that could include paleontological resources. As mentioned previously, the Ranchwide Agreement would require that land uses be conducted so as to maintain conservation values, which also include paleontological resources. Therefore, effects on paleontological resources associated with Existing Ranch Uses would be minor.

4.5.3 Proposed TU MSHCP Alternative

4.5.3.1 Cultural and Paleontological Resources

Commercial and Residential Development Activities

Ground disturbance associated with construction of Commercial and Residential Development Activities has the potential to adversely affect cultural resources. Under this alternative, 5,533 acres would be developed requiring grading with an estimated 75 million cubic yards of earth to be moved, including cut-and-fill.

As discussed in Section 3.5, Cultural Resources, surveys have been completed for the TMV Planning Area and Lebec/Existing Headquarters Area where Commercial and Residential Development Activities would occur. Based on these surveys, no known cultural resources determined to be eligible were identified in the Lebec/Existing Headquarters Area. Within the remainder of the surveyed area, 22 sites with the potential to be eligible were found in or near areas proposed for development. Although the TMV Planning Area and the Lebec/Existing Headquarters Area were surveyed and potentially eligible sites were found, there is a low potential for inadvertent discovery of cultural resources during ground disturbance.

Implementation of the mitigation discussed in Section 4.5.3.2, Mitigation Measures, would address potential effects on cultural resources by requiring preconstruction surveys for ground disturbing activities in areas not previously surveyed. Effects on cultural resources that have been deemed eligible for listing in the NRHP will be avoided by relocating the disturbance, minimized through protection of sensitive resources in place, or, if necessary, mitigated through data retrieval, all in consultation with a qualified archaeologist and SHPO as necessary.

In addition, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal, state, and local jurisdictions. It is anticipated that the local approval process would include provisions that would reduce adverse effects on cultural resources in the study area. For example, Kern County's approval of the TMV Project requires known sites be preserved in place (one may be subject to documentation requirements). Additional provisions include delineating a 25-meter buffer around known sites located within 100 meters of ground disturbance; including Native American monitors during any work at known sites; avoiding or preserving certain sites under geotextile matting and capping fill; and stopping work and following the steps and procedures specified in California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98 in the event of accidental discovery of human remains (Appendix J, MM 4.5-1 through 4.5-37 and MM 4.5-42) (Kern County 2009).

Thus, as set forth in the TMV Project approvals, all 22 NRHP-eligible sites in the TMV Specific Plan Development Envelope or that would be affected by the TMV Project will be preserved in place (one may be subject to data recovery). There are no cultural resources identified within the Oso Canyon Development Envelope and the two sites located on the border of the West of Freeway area will be avoided per the mitigation measures required by Kern County. Therefore, although Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative have the potential to result in greater adverse effects on cultural resources compared with the No Action Alternative, the potential effects would be low.

As discussed under the No Action Alternative above, small areas near Castac Lake have the potential to contain older Pleistocene sediments, middens, or caves that could also contain paleontological resources. Implementation of the mitigation discussed in Section 4.5.3.2, Mitigation Measures, would reduce the effects on paleontological resources by requiring paleontological resources monitoring during excavations around Castac Lake. In addition, the local approval process includes provisions that would reduce adverse effects on paleontological resources similar to that described above. Kern County's approval of the TMV Project requires that a qualified professional vertebrate paleontologist with regional knowledge monitor all excavations areas in the Castac Lake basin identified as having a high sensitivity for Pleistocene sediments and redirecting work to other areas if paleontological resources are exposed until scientific significance of the find is assessed. Additional provisions include staking and flagging areas of potential paleontological resources to alert construction workers; assessment of potential finds by a paleontologist to determine the appropriate recovery requirements; implementing a data recovery program for all macro- and microfossils (vertebrate, invertebrate, and/or plant) recovered; and offering all fossil remains recovered during construction for curation at a recognized, permanent repository accredited with the American Association of Museums (Appendix J, MM 4.5-38 through 4.5-41) (Kern County 2009). Therefore, although potential effects on paleontological resources near Castac Lake would be greater than the No Action Alternative, the potential effects would be minor.

Plan-Wide Activities

Plan-Wide Activities would occur under the Proposed TU MSHCP Alternative, similar to the Existing Ranch Uses under the No Action Alternative, with the exception that permanent ground disturbance would be limited to 200 acres. Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities would be subject to the BMPs and use restrictions required pursuant to the Ranchwide Agreement, as currently set forth in the Interim RWMP. As discussed above, this entails maintaining the existing conservation values including cultural resources and the historic context of the Covered Lands consistent with the Ranchwide Agreement. All subsequent RWMPs must similarly reflect BMPs that protect the conservation values of the land, as carried through in the conservation easements required by the Ranchwide Agreement. Plan-Wide Activities that involve ground disturbance, such as farming and construction and maintenance of roads, utilities, fences, ancillary ranch structures, and back-country cabins, could destroy or disturb cultural or paleontological resources.

Cultural and paleontological resources are either known to exist or to have the potential to exist within the study area. As discussed in Section 3.5.2, Results of the Records Search, Field Surveys, and Native American Consultation, although there are no known cultural resources eligible for listing in the NRHP in the Lebec/Existing Headquarters Area, there are 22 eligible sites in the TMV Planning Area. Other resources located in TMV Planning Area Open Space as identified in the Phase I Report (W&S Consultants 2004) may also be eligible. In addition, the full remainder of the study area has not been surveyed although cultural resources could also exist in those areas. As mentioned in Section 3.5.1.3, History, continuation of ranching under Plan-Wide Activities is also important in terms of preserving the historic context of land uses. As described in Section 3.5.3, Paleontological

Setting, there are small areas near Castac Lake with features (older Pleistocene sediments, middens, or caves) that could include paleontological resources.

In addition to being conducted in a manner to maintain the existing conservation values, Plan-Wide Activities would be required to comply with all applicable Federal, state, and local regulations, and the mitigation measures in Section 4.5.3.2, Mitigation Measures. For example, the Plan-Wide Activities that would require substantial ground disturbance would trigger the need for pre-ground-disturbance surveys, monitoring for paleontological resources around Castac Lake, and the application of avoidance and minimization measures, as discussed below. It is anticipated that prior to issuance of any required permits, the local jurisdiction would require demonstration that potential effects on cultural resources would be avoided or minimized.

Furthermore, as mentioned above, ground disturbance under the Proposed TU MSHCP Alternative would be limited to 200 acres and the remaining Open Space Area (approximately 129,118 acres) would be preserved to protect the existing conservation values, which include cultural and paleontological resource values and the historic ranching context of the Covered Lands. This would result in approximately 23,001 acres of additional permanent open space preservation (protected by conservation easement or the equivalent) compared with the No Action Alternative.

For these reasons, potential effects on cultural resources from Plan-Wide Activities under the Proposed TU MSHCP Alternative would be minor and could be less than those associated with the No Action Alternative where ground disturbance in open space areas would not be limited to 200 acres.

4.5.3.2 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the Proposed TU MSHCP Alternative on cultural and paleontological resources. In addition, the following mitigation measures would reduce potential effects on cultural and paleontological resources that may be associated with the Proposed TU MSHCP Alternative.

- ***Protect Identified Significant Cultural Resources in Development Areas.*** All cultural resources in and adjacent to Development Area as identified in the Cultural Resources Survey Reports (W&S Consultants 2004, 2005, and 2006; ASM Affiliates 2010) determined eligible for the NRHP through consultation with the SHPO will be avoided/protected in place, or if necessary, mitigated through data retrieval, all in consultation with a qualified archaeologist and SHPO as necessary.
- ***Conduct Pre-Ground-Disturbance Survey in Open Space Areas Not Previously Surveyed.*** Prior to grading activities associated with Plan-Wide Activities in areas that have not previously been surveyed, a qualified archaeologist will conduct a survey of the Disturbance Area in order to identify sensitive archaeological resources. Effects on identified resources will be avoided by relocating the disturbance, minimized through protection of sensitive resources in place, or, if necessary, mitigated through data retrieval, all in consultation with a qualified archaeologist and SHPO as necessary.

  Prior to grading activities, all earthmoving and excavation contractor employees will attend a "tailgate" session informing them of the potential for inadvertently discovered cultural resources and/or human remains, and protection measures to be followed to prevent destruction of any and all cultural resources discovered on site (including the measures noted above and in compliance with California Health and Safety Code Section 7050.5).
- ***Conduct Paleontological Resources Monitoring During Excavations around Castac Lake.*** A qualified professional vertebrate paleontologist with regional experience will monitor all

excavations in areas around Castac Lake with Pleistocene sediments. If paleontological resources are exposed by excavation, work will be redirected and the paleontologist will assess the find for potential significance and determine the appropriate recovery requirements.

- ***Comply with Applicable Federal, State, and Local Cultural Resources Protection Requirements.*** All development within the study area would comply with Federal, state and local requirements, including completion of SHPO consultation, as relevant, and/or compliance with CEQA and other state and local laws. Site-specific minimization measures will be identified at the time that development is proposed through the planning review process. This compliance process would entail the following:
  - Conducting pre-ground-disturbance surveys,
  - Evaluating resources,
  - Consulting with SHPO through the National Historic Preservation Act requirements or CEQA requirements, as applicable,
  - Applying avoidance and minimization measures on a case-by-case basis to ensure that potential effects are addressed, and
  - Halting work in the case of an inadvertent discovery and consulting with the appropriate agency (SHPO, coroner, Native American tribe, as required).

4.5.4 Condor Only HCP Alternative

4.5.4.1 Cultural and Paleontological Resources

Commercial and Residential Development Activities

Potential effects on cultural and paleontological resources associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as those under the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential effects on cultural and paleontological resources from Plan-Wide Activities under the Condor Only HCP Alternative would be the same as those under the Proposed TU MSHCP Alternative.

4.5.4.2 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the Condor Only HCP Alternative on cultural and paleontological resources. In addition, the mitigation measures listed in Section 4.5.3.2, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the Condor Only HCP Alternative.

4.5.5 CCH Avoidance MSHCP Alternative

4.5.5.1 Cultural and Paleontological Resources

Commercial and Residential Development Activities

Under the CCH Avoidance MSHCP Alternative, the development of approximately 4,496 acres would require grading with an estimated 90 million cubic yards of cut-and-fill. Proposed development would be concentrated in the southwestern corner of the study area near Interstate 5 (I-5) and Castac Lake. More grading would be required in the western portion of the TMV Planning Area in order to achieve a higher density of development. This intensified development could potentially make it more difficult to avoid destroying or disturbing the 22 sites eligible for listing in the NRHP known to exist in the TMV Planning Area, which are located in or near areas proposed for development. No cultural resources eligible for listing in the NRHP were identified in the Lebec/Existing Headquarters Area. Although the TMV Planning Area has been surveyed, a low potential for accidental discovery of cultural resources remains.

Implementation of the mitigation discussed in Section 4.5.3.2, Mitigation Measures, would address potential effects on cultural resources by requiring preconstruction surveys for ground disturbing activities in areas not previously surveyed. Effects on cultural resources eligible for listing in the NRHP will be avoided by relocating the disturbance, minimized through protection of sensitive resources in place, or if necessary, mitigated through data retrieval, all in consultation with a qualified archaeologist and SHPO as necessary.

In addition, as indicated in Section 4.5.3.2, Mitigation Measures, all Commercial and Residential Development would be subject to project-specific approvals from Federal and state agencies and local jurisdictions. It is anticipated that the local approval process would include provisions that would reduce adverse effects on cultural resources in the study area. For example, the Kern County's approval of the TMV Project requires known sites be preserved in place (one may be subject to documentation requirements). Additional provisions include delineating a 25-meter buffer around known sites located within 100 meters of ground disturbance, including Native American monitors during any work at known sites, avoiding or preserving certain sites under geotextile matting and capping fill, and stopping work and following the steps and procedures specified in California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98 in the event of accidental discovery of human remains (Appendix J, MM 4.5-1 through 4.5-37 and MM 4.5-42) (Kern County 2009). Although Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative have the potential to result in greater adverse effects on cultural resources compared with the No Action Alternative, the effects would be minor.

As discussed previously, small areas near Castac Lake have the potential to contain paleontological resources. The proposed concentrated development in this area could increase the potential to destroy or disturb these resources. However, implementation of the mitigation discussed in Section 4.5.5.2, Mitigation Measures, would reduce the effects on paleontological resources by requiring paleontological resources monitoring during excavations around Castac Lake. In addition, it is anticipated the local approval process would likely include provisions that would protect these resources similar to those required of the TMV Project (Appendix J, MM 4.5-38 through 4.5-41) (Kern County 2009). Therefore, although potential effects on paleontological resources near Castac Lake would be greater than the No Action Alternative, the potential effects would be minor.

Plan-Wide Activities

The extent and nature of Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would be similar to those associated with the No Action Alternative with the exception that permanent

ground disturbance would be limited to 200 acres. Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities would be subject to the BMPs and use restrictions required pursuant to the Ranchwide Agreement, as currently set forth in the Interim RWMP. As discussed above, this entails maintaining the existing conservation values including cultural resources and the historic context of the Covered Lands consistent with the Ranchwide Agreement. All subsequent RWMPs must similarly reflect BMPs that protect the conservation values of the land, as carried through in the conservation easements required by the Ranchwide Agreement.

As discussed in Section 3.5.2, Results of the Records Search, Field Surveys, and Native American Consultation, although there are no known cultural resources eligible for listing in the NRHP in the Lebec/Existing Headquarters Area, 22 eligible sites are in the TMV Planning Area. Other resources located in TMV Planning Area Open Space as identified in the Phase I Report (W&S 2004) may also be eligible. In addition, the full remainder of the study area has not been surveyed although cultural resources could also exist in those areas. As mentioned in Section 3.5.1.3, History, continuation of ranching under Plan-Wide Activities is also important in terms of preserving historic context of land uses. As described in Section 3.5.3, Paleontological Setting, there are small areas near Castac Lake with features (older Pleistocene sediments, middens, or caves) that could include paleontological resources. Plan-Wide Activities that involve ground disturbance, such as farming and construction and maintenance of roads, utilities, fences, ancillary ranch structures, and back-country cabins, could destroy or disturb cultural or paleontological resources.

Plan-Wide Activities would be required to comply with all applicable Federal, state, and local regulations as discussed in Section 4.5.5.2, Mitigation Measures. For example, Plan-Wide Activities that would require substantial ground disturbance would trigger the need for pre-ground-disturbance surveys, monitoring for paleontological resources around Castac Lake, and the application of avoidance and minimization measures, as discussed below.It is anticipated that prior to issuance of any required permits, the local jurisdiction would require demonstration that potential effects on cultural and paleontological resources would be avoided or minimized.

Furthermore, as mentioned above, ground disturbance under the CCH Avoidance MSHCP Alternative would be limited to 200 acres and the remaining Open Space Area (approximately 130,339 acres) would be preserved to protect the existing conservation values, which include cultural and paleontological resource values and the historic ranching context of the Covered Lands. This would result in approximately 24,022 acres of additional permanent open space preservation (protected by conservation easement or the equivalent) compared with the No Action Alternative.

Therefore, the potential effects on cultural resources from Plan-Wide Activities would be minor under the CCH Avoidance MSHCP Alternative and could be less than under the No Action Alternative, in which Existing Ranch Uses would not be limited to 200 acres.

4.5.5.2 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement in (as currently set forth in the Interim RWMP) would reduce the effects of the CCH Avoidance MSHCP Alternative on cultural and paleontological resources. In addition, the mitigation measures listed in Section 4.5.3.2, Mitigation Measures, for the Proposed TU MSHCP Alternative, would also be implemented under the CCH Avoidance MSHCP Alternative.

4.5.6 Kern County General Plan Buildout Alternative

4.5.6.1 Cultural and Paleontological Resources

Commercial and Residential Development Activities

Ground disturbance associated with the construction of the proposed Commercial and Residential Development has the potential to adversely affect cultural resources. Under this alternative, 12,142 acres would be developed requiring grading with an estimated 222 million cubic yards of earth to be moved, including both cut and fill.

As discussed in Section 3.5, Cultural Resources, surveys have been completed for the TMV Planning Area and the Lebec/Existing Headquarters Area. Based on these surveys, no known cultural resources determined to be eligible were identified in the Oso Canyon Development Envelope or the Lebec/Existing Headquarters Area. Within the remainder of the surveyed area, 22 sites with the potential to be eligible were found in or near areas proposed for development. Under this alternative Commercial and Residential Development Activities would be dispersed throughout the study area. Some areas proposed for development have not been surveyed, and development could affect unknown cultural resources. There is a low potential for inadvertent discovery of cultural resources to occur during ground disturbance in areas that have been surveyed.

Implementation of the mitigation discussed in Section 4.5.3.2, Mitigation Measures, would address potential effects on cultural resources by requiring preconstruction surveys for ground-disturbing activities in areas not previously surveyed, Effects on cultural resources eligible for listing in the NRHP will be avoided by relocating the disturbance, minimized through protection of sensitive resources in place, or, if necessary, mitigated through data retrieval, all in consultation with a qualified archaeologist and SHPO as necessary.

In addition, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal, state agencies, and local jurisdictions. It is anticipated that the local approval process would also include provisions that would reduce adverse effects on cultural resources in the study area. For example, Kern County's approval of the TMV Project requires that known sites be preserved in place (one may be subject to documentation requirements). Additional provisions include delineating a 25-meter buffer around known sites located within 100 meters of ground disturbance; including Native American monitors during any work at known sites; avoiding or preserving certain sites under geotextile matting and capping fill; and stopping work and following the steps and procedures specified in California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98 in the event of accidental discovery of human remains (Appendix J, MM 4.5-1 through 4.5-37 and MM 4.5-42) (Kern County 2009).

Therefore, although Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative have the potential to result in greater adverse effects on cultural resources compared with the No Action Alternative, the potential effects would be minor.

As discussed under the No Action Alternative, paleontological resources are not known or expected to exist in the study area, with the exception of small areas near Castac Lake, which contain older Pleistocene sediments, middens, or caves that could also contain paleontological resources. Implementation of the mitigation discussed in Section 4.5.3.2, Mitigation Measures, would reduce the effects on paleontological resources by requiring paleontological resources monitoring during excavations around Castac Lake. In addition, the local approval process includes provisions that would reduce adverse effects on paleontological resources similar to that described above. Kern County's approval of the TMV Project requires that a qualified professional vertebrate paleontologist with regional knowledge monitor all excavations areas in the Castac Lake basin with

a high sensitivity for Pleistocene sediments, and that work is redirected to other areas if paleontological resources are exposed until scientific significance of the find is assessed. Additional provisions include staking and flagging areas of potential paleontological resources to alert construction workers; assessing potential finds by a paleontologist to determine the appropriate recovery requirements; implementing a data recovery program for all macro- and microfossils (vertebrate, invertebrate, and/or plant) recovered; and offering all fossil remains recovered during construction for curation at a recognized, permanent repository accredited with the American Association of Museums (Appendix J, MM 4.5-38 through 4.5-41) (Kern County 2009). Although potential effects on paleontological resources near Castac Lake would be greater than under the No Action Alternative, the potential effects would be minor.

Existing Ranch Uses

Under the Kern County General Plan Buildout Alternative, Existing Ranch Uses would continue to occur in the study area similar to existing conditions. Existing Ranch Uses that involve ground disturbance, such as farming and irrigation, and construction of roads, utilities, fences, ancillary ranch structures, and back country cabins, could destroy or disturb cultural or paleontological resources.

As discussed in Section 3.5.2, Results of the Records Search, Field Surveys, and Native American Consultation, although there are no known cultural resources eligible for listing in the NRHP in the Lebec/Existing Headquarters Area, 22 sites eligible for listing in the NRHP are in the TMV Planning Area. Other resources located in TMV Planning Area Open Space as identified in the Phase I Report (W&S Consultants 2004) may also be eligible. In addition, the full remainder of the study area has not been surveyed, and cultural resource sites could also exist in those areas. As mentioned in Section 3.5.1.3, History, the continuation of Existing Ranch Uses is also important in terms of preserving historic context of land uses. As described in Section 3.5.3, Paleontological Setting, there are small areas near Castac Lake with features (older Pleistocene sediments, middens, or caves) that could include paleontological resources.

Existing Ranch Uses would be required to comply with all applicable Federal, state, and local regulations as discussed in Section 4.5.6.2, Mitigation Measures. For example, activities associated with Existing Ranch Uses that would require substantial ground disturbance would trigger the need for a grading or building permit. It is anticipated that prior to issuance of any required permits, the local jurisdiction would require demonstration that potential effects on cultural resources would be avoided or minimized.

As described in Chapter 2, Proposed TU MSHCP and Alternatives, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as reflected in the Interim RWMP are anticipated to continue (although they cannot be assured), and compliance with legal requirements governing ground-disturbing activities directly affecting cultural or paleontological resources would apply. For these reasons, similar to the No Action Alternative, the effects of Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be minor.

4.5.6.2 Mitigation Measures

As described above, the limitations of the Ranchwide Agreement would not apply under the Kern County General Plan Buildout Alternative. However, even in the absence of the Ranchwide Agreement, BMPs and use restrictions (as currently set forth in the Interim RWMP) are anticipated to continue (although they cannot be assured). Restrictions imposed by the TMV Project Approvals and by easement language in the Existing Conservation Easement Areas would apply under the Kern County General Plan Buildout Alternative. The mitigation measures listed in Section 4.5.3.2,

Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the Kern County General Plan Buildout Alternative.

4.5.7 Cumulative Effects

The approach for analyzing cumulative effects on cultural and paleontological resources is described in Section 4.0.4, Methods for Assessing Cumulative Effects, which includes a list of reasonably foreseeable projects considered in this assessment. Specific to cultural and paleontological resources, the potential for cumulative effects are assessed in the context of the criteria discussed in Section 4.5.1.2, Methods, which includes each alternative's potential contribution to the destruction or disturbance of cultural resources eligible for listing in the NRHP or the destruction or disturbance of paleontological resources. As defined in Section 4.0.4.1, Cumulative Effects Analysis Area, and described in the introduction to this section above, the area analyzed in terms of cumulative effects on cultural resources generally encompasses the Tehachapi Uplands portion of the Southern California Mountains Ecoregion, and the valley and foothill areas outside the Tehachapi Uplands.

Cumulative effects on cultural and paleontological resources are indirect or secondary effects related to the future development that would be facilitated by issuance of an incidental take permit (ITP) by the Service. Whether or not such effects would be substantial cumulatively is primarily dependent on the mitigation measures put in place by other Federal, local, and state authorities pursuant to their project approval process.

4.5.7.1 Cultural Resources

As indicated in Section 3.5, Cultural Resources, prehistoric and historic use of the region was fairly dispersed. Within the immediate vicinity of the Covered Lands, the Fort Tejon State Historic Park is the only known historic resource. Archaeological sites have been documented in the Covered Lands and the potential remains for other previously undocumented sites to exist.

As discussed in this section, all of the alternatives have a potential to result in some effects on cultural resources. Adverse effects would occur primarily related to the potential disturbance of archaeological sites during ground-disturbing activities. When considered in the context of other reasonably foreseeable projects, it is possible that the proposed action could contribute to a cumulatively adverse effect on cultural resources associated with the substantial loss or destruction of cultural resources within the cumulative effects analysis area.

As indicated above, all the alternatives would be required to comply with applicable mitigation and BMPs to minimize any effects on cultural resources. It is presumed that other potential projects or activities within the cumulative effects study area would also be required to comply with similar regulations and requirements to address potential effects on cultural resources as those discussed above for the proposed action. Because existing regulations would require that adverse effects on cultural resources be adequately mitigated at the project-level, it is assumed that potential adverse effects would not become cumulatively considerable. Therefore, none of the alternatives would result in a substantial contribution to a cumulative effect on cultural resources.

4.5.7.2 Paleontological Resources

As indicated in Section 3.5, Cultural Resources, sedimentary deposits, which have the potential to contain Pleistocene fossils, can be found in the valley bottoms and in small areas near Castac Lake. However, the majority of the cumulative effects analysis area is underlain by igneous and metamorphic rocks of the mountain plutons, which are not known to yield fossiliferous material. While scattered commercial and residential development and other associated activities may have

resulted in the disturbance of some paleontological resources, it is presumed that most resources have not been disturbed within the cumulative effects analysis area.

As discussed in this section, all of the alternatives have a potential to result in some effects on paleontological resources. Adverse effects would occur primarily related to ground-disturbing activities. When considered in the context of other reasonably foreseeable projects, it is possible that the proposed action could contribute to a cumulatively adverse effect from the substantial loss or destruction of paleontological resources within the cumulative effects analysis area.

As indicated above, all the alternatives would be required to comply with applicable mitigation and BMPs to minimize any effects. It is presumed that other potential projects or activities within the cumulative effects study area would also be required to comply with similar regulations and requirements to address potential effects on paleontological resources. Because existing regulations would require that adverse effects be adequately mitigated at the project-level, it is assumed that potential adverse effects would not become cumulatively considerable. Therefore, none of the alternatives would result in a substantial contribution to a cumulative effect on paleontological resources.

4.5.8 Comparison of Alternatives

The exact contours, locations, and building designs of the Commercial and Residential Development Activities are not known. Therefore, the comparison of alternatives is based on the acreage of disturbance and cut-and-fill estimates and the preserved acres where Existing Ranch Uses or Plan-Wide Activities would occur for each of the alternatives as presented in Table 4.5-1.

Table 4.5-1 Comparison of Disturbance Areas and Open Space Areas for Each Alternative

	No Action Alternative	Proposed TU MSHCP/Condor Only HCP Alternative	CCH Avoidance MSHCP Alternative	Kern County General Plan Buildout Alternative
Ground disturbance (acres)	0	5,533	4,496	12,142
Cut/fill (cubic yards)	0	75 million	< 90 million	222 million
Population	0	11,441	9,957	22,800
Permanently preserved open space (acres)[1]	106,317 (75%)	129,318 (91%)	130,339 (92%)	119,392 (84%)[2]

[1] Percentage representative of percentage of total study area (Covered Lands) (141,886 acres).

[2] The Kern County General Plan Buildout Alternative includes both permanently preserved open space (34,130 acres) and restricted open space (85,262 acres).

Although the No Action Alternative would result in the least amount of open space protected by conservation easements, there would be no potential effects associated with Commercial and Residential Development Activities. By comparison, the remaining alternatives would all result in potential effects on cultural and paleontological resources from ground disturbance associated with Commercial and Residential Development Activities. Generally speaking, the potential for adverse effects would increase with the extent and intensity of the development. As indicated in Table 4.5-1, the CCH Avoidance MSHCP Alternative would result in the least amount of developed area; however, this alternative would require more extensive grading. The Proposed TU MSHCP Alternative and the Condor Only HCP Alternative would result in the next greatest amount of permanent ground disturbance and the Kern County General Plan Buildout Alternative would result in the greatest amount of ground disturbance. Therefore, the Kern County General Plan Buildout Alternative would

have the greatest potential for effects on cultural and paleontological resources. However, as indicated in the discussions above, it is anticipated that the potential effects under all the alternatives would be minor.

As discussed in this section, the potential effects of Existing Ranch Uses and Plan-Wide Activities on cultural and paleontological resources would be minor for all the alternatives. Under the Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance HCP Alternatives, the extent of ground disturbance from Plan-Wide Activities would be limited to 200 acres, which could result in fewer effects compared to the No Action Alternative. By comparison, the Kern County General Plan Buildout Alternative would result in slightly less open space preservation compared to the other build alternatives and a slightly greater potential for effects compared to the other build alternatives. The potential effects of Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be comparable to the effects from those uses under the No Action Alternative.

4.6 Visual Resources

4.6.1 Overview

This section describes the regulatory setting applicable to visual resources and the potential effects of the alternatives on visual resources in the study area. As described in Section 3.6, Visual Resources, the study area includes the corridors along Interstate 5 (I-5) from State Road (SR) 138 to SR 99, SR 58, and SR 223, and the adjacent communities. The cumulative effects analysis area for visual resources considers the same study area. A description of the cumulative effects analysis area is provided in Section 4.6.7, Cumulative Effects, along with a discussion of the potential cumulative effects of the alternatives.

4.6.1.1 Regulatory Setting

Activities proposed under all the alternatives would be required to conform to Federal, state, and local laws and regulations that protect visual resources, as described below.

Federal Highway Beautification Act

The Federal Highway Beautification Act (23 United States Code [U.S.C.] 131) and regulations that implement it (23 Code of Federal Regulations [CFR] 750) set national standards to control outdoor advertising adjacent to the interstate highway system. Actual control of outdoor advertising is exercised by the local jurisdiction (Kern County), but the Federal government can restrict Federal-aid highway funds for noncompliance.

California Scenic Highways Program

California's Scenic Highway Program is intended to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways. The state laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 *et seq*. A highway may be designated as scenic depending on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. The California Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. The portion of the Covered Lands identified for potential Commercial and Residential Development Activities is visible from only one major highway—I-5 —between the Frazier Mountain Park Road and Fort Tejon interchanges. This portion of I-5 is not designated as a state scenic highway and has not been determined to be eligible for designation (California Department of Transportation 2011). Therefore, regulations related to the California Scenic Highways Program are not applicable.

Outdoor Advertising Act and Regulation

The standards for regulation of outdoor advertising on the interstate highway system in California are contained in the Outdoor Advertising Act and Regulation, California Code of Regulations (CCR) Title 4, Business Regulations.

Kern County General Plan

The Kern County General Plan (Kern County 2009a) includes policies that require new development projects to minimize light and glare (Policy 47), and encourage the use of low-glare lighting to minimize nighttime glare effects on neighboring properties (Policy 48). The general plan also includes a policy under Section 1.10.8 (Smart Growth) that encourages discretionary development projects to include in design features "aesthetically pleasing and unifying design features that promote a visually pleasing environment" (Policy 49(g)).

Kern County Dark Sky Outdoor Lighting Ordinance

Kern County has also adopted a "Dark Sky" Ordinance, which applies to all new sources of outdoor lighting in the County's unincorporated areas. Outdoor lighting must be fully shielded and oriented downward, and must comply with height, intensity, and hours of operation restrictions provided in the ordinance. The Ordinance is intended to reduce unnecessary night lighting and minimize lighting effects on surrounding properties (Kern County Ordinance G-8226).

4.6.1.2 Methods

The analysis of direct, indirect, and cumulative effects and the magnitude of such effects on visual resources is considered in terms of whether the alternative would result in physical changes to the study area that would alter existing public views of natural landforms, substantially degrade the existing visual character of the study area as perceived by sensitive receptors, or create a new source of light or glare that would adversely affect day or nighttime views in the study area.

Visual effects typically occur when there are visible physical changes to landform (topography such as ridges, natural features like lakes and vegetation) or the existing character of the site (significant change in land use patterns, removal of important visible elements, or addition of incompatible elements), or visual changes in the amount of light or glare. The magnitude of the visual changes depends on the number of viewers, their exposure to the changes (whether they have full views or screened views, and the duration of the views), the distance of the viewer (whether those views are foreground, middle ground or background) and their sensitivity to change. In general, effects on visual resources were assumed to be associated with potential visual changes associated with construction and operation of each alternative that would affect sensitive viewers or the visual character of the study area.

4.6.2 No Action Alternative

4.6.2.1 Views of Natural Landforms and Visual Character

Commercial and Residential Development Activities

No Commercial or Residential Development Activities would occur under the No Action Alternative. Therefore, there would be no physical changes to landform and no direct or indirect effects on visual resources from Commercial and Residential Development Activities.

Existing Ranch Uses

Under the No Action Alternative, Existing Ranch Uses would continue similar to existing conditions, subject to the use restrictions and best management practices (BMPs) required pursuant to the Ranchwide Agreement, as currently set forth in the Interim Ranchwide Management Plan (RWMP) (Tejon Ranch Company 2009). Such BMPs include provisions to minimize the effects of grazing on the landscape in general, and on sensitive visual resources in particular. For example, a guiding

principle of the Interim RWMP is the protection of scenic vistas and rare visual resources. Specifically, filming activities that may potentially disturb sensitive areas must be reviewed to ensure that effects are minimized and that a plan to restore the area to prefilming conditions is prepared and implemented as appropriate. In addition, site evaluations are required for any new structures to evaluate and minimize the potential effects on sensitive resources. The Ranchwide Agreement requires that all subsequent RWMPs must similarly reflect BMPs that protect the conservation values of the land and that such management standards and use restrictions are carried through in the conservation easements required by the Ranchwide Agreement.

Existing Ranch Uses would have limited potential to alter public views of natural landforms or to change the visual character of the study area. The most extensive existing land use in the Covered Lands is grazing, which has minimal, if any effect, on permanently changing topography or vegetation, and would continue to have a minimal effect under the No Action Alternative. In addition, minimal visual effects associated with filming activities and construction and maintenance of road and utility infrastructure, ancillary ranch uses, and back-country cabins would also occur under this alternative. However, most of these activities would conducted in a manner to minimize effects on visual resources, would be located far from sensitive viewers, and would represent minor visual changes that would not substantially alter public views of natural landforms or substantially degrade the visual character within the study area.

In addition to the use restrictions and BMPs currently set forth in the Interim RWMP, Existing Ranch Uses would be required to comply with all applicable Federal, state, and local regulations on a project-specific basis. For example, activities associated with Existing Ranch Uses that would require substantial ground disturbance would trigger the need for a local grading or building permit. It is anticipated that prior to issuance of the required permits, the local jurisdiction would require demonstration that potential visual effects would be avoided or minimized. Therefore, there would be minor effects on visual character under the No Action Alternative.

4.6.2.2 Light and Glare Conditions

Commercial and Residential Development Activities

No Commercial and Residential Development Activities would occur under the No Action Alternative. There would be no direct or indirect changes in light or glare conditions associated with these activities.

Existing Ranch Uses

Existing Ranch Uses would continue similar to existing conditions and would not result in substantial increases in new sources of light and glare. As discussed above, Existing Ranch Uses would be subject to the use restrictions and BMPs required pursuant to the Ranchwide Agreement, as currently set forth in the Interim RWMP, and would include provisions to minimize effects of Existing Ranch Uses on the landscape in general and sensitive visual resources in particular. For example, provisions have been included that require that new ancillary ranch structures comply with Kern County's “Dark Sky” Ordinance to minimize lighting effects (Tejon Ranch Company 2009).

Existing lights are limited to lighting associated with ranch headquarters, ancillary ranch structures, back-country cabins, entry gates, and the equestrian facility. Any additional lighting would be limited to similar structures and would be implemented in a manner to minimize effects as described above. The most extensive existing land use in the Covered Lands is grazing, which has minimal, if any, contribution to light and glare sources. In addition, minimal light and glare effects could occur associated with vehicle lights on new roads, the construction of new structures, grading, vegetation removal, and nighttime filming activities. However, most of these activities would be

located far from sensitive viewers and would represent minor visual changes that would not result in new sources of light or glare that would substantially adversely affect day or nighttime views.

In addition to the use restrictions and BMPs provided pursuant to the Ranchwide Agreement, Existing Ranch Uses would be required to comply with all applicable Federal, state, and local regulations on a project-specific basis. For example, activities associated with Existing Ranch Uses that would require substantial ground disturbance would trigger the need for a local grading or building permit. It is anticipated that prior to issuance of the required permits, the local jurisdiction would require demonstration that potential visual effects would be avoided or minimized and any new sources of lighting would be required to comply with applicable Federal, state and local laws, including the Kern County General Plan policies to minimize lighting impacts, and the Kern County "Dark Sky" Ordinance requiring outdoor lighting to be fully shielded and oriented downward. Therefore, there would be only minor visual effects associated with light and glare from Existing Ranch Uses under the No Action Alternative.

4.6.3 Proposed TU MSHCP Alternative

4.6.3.1 Views of Natural Landforms and Visual Character

Commercial and Residential Development Activities

Under the Proposed TU MSHCP Alternative, Commercial and Residential Development Activities would occur on 5,533 acres of the Covered Lands and would result in visual changes associated with the placement of new commercial and residential buildings and associated land uses where little development previously existed. Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would require grading and earth movement of approximately 75 million cubic yards of soil.

Visual changes would consist primarily of the presence of dispersed, low-density buildings and other related infrastructure, such as roads, utilities, and other supporting structures where largely open space previously existed. Implementation of the conservation measures in the TU MSCHP would reduce changes to natural landforms and visual character by only allowing low-density development. However, new structures could alter views of natural landforms or degrade the existing visual character, depending on their locations. In addition, construction of the proposed facilities would require the removal of vegetation and changes in topography associated with grading. Vegetation removal and grading could degrade the visual character of the area by altering natural landforms and replacing vegetation with developed land uses.

The proposed development would occur along the I-5 corridor between the Fort Tejon Road interchange with I-5 and the Lebec Road interchange with I-5, and a portion of it would be visible in the foreground to motorists, residents, and workers located along the I-5 corridor. However, the majority of the proposed development would not be visible from the surrounding area because the intervening topography would block and limit views of the developed area. As discussed in Section 3.6, Visual Resources, views of the Covered Lands from Fort Tejon in the State Historic Park would be limited by views of ranch headquarters and related development immediately across I-5, and then blocked by the intervening topography. Foreground views from Fort Tejon would include proposed development in the Lebec/Existing Headquarters area, but the visual changes would largely be consistent with the existing visual character of the immediate area, which is already developed with ranch headquarters infrastructure and related uses to the east of I-5, and the uses that compose the community of Lebec to the west of I-5. From I-5 and other communities in Lebec, some middle and background views of the development would be visible; however, the majority of the middle and background views would be blocked by intervening topography. From I-5 to the

east, while the TMV Project would be visible in the south, views of the seasonal wildflowers would be unchanged and much of the existing vegetation would remain. From I-5 to the west, proposed development would be consistent with existing land use patterns that are currently in place along the boundary of the Covered Lands on the west of I-5, including the community of Lebec. A more detailed visual analysis is not provided for the areas within view of SR 58 or SR 223 because development would not occur in this location under this alternative.

The remainder of the Covered Lands would be preserved in open space with no further Commercial or Residential Development Activities allowed. Under the Proposed TU MSHCP Alternative, 129,318 acres would remain in its current undeveloped state with no or minor changes to landform or visual resources. Potential visual changes within open space areas are discussed further under Plan-Wide Activities below.

As indicated in Section 4.6.3.3, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal and state agencies and local jurisdictions, including grading restrictions, General Plan and "Dark Sky" Ordinance requirements, and design review. It is anticipated that the local approval process would include provisions that would reduce adverse effects on visual resources in the study area. For example, the Kern County's approval of the TMV Project requires structures to maintain a low profile and maintain the visual context of the existing setting and visual character of the surrounding area, grading to maintain the natural topography and minimize visual effects to the extent possible, and revegetation of graded areas with native plants (Appendix J, Kern County 2009b, MM 4.1-2 and 4.1-3).

Even with the implementation of mitigation measures and BMPs to reduce visual effects, some visual changes associated with commercial and residential development would remain. Views of the development would be somewhat limited for the majority of sensitive viewers or would be consistent with the existing development present along the I-5 corridor. Therefore, potential effects on sensitive viewers under the Proposed TU MSHCP Alternative would be minor to moderate depending on the extent and visibility of the changes as seen by sensitive viewers.

Plan-Wide Activities

Plan-Wide Activities would occur under the Proposed TU MSHCP Alternative similar to the Existing Ranch Uses under the No Action Alternative, with the exception that permanent ground disturbance would be limited to 200 acres. Plan-Wide Activities would be subject to the use restrictions and BMPs required pursuant to the Ranchwide Agreement that would include provisions to minimize the effects of grazing on the landscape in general and sensitive visual resources in particular. For example, a guiding principle of the Interim RWMP includes the protection of scenic vistas and rare visual resources. Specifically, filming activities that would potentially disturb sensitive areas would be reviewed to ensure that effects are minimized and that a plan to restore the area to prefilming conditions is prepared and implemented as appropriate. In addition, site evaluations are required for any new structures to evaluate and minimize the potential to affect sensitive resources (Tejon Ranch Company 2009). The Ranchwide Agreement requires that all subsequent RWMPs must similarly reflect BMPs that protect the conservation values of the land and that such management standards and use restrictions are carried through in the conservation easements required by the Ranchwide Agreement.

Plan-Wide Activities have limited potential to alter public views of natural landforms or to change the visual character of the study area. As described above, the most extensive land use in the Covered Lands is grazing, which has minimal, if any, effect on permanently changing topography or existing vegetation and would continue to have minimal effect under the Proposed TU MSHCP Alternative. In addition, minimal visual effects associated with filming activities and construction and maintenance of road and utility infrastructure, ancillary ranch structures, and back-country cabins would also occur under this alternative. However, most of these activities would be

conducted in a manner to minimize effects on visual resources, would be located far from sensitive viewers, and would represent minor visual changes would not substantially alter public views of natural landforms or substantially degrade the visual character within the study area.

In addition to the use restrictions and BMPs currently set forth in the Interim RWMP, Plan-Wide Activities would be required to comply with all applicable Federal, state, and local regulations on a project-specific basis. For example, activities associated with Plan-Wide Activities that would require substantial ground disturbance would trigger the need for a local grading or building permit. It is anticipated that prior to issuance of the required permits, the local jurisdiction would require demonstration that potential visual effects would be avoided or minimized.

For these reasons, potential effects on visual resources from Plan-Wide Activities under the Proposed TU MSHCP Alternative would be minor and could be less than those associated with the No Action Alternative, where ground disturbance in open space areas would not be limited to 200 acres.

4.6.3.2 Light and Glare Conditions

Commercial and Residential Development Activities

As discussed above, Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would occur on 5,533 acres of the Covered Lands. Commercial and Residential Development Activities would result in the construction of approximately 3,632 dwelling units and 1,804,390 square feet of commercial space in the Disturbance Area. This development would result in new sources of light from newly constructed residences, street, commercial centers, and vehicles, and glare from new reflective surfaces, such as roofs and roadways. The proposed development would occur along the I-5 corridor between the Fort Tejon interchange and the Lebec Road interchange and portions of it would be visible in the foreground to motorists and residents and workers located along the I-5 corridor.

Visual changes would consist primarily of the presence of dispersed low-density buildings and other related infrastructure, such as roads, utilities, and other supporting structures where largely open space previously existed. Implementation of the conservation measures in the TU MSHCP would reduce effects associated with new sources of light and glare by allowing only low-density development and requiring that lighting be directed away from open space areas (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives). However, the proposed land uses would include new sources of light and glare associated primarily with nighttime lighting and vehicle headlights. The proposed development would be consistent with existing development along the I-5 corridor in and adjacent to the Lebec/Existing Headquarters Area and less intrusive than the commercial uses at Frazier Mountain Park Road interchange, which include a brightly lit commercial center. The remainder of the Covered Lands would be preserved in open space with no further Commercial or Residential Development Activities allowed. Under the Proposed TU MSHCP Alternative, 129,318 acres would remain in its current undeveloped state with relatively minimal sources of light and glare. Potential visual changes from light and glare within open space areas would be minor are discussed further under Plan-Wide Activities below.

The majority of the proposed Commercial and Residential Development would not be visible from the surrounding area because the intervening topography would block and limit views of new sources of lighting. As discussed in Section 3.6, Visual Resources, foreground views of the Covered Lands from Fort Tejon in the State Historic Park would be limited by ranch headquarters immediately across I-5 and middle and background views would be limited by topography. From I-5 and the surrounding communities, foreground views of the visual changes, including new light sources, would be visible to motorists, residents, and workers. At the Lebec/Existing Headquarters

Area, the visual changes from lighting would largely be consistent with the existing visual character of the immediate area, which is already developed, and less than the commercial center at Frazier Mountain Park Road. In the TMV Planning Area, development in West of Freeway would similarly be consistent with existing adjacent land use patterns and sources of light and glare. Development to the east of I-5 in the TMV Planning Area would be visible from I-5 and the surrounding communities, and these uses immediately visible from I-5 would be consistent with the existing land use pattern and development in the surrounding communities immediately to the west of I-5. Some middle and background views of the proposed development would also be visible from these locations between intervening topography. Views of the surrounding open space would remain darkened with relatively few, if any, visible sources of light.

As indicated in Section 4.6.3.3, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal and state agencies and local jurisdictions, including General Plan and "Dark Sky" Ordinance requirements and design review. It is anticipated that the local approval process would include provisions that would reduce adverse effects on visual resources in the study area. For example, Kern County's approval of the TMV Project requires implementation of a lighting program consistent with specific plan design guidelines. The guidelines limit visible exterior lighting to the extent required for safety so as to preserve the nighttime ambiance; require lighting to be designed and maintained to be consistent with a dark sky; and require downward facing lighting. In addition, in keeping with the rural mountainous character of the area, street lighting would only be provided at intersections and nighttime helicopter pad lighting would only be used for take offs and landings and be kept to the minimal levels required by the Federal Aviation Administration (Appendix J, Kern County 2009b, MM 4.2-4 through 4.2-6).

Even with the implementation of mitigation measures and BMPs to reduce visual effects, some new sources of light and glare would occur and would be visible to sensitive viewers. However, the Proposed TU MSHCP Alternative would not result in new sources of light and glare that would adversely affect day or nighttime views in the study area. Views of the proposed development would be somewhat limited for the majority of sensitive viewers or would be consistent with the existing development present along the I-5 corridor. Therefore, potential effects associated with new sources of light and glare under the Proposed TU MSHCP Alternative would be minor to moderate depending on the extent and visibility of the changes as seen by sensitive viewers.

Plan-Wide Activities

Plan-Wide Activities would occur under the Proposed TU MSHCP Alternative similar to Existing Ranch Uses under the No Action Alternative, with the exception that permanent ground disturbance would be limited to 200 acres. Similar to the No Action Alternative, Plan-Wide Activities would be subject to use restrictions and BMPs required by the Ranchwide Agreement (as currently set forth in the Interim RWMP). For example, provisions have been included that require new ancillary ranch structures comply with Kern County's "Dark Sky" Ordinance to minimize lighting effects (Tejon Ranch Company 2009).

Existing lights are limited to lighting associated with ranch headquarters, ancillary ranch structures, entry gates and the equestrian facility. Plan-Wide Activities have limited potential to result in new sources of light or glare within the study area. The most extensive existing land use in the Covered Lands is grazing, which has minimal, if any effect, on light and glare. In addition, minimal light and glare effects could occur associated the vehicle lights on new roads, the construction of new structures, grading, vegetation removal, and nighttime filming activities. However, most of these activities would be located far from sensitive viewers and would represent minor visual changes that would not substantially alter public views of natural landforms or substantially degrade the visual character within the study area.

As indicated in Section 4.6.3.3, Mitigation Measures, Plan-Wide Activities would be required to comply with all applicable Federal, state, and local regulations on a project-specific basis. For example, activities associated with Existing Ranch Uses that would require substantial ground disturbance would trigger the need for a local grading or building permit. It is anticipated that prior to issuance of the required permits, the local jurisdiction would require demonstration that potential visual effects would be avoided or minimized. Therefore, there would be only minor visual effects associated with light and glare from Plan-Wide Activities under the Proposed TU MSHCP Alternative.

4.6.3.3 Mitigation Measures

As described above, BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the Proposed TU MSHCP Alternative on visual resources. The Proposed TU MSHCP Alternative would also include conservation measures (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives), such as requiring that only low-density and low-profile construction be allowed and requiring that lighting be directed away from modeled habitat, which would reduce potential effects on visual resources. If the Service issues an incidental take permit (ITP) to Tejon Ranchcorp (TRC) for the 27 species covered under the TU MSHCP, these measures would be enforceable under the Endangered Species Act (ESA) through the ITP and applicable conservation easements.

The following mitigation measure would further reduce potential effects on visual resources that may be associated with the Proposed TU MSHCP Alternative.

- ***Comply with Applicable Federal, State, and Local Visual Resource Protection Requirements.*** Activities within the Covered Lands will comply, at a minimum, with applicable Federal, state, and local visual resources protection laws and regulations, including the Federal Highway Beautification Act, the California Environmental Quality Act (CEQA), the Kern County General Plan, the Kern County "Dark Sky" Ordinance, and the TMV Specific Plan. Specifically, all development would be completed in a manner to conserve natural landforms, minimize grading, protect natural drainage courses, preserve existing specimen trees and tree groupings, design roadways to fit into the existing topography, design structures to blend with natural surroundings, use native or similar planting material, use coordinated and appropriate commercial signage, and prevent spillover lights and night glow effects.

4.6.4 Condor Only HCP Alternative

4.6.4.1 Views of Natural Landforms and Visual Character

Commercial and Residential Development Activities

Potential effects on visual character associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential effects on visual character associated with Plan-Wide Activities would be the same as described for the Proposed TU MSHCP Alternative.

4.6.4.2 Light and Glare Conditions

Commercial and Residential Development Activities

Potential effects from increases in light and glare associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential effects from increases in light and glare associated with Plan-Wide Activities would be the same as described for the Proposed TU MSHCP Alternative.

4.6.4.3 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the Condor Only HCP Alternative on visual resources. However, only the species-specific conservation measures for the California condor (Table 2-3 in Chapter 2, Proposed TU MSHCP and Alternatives) would be implemented under this alternative. The mitigation measures listed in Section 4.6.3.3, Mitigation Measures, would also be implemented under the Condor Only HCP Alternative.

4.6.5 CCH Avoidance MSHCP Alternative

4.6.5.1 Views of Natural Landforms and Visual Character

Commercial and Residential Development Activities

Under the CCH Avoidance MSHCP Alternative, Commercial and Residential Development Activities would occur on approximately 4,496 acres of the Covered Lands and would result in visual changes associated with the placement of new commercial and residential buildings and associated land uses where little development previously existed. Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would require grading and earth movement of approximately 90 million cubic yards.

Visual changes would consist primarily of the presence of buildings and other related infrastructure, such as roads, utilities, and other supporting structures where largely open space previously existed. As discussed previously, the CCH Avoidance MSHCP Alternative would include implementation of the same conservation measures as the Proposed TU MSHCP Alternative (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives). However, to avoid condor critical habitat, the proposed Commercial and Residential Development would be more concentrated and would not be as low in density as the Proposed TU MSHCP Alternative. Depending on their locations, new structures could alter public views of natural landforms or degrade the existing visual character. In addition, construction of the proposed facilities would require the removal of vegetation and changes in topography associated with grading. Vegetation removal and grading could alter the visual character of the area by altering natural landforms and replacing vegetation with developed land uses.

Under the CCH Avoidance MSHCP Alternative, Commercial and Residential Development located to the east of I-5 would be higher intensity than existing developments in the immediate vicinity. Currently, this area has a very rural and open rangeland character, resulting in a landscape dominated by natural features, except in the immediate vicinity of the existing ranch headquarters

and around ancillary ranch structures. Additionally, higher intensity development of this area would make it more difficult to avoid grading steeper slopes and to retain prominent topographical features. Therefore, along the eastern side of the I-5 corridor, Commercial and Residential Development Activities associated with the CCH Avoidance MSHCP Alternative would result in changes in visual character.

In the areas west of I-5, the proposed development would be consistent with the existing visual character, such as that near the Lebec Road interchange, which includes neighborhood commercial, low-density residential, industrial, and institutional uses that compose the community of Lebec. The remainder of the Covered Lands would be preserved in open space with no further Commercial or Residential Development Activities allowed. Under the CCH Avoidance MSHCP Alternative, 130,339 acres would remain in its current undeveloped state with no or minor changes to landform or visual resources. Potential visual changes within open space areas would be minor and are discussed further under Plan-Wide Activities below.

The majority of the proposed commercial and residential development would not be visible from the surrounding area because the intervening topography would block and limit views of the proposed changes. As discussed in Section 3.6, Visual Resources, views of the Covered Lands from Fort Tejon in the State Historic Park would be limited by views of ranch headquarters and related development immediately across I-5 and then blocked by the intervening topography. Foreground views from Fort Tejon would include proposed development in the Lebec/Existing Headquarters, but the visual changes would largely be consistent with the existing visual character of the immediate area, which is already developed to the east of I-5 (across from the park) with the existing headquarters and related uses, and on the west side of I-5 with the uses that compose the community of Lebec. From I-5 and other communities in Lebec, some middle and background views of the development would be visible; however, the majority of the middle and background views would be blocked by intervening topography. From I-5 to the east, the dense development around Castac Lake would be highly visible in the south. However, views of the seasonal wildflowers would be unchanged and much of the existing vegetation would nevertheless remain. From I-5 to the west, proposed development would be consistent with existing land use patterns that are currently in place including the community of Lebec along the boundary of the Covered Lands on the west of I-5. A more detailed visual analysis is not provided for the areas within view of SR 58 or SR 223 because development would not occur in this location under this alternative.

All Commercial and Residential Development Activities would be subject to project-specific approvals from Federal and state agencies and local jurisdictions, including grading restrictions, General Plan and "Dark Sky" Ordinance requirements and design review. It is anticipated that the local approval process would include provisions that would reduce adverse effects on visual resources in the study area. For example, the Kern County's approval of the TMV Project requires structures to maintain a low profile and maintain the visual context of the existing setting and visual character of the surrounding area; grading to maintain the natural topography and minimize visual effects to the extent possible; and that graded areas be revegetated with native plants (Appendix J, Kern County 2009b, MM 4.1-2 and 4.1-3).

Even with the implementation of mitigation measures and BMPs to reduce visual effects, visual changes associated with commercial and residential development would remain. Although the views of the development would be somewhat limited, grading and earthmoving associated with the more concentrated development under this alternative would result in substantial changes in land form and vegetative cover. Additionally, the changes in land uses associated with higher density development would be out of character with the surrounding setting. Therefore, potential effects on sensitive viewers under the CCH Avoidance MSHCP Alternative would be substantial.

Plan-Wide Activities

Plan-Wide Activities would occur under the CCH Avoidance MSHCP Alternative similar to the Existing Ranch Uses under the No Action Alternative, with the exception that permanent ground disturbance would be limited to 200 acres. Similar to the No Action Alternative, Plan-Wide Activities would be subject to the use restrictions and BMPs required pursuant to the Ranchwide Agreement, which include provisions to minimize the effects of grazing on the landscape in general and sensitive visual resources in particular. For example, a guiding principle of the Interim RWMP includes the protection of scenic vistas and rare visual resources. Specifically, there is a commitment that filming activities that would potentially disturb sensitive areas would be reviewed to ensure that effects on sensitive resources are minimized and that a plan to restore the area to prefilming conditions be prepared and implemented as appropriate. In addition, site evaluations are required for any new structures to evaluate and minimize the potential to affect sensitive resources (Tejon Ranch Company 2009).

Plan-Wide Activities have limited potential to alter public views of natural landform or to change the visual character of the study area. The most extensive existing land use in the Covered Lands is grazing, which has minimal, if any, effect on permanently changing topography or vegetation and would continue to have minimal effect under the CCH Avoidance MSHCP Alternative. In addition, minimal visual effects associated with filming and construction and maintenance of road and utility infrastructure, ancillary ranch structures, and back-country cabins would also occur under this alternative. However, most of these activities would be conducted in a manner to minimize effects on visual resources, would be located far from sensitive viewers, and would represent minor visual changes which would not substantially alter public views of natural landforms or substantially degrade the visual character within the study area.

In addition to the use restrictions and BMPs currently set forth in the Interim RWMP, Plan-Wide Activities would be required to comply with all applicable Federal, state, and local regulations on a project-specific basis. For example, activities associated with Existing Ranch Uses that would require substantial ground disturbance would trigger the need for a local grading or building permit. It is anticipated that prior to issuance of the required permits, the local jurisdiction would require demonstration that potential visual effects would be avoided or minimized.

For these reasons, potential effects on visual resources from Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would be minor and could be less than those associated with the No Action Alternative, where ground disturbance in open space areas would not be limited to 200 acres.

4.6.5.2 Light and Glare Conditions

Commercial and Residential Development Activities

As discussed above, Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would occur on approximately 4,496 acres of the Covered Lands and would result in the construction of approximately 3,161 dwelling units and 1,804,930 square feet of commercial space. This development would result in new sources of light from newly constructed residences, street, commercial centers, and vehicles, and glare from new reflective surfaces, such as roofs and roadways. The proposed development would occur along the I-5 corridor between Fort Tejon Historic Park and Lebec Road interchanges, and a portion of it would be visible in the foreground to motorists and residents and workers located along the I-5 corridor.

Although implementation of the conservation measures (as presented in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives) under this alternative would reduce the effects associated with new sources of light and glare by requiring that lighting be directed away from open space areas, commercial and residential development located to the east of I-5 would be of a higher

intensity than existing developments in the immediate vicinity and could result in a higher concentration of new sources of lighting or glare. Currently, this area has a very rural and open rangeland and a natural appearance. In the areas west of I-5, the proposed development would be consistent with the existing visual character, such as that near the Lebec Road interchange, which includes neighborhood commercial, low-density residential, industrial, and institutional uses that compose the community of Lebec. The remainder of the Covered Lands would be preserved in open space with no further Commercial or Residential Development Activities allowed. Under the CCH Avoidance MSHCP Alternative, 130,339 acres would remain in its current undeveloped state with no changes to landform or visual resources. Potential visual changes within open space areas would be minor are discussed further under Plan-Wide Activities below.

Commercial and Residential Development Activities would be consolidated and intensified in the southwestern portion of the Covered Lands, which includes the areas most visible from I-5 and the communities to the west of I-5. As discussed in Section 3.6, Visual Resources, foreground views of the Covered Lands from Fort Tejon in the State Historic Park would be limited by ranch headquarters immediately across I-5, and middle and background views would be limited by topography. From I-5 and the surrounding communities, foreground views of the visual changes, including new light sources, would be visible to motorists, residents, and workers. At the Lebec/Existing Headquarters Area, the visual changes from lighting would largely be consistent with the existing visual character of the immediate area, which is already developed, and less than the commercial center at Frazier Mountain Park Road. Development in West of Freeway would be similarly consistent with existing adjacent land use patterns and sources of light and glare. Development to the east of I-5 in and around Castac Lake, as noted above, would be visible from I-5 and the surrounding communities and these uses would be denser than the surrounding communities and land use patterns. Due to the extent of grading and topographical changes that would be required for this alternative, it is possible that some middle and background views of the proposed changes would also be more visible from these locations. Views of the surrounding open space would remain darkened with relatively few, if any, visible sources of light.

As discussed in Section 4.6.3.3, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal and state agencies and local jurisdictions, including the Kern County General Plan and "Dark Sky" Ordinance requirements and design review. It is anticipated that the local approval process would include provisions that would reduce adverse effects on visual resources in the study area. For example, the Kern County's approval of the TMV Project requires implementation of a lighting program consistent with specific plan design guidelines. The guidelines limit visible exterior lighting to the extent required for safety so as to preserve the nighttime ambiance; require lighting to be designed and maintained to be consistent with a dark sky; and require downward facing lighting. In addition, in keeping with the rural mountainous character of the area, street lighting would only be provided at intersections and nighttime helicopter pad lighting would only be used for take offs and landings and be kept to the minimal levels required by the Federal Aviation Administration. (Appendix J, Kern County 2009b, MM 4.2-4 through 4.2-6).

Even with the implementation of mitigation measures and BMPs to reduce visual effects, some new sources of light and glare would occur and would be visible to sensitive viewers. However, the CCH Avoidance MSHCP Alternative would not result in new sources of light and glare that would adversely affect day or nighttime views in the study area. Therefore, potential effects associated with new sources of light and glare under the CCH Avoidance MSHCP Alternative would be minor to moderate depending on the extent and visibility of the changes as seen by sensitive viewers.

Plan-Wide Activities

Plan-Wide Activities would occur under the CCH Avoidance MSHCP Alternative similar to Existing Ranch Uses under the No Action Alternative, with the exception that permanent ground disturbance would be limited to 200 acres. Similar to the No Action Alternative, Plan-Wide Activities would be subject to use restrictions and BMPs required by the Ranchwide Agreement (as currently set forth in the Interim RWMP). For example, provisions have been included that require new ancillary ranch structures comply with Kern County's "Dark Sky" Ordinance to minimize lighting effects (Tejon Ranch Company 2009).

Existing lights are limited to lighting associated with ranch headquarters, ancillary ranch structures, entry gates and the equestrian facility. Plan-Wide Activities have limited potential to result in new sources of light or glare within the study area. The most extensive existing land use in the Covered Lands is grazing, which has minimal, if any effect, on light and glare. In addition, minimal light and glare effects could occur associated with vehicle lights on new roads, the construction of new structures, grading, vegetation removal, and nighttime filming activities. However, most of these activities would be located far from sensitive viewers and would represent minor visual changes that would not substantially alter public views of natural landforms or substantially degrade the visual character within the study area.

As indicated in Section 4.6.5.3, Mitigation Measures, Plan-Wide Activities would be required to comply with all applicable Federal, state, and local regulations on a project-specific basis. For example, activities associated with Existing Ranch Uses that would require substantial ground disturbance would trigger the need for a local grading or building permit. It is anticipated that prior to issuance of the required permits, the local jurisdiction would require demonstration that potential visual effects would be avoided or minimized. Therefore, there would be minor visual effects associated with light and glare from Plan-Wide Activities under the CCH Avoidance MSHCP Alternative.

4.6.5.3 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the CCH Avoidance MSHCP Alternative on visual resources. Conservation measures, similar to those provided in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives, would also be enforced, such as requiring that lighting be directed away from modeled habitat. The mitigation measures in Section 4.6.3.3, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the CCH Avoidance MSHCP Alternative.

4.6.6 Kern County General Plan Buildout Alternative

4.6.6.1 Views of Natural Landforms and Visual Character

Commercial and Residential Development Activities

Under the Kern County General Plan Buildout Alternative, Commercial and Residential Development Activities would occur on approximately 12,142 acres of the Covered Lands and would result in visual changes associated with the placement of new commercial and residential buildings and associated land uses where little development previously existed. Commercial and Residential Development Activities under this alternative would require grading and earth movement of approximately 222 million cubic yards.

Visual changes would consist primarily of the presence of buildings and other related infrastructure, such as roads, utilities, and other supporting structures, where largely open space previously existed. Depending on their locations, new structures could alter public views of natural landforms or degrade the existing visual character. In addition, construction of the proposed facilities would require the removal of vegetation and changes in topography associated with grading. Vegetation removal and grading could alter the visual character of the area by altering natural landforms and replacing vegetation with developed land uses.

The Kern County General Plan Buildout incorporates the commercial and residential development associated with the Proposed TU MSHCP Alternative for the TMV Specific Plan Area located in the southwest corner of the Covered Lands (Figure 2-5). As discussed in Section 4.6.3.1, Views of Natural Landforms and Visual Character, the visual effects of this commercial and residential development would be minor to moderate. Therefore, the potential effects of the Kern County General Plan Buildout Alternative from development visible along the I-5 corridor and surrounding area would also be minor to moderate.

Commercial and residential development under the Kern County General Plan Buildout Alternative would also result in the development of additional areas identified for specific plan development by the Kern County General Plan (Figure 2-7). Development of these areas would result in similar visual changes to those described above. Views of these additional areas could be visible in the middle and background by motorists along SR 58 and SR 223. Although much of the intervening topography would block views of the proposed changes from sensitive viewers and much of the surrounding open space would remain, new development in this area would be more noticeable and would degrade the existing visual character.

As indicated in Section 4.6.3.3, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal and state agencies and local jurisdictions. Project approvals from the local jurisdiction include grading restrictions, Kern County General Plan and "Dark Sky" Ordinance requirements and design review. It is anticipated that the local approval process would include provisions that would reduce adverse effects on visual resources in the study area. For example, Kern County's approval of the TMV Project requires that structures maintain a low profile and maintain the visual context of the existing setting and visual character of the surrounding area; grading to maintain the natural topography and minimize visual effects to the extent possible; and that graded areas be revegetated with native plants (Appendix J, Kern County 2009b, MM 4.1-2 and 4.1-3).

Even with the implementation of mitigation measures to reduce visual effects, some visual changes associated with commercial and residential development would remain. The most visible and extensive changes would occur along SR 58 where currently no commercial and residential development occurs. Views of the development along the I-5 corridor would be somewhat limited for the majority of sensitive viewers or would be consistent with the existing development present along the I-5 corridor. However, given the dispersed nature of the development, the middleground views would be substantially affected. Therefore, potential effects on sensitive viewers from Commercial and Residential Development Activities under the Kern County General Plan Alternative would be substantial.

Existing Ranch Uses

Existing Ranch Uses would occur under the Kern County General Plan Buildout Alternative, similar to Existing Ranch Uses under the No Action Alternative. Existing Ranch Uses have limited potential to change the visual character of the study area. The most extensive existing land use in the Covered Lands is grazing, which has minimal, if any, effect on permanently changing topography or vegetation and would continue to have a minimal effect under the Kern County General Plan Buildout Alternative. In addition, minimal visual effects associated with filming activities and

construction and maintenance of road and utility infrastructure, ancillary ranch structures, and back-country cabins would also occur under this alternative. However, most of these activities would be located far from sensitive viewers and would represent minor visual changes which would not substantially alter public views of natural landforms or substantially degrade the visual character within the study area.

Existing Ranch Uses would be required to comply with all applicable Federal, state, and local regulations on a project-specific basis. For example, activities associated with Existing Ranch Uses that would require substantial ground disturbance would trigger the need for a local grading or building permit. It is anticipated that prior to issuance of the required permits, the local jurisdiction would require demonstration that potential visual effects would be avoided or minimized.

As described in Chapter 2, Proposed TU MSHCP and Alternatives, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as reflected in the Interim RWMP are anticipated to continue (although they cannot be assured), and compliance with legal requirements governing ground disturbing activities directly affecting visual quality would apply. In addition, because most Existing Ranch Uses would have only minor effects on visual quality, it is unlikely that Existing Ranch Uses under the Kern County General Plan Buildout Alternative would significantly alter public views or substantially degrade the visual character of the study area.

4.6.6.2 Light and Glare Conditions

Commercial and Residential Development Activities

Under the Kern County General Plan Buildout Alternative, Commercial and Residential Development Activities would occur on approximately 12,142 acres of the Covered Lands, and would result in the construction of approximately 7,238 dwelling units and 2,144,180 square feet of commercial space. This development would result in new sources of light from newly constructed residences, street, commercial centers, and vehicles, and glare from new reflective surfaces, such as roofs and roadways.

The Kern County General Plan Buildout incorporates the commercial and residential development associated with the Proposed TU MSHCP Alternative for the TMV Specific Plan Area located in the southwest corner of the Covered Lands (Figure 2-5). As discussed in Section 4.6.3.2, Light and Glare Conditions, the visual effects of this development would be minor to moderate. Therefore, the potential effects of the Kern County General Plan Buildout Alternative from commercial and residential development visible along the I-5 corridor and surrounding area would also be minor to moderate.

Commercial and residential development under the Kern County General Plan Buildout Alternative would also result in the development of additional areas identified for specific plan development by the Kern County General Plan (Figure 2-7). Development of these areas would result in similar visual changes to those described above. Views of these additional areas could be visible in the middle/background by motorists along SR 58 and SR 223. Although much of the intervening topography would block views of the proposed changes from sensitive viewers and much of the surrounding open space would remain darkened, new development in this area would be more noticeable and would degrade the existing visual character.

The remainder of the Covered Lands would be preserved in open space with no further Commercial or Residential Development Activities allowed. Under the Kern County General Plan Buildout Alternative, 119,392 acres would remain in its current undeveloped state with relatively minimal sources of light and glare. An additional 13,220 acres would be preserved compared with the No

Action Alternative. Potential visual effects from light and glare within open space areas would be minor and are discussed further under Existing Ranch Uses below.

All Commercial and Residential Development Activities would be subject to project-specific approvals from Federal and state agencies and local jurisdictions. Project approvals from the local jurisdiction include the Kern County General Plan and "Dark Sky" Ordinance requirements and design review. It is anticipated that the local approval process would include provisions that would reduce adverse effects on visual resources in the study area. For example, the Kern County's approval of the TMV Project requires implementation of a lighting program consistent with specific plan design guidelines. The guidelines limit visible exterior lighting to the extent required for safety so as to preserve the nighttime ambiance; require lighting to be designed and maintained to be consistent with a dark sky; and require downward facing lighting. In addition, in keeping with the rural mountainous character of the area, street lighting would only be provided at intersections and nighttime helicopter pad lighting would only be used for take offs and landings and be kept to the minimal levels required by the Federal Aviation Administration (Appendix J, Kern County 2009b, MM 4.2-4 through 4.2-6).

Even with the implementation of mitigation measures to reduce visual effects, some new sources of light and glare would occur and would be visible to sensitive viewers. The most visible and extensive changes would occur along SR 58 where currently no commercial and residential development occurs. Views of this development along the I-5 corridor would be somewhat limited for the majority of sensitive viewers, or would be consistent with the existing development present along the I-5 corridor. Therefore, potential effects on sensitive viewers under the Kern County General Plan Alternative would be minor to moderate depending on the location and the extent of the development.

Existing Ranch Uses

Existing Ranch Uses would occur under the Kern County General Plan Buildout Alternative similar to the Existing Ranch Uses under the No Action Alternative. Existing lights are limited to lighting associated with ranch headquarters, ancillary ranch structures, entry gates, and the equestrian facility. Any additional lighting would be limited to similar infrastucture. Existing Ranch Uses have limited potential to result in new sources of light or glare within the study area. The most extensive existing land use in the Covered Lands is grazing, which has minimal, if any effect, on light and glare. In addition, minor light and glare effects could occur associated the vehicle lights on new roads, the construction of new structures, grading, vegetation removal, and nighttime filming activities. However, most of these activities would be located far from sensitive viewers and would represent minor visual effects on day or nighttime views.

Existing Ranch Uses would be required to comply with all applicable Federal, state, and local regulations on a project-specific basis. For example, activities associated with Existing Ranch Uses that would require substantial ground disturbance would trigger the need for a local grading or building permit. It is anticipated that prior to issuance of the required permits, the local jurisdiction would require demonstration that potential visual effects would be avoided or minimized.

As described in Chapter 2, Proposed TU MSHCP and Alternatives, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historical ranch practices as reflected in the Interim RWMP are anticipated to continue (although they cannot be assured), and compliance with legal requirements governing ground disturbing activities directly affecting visual quality would apply. In addition, because most Existing Ranch Uses would have only minor effects associated with light and glare, it is unlikely that Existing Ranch Uses under the Kern County General Plan Buildout Alternative substantially alter day or nighttime views.

4.6.6.3 Mitigation Measures

As described above, the limitations of the Ranchwide Agreement would not apply under the Kern County General Plan Buildout Alternative. However, even in the absence of the Ranchwide Agreement, BMPs (as currently set forth in the Interim RWMP) are anticipated to continue (although they cannot be assured). Restrictions imposed by the TMV Project Approvals and by easement language in the Existing Conservation Easement Areas would apply under the Kern County General Plan Buildout Alternative. Comparable measures to those provided in Tables 2-3 and 2-4 would likely be implemented to avoid, mitigate, and minimize effects on special-status species (i.e., state or federally listed species, species protected as special-status species under CEQA), which could also reduce effects on visual resources. In addition, the mitigation measures in Section 4.6.3.3, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the Kern County General Plan Alternative.

4.6.7 Cumulative Effects

Cumulative effects on visual resources are indirect or secondary effects related to the future development that is facilitated by issuance of the ITP by the Service. Cumulative effects on visual resources are analyzed in terms of the criteria discussed in Section 4.6.1.2, Methods, and each alternative's contribution to the loss of public views of natural landforms, the degradation of visual character, and the substantial alteration of day or nighttime views associated with new sources of light and glare. For the purposes of this analysis, the cumulative effects analysis area is the same as the visual resources study area described above, and includes the views along the I-5 corridor, SR 58, and SR 223. Whether or not such effects would be substantial cumulatively is primarily dependent on the mitigation measures put in place by other Federal, local, and state authorities pursuant to their project approval process. Specific cumulative projects are also considered, as discussed in Section 4.0.4, Methods for Assessing Cumulative Effects.

4.6.7.1 Views of Natural Landforms and Visual Character

As described in Section 3.6, Visual Resources, the Covered Lands are located in an area that is primarily rural and mountainous with limited existing development in the surrounding area. As noted in Section 3.6.2.2, Sensitive Viewers, public views of the Covered Lands are somewhat limited due to the remoteness of the area and the presence of intervening topography. Public views of the Covered Lands are provided along roadways, including I-5 to the south and west, and along SR 58 and SR 223 to the north. Views within the Covered Lands are largely limited by lack of general public access.

Within the cumulative effects analysis area, past actions associated with commercial and residential development, the construction of roadways, utilities, and related infrastructure, and other uses, such as farming and ranching, have contributed to the existing visual character. As discussed in Section 3.6, Visual Resources, views of lands uses from the I-5 corridor and surrounding mountain communities are dominated by grazing, open space, and natural landforms, but also include views of orchards and vineyards, access roadways, ranch headquarters buildings, and lake maintenance activities. Utility corridors can be observed from many locations in and around the study area. Other land uses, including occasional filming and hunting, are relatively small in scale and do not represent a significant visual element in the cumulative effects analysis area.

As noted in Section 4.0.4.2, Other Reasonably Foreseeable Actions, additional development proposed for the surrounding area may occur within the cumulative effects analysis area (Figure 4.0-1). These developments would include additional conversions of open space areas to developed land uses, which could alter public views of natural landforms and result in the degradation of visual character.

While additional future developments would largely not be visible from the same locations where Commercial and Residential Development Activiteis, Existing Ranchwide Uses, or Plan-Wide Activities would be visible under the various alternatives, cumulative changes in land use patterns would likely attract more visitors and more development to the study area. The potential visual effects of the Commercial and Residential Development Activities associated with the proposed action alternatives would be minor to substantial and visual effects would remain even after mitigation. Therefore, the proposed action alternatives would all have the potential to result in a contribution to the alteration of public views of natural landforms and degradation of visual character that would be cumulatively considerable.

The No Action Alternative does not include Commercial and Residential Development and is unlikely to result in significant visual effects from Existing Ranch Uses. Therefore, the No Action Alternative would not combine with other past, present, or reasonably foreseeable future projects to create significant cumulative visual effects.

4.6.7.2 Light and Glare Conditions

As described above, the Covered Lands are located in an area that is primarily rural and mountainous with limited existing development in the surrounding area. Views of the Covered Lands are somewhat limited due to the remoteness of the area and the presence of intervening topography. Views of the Covered Lands are provided along public roadways, including I-5 to the south and west, and along SR 58 and SR 223 to the north. Views within the Covered Lands are largely limited by lack of public access.

Past actions associated with the construction of roadways and the development of discrete areas have contributed to the existing visual character of the cumulative effects analysis area. As discussed in Section 3.6.1.4, Light and Glare Conditions, current sources of light and glare in the Covered Lands include existing structures and facilities located at ranch headquarters and vehicle headlights used for ranch purposes. This light and glare is visible from local roadways, commercial areas, and residences in and near the mountain communities in the vicinity along the I-5 corridor. Mineral extraction activities located on the southern face of the Tehachapi Mountains also generate light and glare that is visible at a distance above the mining site and from locations along SR 138.

As noted in Section 4.0.4.2, Other Reasonably Foreseeable Actions, additional development proposed for the surrounding area may occur within the cumulative effects analysis area (Figure 4.0-1). These developments would include additional conversions of open space areas to developed land uses, which could further alter day or nighttime views associated with new sources of light or glare. However, the extent of effects on nighttime conditions is difficult to predict because visibility depends on atmospheric conditions, topographic features, and other uncertainties. Nighttime lighting effects could be visible from a wider area than daytime sources of light and glare and nighttime conditions could be affected by small amounts of light and glare.

Given the uncertainties of how visible nighttime lighting may be and the potential for nighttime lighting to be far-reaching, in combination with other past, present, and reasonably foreseeable projects in the region, the proposed action alternatives have the potential to result in cumulative substantial visual effects associated with nighttime lighting.

The No Action Alternative, which does not include commercial and residential development, is unlikely to result in significant new sources of light and glare from Existing Ranch Uses, and therefore, would not combine with other past, present, or reasonably foreseeable future projects to create substantial cumulative visual effects.

4.6.8 Comparison of Alternatives

The exact contours, locations, and building designs of the Commercial and Residential Development Activities are not known. Therefore, the comparison of alternatives is based on the acreage of disturbance and cut-and-fill estimates and the preserved acres where Existing Ranch Uses or Plan-Wide Activities would occur for each of the alternatives as presented in Table 4.6-1.

Table 4.6-1 Comparison of Disturbance Areas and Open Space Areas for Each Alternative

	No Action Alternative	Proposed TU MSHCP/Condor Only HCP Alternatives	CCH Avoidance MSHCP Alternative	Kern County General Plan Buildout Alternative
Ground disturbance (acres)	0	5,533	4,496	12,142
Cut/fill (cubic yards)	0	75 million	90 million	222 million
Population	0	11,441	9,957	22,800
Dwelling Units	0	3,632	3,161	7,238
Commercial Development (square feet)	0	1,804,390	1,804,390	2,144,180
Permanently preserved open space (acres)[1]	106,317[2] (75%)	129,318 (91%)	130,339 (92%)	119,392[3] (84%)

1 Percentage representative of percentage of total study area (Covered Lands) (141,886 acres).

2 While conservation easements would be recorded over only 106,317 acres, Existing Ranch Uses would continue over the remaining Covered Lands (with no Commercial or Residential Development).

3 The Kern County General Plan Buildout Alternative includes both permanently preserved open space (34,130 acres) and Restricted Open Space (85,262 acres).

Although the No Action Alternative would result in the least amount of open space protected by conservation easements, there would be no visual effects associated with Commercial and Residential Development Activities because no such development would occur and only minor effects associated with Existing Ranch Uses.

As discussed above, the proposed action alternatives would also have a low potential to result in visual effects associated with Existing Ranch Uses or Plan-Wide Activities, but would all result in some level of effects on visual resources associated with Commercial and Residential Development Activities compared with the No Action Alternative. Generally speaking, the potential for adverse visual effects would increase with the extent, intensity, and location of the development as discussed below.

The Proposed TU MSHCP Alternative and the Condor Only HCP Alternative have the potential to alter public views of natural landforms, degrade existing visual character, and/or alter day or nighttime views from new sources of light and glare. However, changes to the majority of the views would not be visible in the foreground and the commercial and residential development along I-5 would be compatible with (or less than) other highway commercial uses. Nevertheless, there would be a minor to moderate effect on visual effects from these alternatives. There is a greater potential to affect visual resources under both these alternatives compared to the No Action Alternative, and both alternatives could contribute to a cumulatively substantial effect on visual resources.

The CCH Avoidance MSHCP Alternative would result Commercial and Residential Development Activities that would affect a slightly smaller area compared to the Proposed TU MSHCP and Condor Only HCP Alternatives. Commercial and Residential Development Activities would be consolidated and intensified in the southwestern portion of the Covered Lands, which are the areas most visible from I-5 and from the local communities to the west of I-5. This would result in greater visual effects related to landform changes from grading and earth movement and effects on vegetative cover compared with the No Action, Proposed TU MSHCP, and Condor Only HCP Alternatives. Additionally, the change in the land use pattern with higher density would be out of character with the surrounding setting and new sources of light and glare would be introduced by the development and would be in areas highly visible to the surrounding community. Although light and glare effects are likely to be minimized, the effects on visual resources would likely result in direct and substantial effects on the visual character of the study area, would be greater than effects under the No Action, Proposed TU MSHCP, or Condor Only HCP Alternatives, and would result in substantial visual effects.

The Kern County General Plan Buildout Alternative would result in up to 12,142 acres of permanent ground disturbance and 222 million cubic yards of cut and fill. This alternative would result in greater visual effects than the No Action, Proposed TU MSHCP, Condor Only HCP, or CCH Avoidance MSHCP Alternatives. Specifically, the effects under the Kern County General Plan Buildout Alternative would be greater because a larger area would be subject to Commercial and Residential Development Activities. Commercial and Residential Development Activities under this alternative would occur on a project-by-project basis, would be spread out over the extent of the Covered Lands, and would likely result in additional effects on landforms, vegetative cover, and views. Development would also change the visual character of the site, and could be intermittently visible in the middle and background along SR 58 and SR 223. The increased visual effects of this alternative would be roughly proportional to its greater development envelope and would be greater than all the other alternatives both individually and cumulatively.

4.7 Community Resources

4.7.1 Overview

The analysis of community resources considers effects related to land resources (agricultural resources and mineral resources); socioeconomics, including environmental justice; hazardous materials and other hazards; and public services and utilities. This section describes the regulatory setting applicable to community resources and the potential effects of the alternatives on community resources in the study area. As discussed in Section 3.7, Community Resources, the study area is considered concurrent with the Covered Lands with the exception of demographic data pertaining to socioeconomics and environmental justice, which are presented in the context of Kern County.

4.7.1.1 Regulatory Setting

Activities proposed in the study area would be required to conform to Federal, state, and local laws and regulations relating to land resources, socioeconomics, public safety, and public services, as described below. While the Service has direct authority and jurisdiction over the biological resources, with respect to secondary effects related to community resources, other agencies have primary jurisdiction.

Federal Resource Conservation and Recovery Act

The Federal Resource Conservation and Recovery Act (RCRA) provides the U.S. Environmental Protection Agency (EPA) with the authority to regulate the generation, transportation, treatment, storage, and disposal of hazardous wastes (from the 'cradle to grave') (42 United States Code [U.S.C.] 6901 *et seq*.).

Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations (1994), requires that all Federal agencies consider environmental justice concerns when evaluating the potential effects of a proposed action. In general, Executive Order 12898 seeks to ensure that environmental effects potentially associated with a Federal action will not disproportionately generate high and/or adverse human health or environmental effects on minority and low-income populations and communities. The U.S. Environmental Protection Agency (EPA) has summarized environmental justice concerns as follows:

> Environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies (U.S. Environmental Protection Agency 1998).

In 1997, the Council on Environmental Quality (CEQ) issued guidance regarding the analysis of environmental justice issues by Federal agencies (Council on Environmental Quality 1997). This environmental justice guidance defines *minority* to mean people of African, Asian, American Indian

and Alaskan Native, Native Hawaiian or other Pacific Islander, or Hispanic origin.[1] The guidance states that, for purposes of assessing potential environmental justice effects,

> …minority populations should be identified [by a Federal action agency] when either (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographical analysis.

According to the environmental justice guidance, "low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty." The Census Bureau's 2000 poverty thresholds set the poverty level for an individual at $8,794 and for a family of four at $17,603.

As shown by the demographic information provided in Section 3.7, Community Resources, the population in the study area, in Census Designated Places near the study area, and within Kern County as a whole does not meet environmental justice criteria for identifying either a minority population or a low-income population that may be affected by the proposed action.

California Department of Toxic Substances Control Regulations

The California Department of Toxic Substances Control (DTSC) hazardous waste regulations are located in the California Code of Regulations (CCR) at Title 22 Social Security, Division 4.5, Environmental Health Standards for Management of Hazardous Waste. These regulations govern the storage, treatment, and disposal of hazardous waste.

State Fire Protection Code

Statewide fire protection standards are located in Public Resources Code, Section 4291, Chapter 47 of the 2007 California Fire Code, Section 4701–4713; and in CCR including Title 14 (CalFire State Responsibility Area Fire Safe Regulations) Chapter 7, Section 1270–1299, and Title 24, Part 2 (California Building Codes), Chapter 7A, Section 701A–704A.5. These codes and regulations address fire protection standards for buildings and structures located within a wildland-urban interface fire area and in areas that are within the state's responsibility for fire protection.

State School Funding and Mitigation

There are several state mechanisms that fund mitigation for effects on schools from new developments. The Leroy F. Green State School Building Lease-Purchase Law of 1976 (California Education Code, Section 17000–17009.5) raises money through the sale of state bonds to fund the construction of schools. The Mello-Roos Community Facilities Act of 1982 allows for the creation of Community Facilities Districts that may issues bonds and collect special taxes to finance school projects (California Government Code, Sections 53311–53368.3). The Schools Facilities Act of 1977 allows cities or counties to require new development to provide interim school facilities for up to five years. California Government Code Section 65995 limits the development fees that cities or counties may charge to fund school construction or reconstruction associated with residential or commercial construction approvals. California Government Code 65996(b) stipulates that the payment of the development fees authorized by Section 65996 constitutes "full and complete school facilities mitigation" for new projects.

[1] As defined by the U.S. Census Bureau, the term *Hispanic* is considered to indicate an ethnic and cultural identity and not a category of race. As a result, tabulations that include Hispanic responses on census questionnaires do not add up to 100% because respondents may describe themselves as both Hispanic and as a member of a specific racial category.

Williamson Act

As stated in Section 3.7, Community Resources, certain portions of the study area are subject to the agricultural conservation agreements of the California Land Conservation Act, also known as the Williamson Act (Figure 3.7-3). These agreements reduce the tax basis of the affected property in exchange for the owner's commitment to maintain agricultural or grazing activities for a minimum period of 10 years. The contract term automatically renews every year for a new 10-year period until the owner elects to terminate the agreement pursuant to the act. In such an event, the agreement will expire 10 years after a notice of nonrenewal has been properly filed in accordance with the act.

California Health and Safety Laws and Regulations

State law regulates health and safety matters, including vector control and sanitation in Division 104, Environmental Health of the State Health and Safety Code. CCR Title 27 addresses environmental protection, including solid waste.

Kern County General Plan

The Kern County General Plan, which was adopted in 2004, was last updated in 2009 with changes to certain land use designations made together with Kern County's approval of the TMV Project in 2009 (Kern County 2009a). Chapter 1, Section 1.4 Public Facilities and Services of the Kern County General Plan includes policies that intended to ensure that public facilities and services are maintained within Kern County.

Kern County Building Code

Kern County has adopted building regulations that include a Wildland-Urban Interface Code (Kern County Code of Regulations, Chapter 17.34) that is intended to reduce the risk of wildfires in Kern County.

Kern County Animal Control and Health and Safety Code

Chapter 7 of Kern County Code addresses animal control. Chapter 8 of Kern County Code addresses health and safety, including land application of biosolids, dangerous excavations, and solid waste.

4.7.1.2 Methods

The analysis of the effects and the magnitude of direct, indirect, and cumulative effects on community resources are considered in terms of whether each alternative would result in the loss of amounts of land resources, defined as high-value agricultural or mineral resources; cause adverse socioeconomic effects, including disproportionate effects on environmental justice populations; result in exposure to hazardous materials or other hazards that would violate Federal, state, or local laws, regulations, or policies; or result in an inability to maintain appropriate public service levels and facilities or adequate utilities.

Socioeconomics

The analysis of socioeconomics considered the potential effects of the proposed action on the generation of tax revenue (property and sales) and job generation. This analysis uses following assumptions to determine a basis upon which to compare tax revenue and job creation for each alternative.

- **Tax Revenue.** Although tax revenue would vary depending on the specific activities and development project proposed, the following general assumptions were developed and applied to each alternative to provide a basis for comparison. Actual revenues would vary from estimates provided as a result of this method, and this analysis is intended to provide a stable basis for comparison only.
    - Property tax revenue was determined by multiplying the number of dwelling units proposed for each alternative by the median value of owner-occupied housing in Kern County ($226,800) (U.S. Census Bureau 2010). This provided the total estimated property value for residential property under each alternative. A 1% property tax levy was applied to this figure, which was then multiplied by the Kern County General Fund property tax levy of 20.21%. This provided the amount of tax revenue that would go into the Kern County General Fund for each alternative.
    - Sales tax was determined by multiplying the total estimated property value determined above by 15%, as an approximation of total household income (i.e., income can be expected to be roughly 15% of the value of one's home). This provided the total estimated aggregate income. This figure was multiplied by 34%, to estimate the percentage of income spent on taxable goods, to determine the total expenditure on taxable goods. This figure was multiplied by 50% to estimate the proportion of expenditure in Kern County. This figure was multiplied by 32% to estimate the proportion of purchases made in unincorporated Kern County. This provided the total taxable sales made in unincorporated Kern County, which was then multiplied by 1% to determine the Kern County General Fund portion of the sales tax.
- **Job Generation.** Although job generation would vary depending on the specific activities and development project proposed, the following general assumptions were applied to each alternative to provide a basis for comparison. Actual job generation would vary from estimates provided as a result of this method, and this analysis is intended to provide a stable basis for comparison only.
    - Construction worker job generation was determined on a per-dwelling-unit and per-commercial-square-foot basis. The exact number of jobs resulting from construction of a commercial and residential development can vary depending on specific development and product type. In order to determine an average number that could be applied across the alternatives, this analysis considered the construction trips generated for residential and commercial development by the TMV Project. The TMV Traffic Study (Austin Foust 2009, p. 5-28) determined that, on an average day, the TMV Project would require approximately 210 construction workers. An estimated 160 of these workers would work on residential construction, and 52 would work on commercial construction. Dividing the 160 residential construction workers by the 3,450 dwelling units in the TMV Project yields 0.046 worker per dwelling unit. Dividing the 52 commercial construction workers by the 160.000 square feet of commercial development in the TMV Project yields 0.000325 worker per dwelling unit. These factors were then applied to the dwelling unit and commercial square footage amounts of each alternative.
    - Operations worker generation would be associated with the commercial square footage of each alternative. In order to estimate how many workers would be associated with the commercial development under each alternative, a worker-generated number was based on parking requirements specified in Section 19.82.020 of the Kern County Code of Ordinances for each type of land use. This number served as a proxy for how many jobs would be generated by the various land use categories. Because the precise type of commercial development that would occur under each alternative is not known, it was assumed that this development would vary from business or professional offices (requiring one parking space

per 250 square feet of development) to warehouse uses (requiring one parking space per 1,000 square feet of development). The average of these two uses—one space per 650 square feet of development—was applied to the commercial square footage of each alternative. Of these required parking spaces, 75% were assumed to be used by employees, with the remainder used as customer and visitor parking, for an estimate of one worker per 870 square feet.

4.7.2 No Action Alternative

4.7.2.1 Land Resources

Commercial and Residential Development Activities

No Commercial and Residential Development Activities would occur under the No Action Alternative. Therefore, there would be no direct or indirect effects on land resources under this alternative.

Existing Ranch Uses

Under the No Action Alternative, Existing Ranch Uses would continue similar to existing conditions, subject to the best management practices (BMPs) and use restrictions required by the Ranchwide Agreement (as currently set forth in the Interim RWMP). Such measures include a commitment to preserve and protect conservation values, including land resources. The Ranchwide Agreement requires that all subsequent RWMPs must similarly reflect BMPs that protect the conservation values of the land and that such management standards and use restrictions are carried through in the conservation easements required by the Ranchwide Agreement.

In addition, the majority of the Covered Lands would be permanently preserved in open space (106,317 acres), and remaining Covered Lands would continue to be limited to existing uses (no Commercial and Residential Development Activities).

As described in Section 3.7.2.1, Agricultural Resources, the study area does not contain high-value farmland, which is defined as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the FMMP or mineral resource areas (Figures 3.7-2 and 3.7-4). In addition, large-scale grazing is not listed as an important agricultural commodity in Kern County.

Mineral resource extraction operations are an existing use (not a Covered Activity) and these uses would continue at the permitted mining operations. However, the expansion of mineral extraction would not be allowed within the study area outside of existing mineral leases as restricted by the Ranchwide Agreement. Because there is a long-term supply remaining in the existing permitted mining operations, restricting mineral extraction activities to areas prescribed in the existing mining leases would not result in the substantial loss of high-value mineral resources.

Other Existing Ranch Uses, such as filming, recreational use, and construction and maintenance of roads, utilities, ancillary ranch structures, and back-country cabins, would continue and would have a low potential to affect agricultural and mineral resources.

Therefore, Existing Ranch Uses would not result in the substantial loss of high-value agricultural resources and continuation of the permitted mineral extraction operations within existing mining leases would not result in substantial loss of high-value mineral resources. The potential effects on land resources would be minor, similar to effects under existing conditions.

4.7.2.2 Socioeconomic Effects and Environmental Justice

Commercial and Residential Development Activities

No Commercial and Residential Development Activities would occur under the No Action Alternative. Therefore, there would be no direct or indirect effects on community resources related to socioeconomics or environmental justice conditions.

Existing Ranch Uses

Existing Ranch Uses would continue under the No Action Alternative similar to existing conditions. Some Existing Ranch Uses, such as grazing and Lebec/Existing Headquarters Uses generate a limited amount of tax revenue. Existing Ranch Uses would also continue to generate some employment opportunities. However, tax revenue and job creation from Existing Ranch Uses are generally low and do not result in a substantial socioeconomic effect. As discussed above, the population in the study area does not meet environmental justice criteria to be considered either a minority or low-income population. Therefore there would be no direct or indirect adverse socioeconomic or environmental justice effects associated with Existing Ranch Uses under the No Action Alternative.

4.7.2.3 Hazardous Materials and Other Hazards

Commercial and Residential Development Activities

No Commercial and Residential Development Activities would occur under the No Action Alternative. Therefore, there would be no direct or indirect effects related to increased risk of exposure to hazardous materials or other hazards.

Existing Ranch Uses

As described in Section 3.7, Community Resources, existing and past land uses in the study area may have resulted in exposure to hazardous materials from agricultural chemicals, underground pipelines, lead from past hunting activities, lead contamination from soil adjacent to major highways, and other such uses. Hazardous materials such as polychlorinated biphenyls (PCBs) may also be present in electrical transformers. However, Existing Ranch Uses would have a limited potential to result in exposure to hazardous materials or other hazards. Potential exposure could occur as a result of activities involving the storage and use of chemicals, such as pesticides, fuels, and other solvents associated with pest and vegetation management, agricultural, filming, or construction and maintenance activities. Activities requiring grading or soil disturbance could result in exposure to soil-borne contaminants from past land uses. Some activities associated with vehicle use and construction activities could result in a low risk of fires.

As mentioned previously, Existing Ranch Uses would continue under the No Action Alternative similar to existing conditions, subject to the use restrictions and BMPs required by the Ranchwide Agreement (as currently set forth in the Interim RWMP). This includes minimizing effects associated with exposure to hazardous materials and other hazards in open space. For example, no smoking is allowed in the ranch to reduce the potential for wildfires. Additionally, visitors to the ranch are required to limit campfires to designated areas and are prohibited from bringing in toxic substances. Additional BMPs to manage chemical use in the Covered Lands would be implemented to reduce potential risk.

In addition, Existing Ranch Uses would be subject to applicable regulations to Federal, state, and local regulations of hazardous materials and other hazards. For example, the storage and use of hazardous materials would be subject to DTSC regulations requiring safe storage and handling of chemicals. Additionally, the ranch is subject to the jurisdiction of California Department of Forestry, the Kern County Fire Department, and the Los Angeles County Fire Department. Land uses would be implemented consistent with the policies of these agencies to minimize risks associated with wildfire and other safety hazards.

Even with implementation of mitigation, some minor effects associated with exposure to hazardous materials or other hazards would remain. However, because the risk of substantial exposure to levels that would exceed applicable Federal, state, or local laws, regulations, or policies is low, the potential effects of the No Action Alternative would be minor, similar to effects under existing conditions.

4.7.2.4 Public Services and Utilities

Commercial and Residential Development Activities

No Commercial and Residential Activities would occur under the No Action Alternative. Therefore, there would be no direct or indirect effects on public services or utilities.

Existing Ranch Uses

Existing Ranch Uses would continue under the No Action Alternative similar to existing conditions, subject to use restrictions and BMPs required by the Ranchwide Agreement (as currently set forth in the Interim RWMP). Existing Ranch Uses would have a limited potential to result in an inability to maintain appropriate public service levels and facilities or adequate utilities. Existing Ranch Uses such as grazing, recreational use, ancillary ranch activities, road and utility repair and maintenance, and film production, do not rely on public services and utilities and have only minimal effects on such resources. For example, grazing, which is the largest Existing Ranch Use, relies on onsite surface and groundwater and does not rely on public water. Due to the very low residential population, Existing Ranch Uses create only incidental and minimal demand for fire and police services and schools. Fire, police, and school services are currently adequate to provide service to Existing Ranch Uses. Therefore, potential effects on public services and utilities under the No Action Alternative would be minor, similar to effects under existing conditions.

4.7.3 Proposed TU MSHCP Alternative

4.7.3.1 Land Resources

Commercial and Residential Development Activities

Commercial and Residential Development Activities would result in conversion of existing land uses to residential and commercial uses in the 5,533-acre Disturbance Area, which has the potential to affect agricultural or mineral resources in the study area. As described in Section 3.7.2.1, Agricultural Resources, the study area does not contain high-value farmland, which is defined as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the FMMP or mineral resource areas (Figures 3.7-2 and 3.7-4). In addition, large-scale grazing is not listed as an important agricultural commodity in Kern County. Therefore, there would be no loss of high-value agricultural or mineral resources as a result of Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative.

All mineral extraction zones are located outside of areas planned for Commercial and Residential Development under the Proposed TU MSHCP Alternative. Therefore, the potential effects on mineral resources under the Proposed TU MSHCP Alternative are discussed in greater detail under Plan-Wide Activities.

Plan-Wide Activities

Under the Proposed TU MSHCP Alternative, Plan-Wide Activities would occur in a manner similar to Existing Ranch Uses under the No Action Alternative with the exception that permanent ground disturbance would be limited to 200 acres. Similar to Existing Ranch Uses, Plan-Wide Activities would be subject to use restrictions and BMPs required by the Ranchwide Agreement (as set forth in the Interim RWMP), such as prohibiting smoking within the ranch to reduce the potential for wildfires.

In addition, the TU MSHCP calls for the development and implementation of an integrated pest management plan (IPMP), public access plan, fuel management plan, and grazing management plan that would be subject to approval by the Service. These plans are intended to preserve and protect land resources in open space areas and would require implementation of BMPs to further limit potential exposure to hazardous materials and other hazards.

As indicated in Section 3.7.2.1, Agricultural Resources, and mentioned above, there are no designated areas of high-value agricultural lands in the study area, but agricultural operations do occur, primarily associated with grazing. Plan-Wide Activities would include continuation of grazing; however, under the Proposed TU MSHCP Alternative, large-scale livestock grazing and range management activities would be excluded from open space portions of the TMV Planning Area. Conservation measures included in the TU MSHCP require that a grazing management plan be prepared and followed that limits grazing to 14,500 head of cattle to protect the landscape. This limit, however, is consistent with historical grazing, so grazing uses would continue at the same level as the No Action Alternative.

Under the Proposed TU MSHCP Alternative, operation of the National Cement and La Liebre Mines are an existing use (not a Covered Activity) and these operations would continue. Therefore, there would be no disruption to or loss of resources associated with operation of these facilities. The remaining areas currently designated for mineral and extractive uses are located outside the TMV Planning Area and in designated open space areas. Although these areas would not be developed, they would be subject to the provisions of the Ranchwide Agreement, which preclude future extraction of mineral resources outside of existing mineral leases. Because there is a long-term supply remaining in the existing permitted mining operations, restricting mineral extraction activities to areas prescribed in the existing mining leases would not result in the substantial loss of high-value mineral resources.

Other Plan-Wide Activities, such as filming, recreational use, and construction and maintenance of roads, utilities, ancillary ranch structures, and back-country cabins, would continue to be implemented consistent with the provisions of the Ranchwide Agreement and approvals required as part of the Federal, state, and local permitting processes. Therefore, Plan-Wide Activities would not result in the substantial loss of high-value agricultural or mineral resources. The potential effects on land resources would be minor, similar to effects under the No Action Alternative.

4.7.3.2 Socioeconomic Effects and Environmental Justice

Commercial and Residential Development Activities

Under the Proposed TU MSHCP Alternative, Commercial and Residential Development Activities in the study area would result in a total of 3,632 dwelling units and 1,804,390 square feet of commercial space. The population of the study area would be increased by 11,441 new residents. This increase in population and residential and commercial uses would have a beneficial effect on housing, tax revenue, and employment opportunities in the study area compared to the No Action Alternative, under which no Commercial and Residential Development would occur.

Based on the method set forth in Section 4.7.1.2, Methods, above, the Proposed TU MSHCP Alternative would result in an addition to the Kern County General Fund of approximately $1,664,773 in property tax revenue and $67,216 in sales tax revenue. Some of this revenue would be offset by the expenditures for Kern County services and facilities incurred as a result of the Proposed TU MSHCP Alternative. However, prior to Kern County approval of a particular development project, the project applicant would have to undertake a fiscal impact analysis demonstrating that its contribution to the Kern County General Fund would surpass its expenditures.

In addition, jobs would be generated by both construction and operations activities associated with Commercial and Residential Development. This alternative would result in approximately 753 construction jobs on an average day (167 associated with residential construction, and 586 with commercial construction), and 2,165 operations jobs.

Given the tax revenue that would contribute to the Kern County General Fund, and the short-term and long-term jobs that would result from the Proposed TU MSHCP Alternative, this alternative would have a net beneficial socioeconomic effect.

As discussed in Section 3.7, Community Resources, the population in the study area, in Census Designated Places near the study area, and in Kern County as a whole does not meet environmental justice criteria for identifying either a minority population or a low-income population that may be affected by the proposed action. Therefore, there would be no direct or indirect adverse socioeconomic effects from the Proposed TU MSHCP Alternative, including effects on environmental justice populations.

Plan-Wide Activities

Plan-Wide Activities would continue under the Proposed TU MSHCP Alternative similar to Existing Ranch Uses under the No Action Alternative with the exception permanent ground disturbance would be limited to 200 acres. Some Plan-Wide Activities, such as grazing and Lebec/Existing Headquarters Uses generate a limited amount of tax revenue. Plan-Wide Activities would also continue to generate some employment opportunities. Tax revenue and job creation from Plan-Wide Activities are generally low and would not result in a substantial socioeconomic effect. As discussed above, the population in the study area does not meet environmental justice criteria for identifying either a minority or low-income population. Therefore, similar to the No Action Alternative, there would be no direct or indirect adverse socioeconomic effects from the Proposed TU MSHCP Alternative, including effects on environmental justice populations.

4.7.3.3 Hazardous Materials and Other Hazards

Commercial and Residential Development Activities

Under the Proposed TU MSHCP Alternative, Commercial and Residential Development Activities would result in the development of approximately 5,533 acres for commercial and residential land uses. This would involve the construction of approximately 3,632 dwelling units and up to 1,804,390 square feet of commercial development. These activities have the potential to result in exposure to hazardous materials from past land uses or exposure to additional hazards or sources of hazardous materials from construction or operations associated with Commercial and Residential Development Activities.

The potential for encountering hazardous materials associated with past land uses could occur during grading for construction. Grading could release particulate contaminants into the air that could result in health risks to humans. Known hazardous materials sites located in the study area, including but not limited to the California Highway Patrol Facility located at 4459 Lebec Road, and the old Post Office located at 1777 Lebec Road (Kern County 2009b, pp. 4.7-5 to 4.7-8). It is anticipated that these areas would be avoided during construction.

Commercial and Residential Development Activities would require the use of hazardous materials during construction, such as gasoline, paint, and other solvents. Accidental spills of these materials could expose humans to these chemicals either directly or through contamination from stormwater runoff. In addition, construction could result in exposure to other hazards, including blasting.

As indicated in Section 4.7.3.5, Mitigation Measures, Commercial and Residential Development Activities would be required to comply with all applicable Federal, state and local requirements. For example, Federal and state laws require safe handling and storage of hazardous materials by certified personnel. Any ground disturbance greater than 1 acre would require an NPDES Permit and the development and implementation of spill and countermeasures plan. Ground-disturbing activities would be required to obtain a grading or building permit. Prior to issuing a permit, it is anticipated the local jurisdiction would require implementation of BMPs to minimize exposure to risks. For example, Kern County's approval of the TMV Project requires the implementation of a blasting safety plan (Appendix J, MM 4.7-1) (Kern 2009b).

Land uses associated with Commercial and Residential Development could include operations that require the storage or use of hazardous materials, such as gas stations and dry cleaning facilities. These land uses would also be required to comply with Federal, state, and local laws and regulations, including RCRA and California DTSC regulations, as indicated in Section 4.7.3.5, Mitigation Measures.

The Proposed TU MSHCP Alternative would include residential land uses located in the vicinity of transmission lines, which represent a substantial source of electromagnetic fields. However, land use densities and parcel sizes in the vicinity of these transmission lines would allow appropriate setbacks of habitable structures and few residential or commercial uses result in substantial electromagnetic field generation. Conservation measures as presented in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives, included in the TU MSHCP would further reduce risks by restricting the placement and location of utilities such that most overhead electrical utilities would be placed underground.

There are additional utility easements throughout the study area, some of which could pose a safety risk to humans associated with leaks or pipeline ruptures. However, these utilities are located in easements that could not be developed, ensuring adequate safety. In addition, there are safety features built into many of the utility facilities, such as the high-pressure gas line crossing the study area, that allow the system to be automatically shut down in case of a leak or rupture. Therefore, the

likelihood of the additional development in the vicinity of the utility easements is low. As indicated in Section 4.7.3.5, Mitigation Measures, any new construction would be required to comply with applicable Federal, state, and local regulations governing safety for utilities. Additional measures would likely be required during local project-level approval. For example, Kern County's approval of the TMV Project requires design measures to minimize risks to new critical utilities that cross active fault traces.

The Proposed TU MSHCP Alternative would include development in areas with severe or very severe fire hazards. The implementation of conservation measures included in the TU MSCHP (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives) would further reduce risks by requiring conformance with the County-approved Fire Protection Plan as well as Service review and approval of a fuel management plan to control potential fire risk from the open space. Furthermore, Commercial and Residential Development would be concentrated in two areas, the TMV Planning Area and the Lebec/Existing Headquarters Area, which would also limit the wildland-urban interface. The planned development approach under the Proposed TU MSHCP would allow the incorporation of safety features such as evacuation routes, appropriate road geometrics, fuel management zones, an integrated fire protection plan, and a location for fire stations.

In addition, Commercial and Residential Development would be subject to all applicable Federal, state, and local regulations. For example, Kern County's approval of the TMV Project requires an environmental education program for residents prior to occupation that addresses fire safety; consistency with the requirements of the Kern County Fire Department, including the development of a project-wide fire protection plan; and approval of a proposed development tract by the Kern County Fire Department. All structures, vegetation, and roads would be constructed consist with applicable fire code (Appendix J, MMs 4.2-3, 4.4-21, 4.7-10, and 4.7-11 through 4.7-14) (Kern County 2009b).

New development under the Proposed TU MSHCP Alternative could introduce disease vectors more often associated with populated areas. These may be related to solid waste, additional stagnant water sources, and food storage. Conservation measures included in the TU MSHCP (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives, would reduce the risk of introducing disease vectors by requiring trash storage and disposal controls, implementing amphibian fieldwork practices to prevent the spread of disease during construction, and developing and implementing an IPMP. Increase in risk of disease is typical of any populated area and would be further controlled through compliance with Federal, state, and county laws and regulations as indicated in Section 4.7.3.5, Mitigation Measures. For example, prior to issuing a grading permit associated with any proposed golf courses, Kern County's approval of the TMV Project requires consultation with and incorporation of measures recommended by the Kern Vector Control District (Appendix J, MM 4.7-17) (Kern County 2009b).

Even with implementation of mitigation, some minor effects associated with exposure to hazardous materials or other hazards would remain and would be greater compared to the No Action Alternative. However, because the risk of substantial exposure to levels that would exceed applicable Federal, state, or local laws, regulations, or policies is low, the potential effects of the Proposed TU MSHCP Alternative would be minor.

Plan-Wide Activities

As described above and in Section 3.7, Community Resources, existing and past land uses in the study area may have resulted in exposure to hazardous materials from agricultural chemicals, underground pipelines, lead from past hunting activities, lead contamination from soil adjacent to major highways, and other such uses. Hazardous materials such as PCBs may also be present in electrical transformers. Plan-Wide Activities would have a limited potential to result in exposure to hazardous materials or other hazards. Potential exposure could occur as a result of activities

involving the storage and use of chemicals, such as pesticides, fuels, and other solvents associated with pest and vegetation management, agricultural, filming, or construction and maintenance activities. In addition, activities requiring grading or soil disturbance could result in exposure to soil-borne contaminants from past land uses. Some activities associated with vehicle use and construction activities could result in a low risk of fires.

Plan-Wide Activities would continue under the Proposed TU MSHCP Alternative similar to Existing Ranch Uses with the exception that permanent ground disturbance would be limited to 200 acres. Plan-Wide Activities would be implemented consistent with the provisions of the BMPs and use restrictions, required by the Ranchwide Agreement (as currently set forth in the Interim RWMP), to minimize effects associated with exposure to hazardous materials and other hazards. For example, no smoking is allowed within the ranch to reduce the potential for wildfires. Additionally, visitors to the ranch are required to limit campfires to designated areas and are prohibited from bringing in toxic substances.

In addition, conservation measures included in the TU MSCHP (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives) would further reduce risks by requiring enforcement of the ranchwide lead ban, implementation of amphibian fieldwork code practices to prevent the spread of amphibian diseases, implementation of BMPs listed in the IPMP to reduce potential risk of exposure to chemicals, and implementation of the provisions ofa fuel management plan to minimize risk of wildfire.

In addition to the measures and BMPs listed above, Plan-Wide Activities would be subject to applicable Federal, state, and local regulations governing hazardous materials and other hazards. For example, the storage and use of hazardous materials would be subject to DTSC regulations requiring safe storage and handling of chemicals. Additionally, the ranch is subject to the jurisdiction of California Department of Forestry, the Kern County Fire Department, and the Los Angeles County Fire Department. Land uses would be implemented consistent with the policies of those agencies to minimize risks associated with wildfire and other safety hazards.

Even with implementation of mitigation, some minor effects associated with exposure to hazardous materials or other hazards would remain. However, because the risk of substantial exposure to levels that would exceed applicable Federal, state, or local laws, regulations, or policies is low, the potential effects of the Proposed TU MSHCP Alternative would be minor, similar to effects under the No Action Alternative.

4.7.3.4 Public Services and Utilities

Commercial and Residential Development Activities

Commercial and Residential Development Activities associated with the Proposed TU MSHCP Alternative would provide for a population increase of 11,441 new residents. This increase in population would correspondingly increase the demand for fire protection, police services, schools, libraries, water, waste disposal, sewer treatment and other services and utilities that could exceed existing capacity.

Population increases associated with the Proposed TU MSHCP Alternative would be expected to generate the following additional calls annually. This information is based on per capita data for the Kern County Fire Department.

- 793 total emergency calls (0.07 call per person)
- 66 fire calls (0.01 fire per person), including 18 structural fires, 21 wildfires, and 26 other fires, such as car fires. It should be noted that this is the average for the entire county. Because fire

risk within the study area is higher than other parts of Kern County, wildfire calls within the study area are expected to be higher.

- 423 emergency medical or rescue calls (0.04 per person)

Commercial and Residential Development associated with the Proposed TU MSHCP Alternative would also require 12 additional police officers compared to the No Action Alternative. This estimate is based on existing service ratios of 1 officer per 1,000 individuals.

With respect to the provision of education services, the Proposed TU MSHCP Alternative is anticipated to result in the need to accommodate approximately 2,469 school-age children compared to the No Action Alternative. This estimate is based on 2010 U.S. Census data for population by age in Kern County (U.S. Census Bureau 2010) and the projected increase in population of the 11,441 new residents. Therefore, the Proposed TU MSHCP Alternative would require an expansion of the current schools or new schools to meet this demand. Similarly, it is anticipated additional library services would be required to meet increased demands.

Commercial and Residential Development Activities associated with the Proposed TU MSHCP Alternative would also increase the demand for water supply, wastewater treatment, and waste disposal. Tejon Castac Water District (TCWD) would obtain, treat, and distribute water to the newly developed areas. Potable water demand under this alternative is expected to be 2,721 acre-feet per year based on the following duty factors and assumptions: 0.66 acre-feet per year per dwelling unit for the 3,633 dwelling units and 160 gallons per day per thousand square feet for the 1,804,390 square feet of commercial/office space under this alternative, which converts to 323 acre-feet per year. Duty factors used are based on those from TCWD water supply assessments, and may be different based on actual land use and conservation practices.

Wastewater disposal would be handled with sewer service and waste treatment plants, which would have the potential added benefit of supplying recycled water for use in irrigation. Electricity would be provided by the Pacific Gas & Electric Company and the Southern California Edison Company.

As mentioned previously, Commercial and Residential Development under the Proposed TU MSHCP Alternative would consistent primarily of planned development. This would allow for planning to take advantage of funding opportunities to provide additional public services and to coordinate design plans to provide optimal siting of fire stations, other public service facilities, and utility infrastructure.

In addition, as indicated in Section 4.7.3.5, Mitigation Measures, Commercial and Residential Development Activities would be required to comply with applicable Federal, state, and local laws governing public service and utility provision. For example, ground-disturbing activities would require a grading or building permit from the local jurisdiction. Prior to issuing the permit, it is anticipated the local jurisdiction would require implementation of mitigation and BMPs to reduce the potential for Commercial and Residential Development Activities to exceed the capacity of public service and utility providers. For example, Kern County's approval of the TMV Project requires providing for additional public services, through the creation, purchase of equipment, and/or payment of fees for fire stations, police offices, schools, and libraries to ensure adequate provision of public services (Appendix J, MMs 4.13-2 through 4.13-13) (Kern County 2009b). With respect to the provision of utilities, Kern County's approval of the TMV Project requires the implementation of water conservation and waste reduction measures and requirements to ensure adequate provision of water, sewage treatment, and waste disposal exist (Kern County 2009b, MMs 4.16-1 through 4.16-7).

Even with implementation of mitigation, there would be increased demand compared with the No Action Alternative. However, because Commercial and Residential Development Activities would be

required to ensure that appropriate levels of public service and utilities are provided via the local approval process, the effects on public services and utilities would be minor.

Plan-Wide Activities

Plan-Wide Activities would continue under the Proposed TU MSHCP Alternative similar to the No Action Alternative, with the exception that permanent ground disturbance would be limited to 200 acres. Plan-Wide Activities would have a limited potential to result in an inability to maintain appropriate public service levels and facilities or adequate utilities. Plan-Wide Activities such as grazing, recreation, ancillary ranch activities, road and utility repair and maintenance, and film production, typically have only minor public services or utility needs. For example, grazing, which is the largest activity, relies on onsite surface and groundwater and does not rely on public water. Plan-Wide Activities would create only incidental and minimal demand for fire and police services and schools. Fire services are currently adequate to provide service to the ranch. Therefore, potential effects on public services and utilities under the Proposed TU MSHCP Alternative would be minor, similar to effects under the No Action Alternative.

4.7.3.5 Mitigation Measures

As described above, BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP), would reduce the effects of the Proposed TU MSHCP Alternative on community resources. The Proposed TU MSHCP Alternative would also include species-specific conservation measures (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives) that would minimize effects on land resources (e.g., a grazing management plan), and hazards (e.g., fire protections, fuel management plan, overhead utility risk protections, protection against chemicals and contaminants, enforcment of a ranchwide lead ammunition ban, and protection against disease vectors). If the Service issues an ITP to TRC for incidental take of the 27 species covered under the TU MSCHP, these measures would be enforceable under the ESA through the ITP and applicable conservation easements. In addition, the following mitigation measures are proposed to reduce potential effects on community resources that may be associated with the Proposed TU MSHCP Alternative.

- ***Comply with Applicable Federal, State, and Local Regulations Governing Hazardous Materials and Other Hazards.*** Commercial and Residential Development Activities and Plan-Wide Activities will comply with applicable Federal, state, and local laws and regulations related to the use of hazardous materials and other hazards and will comply with the minimum standards for safe storage and handling of hazardous materials consist with DTSC requirements and applicable state code and policies as outlined above.
- ***Comply with Applicable Federal, State, and Local Regulations Governing the Provision of Public Services and Utilities.*** Commercial and Residential Development Activities and Plan-Wide Activities will comply with applicable Federal, state, and local laws and regulations related to the adequate provision of public services and utilities.

4.7.4 Condor Only HCP Alternative

4.7.4.1 Land Resources

Commercial and Residential Development Activities

The Condor Only HCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Commercial and Residential Development Activities.

Plan-Wide Activities

The Condor Only HCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Plan-Wide Activities.

4.7.4.2 Socioeconomic Effects and Environmental Justice

Commercial and Residential Development Activities

The Condor Only HCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Commercial and Residential Development Activities.

Plan-Wide Activities

The Condor Only HCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Plan-Wide Activities.

4.7.4.3 Hazardous Materials and Other Hazards

Commercial and Residential Development Activities

The Condor Only HCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Commercial and Residential Development Activities.

Plan-Wide Activities

The Condor Only HCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Plan-Wide Activities.

4.7.4.4 Public Services and Utilities

Commercial and Residential Development Activities

The Condor Only HCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Commercial and Residential Development Activities.

Plan-Wide Activities

The Condor Only HCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Plan-Wide Activities.

4.7.4.5 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP), would reduce the effects of the Condor Only HCP Alternative on community resources. However, only the species-specific conservation measures for California condor (Table 2-3 in Chapter 2, Proposed TU MSHCP and Alternatives) would be implemented under this alternative. The proposed mitigation measures listed above in Section 4.7.3.5, Mitigation Measures, would also be implemented under the Condor Only HCP Alternative.

4.7.5 CCH Avoidance MSHCP Alternative

4.7.5.1 Land Resources

Commercial and Residential Development Activities

The CCH Avoidance MSHCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Commercial and Residential Development Activities.

Plan-Wide Activities

The CCH Avoidance MSHCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Plan-Wide Activities.

4.7.5.2 Socioeconomic Effects and Environmental Justice

Commercial and Residential Development Activities

Under the CCH Avoidance MSHCP Alternative, Commercial and Residential Development Activities in the study area would result in a total of 3,161 dwelling units and 1,804,390 square feet of commercial space. The population of the study area would be increased by 9,957 new residents. This increase in population and residential and commercial uses would have a beneficial effect on housing, tax revenue, and employment opportunities in the study area compared to the No Action Alternative.

Based on the method set forth in Section 4.7.1.2, Methods, the CCH Avoidance MSHCP Alternative would result in an addition to the Kern County General Fund of approximately $1,448,884 in property tax revenue and $58,500 in sales tax revenue. Some of this revenue would be offset by the expenditures for Kern County services and facilities incurred as a result of the Commercial and Residential Development Activities. However, prior to Kern County approval of a particular development project, the project applicant would have to undertake a fiscal impact analysis demonstrating that its contribution to the Kern County General Fund would surpass its expenditures. Thus, it is not anticipated that expenditures from the General Fund would exceed the tax revenue generated by this alternative.

As with the other proposed action alternatives, the CCH Avoidance MSHCP Alternative would result in both construction and operations-related job creation. This alternative would result in approximately 731 construction jobs (145 associated with residential construction, and 586 with commercial construction), and 2,165 operations jobs.

Given the tax revenue to the Kern County General Fund, and the short-term and long-term jobs that would result from the CCH Avoidance MSHCP Alternative, this alternative would have a net beneficial socioeconomic effect.

As discussed above, the population in the study area, in Census-Designated Places near the study area, and in Kern County as a whole does not meet environmental justice criteria for identifying either a minority population or a low-income population. Therefore, there would be no direct or indirect adverse socioeconomic effects from the CCH Avoidance MSHCP Alternative, including effects on environmental justice populations.

Plan-Wide Activities

Plan-Wide Activities would continue under the CCH Avoidance MSHCP similar to Existing Ranch Uses under the No Action Alternative. Some Plan-Wide Activities, such as grazing and Lebec/Existing Headquarters Uses, generate a limited amount of tax revenue. Plan-Wide Activities would also continue to generate some employment opportunities. Tax revenue and job creation from Plan-Wide Activities are generally low and would not result in a substantial socioeconomic effect. As discussed above, the population in the study area does not meet environmental justice criteria for identifying either a minority or low-income population. Therefore, similar to the No Action Alternative, there would be no direct or indirect adverse socioeconomic effects from the CCH Avoidance MSHCP Alternative, including effects on environmental justice populations.

4.7.5.3 Hazardous Materials and Other Hazards

Commercial and Residential Development Activities

The CCH Avoidance MSHCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Commercial and Residential Development Activities.

Plan-Wide Activities

The CCH Avoidance MSHCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Plan-Wide Activities.

4.7.5.4 Public Services and Utilities

Commercial and Residential Development Activities

The CCH Avoidance MSHCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Commercial and Residential Development Activities; however, the projected demand for additional public services and utilities would be slightly less because less Commercial and Residential Development is proposed.

Plan-Wide Activities

The CCH Avoidance MSHCP Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Plan-Wide Activities.

4.7.5.5 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the CCH Avoidance MSHCP Alternative on community resources. Species-specific conservation measures, similar to those provided in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP Alternative, would also be implemented that would help to reduce effects on community resources and would be enforceable under the ESA. In addition, the mitigation measures listed above in Section 4.7.3.5, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the CCH Avoidance MSHCP Alternative.

4.7.6 Kern County General Plan Buildout Alternative

4.7.6.1 Land Resources

Commercial and Residential Development Activities

As previously mentioned, there are no high-value agricultural lands designated within the study area and mineral resource areas are located outside of areas that would be proposed for development. Therefore, the Kern County General Plan Buildout Alternative would result in the same effects as the Proposed TU MSHCP Alternative from Commercial and Residential Development Activities. Potential effects on mineral resources are discussed further under Existing Ranch Uses.

Existing Ranch Uses

Existing Ranch Uses would continue under the Kern County General Plan Buildout Alternative similar to the No Action Alternative. As described in Chapter 2, Proposed TU MSHCP and Alternatives, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as reflected in the Interim RWMP are anticipated to continue (although they cannot be assured).

As mentioned previously, there are no high-value agricultural lands within the study area. However, ongoing agricultural uses, primarily ranching, would continue under this alternative. Existing Ranch Uses, such as filming; recreational use; and construction and maintenance of roads, utilities, ancillary ranch structures, and back-country cabins, would continue and would have a low potential to affect ongoing agricultural activities.

Under the Kern County General Plan Buildout Alternative, Existing Ranch Uses would also continue to include ongoing mining operations (not a Covered Activity). Although the Kern County General Plan allows for 5,141 acres of mineral and petroleum uses, because there are currently no specific proposals for mineral extraction activities on the study area, mining of this additional acreage is considered speculative and existing acreages (2,636 acres) for these uses are assumed under this alternative. Because there is a long-term supply remaining in the existing permitted mining operations, restricting mineral extraction operations to areas within the existing leases would not result in the substantial loss of high-value mineral resources.

Therefore, Existing Ranch Uses would not result in the substantial loss of high-value agricultural or mineral resources. The potential effects on land resources would be minor, similar to effects under the No Action Alternative.

4.7.6.2 Socioeconomic Effects and Environmental Justice

Commercial and Residential Development Activities

Under the Kern County General Plan Buildout Alternative, Commercial and Residential Development Activities in the study area would result in a total of 7,238 dwelling units and 2,144,810 square feet of commercial space. The population of the study area would be increased by 22,800 new residents. This increase in population and residential and commercial uses would have a beneficial effect on housing, tax revenue, and employment opportunities in the study area compared to the No Action Alternative.

Based on the method set forth in Section 4.7.1.2, Methods, the Kern County General Plan Buildout Alternative would result in an addition to the Kern County General Fund of approximately $3,358,882 in property tax revenue and $135,618 in sales tax revenue. Some of this revenue would be offset by the expenditures for Kern County services and facilities incurred as a result of the Commercial and

Residential Development Activities. Although development under this alternative would not occur as part of a planned development (at least 250 units) that would necessarily require a fiscal impacts analysis, it is not anticipated that expenditures from the Kern County General Fund would exceed the tax revenue generated by this alternative.

As with the other proposed action alternatives, the Kern County General Plan Buildout Alternative would result in both construction and operations-related job creation. This would include approximately 1,030 construction jobs (333 associated with residential construction and 697 with commercial construction), and 2,573 operations jobs.

Given the tax revenue that would contribute to the Kern County General Fund and the short-term and long-term jobs that would result from the Kern County General Plan Buildout Alternative, this alternative would have a net beneficial socioeconomic effect.

As discussed above, the population in the study area, in Census-Designated Places near the study area, and in Kern County as a whole does not meet environmental justice criteria for identifying either a minority population or a low-income population. Therefore, there would be no direct or indirect adverse socioeconomic effects, including on environmental justice populations.

Existing Ranch Uses

Existing Ranch Uses would continue under the Kern County General Plan Buildout Alternative similar to Existing Ranch Uses under the No Action Alternative. Some Existing Ranch Uses, such as grazing and Lebec/Existing Headquarters Uses generate a limited amount of tax revenue. Existing Ranch Uses would also continue to generate some employment opportunities. Tax revenue and job creation from Existing Ranch Uses are generally low and do not result in a substantial socioeconomic effect. As discussed above, the population in the study area does not meet environmental justice criteria for identifying either a minority or low-income population. Therefore, there would be no direct or indirect adverse socioeconomic effects, including on environmental justice populations.

4.7.6.3 Hazardous Materials and Other Hazards

Commercial and Residential Development Activities

Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would result in similar effects from exposure to hazardous materials and other hazards as the Proposed TU MSHCP Alternative. Similarly, ESA-related conservation measures, such as requiring a fuel management plan or IPMP, would likely be implemented on a project-by-project basis that would mitigate the risks from exposing people to hazardous materials and other hazards. However, the potential risk of wildfires would be greater because there would be a greater area of Commercial and Residential Development that would also be more dispersed throughout the Covered Lands. Most of this development would occur parcel-by-parcel instead of as part of a planned development. Logistics for adequate fire stations to cover the developed area would be difficult. The combination of higher fire potential with logistically challenging fire protection operations would result in a moderate effect associated with increased fire hazard compared with the Proposed TU MSHCP Alternative.

Existing Ranch Uses

The Kern County General Plan Buildout Alternative would result in the same effects as the No Action Alternative from Existing Ranch Uses.

4.7.6.4 Public Services and Utilities

Commercial and Residential Development Activities

Commercial and Residential Development Activities associated with the Kern County General Plan Buildout Alternative would provide for a population increase of 22,800 new residents. This increase in population would correspondingly increase the demand for fire protection, police services, schools, libraries, water supply, waste disposal, sewer treatment, and the provision of other public services and utilities that could exceed existing capacity.

Population increases associated with the Kern County General Plan Buildout Alternative would be expected to generate the following additional calls annually. This information is based on per capita data for the Kern County Fire Department.

- 1,580 total emergency calls (0.07 call per person)
- 132 fire calls (0.01 fire per person), including 37 structural fires, 42 wildfires, and 52 other fires, such as car fires. It should be noted that this is the average for the entire county. Most of the county lands are not located in areas with severe fire risk, as is the case within the Covered Lands; therefore, wildfire calls within the Covered Lands is expected to be higher.
- 844 emergency medical or rescue calls (0.04 per person)

Commercial and Residential Development associated with the Kern County General Plan Buildout Alternative would require 23 additional police officers compared to the No Action Alternative. This estimate is based on existing service ratios of 1 officer per 1,000 individuals. However, there is a potential that a 1:1,000 ratio should be higher for the dispersed development compared to other proposed action alternatives.

With respect to education services, the Kern County General Plan Buildout Alternative is anticipated to result in the need to accommodate approximately 4,920 school-age children compared to the No Action Alternative. This estimate is based on 2010 U.S. Census data for population by age in Kern County (U.S. Census Bureau 2010) and the projected increase in population. The Kern County General Plan Buildout Alternative would require a substantial expansion of current schools or new schools to meet this demand. Similarly, it is anticipated additional library services would be required to meet increased demand.

Commercial and Residential Development Activities associated with the Kern County General Plan Buildout Alternative would also increase the demand for water supply, wastewater treatment, and waste disposal. It is presumed that TCWD would obtain, treat, and distribute water to the newly developed areas under this alternative. Potable water demand under this alternative is expected to be 5,162 acre-feet per year based on the following duty factors and assumptions: 0.66 acre-feet per year per dwelling unit for the 7,238 dwelling units and 160 gallons per day per thousand square feet for the 2,144,810 square feet of commercial/office space, which converts to 384 acre-feet per year. Duty factors used are based on those from TCWD water supply assessments, and may be different based on actual land use and conservation practices.

For new developments with more than 500 dwelling units (or equivalent water demand), California law requires a comprehensive assessment and assured adequate water supply and storage as part of the environmental review and subdivision process. For example, Kern County's approval of the TMV Project requires ensuring that adequate water supply and storage could be met (Appendix J, MMs 4.16-3 through 4.16-5) (Kern County 2009b). This process is not triggered by parcelization and development of large-lot subdivisions that occur on a sequential or project-by-project basis over time. Because much of the Commercial and Residential Development under this alternative would occur outside planned community areas, this comprehensive demonstration of adequate water

supplies would not be required for this development. For the parcel-by-parcel development, landowners would need to drill individual wells or be served by TCWD; however, it is still expected that similar requirements would be imposed on applicants by the local jurisdiction.

To serve the demand projected under the Kern County General Plan Buildout Alternative, with its State Water Project allotment, TCWD would be required to install many miles of new water supply pipelines and pumping stations across the study area. As indicated in Section 4.2.6.1, Surface Water Flow and Groundwater Recharge, it is possible that individual landowners could attempt to exercise riparian, appropriative, or groundwater rights to meet water demand, which could adversely affect surface flows and groundwater supplies. In addition, individual parcels would likely require septic systems (septic tanks and/or leach fields).

As noted in Section 4.7.3.5, Mitigation Measures, all Commercial and Residential Development Activities must comply with applicable Federal, state, and local regulations, and it is anticipated that individual permit applications would still be required to demonstrate adequate the provision of adequate water supply and that applicants would be required to implement mitigation and BMPs to ensure the adequate provision of other services and utilities. For example, ground-disturbing activities would require a grading or building permit from the local jurisdiction. Prior to issuing the permit, it is anticipated the local jurisdiction would require implementation of mitigation and BMPs. For example, Kern County's approval of the TMV Project requires providing for additional public services, through the creation, purchase of equipment, and/or payment of fees for fire stations, police offices, schools, and libraries a to ensure adequate provision of public services (Appendix J, MMs 4.13-2 through 4.13-13) (Kern County 2009b). With respect to utilities, Kern County's approval of the TMV Project requires the implementation of water conservation and waste reduction measures and requirements to ensure adequate provision of water, sewage treatment, and waste disposal exist (Appendix J, MMs 4.16-1 through 4.16-7) (Kern County 2009b).

Even with implementation of mitigation, there would be increased demand compared with the No Action Alternative. However, because Commercial and Residential Development Activities would be required to ensure that appropriate levels of public service and utilities are provided via the local approval process, the effects on public services and utilities would be minor.

Existing Ranch Uses

The Kern County General Plan Buildout Alternative would result in the same effects as the No Action Alternative from Existing Ranch Uses.

4.7.6.5 Mitigation Measures

As described above, the limitations of the Ranchwide Agreement would not apply under the Kern County General Plan Buildout Alternative. However, even in the absence of the Ranchwide Agreement, BMPs (as currently set forth in the Interim RWMP) are anticipated to continue (although they cannot be assured). Restrictions imposed by the TMV Project Approvals and by easement language in the Existing Conservation Easement Areas would apply under the Kern County General Plan Buildout Alternative. Comparable measures to those provided in Tables 2-3 and 2-4 would likely be implemented to avoid, mitigate, and minimize effects on special-status species (i.e., state or federally listed species, species protected as 'special-status' under CEQA); would be anticipated as part of either the CESA or CEQA processes; or would be required through a project-specific consultation with the Service completed in accordance with either ESA Section 10 or Section 7. In addition, the proposed mitigation measures listed in Section 4.7.3.5, Mitigation Measures, would also be implemented under the Kern County General Plan Buildout Alternative.

4.7.7 Cumulative Effects

The approach for analyzing cumulative effects on community resources is described in Section 4.0.4, Methods for Assessing Cumulative Effects, which includes a list of reasonably foreseeable projects considered in this assessment. Specific to community resources considerations, the potential cumulative effects are assessed in the context of the criteria discussed in Section 4.7.1.2, Methods, which includes each alternative's potential to result in the loss of substantial amounts of land resources, defined as high-value agricultural or mineral resources; cause adverse socioeconomic effects, including causing disproportionate effects on environmental justice populations; result in exposure to hazardous materials or other hazards that would violate Federal, state, or local laws, regulations, or policies; or result in an inability to maintain appropriate public service levels and facilities or adequate utilities. As discussed above, the cumulative effects analysis area is concurrent with the Covered Lands, with the exception of demographic data, which are presented in the context of Kern County with respect to cumulative effects on socioeconomics or environmental justice.

Cumulative effects related to community resources are indirect or secondary effects related to the future development that would be facilitated by issuance of an incidental take permit (ITP) by the Service. Whether or not such effects would be substantial cumulatively is primarily dependent on the mitigation measures put in place by other Federal, local, and state authorities pursuant to their project approval process.

4.7.7.1 Land Resources

As noted in Section 3.7.2.1, Agricultural Resources, although no designated high-value agricultural lands exist in the immediate vicinity of the Covered Lands, some agricultural operations occur throughout the Covered Lands and surrounding area. Past development in the cumulative effects analysis area has resulted in the conversion of some agricultural land to nonagricultural uses or has indirectly affected agricultural operations.

The No Action Alternative would not include any Commercial and Residential Development Activities and would not affect agricultural resources associated with these activities. Therefore, the No Action Alternative would not contribute to a cumulative effect on agricultural resources. Existing Ranch Uses or Plan-Wide Activities associated with any of the alternatives would not result in the substantial loss of high-value agricultural land. Therefore, these activities would not combine with any of the reasonably foreseeable projects as discussed in Section 4.0.4, Methods for Assessing Cumulative Effects, to result in cumulative effects on agricultural resources.

Commercial and Residential Development Activities would occur under the proposed action alternatives. As discussed above, Commercial and Residential Development Activities would convert land in the Disturbance Areas for the alternatives from its existing land uses to residential and commercial land uses, which has the potential to result in cumulatively substantial effects on land resources. However, while important agricultural resources may be present in the cumulative effects analysis area, none of the alternatives would adversely affect high-value farmland. Thus, none of the alternatives would result in a cumulative effect on agricultural resources.

As noted in Section 3.7.2.2, Mineral Resources, some areas are zoned for mineral resource extraction within the Covered Lands and two mines are currently in operation. The No Action Alternative would not include any Commercial and Residential Development Activities and would not affect mineral resources associated with these activities. Therefore, the No Action Alternative would not contribute to a cumulative effect on mineral resources. The remaining proposed action alternatives would result in Commercial and Residential Development that could develop lands otherwise designated for mineral resource extraction; however, these lands are zoned for mineral resource extraction and Commercial and Residential Development would be an inconsistent land use per

Kern County zoning. Therefore, it is not expected that Commercial and Residential Development Activities would affect mineral resources under any of the alternatives. Furthermore, the two existing mines would continue to operate under all the alternatives.

Existing Ranch Uses and Plan-Wide Activities would have the potential to conflict with mineral resources to the extent that all the alternatives, with the exception of the Kern County General Plan Buildout Alternative would preclude future extraction of mineral resources outside of existing mining leases per the provisions of the Ranchwide Agreement. However, because adequate long-term supply would remain in the existing permitted mining operations, this effect would be considered minor. Therefore, none of these alternatives would contribute to a cumulative effect on mineral resources.

4.7.7.2 Socioeconomic Effects and Environmental Justice

The Existing Ranch Uses and Plan-Wide Activities associated with the various alternatives would not result in meaningful tax revenue or job creation, and because the uses are expected to continue consistent with current operations, an adverse effect is not expected from these activities. All proposed action alternatives would generate tax revenue and create short- and long-term jobs. Other projects in the region would similarly be expected to result in beneficial economic effects. All proposed action alternatives, therefore, would have a beneficial cumulative socioeconomic effect when considered with the other projects listed in Section 4.0.4, Methods for Assessing Cumulative Effects.

As mentioned previously, the population in the study area, in Census-Designated Places near the study area, and in Kern County as a whole does not meet environmental justice criteria for identifying either a minority population or a low-income population that may be affected by the proposed action. Therefore, no direct or indirect effects would contribute to a cumulative effect on environmental justice populations.

4.7.7.3 Hazardous Materials and Other Hazards

As described in Section 3.7, Community Resources, existing and past land uses in the study area may have resulted in exposure to hazardous materials from agricultural chemicals, underground pipelines, lead from past hunting activities, lead contamination from soil adjacent to major highways, and other such uses. Hazardous materials such as PCBs may also be present in electrical transformers. Future growth and associated land uses could also contribute to the development of additional land uses that could also increase the risk of exposure to hazardous materials or other hazards during either construction activities or operations.

The No Action Alternative would not include any Commercial and Residential Development Activities and would not expose people to increased risk of exposure to hazardous materials or other hazards. Therefore, the No Action Alternative would not contribute to a cumulative effect. Existing Ranch Uses or Plan-Wide Activities associated with any of the alternatives would not result in substantial increases in exposure that could exceed applicable standards. Therefore, these activities would not combine with any of the reasonably foreseeable projects as discussed in Section 4.0.4, Methods for Assessing Cumulative Effects, to result in cumulative effects associated with hazardous materials or other hazards.

Commercial and Residential Development Activities under the proposed action alternatives would have the potential to result in increased exposure to hazardous materials or other hazards. However, these risks vary depending on project location and are site-specific. Like all development under any of the proposed action alternatives, each project in the region must individually meet the standards and requirements specific to hazardous materials (such as safe handling, disposal, and cleanup of hazardous materials) and other hazards (such as implementing BMPs to minimize risk of

wildfire). It is anticipated that other future development would also meet these requirements. Therefore, no additive effect would occur and no cumulatively substantial effect related to risks from exposure to hazardous materials or other hazards would occur.

4.7.7.4 Public Services and Utilities

The No Action Alternative would not include any Commercial and Residential Development Activities and would not increase the demand for public services or utilities. Therefore, the No Action Alternative would not contribute to a cumulative effect. Existing Ranch Uses or Plan-Wide Activities associated with any of the alternatives would not result in substantial increases in the demand for public services and utilities. Therefore, these activities would also not combine with any of the reasonably foreseeable projects as discussed in Section 4.0.4, Methods for Assessing Cumulative Effects, to result in cumulative effects.

Commercial and Residential Development Activities under the proposed action alternatives would have the potential to result in increased demand for public services and utilities that could result in a cumulative effect. Like all development under any of the proposed action alternatives, each project in the region must individually meet the standards and requirements specific to the provision of public services and utilities. It is anticipated that other future development would also meet these requirements. Therefore, these activities would not combine with any of the reasonably foreseeable projects as discussed in Section 4.0.4, Methods for Assessing Cumulative Effects, to result in cumulative effects associated with public services or utilities.

4.7.8 Comparison of Alternatives

The exact contours, locations, and building designs of the commercial and residential areas are not known. Therefore, the comparison of alternatives is based on population, Disturbance Area, and proposed development (expressed in dwelling units and square footage) as presented in Table 4.7-1.

Table 4.7-1. Comparison of Development Effects for each Alternative

	No Action Alternative	Proposed TU MSHCP/Condor Only HCP Alternatives	CCH Avoidance MSHCP Alternative	Kern County General Plan Buildout Alternative
Population	0	11,441	9,957	22,800
Residential Development (dwelling units)	0	3,632	3,161	7,238
Commercial Development (square footage)	0	1,804,390	1,804,390	2,144,810
Ground Disturbance (acres)	0	5,553	4,496	12,142

Land Resources

Because there is no high-value agricultural land within the study area, none of the alternatives would result in the loss of high-value agricultural land. However, grazing under the Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives would be limited in the TMV Planning Area compared with the No Action and Kern County General Plan Buildout Alternative.

None of the alternatives would affect mineral resource areas as a result of Commercial and Residential Development Activities because no such areas are designated within the areas to be developed. Mineral extraction operations are subject to existing leases and are not a Covered Activity and these uses would continue to occur under the No Action Alternative and Plan-Wide Activities under the Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives although mineral extraction outside of existing permitted operations would be restricted per the provisions of the Interim RWMP. It is assumed these provisions would not be implemented under the Kern County General Plan Buildout Alternative. Regardless, prohibitions under the other proposed action alternatives are not considered to result in a substantial loss of high-value mineral resources. Thus, the No Action Alternative would have the least effect to land resources, but effects under all alternatives are minor, and none of the alternatives would result in a contribution to a cumulative effect on land resources.

Socioeconomics and Environmental Justice

Because the study area does not meet criteria for environmental justice populations, none of the alternatives would result in adverse environmental justice effects. All alternatives would result in beneficial socioeconomic effects as a result of construction with the effect being proportional to the extent of the proposed development. The No Action Alternative would have the least socioeconomic benefit, followed by the CCH Avoidance MSHCP Alternative, the Proposed TU MSHCP and Condor Only HCP Alternatives, then the Kern County General Plan Buildout Alternative. None of the alternatives would result in result in a contribution to an adverse cumulative socioeconomic effect.

Hazardous Materials and Other Hazards

Existing and Plan-Wide Activities under all the alternatives would result in minor effects associated with the risk of exposure to hazardous materials or other hazards for all the alternatives. The No Action Alternative would not result in any adverse effects associated with Commercial and Residential Development. The potential effects associated with Commercial and Residential Development Activities under the proposed action alternatives would increase with the extent of the proposed development; however, none of the alternatives would be expected to result in the exposure of people or structures to hazardous materials or other hazards that would exceed applicable Federal, state, or local standards. Therefore, the No Action Alternative would have the least effect associated with the risk of exposure to hazards or hazardous materials, and the proposed action alternatives would all have minor effects after mitigation.

Public Services and Utilities

Existing and Plan-Wide Activities under all the alternatives would result in minor effects on public services and utilities for all the alternatives. The No Action Alternative would not result in any adverse effects on public services or utilities associated with Commercial and Residential Development. By comparison, for the proposed action alternatives, the potential effects for Commercial and Residential Development Activities to exceed capacity for the provision of public services and utilities would increase with the extent of the proposed development; however, after mitigation and compliance with the local permitting process, none of the alternatives would be expected to result in demand for public services or utilities that would exceed capacity.

4.8 Transportation

4.8.1 Overview

This section describes the regulatory setting applicable to transportation, the methods of determining transportation effects, and the potential effects of the proposed action alternatives on transportation in the study area. As described in Section 3.8, Transportation, the study area includes the Covered Lands and the surrounding roadways used to reach the Covered Lands; geographically, the study area includes all of Kern County and the northwest portion of Los Angeles County. The cumulative effects analysis area consists of the areas analyzed in the Kern and Los Angeles Counties' regional transportation models consistent with the growth projections under those counties' general plans. Additional information about the cumulative effects analysis area and the analysis of cumulative effects on transportation is presented in Section 4.8.7, Cumulative Effects.

4.8.1.1 Regulatory Setting

Activities proposed under all the alternatives would be required to conform to Federal, state, and local laws and regulations that guide traffic and the development and use of transportation facilities. Transportation facilities in California are guided by policies and standards set by local jurisdictions and by the California Department of Transportation (Caltrans). Caltrans has jurisdiction over the roadway segments and freeway ramps in the study area. Additionally, Kern County regulates local traffic per the policies and implementation measures put forth in the Kern County General Plan Land Use, Open Space, and Conservation Element (Kern County 2004) and General Plan Circulation Element (Kern County 2004b). Policies and implementation measures applicable to study area are discussed in greater detail below.

General Provisions: Smart Growth (Chapter 1.10.8 of Kern County General Plan)

Policy 49. Discretionary development projects should be encouraged to incorporate innovative or "smart growth" land use planning techniques as design features, as follows:

> b. Mixed-use developments that promote reduced vehicle trips by having residential, commercial, and public uses proximate to each other;
>
> d. Master-planned communities that feature interconnected roads, transit stops, sidewalks, landscaping, and trails to encourage efficient vehicle and pedestrian movement; and
>
> f. Adequate infrastructure (i.e., roads, sewer, water, parks, etc.) is provided as a condition of development approval by the project proponent.

Highway Plan (Section 2.3.3 of Kern County General Plan)

Policy 1. Development of roads within the county shall be in accordance with the Circulation Diagram map. The charted roads are usually on section and mid-section lines. This is because the road centerline can be determined by an existing survey.

Policy 2. This plan requires, as a minimum, construction of local road widths in areas where the traffic model estimates little growth through and beyond year 2010. Where Planning Department's growth estimates indicate more than a local road is required, expanded facilities shall be provided. The timing and scope of required facilities should be set up and implemented through the Kern County Land Division Ordinance. However, the county shall routinely protect all surveyed section

lines in the Valley and Desert Regions for arterial right-of-way. The county shall routinely protect all midsection lines for collector highways in the same regions. The only possible exceptions shall be where the county adopts special studies and where Map Code 4.1 (Accepted County Plan) areas occur. In the Mountain Region where terrain does not allow construction on surveyed section and midsection lines, right-of-way width shall be the size shown in the Circulation Element. No surveyed section and mid-section "grid" will comprehensively apply to the Mountain Region.

Policy 3. This plan's road width standards are listed below. These standards do not include state highway widths that would require additional right-of-way for rail transit, bike lanes, and other modes of transportation. Kern County shall consider these modifications on a case-by-case basis.

- Expressway [Four Travel Lanes] Minimum 110-foot right-of-way
- Arterial [Major Highway] Minimum 110-foot right-of-way;
- County Standard: 110 feet
- Collector [Secondary Highway] Minimum 90-foot right-of-way;
- County Standard: 90 feet
- Commercial-Industrial Street Minimum 60-foot right-of-way;
- County Standard: 60 feet
- Local Street [Select Local Road] Minimum 60-foot right-of-way;
- County Standard: 60 feet

Implementation Measure A: The Planning Department shall carry out the road network policies by using the Kern County Land Division Ordinance and Zoning Ordinance, which implements the Kern County Development Standards, including road standards related to urban and rural planning requirements. These ordinances also regulate access points. Planning Department can help developers and property owners in identifying where planned circulation is to occur.

Implementation Measure B: Continuity and integrity of the arterial and collector system at the mountain/valley region and the mountain/desert region boundary must be reviewed and approved in conjunction with project adoption on an individual basis.

4.8.1.2 Methods

The analysis of effects and the magnitude of direct, indirect, and cumulative effects is considered in terms of whether each alternative would exceed the capacity of local roadways as a result of construction; exceed the capacity of local roadways as a result of operations; exceed the capacity of local public transit; exceed the capacity of nonmotorized transportation facilities, such as bicycle or pedestrian trails; or exceed the capacity of existing or planned air or rail service. The effects would be cumulatively considerable if the alternative met the above conditions when considered in the context of past, present, and reasonably foreseeable future projects. Additional information about the approach for the cumulative effects analysis is discussed in greater detail below in Section 4.8.7, Cumulative Effects. In general, effects on transportation were assumed to be associated with additional vehicles related to Commercial and Residential Development Activities.

Highway Analysis Methods

As indicated in Section 3.8, Transportation, the study area for this analysis is divided into northern and southern regions. The northern region is in Kern County and the southern region is in the northwest part of Los Angeles County. The analysis focuses on state highway segments that would be affected by development of the alternatives, specifically Interstate 5 (I-5) and State Route

(SR)138; other regional highways, including SR 14, SR 58, SR 99 and SR 223, would not be directly affected by any of the alternatives and although they are discussed in more detail in Section 3.8, they are not discussed further in the analysis of effects because they are too distant from the main access to the Covered Lands to be expected to carry more than minimal increases in traffic.

In traffic impact studies, impact criteria are based on two primary measures. The first is capacity, which establishes the vehicle carrying ability of a road segment. The second measure, volume, is either a traffic count (in the case of existing volumes) or a traffic forecast for a future point in time. The volume-to-capacity ratio (V/C) defines a corresponding level of service (LOS).

Traffic LOS is designated A through F, with LOS A representing free-flow conditions and LOS F representing severe traffic congestion. The effects analysis for freeway mainline segments is based on average annual daily traffic (AADT) two-way volumes. It should be noted that the V/C analysis does not account for operations effects such as upstream queuing from a downstream bottleneck. Under such conditions, a freeway segment may be congested (in terms of travel speed) even though the segment itself has adequate capacity for the demand.

For the I-5 freeway, there is a different allowable LOS depending on the segment location. The LOS C, D, and E segments illustrated in Figure 4.8-1 are the LOS designations specified by Caltrans for this section of I-5 (Appendix H, TU MSHCP Traffic Study). For this traffic analysis, an AADT equivalent capacity was calculated based on the peak hour capacities used in the Tejon Mountain Village Traffic Study (Austin-Foust Associates 2009). The derived volumes are shown in Table 4.8-1. The hourly capacity is converted to an AADT equivalent at the allowable LOS. A V/C over 1.00 is considered a capacity deficiency for the purpose of the traffic analysis.

For SR 138, under existing conditions, the AADT equivalent capacity reflects the current two-lane capacity. The cumulative condition assumes that SR 138 would be widened from its existing two lanes to four lanes west of and in the proposed Centennial Project area (as a design feature of the Centennial Project; see Section 4.0.4, Methods for Assessing Cumulative Effects, for a description of this project). If the proposed Centennial Project is not built, SR 138 would remain at its existing two lanes unless other funding sources or programs implement the widening.

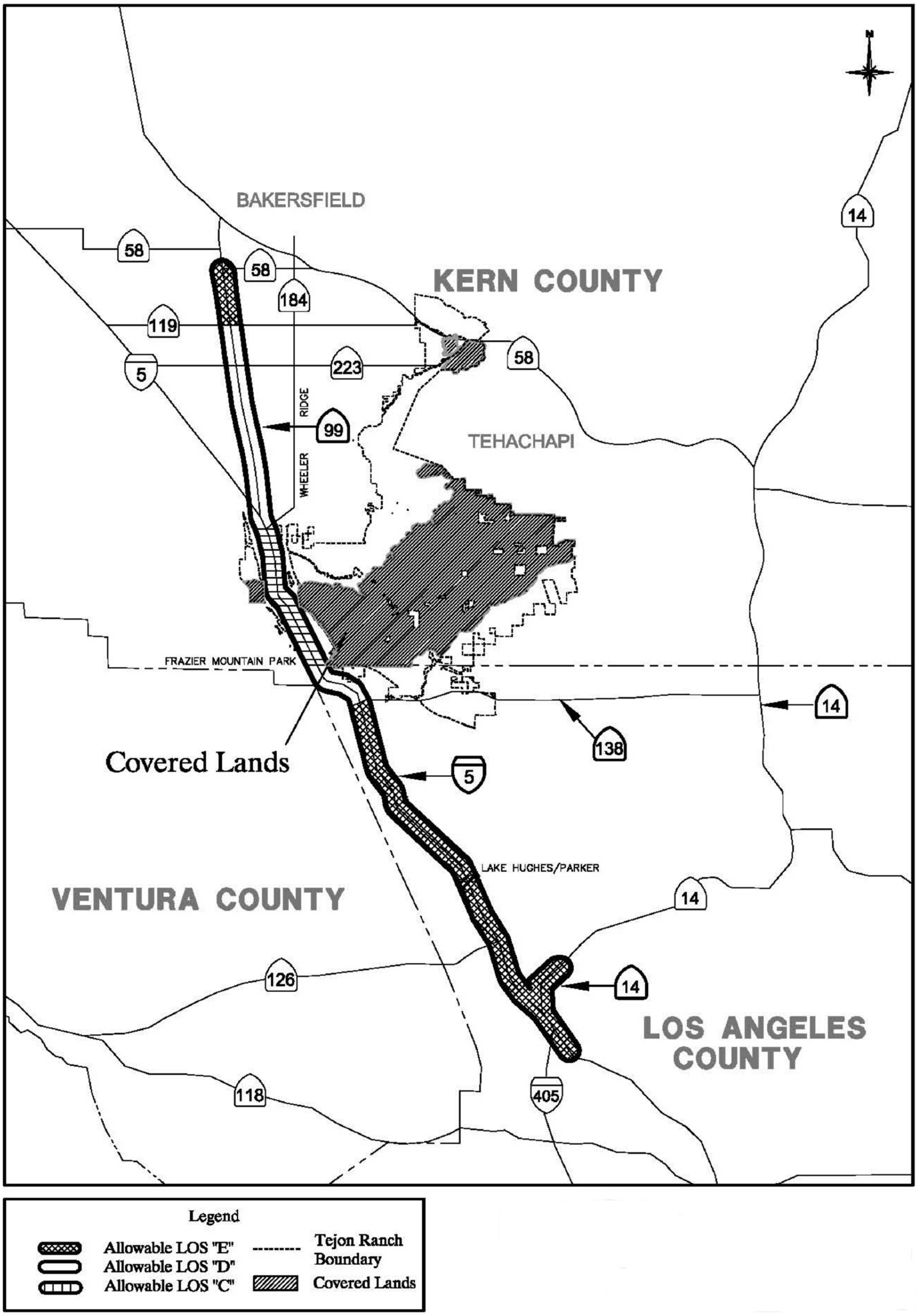
Table 4.8-1. Highway Average Annual Daily Traffic Capacity Calculations

Location	Maximum Allowable LOS[1]	Maximum Allowable Peak Hour Capacity[2]	AADT/Peak Hour Ratio[2]	AADT Capacity Equivalent
EXISTING				
Kern County				
I-5 s/o Fort Tejon IC	C	5,332	27.3	145,564
Los Angeles County				
I-5 s/o Gorman Road IC	D	6,462	28.8	186,606
I-5 s/o SR 138 IC	E	5,952	30.1	179,155
SR–138 e/o "A" ST IC	E	1,700	21.2	36,040
2030 FORECAST				
Kern County				
I-5 s/o Fort Tejon IC	C	6,272	26.7	168,090
Los Angeles County				
I-5 s/o Gorman Road IC	D	6,620	30.8	203,896
I-5 s/o SR 138 IC	E	6,268	29.3	183,652
SR–138 e/o "A" ST IC	E	3,962	18.8	74,486

Source: Austin-Foust Associates 2011
Note:
AADT= annual average daily traffic capacity
LOS = level of service
s/o = south of; e/o = east of
IC = interchange
[1] One direction hourly capacity as reported in the Tejon Mountain Village Traffic Study, October 2009 (Austin-Foust Associates 2009).
[2] Two direction AADT capacity. At allowable LOS, a V/C over 1.00 is considered a capacity deficiency in this analysis.

Trip Generation

Trip generation rates were derived using published sources such as the Institute of Transportation Engineers (ITE) Trip Generation Manual (8th Edition). Because the TMV Project is in the largest development of the proposed Commercial and Residential Covered Activities (in the TMV Planning Area) considered in this effects analysis, assumptions from the traffic study related to that project were reviewed and utilized. Retail, hotel, and support uses in the TMV Planning Area were assigned trip generation rates based on the rates in the Tejon Mountain Village Traffic Study (Austin-Foust Associates 2009), which were also derived from the ITE Trip Generation Manual. A summary of trip generation rates used in the traffic analysis is presented in Table 4.8-2.



Austin Foust Associates 2011

FIGURE 4.8-1

Level of Service Classifications for Interstate 5 (I-5)

Table 4.8-2. Trip Generation Rates

Unit Type	Unit of measurement	Trips per Unit
Single-family residential (ITE 210)	Dwelling unit (DU)	9.57
Multifamily residential (ITE 220)	DU	6.65
TMV Commercial Retail	Thousand square feet (TSF)	57.61
Non-TMV retail (ITE 820)	TSF	42.94
Non-TMV office (ITE 710)	TSF	11.01
Hotel	Room	8.17
Amenities	Acre	2.28

Sources: Austin-Foust Associates 2011
ITE = Institute of Transportation Engineers

Single-family dwelling units in the TMV Planning Area were assigned a trip generation rate of 9.57 vehicle trips per dwelling unit, and multifamily dwelling units were assigned a trip generation rate of 6.65 vehicle trips per dwelling unit, as indicated in Table 4.8-2. Trip generation rates in the TMV Specific Plan Area assumed full-time year-round occupancy of both single and multifamily residential and 100% commercial retail use for commercial square footage. It was assumed that all residential units outside the TMV Planning Area would be associated with single-family dwelling units with a trip generation rate of 9.57 vehicle trips per dwelling unit (Austin-Foust Associates 2011).

All commercial space outside the TMV Planning Area was assumed to be 80% office space and 20% retail space with trip generation rates of 11.01 trips and 42.94 trips, respectively, per 1,000 square feet (Austin-Foust Associates 2011). Assumptions of the square footage of retail and office space outside the TMV Planning Area for each of the alternatives are presented below.

For the Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives, the 1,644,390 square feet of commercial development outside the TMV Planning Area (i.e., in West of Freeway and Lebec/Existing Headquarters Area) would include:

- 60,984 square feet of retail and 243,936 square feet of office west of I-5,
- 267,894 square feet of retail and 1,071,576 square feet of Office in the Lebec/Existing Headquarters Area.

Under the Kern County General Plan Buildout Alternative, the 1,984,810 square feet of commercial development outside the TMV Planning Area (i.e., in West of Freeway, Lebec/Existing Headquarters Area and Other Lands) would include:

- 70,785 square feet of retail and 283,140 square feet of office west of I-5,
- 267,894 square feet of retail and 1,071,576 square feet of office in the Lebec/Existing Headquarters Area, and
- 58,283 square feet of retail and 233,132 square feet of office for other Kern County General Plan designated areas.

Trip Distribution

Table 4.8-3 summarizes the trip distribution percentages assigned to the study area freeways. For all alternatives, the I-5 north freeway has 23% of generated trips. The I-5 south freeway has 51% of generated trips, which consist of trips south of SR 138 (22%) and trips interacting with the

proposed Centennial Project area on SR 138 (29%). Note that for the analyses that do not assume that the Centennial Project is built, 29% of southbound traffic is modeled as continuing on I-5 south, such that I-5 south carries 51% of traffic. The remaining 26% is internal and local trip capture.

The trip distribution percentages and assumptions in this traffic study are based on and consistent with the distribution percentages that were previously reported in the Tejon Mountain Village Traffic Study (Austin-Foust Associates 2009).

Table 4.8-3. Trip Distribution

Location[1]	Percent
I-5 North	23%
I-5 South (south of SR 138)[2]	22%
SR 138[2]	29%
Local/Internal	26%
Total	**100%**

Note:
[1] SR 223 is not analyzed in this study since the amount of dwelling units (53 dwelling units) in the vicinity is below a threshold that would cause an effect.
[2] A total of 51% uses I-5 South of the project and north of SR 138.
Source: Austin-Foust Associates 2011

Traffic Forecasts

The traffic forecast for the I-5 freeway is based on information from two primary sources. The first is the traffic model maintained by the Kern County Council of Governments and referred here as the Kern County Traffic Model (KCTM). The year 2030 cumulative version of the model was used to estimate with and without project volumes on the countywide transportation system and the resulting data formed the basis for the northern regional study area traffic forecasts. The second source of data is from the East Antelope Valley Traffic Analysis Model (EAVTAM). This model includes all of Los Angeles County plus southern Kern County and was used to provide information regarding project trips in the southern regional study area, which is in northwest Los Angeles County.

4.8.2 No Action Alternative

4.8.2.1 Existing Roadways during Construction

Commercial and Residential Development Activities

No Commercial or Residential Development Activities would occur under the No Action Alternative; therefore, there would be no direct or indirect effects on existing roadways from Commercial and Residential Development Activities.

Existing Ranch Uses

Under the No Action Alternative, Existing Ranch Uses would continue similar to existing conditions. Construction associated with Existing Ranch Uses would be limited and would be associated with ranch roads, trails or utilities, ancillary ranch structures, and back-country cabins. The extent and duration of construction is expected to be minimal and would not generate substantial disruption to traffic. Some of these activities may occasionally involve highway use during construction. However,

any highway use associated with these activities would be very limited with only a minor effect on roadway capacity. Substantial construction activities that would generate trips on existing roadways outside the Covered Lands are not associated with Existing Ranch Uses.

4.8.2.2 Highway Network

Commercial and Residential Development Activities

Although no Commercial and Residential Development Activities would occur under the No Action Alternative, traffic along study area highways does currently exist. A summary of current AADT volumes and the V/C ratio for highways in the study area are shown in Table 4.8-4 (for more detailed traffic counts for multiple locations along I-5, SR 138, SR 223, SR 58, and SR 14 nearest to the Covered Lands, see Section 3.8.1, Major Roadways). Of these, SR 223, SR 58 and SR14 are distant from the main access to the Covered Lands and would carry negligible traffic to or from the Covered Lands. These roads are not discussed further. Because Commercial and Residential Development Activities would not occur under the No Action Alternative, the AADT summarized below are expected to remain unchanged under the No Action Alternative, and there would be no direct or indirect effects on existing roadways associated with Commercial and Residential Development Activities.

Table 4.8-4. Existing Freeway Volumes, Capacities and Volume to Capacity Summary

Location	AADT	Maximum Allowable LOS	AADT Equivalent Capacity	V/C[1]
I-5 north	69,000	C	145,564	0.47
I-5 south (north of SR 138)	71,000	D	186,606	0.38
I-5 south (south of SR 138)	68,000	E	179,155	0.38
SR 138	3,600	E	36,040	0.10

Notes:
AADT= annual average daily traffic , V/C = volume to capacity ratio
[1] A V/C greater than 1.00 represents a deficiency
Source: Caltrans Traffic and Vehicle Data Systems Unit 2010

Existing Ranch Uses

As described above, Existing Ranch Uses would continue similar to existing conditions. Some of these activities would involve limited use of the highway network, such as filming, public recreational use, use of back-country cabins and ancillary ranch facilities, and use of Lebec/Existing Headquarters. However, any highway uses associated with these activities would be very limited, with almost no effect on roadway capacity.

The Ranchwide Agreement, which applies to the permanently preserved open space areas on the Covered Lands (106,317 acres under this alternative), requires the development of environmental protection and sustainability measures to address traffic. It is presumed development of best management practices (BMPs) to protect and preserve existing conservation values would be implemented consistent with the Ranchwide Agreement. These BMPs are currently set forth in the Interim Ranchwide Management Plan (RWMP). For example, per the conditions of the Interim RWMP, ranch staff members help to control traffic around filming activities to ensure safety (Tejon Ranch Company 2009). In addition, employee housing is located close to work to minimize traffic commuter congestion. All subsequent RWMPs must similarly reflect BMPs that protect the conservation values of the land, as carried through in the conservation easements required by the

Ranchwide Agreement. Therefore, potential effects on the highway network from Existing Ranch Uses under the No Action Alternative would be minor.

4.8.2.3 Public Transit

Commercial and Residential Development Activities

No Commercial and Residential Development Activities would occur under the No Action Alternative. There would be no increase in the population and no direct or indirect effects on public transit.

Existing Ranch Uses

Existing Ranch Uses would continue to occur under the No Action Alternative, similar to existing conditions. Existing Ranch Uses typically do not consist of activities that would require substantial use of public transit. For example, ranching is the most prevalent Existing Ranch Use. Other activities would include filming, limited public recreational use, and construction and maintenance activities, which would not typically substantially rely on public transit. Therefore, the No Action Alternative would not exceed the capacity for other modes of transportation and would result in very minor effects on public transit, similar to existing conditions.

4.8.2.4 Nonmotorized Transportation

Commercial and Residential Development Activities

No Commercial and Residential Development Activities would occur under the No Action Alternative. There would be no direct or indirect effects on nonmotorized transportation.

Existing Ranch Uses

Under the No Action Alternative, Existing Ranch Uses would continue in the study area similar to existing conditions. As indicated in Section 3.8.3, Nonmotorized Transportation, there are no publicly dedicated nonmotorized routes in the study area. Existing Ranch Uses are not expected to result in substantial increases in demand for nonmotorized transportation facilities because they typically do not consist of activities that would require substantial use of these facilities. For example, ranching is the most prevalent Existing Ranch Use in the Covered Lands. Other activities would include filming, limited public recreation use, and construction and maintenance activities, which would not typically rely on or increase the demand for nonmotorized transportation. Therefore, Existing Ranch Uses associated with the No Action Alternative would have no effect on nonmotorized transportation.

4.8.2.5 Other Transportation Modes

Commercial and Residential Development Activities

No Commercial and Residential Development Activities would occur under the No Action Alternative. There would be no direct or indirect effects on other transportation modes, such as rail service or air travel.

Existing Ranch Uses

Under the No Action Alternative, Existing Ranch Uses would continue in the study area similar to existing conditions. Existing Ranch Uses typically do not consist of activities that would require

substantial use of other modes of transportation. For example, ranching is the most prevalent Existing Ranch Use on the Covered Lands. Other activities would include filming, limited public recreational use, and construction and maintenance activities, which would not typically rely on other modes of transportation. Therefore, the potential effects of the No Action Alternative on other transportation modes would be minor, similar to existing conditions.

4.8.3 Proposed TU MSHCP Alternative

4.8.3.1 Existing Roadways during Construction

Commercial and Residential Development Activities

The Proposed TU MSHCP Alternative would include the construction of 3,632 dwelling units and 1,804,390 square feet of commercial buildings. Construction would result in temporary increases in traffic from the transport of construction equipment and workers to the construction site that could disrupt existing traffic patterns and increase traffic congestion. All roadways are currently operating at an acceptable LOS and have substantial unused capacity (Table 4.8-4). Based on the estimates of construction traffic from the TMV Project (which represents part of the commercial and residential development proposed under this alternative) of 430 trips per day (Austin-Foust Associates 2009), the overall construction traffic associated with the Proposed TU MSHCP Alternative is likely to generate under 1,000 trips a day, at most. Given the substantial amount of additional capacity for each of the roadways and the relatively small amount of construction-related traffic that would be associated with Commercial and Residential Development Activities, the Proposed TU MSHCP Alternative would not cause a substantial increase in existing traffic loads.

As indicated in Section 4.8.3.6, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal, state agencies, and local jurisdictions. It is anticipated that the local approval process would include provisions that would reduce adverse effects on transportation in the study area, through requiring a construction traffic management plan. For example, Kern County's approval of the TMV Project requires preparation of such a plan, including such provisions as detailed information on construction activities to residents, businesses, and public transit and emergency service providers; an emergency vehicle access and circulation plan; adequate parking for construction workers and equipment; and traffic controls on adjacent roadways (Appendix J, MM 4.15-4) (Kern County 2009).

Even with implementation of mitigation, the Proposed TU MSHCP Alternative would result in some level of disruption to traffic during construction compared with the No Action Alternative. However, because substantial existing capacity remains and the projected construction-related traffic would be relatively minor, there would only be minor effects on roadways from construction of the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Plan-Wide Activities under the Proposed TU MSHCP Alternative would be similar to the Existing Ranch Uses under the No Action Alternative, with the exception that permanent ground disturbance would be limited to 200 acres. Construction-related effects on the roadway network would be similar to the limited effects of Existing Ranch Uses described above under the No Action Alternative. Although the Proposed TU MSHCP Alternative would involve some additional vehicle trips with respect to roadway, trail, or utility construction or relocation, the potential would be low and would not substantially reduce roadway capacity. Therefore, although there may be some minor traffic associated with construction related to Plan-Wide Activities, sufficient capacity would remain and the effect on existing roadways would be minor, similar to the No Action Alternative.

4.8.3.2 Highway Network

Commercial and Residential Development Activities

The Proposed TU MSHCP Alternative would result in the creation of 3,632 dwelling units and 1,804,390 square feet of commercial buildings. This development would increase the population by 11,441 and would result in additional traffic associated with these land uses. Table 4.8-5 shows the trips that would be generated by development of these land uses for highways in the study area. A total of 79,514 daily trips would be generated by the Proposed TU MSHCP Alternative.

Table 4.8-6 summarizes the AADT volumes that would result from implementation of the Proposed TU MSHCP Alternative (Table 4.8-5) in combination with the existing highway volumes (Table 4.8-4). Table 4.8-6 summarizes the AADT equivalent capacity for each highway segment (i.e., the maximum volume at the allowable LOS), and the resulting V/C ratio for this alternative. As shown in Table 4.8-6, the modeled AADT associated with the Proposed TU MSHCP Alternative would be below the maximum capacity for all segments. Therefore, all segments would continue to operate at an acceptable LOS with implementation of the Proposed TU MSHCP Alternative.

As indicated in Section 4.8.3.6, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal, state agencies, and local jurisdictions. It is anticipated that the local approval process would include provisions that would reduce adverse effects on transportation in the study area by requiring fair share costs of road improvements to be funded and phased with development and implementation of transportation demand programs to reduce single occupant vehicular trips. For example, the Kern County's approval of the TMV Project requires preparation of traffic studies to determine if project-related traffic volumes would affect segments of I-5, payment of fair share funding of traffic improvements, and requires implementation of a traffic demand management program for necessary areas. Specifically, preparation of traffic management plans are required for the I-5/Lebec, Fort Tejon, and Frazier Mountain Park Road Interchanges (Appendix J, MM 4.15-1 and MM 4.15-3) (Kern County 2009).

Even with implementation of the mitigation measures, the Proposed TU MSHCP Alternative would result in some level of disruption to traffic compared with the No Action Alternative. However, because additional capacity would remain, the Proposed TU MSHCP Alternative would have minor effects on the highway network.

Table 4.8-5. Operational Trips on Existing Highway Network for the Proposed TU MSHCP and Condor Only HCP Alternatives

Location	Average Annual Daily Traffic
I-5 north	29,420
I-5 south (south of SR 138)	29,420
Local/Internal	20,674
Total	**79,514**

Source: Austin-Foust Associates 2011

Table 4.8-6. Freeway Volumes, Capacities and Volume to Capacity Summary for the Proposed TU MSHCP and Condor Only HCP Alternatives

Location	AADT	Maximum Allowable LOS	AADT Equivalent Capacity	V/C[1]
I-5 north	98,420	C	145,564	0.68
I-5 south (north of SR 138)	100,420	D	186,606	0.54
I-5 south (south of SR 138)	97,420	E	179,155	0.54
SR 138	3,600	E	36,040	0.10

Notes:
AADT = average annual daily traffic; LOS = level of service; V/C = volume-to-capacity ratio
[1] A V/C greater than 1.00 represents a deficiency. (The AADT Equivalent Capacity is the maximum volume at the allowable LOS).
Source: Austin-Foust Associates 2011

Plan-Wide Activities

Plan-Wide Activities under the Proposed TU MSHCP Alternative would be similar to the Existing Ranch Uses under the No Action Alternative, with the exception that permanent ground disturbance would be limited to 200 acres. Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities would be subject to the use restrictions and BMPs required by the Ranchwide Agreement (as currently set forth in the Interim RWMP). These provisions require the development of environmental protection and sustainability measures to address traffic. For example, per the conditions of the Interim RWMP, ranch staff help to control traffic around filming activities to ensure safety. In addition, employee housing is located close to work to minimize traffic commuter congestion.

As discussed above, Existing Ranch Uses would result in only minor increases in traffic. Some additional Plan-Wide Activities could result in the generation of additional trips compared to the No Action Alternative. For example, public recreation use and mitigation, monitoring, and management activities might generate some additional trips relative to the No Action Alternative. However, similar to Existing Ranch Uses, any such additional use of the highway network under the Proposed TU MSHCP Alternative would be very limited. As an illustration of the scale of these activities, the Tejon Ranch Conservancy conducted 18 hikes in 2011, with a maximum of 30 participants. Assuming each participant drives a single-passenger car, this would generate 60 one-way trips on hike days. Compared to the daily trips generated by Commercial and Residential Development, this represents a minor increment, even if the scale of hikes were to be greatly expanded. Therefore, potential effects on the highway network from Plan-Wide Activities would be minor.

4.8.3.3 Public Transit

Commercial and Residential Development Activities

At buildout, the Proposed TU MSHCP Alternative would include 3,632 dwelling units and 1,804,390 square feet of commercial development, which would result in a projected increase in population of 11,441 people. This projected increase in population would be expected to increase the demand for public transit services. However, the Proposed TU MSHCP Alternative would be concentrated in proximity to areas already served by Kern Regional Transit.

As indicated in Section 4.8.6.6, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal, state agencies, and local jurisdictions. It is anticipated that prior to issuance of required permits, the local jurisdiction would require demonstration that adverse effects on public transit services would be avoided or minimized.

Even with implementation of mitigation, the Proposed TU MSHCP Alternative would result in some level of increased demand compared with the No Action Alternative. However, because the capacity of local public transit would not be exceeded, these effects would be minor.

Plan-Wide Activities

Under the Proposed TU MSHCP Alternative, Plan-Wide Activities would be similar to Existing Ranch Uses under the No Action Alternative, with the exception that ground disturbance would be limited to 200 acres. Plan-Wide Activities typically do not consist of activities that would require substantial use of other modes of transportation. For example, ranching is the most prevalent Plan-Wide Activity. Other activities would include filming, which may result in some minor and temporary increase in air travel. Public recreational use, construction and maintenance activities, and mitigation, monitoring, and reporting would not typically rely on other modes of transportation and result in exceedance of public transit capacity. Under the Proposed TU MSHCP, additional public access may be granted, which could generate up to 2,000 hikers over the course of the year compared with the No Action Alternative. Even if all hikers took public transit, this would not represent a marked increase in the demand for public transit in the study area. Therefore, the Proposed TU MSHCP would not exceed the capacity for public transit and would result in very minor effects on public transit, similar to the No Action Alternative.

4.8.3.4 Nonmotorized Transportation

Commercial and Residential Development Activities

Only freeways, highways, and rural roads serve the Covered Lands. As noted above and in Section 3.8.3, Nonmotorized Transportation, there are no specified public nonmotorized routes to access the Covered Lands. Therefore, Commercial and Residential Development Activities would not conflict with any existing public nonmotorized transportation facilities.

Commercial and Residential Development Activities are projected to result in an increase in population within the Covered Lands, which could increase the demand for nonmotorized transportation facilities, such as bicycle and pedestrian facilities. However, the Commercial and Residential Development Activities proposed under this alternative consist largely of the TMV Project, which accounts for projected increase in the demand for these facilities. Per Kern County's approval of the TMV Project, nonmotorized transportation facilities will be provided for per the project's design. For example, bicycle storage racks will be required at commercial centers (Appendix J, MM 4.3-11) (Kern County 2009). Therefore, although there would likely be an increase in demand compared with the No Action Alternative, the Proposed TU MSHCP Alternative is not expected to exceed the capacity of nonmotorized transportation facilities, and effects would be minor. Additional discussion of nonmotorized transportation facilities (i.e., trails) in open space areas is discussed under Plan-Wide Activities below.

Plan-Wide Activities

Under the Proposed TU MSHCP Alternative, Plan-Wide Activities would be similar to Existing Ranch Uses under the No Action Alternative, with the exception that ground disturbance would be limited to 200 acres. As discussed in Section 3.8.3, Nonmotorized Transportation, there are no public

nonmotorized transportation facilities in the study area. In addition, Plan-Wide Activities are generally not expected to result in increases in demand for nonmotorized transportation facilities. This is because they typically do not substantially rely on nonmotorized transportation.

As mentioned above, under the Proposed TU MSHCP Alternative, public recreational use, a Plan-Wide Activity, would be expanded. This would include the construction of new nonmotorized transportation facilities, including hiking trails, in open space areas. Per the conservation measures set forth in the TU MSHCP (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives), public access in these areas would be regulated per the terms of a Service-approved Public Access Plan. Therefore, the effects of Plan-Wide Activities on nonmotorized transportation would be minor similar to the No Action Alternative.

4.8.3.5 Other Transportation Modes

Commercial and Residential Development Activities

As indicated in Section 3.8.4, Other Modes of Transportation, there is no existing rail service on or near the study area. The low density of the development under the Proposed TU MSHCP Alternative would not create a substantial demand for public rail transportation or air travel that could not be met by the existing facilities in Bakersfield and Burbank. Therefore, the potential effects on other modes of transportation from the Proposed TU MSHCP Alternative would be minor, similar to effects under the No Action Alternative.

Plan-Wide Activities

Plan-Wide Activities under the Proposed TU MSHCP Alternative would be similar to the Existing Ranch Uses under the No Action Alternative, with the exception that permanent ground disturbance would be limited to 200 acres. Plan-Wide Activities typically do not consist of activities that would require substantial use of other modes of transportation. For example, ranching is the most prevalent Plan-Wide Activity. Other activities would include filming, which may result is some minor and temporary increase in air travel. Public recreational use, construction and maintenance activities, and mitigation, monitoring, and reporting activities would not typically rely on other modes of transportation and would not exceed capacity of public transit facilities. As noted above, additional public access could be granted, which could generate up to 2,000 hikers over the course of the year compared with the No Action Alternative; however, it is unlikely this would have a noticeable effect on other modes of transportation. Therefore, the Proposed TU MSHCP would not exceed the capacity for other modes of transportation and would result in minor effects on other transportation modes similar to the No Action Alternative.

4.8.3.6 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the Proposed TU MSHCP Alternative on transportation facilities. In addition, the following mitigation measure would reduce potential effects on transportation that may be associated with the Proposed TU MSHCP Alternative.

- ***Comply with Applicable Federal, State, and Local Transportation Requirements.*** All development within the study area would comply with Federal, state and local requirements that guide traffic and the development and use of transportation facilities including those policies and standards set by Caltrans and the Kern County General Plan, as relevant, and/or compliance with the California Environmental Quality Act (CEQA) and other state and local laws.

4.8.4 Condor Only HCP Alternative

4.8.4.1 Existing Roadways during Construction

Commercial and Residential Development Activities

Potential effects on existing roadways associated with Commercial and Residential Development Activities under this alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential effects on existing roadways associated with Plan-Wide Activities under this alternative would be the same as described for the Proposed TU MSHCP Alternative.

4.8.4.2 Highway Network

Commercial and Residential Development Activities

Potential effects on the highway network associated with Commercial and Residential Development Activities under this alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential effects on the highway network associated with Plan-Wide Activities under this alternative would be the same as described for the Proposed TU MSHCP Alternative.

4.8.4.3 Public Transit

Commercial and Residential Development Activities

Potential effects on the public transit system associated with Commercial and Residential Development Activities under this alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential effects on the public transit system associated with Plan-Wide Activities under this alternative would be the same as described for the Proposed TU MSHCP Alternative.

4.8.4.4 Nonmotorized Transportation

Commercial and Residential Development Activities

Potential effects on nonmotorized transportation associated with Commercial and Residential Development Activities under this alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential effects on nonmotorized transportation associated with Plan-Wide Activities under this alternative would be the same as described for the Proposed TU MSHCP Alternative.

4.8.4.5 Other Transportation Modes

Commercial and Residential Development

Potential effects on other modes of transportation associated with Commercial and Residential Development Activities under this alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential effects on other modes of transportation associated with Plan-Wide Activities under this alternative would be the same as described for the Proposed TU MSHCP Alternative.

4.8.4.6 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the Condor Only HCP Alternative on transportation facilities. The mitigation measures listed above in Section 4.8.3.6, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the Condor Only HCP Alternative.

4.8.5 CCH Avoidance MSHCP Alternative

4.8.5.1 Existing Roadways during Construction

Commercial and Residential Development Activities

The CCH Avoidance MSHCP Alternative would include the construction of 3,161 dwelling units and 1,804,390 square feet of commercial buildings. Construction would result in temporary increases in traffic from the transport of construction equipment and workers to the construction site that could disrupt existing traffic patterns and increase traffic congestion. All roadways are currently operating at an acceptable LOS and have substantial unused capacity (Table 4.8-4). Based on the estimates of construction traffic from the TMV Project (which generally represents they type of commercial and residential development proposed under this alternative) of 430 trips per day (Austin-Foust Associates 2009), the overall construction traffic associated with the CCH Avoidance MSHCP Alternative is likely to generate under 1,000 trips a day, at most. Given the substantial amount of additional capacity for each of the roadways and the relatively small amount of construction-related traffic that would be associated with Commercial and Residential Development Activities, the CCH Avoidance MSHCP Alternative would not result in a substantial increase in existing traffic loads.

As indicated in Section 4.8.5.6, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal, state agencies, and local jurisdictions. It is anticipated that the local approval process would include provisions that would reduce adverse effects on transportation in the study area, as noted in Section 4.8.3.1, above. For example, although not specifically include in this alternative per se, the Kern County's approval of the TMV Project requires preparation of a construction traffic management plan, including such provisions as detailed information on construction activities to residents, businesses, and public

transit and emergency service providers; an emergency vehicle access and circulation plan; adequate parking for construction workers and equipment; and traffic controls on adjacent roadways (Appendix J, MM 4.15-4) (Kern County 2009).

Even with implementation of mitigation, the CCH Avoidance MSHCP Alternative would result in some level of disruption to traffic during construction compared with the No Action Alternative. However, because substantial existing capacity remains and the projected construction-related traffic would be relatively minor, there would only be minor effects on roadways from construction of the CCH Avoidance MSHCP Alternative.

Plan-Wide Activities

Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would be similar to the Existing Ranch Uses under the No Action Alternative, with the exception that permanent ground disturbance would be limited to 200 acres. Construction-related effects on the roadway network would be similar to the limited effects on Existing Ranch Uses described above under the No Action Alternative. Although the CCH Avoidance MSHCP Alternative would involve some additional vehicle trips with respect to roadway, trail, or utility construction or relocation, the potential for and adverse effect to occur would be minor and would not substantially reduce roadway capacity. Therefore, although there may be some minor traffic associated with construction related to Plan-Wide Activities, sufficient capacity would remain and the effect on existing roadways would be minor, similar to the No Action Alternative.

4.8.5.2 Highway Network

Commercial and Residential Development Activities

The CCH Avoidance MSHCP Alternative would result in the creation of 3,161 dwelling units and 1,804,390 square feet of commercial buildings. This development would increase the population by 9,957 and would result in additional traffic associated with these land uses. Table 4.8-7 shows the trips that would be generated by development of these land uses. A total of 75,006 daily trips would be generated by the CCH Avoidance MSHCP Alternative.

Table 4.8-8 summarizes the AADT volumes that would result from implementation of the CCH Avoidance MSHCP Alternative (Table 4.8-7) in combination with the existing highway volumes shown (Table 4.8-4). Table 4.8-8 also summarizes the AADT equivalent capacity for each highway segment (i.e., the maximum volume at the allowable LOS), and the resulting V/C ratio for this alternative. As shown in Table 4.8-8, the modeled AADT associated with the CCH Avoidance MSHCP Alternative would be below the maximum capacity for all segments. Therefore, all segments would continue to operate at an acceptable level with implementation of the CCH Avoidance MSHCP Alternative.

As indicated in Section 4.8.3.6, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal, state agencies, and local jurisdictions. It is anticipated that the local approval process would include provisions, including the requirement to pay fair share costs of road improvements to be phased in with development and implementation of transportation demand programs to reduce single occupant vehicular trips, which would reduce adverse effects on transportation in the study area. Even with implementation of these types of minimization and mitigation measures, the CCH Avoidance MSHCP Alternative would result in some level of disruption to traffic compared with the No Action Alternative. However, because additional capacity would remain, the CCH Avoidance MSHCP would have minor effects on the highway network.

Table 4.8-7. Operational Trips on Existing Highway Network for the CCH Avoidance MSHCP Alternative

Location	Average Annual Daily Traffic
I-5 North	27,752
I-5 South (s/o SR 138)	27,752
Local/Internal	19,502
Total	**75,006**

Source: Austin-Foust Associates 2011

Table 4.8-8. Freeway Volumes, Capacities, and Volume to Capacity Summary for the CCH Avoidance MSHCP Alternative

Location	AADT	Maximum Allowable LOS	AADT Equivalent Capacity	V/C[1]
I-5 North	96,800	C	145,564	0.67
I-5 South (north of SR 138)	98,800	D	186,606	0.53
I-5 South (south of SR 138)	95,800	E	179,155	0.54
SR 138	3,600	E	36,040	0.10

Notes:
AADT = average annual daily traffic; LOS = level of service; V/C = volume-to-capacity ratio
[1] A V/C greater than 1.00 represents a deficiency
Source: Austin-Foust Associates 2011

Plan-Wide Activities

Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would be similar to the Existing Ranch Uses under the No Action Alternative, with the exception that permanent ground disturbance would be limited to 200 acres. Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities would be subject to the use restrictions and BMPs required by the Ranchwide Agreement (as currently set forth in the Interim RWMP). These provisions require the development of environmental protection and sustainability measures to address traffic, such as requirements that ranch staff members help to control traffic around filming activities to ensure safety and that employee housing be located close to work to minimize traffic commuter congestion.

As discussed above, most Existing Ranch Uses would result in only minor increases in traffic. Some additional Plan-Wide Activities could result in the generation of additional trips compared to the No Action Alternative. For example, public recreation use and mitigation, monitoring, and management activities might generate some additional trips relative to the No Action Alternative. However, similar to Existing Ranch Uses, any such additional use of the highway network under the CCH Avoidance MSHCP Alternative would be very limited. As an illustration of the scale of these activities, the Tejon Ranch Conservancy conducted 18 hikes in 2011, with a maximum of 30 participants. Assuming each participant drives a single-passenger car, this would generate 60 one-way trips on hike days. Compared to the daily trips generated by Commercial and Residential Development Activities, this represents a minor increment, even if the scale of hike participation were to be greatly expanded. Therefore, potential effects on the highway network from Plan-Wide Activities would be minor.

4.8.5.3 Public Transit

Commercial and Residential Development Activities

The effects of the CCH Avoidance MSHCP Alternative on public transit facilities from Commercial and Residential Development Activities would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

The effects of the CCH Avoidance MSHCP Alternative on public transit facilities from Plan-Wide Activities would be the same as described for the Proposed TU MSHCP Alternative.

4.8.5.4 Nonmotorized Transportation

Commercial and Residential Development Activities

The effects of the CCH Avoidance MSHCP Alternative on nonmotorized transportation facilities from Commercial and Residential Development Activities would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

The effects of the CCH Avoidance MSHCP Alternative on nonmotorized transportation facilities from Plan-Wide Activities would be the same as described for the Proposed TU MSHCP Alternative.

4.8.5.5 Other Transportation Modes

Commercial and Residential Development Activities

The effects of the CCH Avoidance MSHCP Alternative on other transportation modes from Commercial and Residential Development Activities would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

The effects of the CCH Avoidance MSHCP Alternative on other transportation modes from Plan-Wide Activities would be the same as described for the Proposed TU MSHCP Alternative.

4.8.5.6 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the CCH Avoidance MSHCP Alternative on transportation facilities. In addition, the mitigation measure listed above in Section 4.8.3.6, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the CCH Avoidance MSHCP Alternative.

4.8.6 Kern County General Plan Buildout Alternative

4.8.6.1 Existing Roadways during Construction

Commercial and Residential Development Activities

The Kern County General Plan Buildout Alternative would include the construction of 7,238 dwelling units and 2,144,594 square feet of commercial buildings. Construction of these land uses would result in temporary increases in the traffic from the transport of construction equipment and workers to the construction site that could disrupt the existing traffic patterns and increase traffic congestion. It can be expected that the maximum daily construction trips would occur when a planned development is under construction (rather than the parcel-by-parcel development also included in the Kern County General Plan Buildout Alternative). Based on the estimates of construction traffic from the TMV Project, for which approximately 430 trips per day would occur during construction (Austin-Foust Associates 2009), Commercial and Residential Development Activities would not likely generate more than a 1,400 to 1,500 trips a day (similar to the other proposed action alternatives). Given the substantial amount of additional capacity for each of the roadways (as shown in Table 4.8-4) and the relatively small amount of construction-related traffic, the Kern County General Plan Buildout Alternative would not result in a substantial increase in existing traffic loads.

As indicated in Section 4.8.6.6, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal, state agencies, and local jurisdictions. It is anticipated that the local approval process would include provisions that would reduce adverse effects on transportation in the study area, as noted in Section 4.8.3.1, above. For example, Kern County's approval of the TMV Project requires preparation of a construction traffic management plan, including such provisions as detailed information on construction activities to residents, businesses, and public transit and emergency service providers; an emergency vehicle access and circulation plan; adequate parking for construction workers and equipment; and traffic controls on adjacent roadways (Appendix J, MM 4.15-4) (Kern County 2009).

Even with the implementation of mitigation, the Kern County General Plan Alternative would result in some level of disruption to traffic during construction compared with the No Action Alternative. However, because substantial existing capacity remains and the projected construction-related traffic would be relatively low, there would only be minor effects on roadways from construction of the Kern County General Plan Buildout Alternative.

Existing Ranch Uses

Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be similar to the Existing Ranch Uses under the No Action Alternative. Construction associated with Existing Ranch Uses would be limited and could be associated with ranch roads, trails or utilities, ancillary ranch structures, and back-country cabins. However, the extent and duration of construction is expected to be minimal and would not generate substantial disruption to traffic. Some of these activities occasionally involve some degree of highway use during construction. However, any highway use associated with these activities would be very limited with almost no effect on roadway capacity. Similar to the No Action Alternative, there would be no activities that would generate trips on existing roadways outside Covered Lands. Therefore, although there may be some minor traffic associated with construction related to Existing Ranch Uses, sufficient capacity would remain and the effect on existing roadways would be minor.

4.8.6.2 Highway Network

Commercial and Residential Development Activities

The Kern County General Plan Buildout Alternative would result in the creation of 7,238 dwelling units and 2,144,810 square feet of commercial buildings. This development would increase the population by 22,800 and would result in additional traffic associated with these land uses. Table 4.8-9 shows the trips that would be generated by development of these land uses. A total of 119,945 daily trips would be generated by the Kern County General Plan Buildout Alternative.

Table 4.8-10 summarizes the AADT volumes that would result from implementation of the Kern County General Plan Buildout Alternative (Table 4.8-9) in combination with the existing highway volumes (Table 4.8-4). Table 4.8-10 also summarizes the AADT equivalent capacity for each highway segment (i.e., the maximum volume at the allowable LOS), and the resulting V/C ratio for this alternative. As shown in Table 4.8-10, the modeled AADT associated with the Kern County General Plan Buildout Alternative would be below the maximum capacity for all segments. All segments would continue to operate at an acceptable LOS under this alternative.

As indicated in Section 4.8.3.6, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal, state agencies, and local jurisdictions. It is anticipated that the local approval process would include provisions, including the requirement to pay fair share costs of road improvements to be phased in with development and implementation of programs to reduce single occupant vehicular trips, which would reduce adverse effects on transportation in the study area. Even with implementation of these minimization and mitigation measures, the Kern County General Plan Buildout Alternative would result in some level of disruption to traffic compared with the No Action Alternative. However, because additional capacity would remain, the Kern County General Plan Buildout Alternative would have minor effects on the highway network.

Table 4.8-9. Operational Trips on Existing Highway Network for the Kern County General Plan Buildout Alternative

Location	Average Annual Daily Traffic
I-5 north	44,380
I-5 south (south of SR 138) *	44,380
Local/Internal	31,186
Total	**119,945**

Source: Austin-Foust Associates 2011

Table 4.8-10. Freeway Volumes, Capacities and V/C Summary for the Kern County General Plan Buildout Alternative

Location	AADT	Maximum Allowable LOS	AADT Equivalent Capacity	V/C[1]
I-5 North	113,380	C	145,564	0.78
I-5 South (north of SR 138)	115,380	D	186,606	0.62
I-5 South (south of SR 138)	112,380	E	179,155	0.63
SR 138	3,600	E	36,040	0.10

Notes:
AADT = average annual daily traffic; LOS = level of service; V/C = volume-to-capacity ratio
[1] A V/C greater than 1.00 represents a deficiency
Source: Austin-Foust Associates 2011

Existing Ranch Uses

As described above, Existing Ranch Uses would continue similar to Existing Ranch Uses under the No Action Alternative. Some of these activities would involve limited use of the highway network, such as filming, use of back-country cabins and ancillary ranch facilities, and use of Lebec/Existing Headquarters. Any highway uses associated with these activities would be very limited, with almost no effect on roadway capacity. Even if certain Existing Ranch Uses were expanded, primarily associated with recreational use and potential requirements to conduct mitigation, monitoring, and management activities, the projected additional traffic volumes associated with these activities would represent a minor incremental increase in highway traffic. As indicated in Section 4.8.3.2, Highway Network, the Tejon Ranch Conservancy facilitated 18 hikes in 2011, with a maximum of 30 participants. Assuming each participant drives a single-passenger car, this would generate 60 one-way trips on hike days. Compared to the daily trips generated by Commercial and Residential Development Activiteis, this represents a minor increment, even if the scale of hikes were to be greatly expanded.

As described in Chapter 2, Proposed TU MSHCP and Alternatives, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historical ranch practices as reflected in the Interim RWMP are anticipated to continue (although they cannot be assured), and compliance with legal requirements governing transportation facilities would apply. In addition, because most Existing Ranch Uses would have only minor increases in vehicle trips, it is unlikely that Existing Ranch Uses under the Kern County General Plan Buildout Alternative would result in substantial effects on the highway network. As such, the effects of Existing Ranch Uses under this alternative would be minor and comparable to those described for the No Action Alternative.

4.8.6.3 Public Transit

Commercial and Residential Development Activities

The Kern County General Plan Buildout Alternative would result in the development of 7,238 dwelling units and 2,144,810 square feet of commercial space, which would result in a projected increase in population of 22,800 people. This projected increase in populations would be expected to increase the demand for public transit services.

As indicated in Section 4.8.6.6, Mitigation Measures, all Commercial and Residential Development Activities would be subject to project-specific approvals from Federal, state agencies, and local

jurisdictions. It is anticipated that prior to issuance of required permits, the local jurisdiction would require demonstration that adverse effects on public transit would be avoided or minimized.

Even with implementation of mitigation, commercial and residential development under the Kern County General Plan Buildout Alternative would be dispersed throughout the majority of the Covered Lands and would be difficult to serve with public transit. It is likely that there would be few if any transit stops in the rural lot areas. Therefore, there may be some increase in potential effects on public transit under the Kern County General Plan Buildout Alternative that would not be met by the provision of public transit services compared to the No Action Alternative. However, because the increased population would be associated with rural residential development, it is anticipated that the expectation or desire to use public transportation would be relatively low. Therefore, the potential effects of the Kern County General Plant Buildout Alternative on public transit would be minor.

Existing Ranch Uses

Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be similar to the Existing Ranch Uses under the No Action Alternative. Existing Ranch Uses typically do not consist of activities that would require substantial use of public transit. For example, ranching is the most prevalent Existing Ranch Use on the Covered Lands. Other activities would include filming, limited public recreational use, and construction and maintenance activities, which would not typically rely on public transit. Therefore, the Kern County General Plan Alternative would not exceed the capacity for other modes of transportation and would result in very minor effects on public transit similar to the No Action Alternative.

4.8.6.4 Nonmotorized Transportation

Commercial and Residential Development Activities

Only freeways, highways, and rural roads serve the Covered Lands. As noted above and in Section 3.8.3, Nonmotorized Transportation, there are no specified public facilities for bicycles or pedestrians to access the Covered Lands. Therefore, Commercial and Residential Development Activities would not conflict with any existing public nonmotorized transportation facilities.

Commercial and Residential Development Activities are projected to result in an increase in population within the Covered Lands. This could result in an increase in the demand for nonmotorized transportation facilities. It is expected that the low residential densities under this alternative would not create a high demand for nonmotorized transportation facilities. In the commercial and specific plan areas, it is anticipated that sidewalks, trails, and/or bike lanes would be incorporated into the design of the development consist with local planning policies. For example, Kern County's approval of the TMV Project requires bicycle storage racks at commercial centers (Appendix J, MM 4.3-11) (Kern County 2009). Therefore, although there would be an increase in demand compared with the No Action Alternative, the Kern County General Plan Buildout Alternative is not expected to exceed the capacity of nonmotorized transportation facilities, and effects would be minor. Additional discussion of nonmotorized transportation facilities (i.e., trails) in open space areas is discussed under Existing Ranch Uses below.

Existing Ranch Uses

Under the Kern County General Plan Buildout Alternative, Existing Ranch Uses would continue to occur in the study area similar to existing conditions. As discussed in Section 3.8.3, Nonmotorized Transportation, and mentioned above, there are no public bicycle or pedestrian facilities within the study area. Existing Ranch Uses are generally not expected to result increases in demand for

nonmotorized transportation facilities because they typically do not consist of activities that would require substantial use of these facilities. For example, ranching is the most prevalent Existing Ranch Use in the Covered Lands. Other activities would include filming, and construction and maintenance activities, which would not typically substantially rely on nonmotorized transportation. Therefore, Existing Ranch Uses associated with the Kern County General Plan Buildout Alternative would have no effect on nonmotorized transportation.

4.8.6.5 Other Transportation Modes

Commercial and Residential Development Activities

As indicated in Section 3.8.4, Other Modes of Transportation, there is no existing rail service on or near the study area. The low density of the development under the Kern County General Plan Buildout Alternative would not create a substantial demand for public rail transportation or air travel that could not be met by the existing facilities in Bakersfield and Burbank. Therefore, the potential effects on other modes of transportation would be minor, similar to effects under the No Action Alternative.

Existing Ranch Uses

Under the Kern County General Plan Alternative, Existing Ranch Uses would be similar to existing conditions. Existing Ranch Uses typically do not consist of activities that would require substantial use of other modes of transportation. For example, ranching is the most prevalent Existing Ranch Use in the Covered Lands. Other activities would include filming, limited public recreational use, or construction and maintenance activities, which would not typically substantially rely on other modes of transportation. Therefore, the potential effects of the Kern County General Plan Alternative on other transportation modes would be minor, similar to effects under the No Action Alternative.

4.8.6.6 Mitigation Measures

As described above, the limitations of the Ranchwide Agreement would not apply under the Kern County General Plan Buildout Alternative. However, even in the absence of the Ranchwide Agreement, BMPs (as currently set forth in the Interim RWMP) are anticipated to continue (although they cannot be assured). In addition, the mitigation measure listed in Section 4.8.3.6, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the Kern County General Plan Buildout Alternative.

4.8.7 Cumulative Effects

The potential cumulative effects on transportation are considered in the context of additional traffic that could be generated by future growth and development within the cumulative effects analysis area, which is considered to be the area analyzed in the Kern and Los Angeles Counties' regional transportation models. The assumptions for future growth and development are discussed in greater detail below in Section 4.8.7.1, Future Growth and Development Assumptions. As indicated in Section 4.8.1.2, Methods, cumulative transportation effects could arise if the proposed activities exceed the capacity of local roadways as a result of operations; exceed the capacity of local public transit; exceed the capacity of nonmotorized transportation facilities, such as bicycle or pedestrian trails; or exceed the capacity of existing or planned air or rail service that would be cumulatively considerable.

Cumulative effects on transportation are considered to be indirect effects of the proposed action, in that they are related to future development that may be facilitated by issuance of an ITP by the

Service. Whether or not such effects are substantial cumulatively is primarily dependent on the mitigation measures put in place by other Federal, local, and state authorities pursuant to their project-specific approval process. Refer to Section 4.0.4, Methods for Assessing Cumulative Effects, for additional information on the approach summarized above and for a description of the reasonably foreseeable future projects considered in this cumulative effects analysis.

4.8.7.1 Future Growth and Development Assumptions

The cumulative traffic analysis uses a long-range projections approach to cumulative growth. Demographic and related traffic forecasts for a horizon year (2030) account for all anticipated growth by that year. This is a more comprehensive analysis framework than simply adding a list of cumulative projects to an existing baseline condition. Growth projections used in the long-range analysis include current development projects and development applications, such as the proposed Frazier Park Estates and Centennial Projects, plus other anticipated growth, consistent with the Kern and Los Angeles Counties' general plans. This growth in surrounding areas in turn increases the projected background traffic on local roadways. The projected trips generated at full buildout are then added to this increased background. Note also that the Centennial Project is included in this cumulative analysis, which both increases projected traffic on SR 138, but also diverts a portion of south-bound traffic on I-5 onto SR 138 for the purposes of this analysis.

To illustrate how the 2030 forecasts represent a long-range cumulative transportation setting, Table 4.8-11 contains a list of projects considered in the development of forecasted traffic. Taken together, projects in the Kern County area accounts for 1,830 dwelling units, 14,490 thousand square feet of building area, and 938 acres of other non-residential development (commercial and other such land uses). The Los Angeles area accounts for 49,567 dwelling units and 18,035 thousand square feet of development. The anticipated growth from these projects plus other growth in the region is accounted for in the models.

Table 4.8-12 summarizes existing and future population and employment for a set of subareas in the surrounding region that includes Los Angeles. Unincorporated West Los Angeles, Santa Clarita and Lancaster areas (locations noted in the cumulative projects list) anticipate approximately a 150,371 increase in dwelling units by 2030. This increase accommodates the 49,567 dwelling units of anticipated growth listed in the cumulative projects list and accommodates other projects in Los Angeles County not listed in the previously referenced list of cumulative projects. This greater population is the basis for a higher level of existing traffic.

Table 4.8-11. Cumulative Projects

Name	Location Description	Development	
		Dwelling Units	TSF or Acres
KERN COUNTY			
BLH Development, LLC	East of I-5 near Kern Co/LA Co Border	33	--
CAL Cart/WZI	Nec Frazier Mtn Park Rd & Cuddy Cyn Rd	--	35 Acres
Frazier Park/Lebec Specific Plan	Frazier Mountain Park	643	148 Acres
Frazier Park Estates/Cornerstone	Frazier Mountain Park Road	662 41	140 TSF 5.59 Acres
Galonska, Siegfried\Christine by French & Assoc	Frazier Mtn Park 3/4 mile east of Mt Pinos	--	145.2 TSF
Goertzen, Vernon	4358 Laval Rd, Arvin	--	5 Acres
Hallmark, Doug and Lori by Pinnacle Engineering	Castaic View Road Lebec	5	--
Johnson, Harold and Rosalie/French & Assoc	W/S I-5 IN SE/4	--	196.8 TSF
Martin Bros Dev Inc/Richard Aldrich	Grand Terrace Dr & Frazier Mtn Park	4	--
Martin, Curtis by Nelms Surveying	Hayride Road, east of I-5 Lebec	7	--
Mettler Water District	Route 99 W. Mettler Frontage Rd	--	12.3 TSF
O-Neil Canyon Specific Plan	Lebec W of I-5	388	60 Acres Commercial
Schafer, Richard & Judy by French & Assocs.	Tecuya Rd and Woods Dr	4	--
Tejon Industrial Complex West	West of I-5 between Wheeler Ridge and Grape Vine	--	7,000 TSF Logistics*
Tejon Industrial Complex East	East of I-5 near Laval Rd	--	7,000 TSF Logistics
Wheeler Ridge Farms, LLC	35 Miles S. Bak. West of I-5 & Laval	--	690 Acres
Subtotal		1,830	14,490 TSF & 938 Acres

Name	Location Description	Development	
		Dwelling Units	TSF or Acres
LOS ANGELES COUNTY			
Centennial	NW portion of the Antelope Valley in unincorporated portion of L.A. County. Southern Boundary of Kern County	22,998	2,021 TSF Commercial Total of 12,485 TSF of employment generating uses.
Gorman Post Ranch	South of Kern County Border in Unincorporated Los Angeles County	533	--
Project NO: 02-232	Lancaster RD	1851 SF lots, 15 MF lots	--
Project NO: 04-207	South of Quail Valley Road	28 SF lots	--
Project NO: TR062053	Gorman Post Rd north of Hwy 138 e/o I-5	191 SF lots	--
Project NO: TR066561	28718 San Francisquito Canyon Road	583	--
Project NO: TR066561	N/A	33 SF lots	--
Project NO: TR067278	28701 Sloan Canyon Rd	28 SF lots	--
Project NO: TR067617	N/A	13	--
Project NO: TR51644-R1	N/A	713 SF lots	--
Northlake	N/A	1051 MF lots 645 SF lots	--
Newhall Ranch	West of I-5, along SR 126 corridor	20,885	5,550 TSF
Subtotal		49,567	18,035 TSF

Notes: * Partially built
SF – single family
MF – multifamily
TSF – thousand square feet of floor area

Source: Austin-Foust Associates 2011

Table 4.8-12. Demographic Data Summary

	Dwelling Units			Population			Employment		
Subarea[1]	2000	2030	Increase (%)	2000	2030	Increase (%)	2000	2030	Increase (%)
1. West LA Co. Unincorporated	2,711	3,935	45.1	6,860	9,802	42.9	1,256	1,674	33.3
2. Palmdale Planning Area	37,977	63,306	66.7	130,246	216,940	66.6	19,056	25,649	34.6
3. Lancaster Planning Area	41,689	94,824	127.5	130,546	303,932	132.8	37,643	96,541	156.5
4. Kern County (East)	59,662	148,999	149.7	155,952	367,784	135.8	56,471	114,615	103.0
5. Kern County (West)[1]	167,321	330,455	97.5	504,048	964,082	91.3	212,501	456,727	114.9
6. Los Angeles County (south)	3,005,968	3,671,830	22.2	8,977,404	10,871,824	21.1	3,973,652	4,968,876	25.0
7. Orange County	900,730	1,068,036	18.6	2,846,289	3,391,249	19.1	1,385,976	2,043,673	47.5
8. Riverside County	516,812	898,272	73.8	1,545,387	2,697,634	74.6	476,882	990,283	107.7
9. San Bernardino County	444,933	692,785	55.7	1,378,747	2,144,979	55.6	430,437	920,727	113.9
10. Ventura County	250,385	309,210	23.5	753,197	936,013	24.3	286,418	431,499	50.7
11. Victor Valley (RSA 32)	69,493	112,327	61.6	214,946	346,915	61.4	42,841	91,714	114.1
12. Barstow (RSA 31)	37,419	60,484	61.6	115,740	186,801	61.4	23,068	49,384	114.1
13. Santa Clarita (RSA 8)[2]	48,765	144,777	196.9	156,536	464,734	196.9	71,965	250,496	248.1
14. Angeles Forest (LACO)	2,228	3,073	37.9	4,734	6,422	35.7	4,449	5,882	32.2
15. East LA Co. Unincorporated	13,687	19,736	44.2	40,602	57,369	41.3	7,116	9,611	35.1

	Dwelling Units			Population			Employment		
Subarea[1]	2000	2030	Increase (%)	2000	2030	Increase (%)	2000	2030	Increase (%)
TOTAL	5,599,780	7,622,048	36.1	16,961,234	22,966,480	35.4	7,029,731	10,424,352	48.3

Notes:
[1] EAVTAM2 data augmented to account for Tejon Industrial Complex (2030)
[2] Data from the SCVCTM has been substituted in the EAVTAM2 model for the Santa Clarita Valley area.

Source: EAVTAM2 (except for Kern County and the Santa Clarita Valley as noted above).

4.8.7.2 Existing Roadways during Construction

The No Action Alternative would result in no Commercial or Residential Development Activities on the Covered Lands and would not contribute to any cumulative effects on roadways associated with construction. In addition, Existing Ranch Uses or Plan-Wide Activities associated with any of the alternatives would not involve substantial construction-related traffic and would not exceed roadway capacity. Therefore, these activities would not combine with any of the reasonably foreseeable projects as discussed in Section 4.0.4.1, Cumulative Effects Analysis Area or above in Section 4.8.7.1, Future Growth and Development Assumptions, to result in a substantial cumulative effect on existing roadways from construction.

The remaining proposed action alternatives would result in some temporary increases in traffic associated with construction of Commercial and Residential Development Activities. However, given the substantial level of remaining capacity for all major roadways under future cumulative conditions (Table 4.8-13), the additional trips generated by the proposed action alternatives as discussed in the effects analysis above are not expected to exceed existing capacity. Therefore, although the proposed action alternatives would result in some increases in construction-related traffic associated with Commercial and Residential Development Activities compared to the No Action Alternative, the potential effects on roadways from these activities would not be cumulatively substantial for any of the alternatives.

4.8.7.3 Highway Network

Although no Commercial and Residential Development Activities would occur under the No Action Alternative, traffic along study area highways does currently exist. A summary of current AADT volumes and the V/C ratio for highways in the study area without any of the proposed action alternatives are shown for 2030 in Table 4.8-13. As mentioned previously, because no Commercial and Residential Development Activities would occur on the Covered Lands under the No Action Alternative, the AADT summarized below represents baseline conditions in the year 2030 with no development in Covered Lands. As previously discussed in Section 4.8.1.2, Methods, a V/C over 1.00 is considered a capacity deficiency. Therefore, 2030 highway volumes would not exceed capacity for any of the highway segments, and there would be no cumulative effects on existing roadways from operations traffic under the No Action Alternative.

In addition, for all the alternatives, Existing Ranch Uses and Plan-Wide Activities are not expected to result in effects on the highway network and would not combine with any of the reasonably foreseeable projects as discussed in Section 4.0.4.1, Cumulative Effects Analysis Area, or Section 4.8.7.1, Future Growth and Development Assumptions, to result in a substantial cumulative transportation effect from construction.

Commercial and Residential Development Activities associated with the proposed action alternatives would contribute to an increase in operations trips on the highway network. As discussed above, none of these alternatives would increase the existing highway volume above an acceptable LOS on their own. However, there is the potential for cumulative operations effects on the existing highway network for some alternatives at certain locations, as discussed below.

Table 4.8-13. 2030 Freeway Volumes, Capacities and V/C Summary for the No Action Alternative

Location	AADT	AADT Equivalent Capacity	V/C[1]
I-5 North	148,692	168,090	0.90
I-5 South (north of SR 138)	135,354	203,896	0.67
I-5 South (south of SR 138)	178,434	183,652	0.98
SR 138	36,250	74,486	0.49

Note:
AADT = average annual daily traffic; V/C = volume-to-capacity ratio
[1] A V/C greater than 1.00 represents a deficiency

For the Proposed TU MSHCP and Condor Only HCP Alternatives, Table 4.8-14 summarizes the 2030 AADT volumes, AADT equivalent capacities, and resulting V/C ratio. As shown in Table 4.8-14, I-5 north, I-5 south (north of SR 138) and SR 138 would all continue to operate at an acceptable level in the year 2030; however, traffic on I-5 south (south of SR 138) would exceed capacity and result in a cumulatively substantial effect at this location.

This analysis does not consider any improvements that may be made to these highways by 2030. It is anticipated that the planned development generating traffic on these highways would be required to contribute to improvements to the highways affected or implement transportation demand programs to reduce single occupant vehicular trips. It is uncertain the extent to which regional transportation planning efforts would be implemented to address potential deficiencies on I-5 in the cumulative scenario. Therefore, the cumulative effect is considered substantial under the Proposed TU MSHCP and Condor Only HCP Alternatives.

Table 4.8-14. 2030 Freeway Volumes, Capacities and Volume to Capacity Summary for the Proposed TU MSHCP and Condor Only HCP Alternatives

Location	AADT	AADT Equivalent Capacity	V/C[1]
I-5 North	166,980	168,090	0.99
I-5 South (north of SR 138)	175,906	203,896	0.86
I-5 South (south of SR 138)	195,927	183,652	1.07
SR 138	59,309	74,486	0.80

Note:
AADT = average annual daily traffic; V/C = volume-to-capacity ratio
[1] A V/C greater than 1.00 represents a deficiency

For the CCH Avoidance MSHCP Alternative, Table 4.8-15 summarizes the 2030 AADT volumes, AADT equivalent capacities, and resulting V/C ratio that would occur through 2030. Similar to the Proposed TU MSHCP and Condor Only HCP Alternatives, there is a potential for V/C to be exceed on I-5 south of SR 138. As discussed above, it should be noted that this analysis does not consider any improvements that may be made to these highways by 2030. It is anticipated that the planned development generating traffic on these highways would be required to contribute to improvements to the highways affected or implement transportation demand programs to reduce single occupant vehicular trips. It is uncertain the extent to which regional transportation planning efforts would be implemented to address potential deficiencies on I-5 in the cumulative scenario. Therefore, the cumulative effect is considered substantial under the CCH Avoidance MSHCP Alternative.

Table 4.8-15. 2030 Freeway Volumes, Capacities and V/C Summary for the CCH Avoidance MSHCP Alternative

Location	AADT	AADT Equivalent Capacity	V/C[1]
I-5 North	165,943	168,090	0.99
I-5 South (north of SR 138)	173,607	203,896	0.85
I-5 South (south of SR 138)	194,935	183,652	1.06
SR 138	58,002	74,486	0.78

Note:
AADT = average annual daily traffic; V/C = volume-to-capacity ratio
[1] A V/C greater than 1.00 represents a deficiency

For the Kern County General Plan Buildout Alternative, Table 4.8-16 summarizes the 2030 AADT volumes, AADT equivalent capacities, and resulting V/C ratio. Similar to the Proposed TU MSCHP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives, V/C would be exceeded on I-5 south of SR 138. In addition, V/C would be exceeded on I-5 to the north. As mentioned above, it is anticipated that the planned development generating traffic on these highways would be required to contribute to improvements to the highways affected. However, the extent to which regional transportation planning will address potential deficiencies on I-5 is not known with certainty. Therefore, the Kern County General Plan Buildout Alternative would still result in the potential for cumulatively substantial effects with regards to operations traffic effects on the existing highway network.

Table 4.8-16. 2030 Freeway Volumes, Capacities and Volume to Capacity Summary for the Kern County General Plan Buildout Alternative

Location	AADT	AADT Equivalent Capacity	V/C[1]
I-5 North	176,280	168,090	1.05
I-5 South (north of SR 138)	196,526	203,896	0.96
I-5 South (south of SR 138)	204,822	183,652	1.12
SR 138	71,034	74,486	0.95

Note:
AADT = average annual daily traffic; V/C = volume-to-capacity ratio
[1] A V/C greater than 1.00 represents a deficiency

4.8.7.4 Public Transit

The No Action Alternative would not result in any Commercial or Residential Development Activities on the Covered Lands, and therefore, would not contribute to any cumulative effects on the provision of transit services. For all the alternatives, Existing Ranch Uses and Plan-Wide Activities are not expected to result in effects on the public transit and would not contribute to cumulatively substantial effects.

Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative, Condor Only HCP Alternative, and the CCH Avoidance MSHCP Alternative would result in minor increases in the demand for public transit service. However, as indicated above, it is anticipated that development-related improvements would be subject to local requirements and mitigation measures to provide alternative transit and/or development of programs with local transit such that capacity can be met. Similarly, it is anticipated that other reasonably foreseeable development could increase demands on local transit. Other developments would be required to be consistent with

adopted plans, policies and programs related to transit, including Kern and Los Angeles Counties' general plan policies regarding alternative modes of transportation and the Counties' Regional Transportation Plans, and it is anticipated that they would include transit-related improvements. Although the precise details of such improvements are not currently known, given the improvements that are anticipated to be required for development under the various alternatives and the coordination with transit agencies required under the alternatives, it is anticipated that transit-related mitigation would similarly be required for other developments. Further, given the fact that no transit facilities currently exist on the Covered Lands, and few transit facilities exist in unincorporated Kern County on which additional demands would be placed, no substantial cumulative effects are expected to existing transit facilities from the Proposed TU MSHCP, Condor Only HCP or CCH Avoidance MSHCP.

The more dispersed and greater amount of development under the Kern County General Plan Buildout Alternative would generate more demand than the other alternatives, and it would be harder to serve. However, even in conjunction with other past, present, and reasonably foreseeable projects, this alternative is not expected to outstrip existing capacity and would also not result in a cumulatively substantial effect on public transit.

4.8.7.5 Nonmotorized Transportation

As discussed in Section 3.8.3, Nonmotorized Transportation, the Covered Lands are not currently served by public bicycle/pedestrian facilities or trails. Some private recreational use does occur and is anticipated to increase over time, with greater increases occurring as a result of planned development under the action alternatives. The No Action Alternative would not result in any Commercial and Residential Development Activities on the Covered Lands, and would not create additional demand on existing or planned nonmotorized transportation facilities.

The action alternatives would result in additional Commercial and Residential Development that would potentially increase the demand for nonmotorized transportation. However, it is anticipated that Commercial and Residential Development Activities under these alternatives would be required to comply with the requirements imposed by state and local jurisdictions during any development-related entitlement processes and would result in exceedance of the demand for nonmotorized facilities.

With respect to Existing Ranch Uses or Plan-Wide Activities none of the proposed activities would result in conflicts with nonmotorized uses. In addition, under the Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives (and presumed to occur under the Kern County General Plan Buildout Alternative), ESA-conservation measures would be implemented to govern the development of nonmotorized transportation facilities, including trails in open space areas. Thus, none of the alternatives would contribute to cumulative effects on nonmotorized transportation facilities.

4.8.7.6 Other Transportation Modes

As discussed in Section 3.8.4, Other Modes of Transportation, the Covered Lands are not currently served by rail facilities and the closest municipal airport is 15 miles away. The No Action Alternative would not create any demand for public air or rail travel because there would be no new Commercial and Residential Development Activities. For all alternatives, Existing Ranch Uses and Plan-Wide Activities are not expected to result in effects on the highway network and would not contribute to cumulatively substantial effects.

Commercial and Residential Development Activities under the proposed action alternatives would not create a substantial demand for public rail or air travel. Therefore, the alternatives would not

contribute to any cumulative effects on regional transportation modes, similar to the No Action Alternative.

As discussed in Section 3.8.4.1, Rail, planning for the California high-speed train is currently underway. However the precise timing and details of this project are not known at this time and is not possible to determine the potential effects that any of the alternatives would have on this project. If completed, however, the California high-speed train would add railway capacity in the region. However, given the proposed route from Bakersfield to Lancaster and the Covered Land's distance from both cities, it is unlikely that any of the alternatives would have a meaningful effect on this rail service, even in consideration of other past, present, or reasonably foreseeable projects.

4.8.8 Comparison of Alternatives

The No Action Alternative would result primarily in no effects related to transportation compared to existing conditions. The No Action Alternative has the potential to result in minor effects related to nonmotorized transportation facilities in open spaces although it is likely that public access to the ranch would continue to be managed in a manner to control and limit effects related to nonmotorized transportation. Plan-Wide Activities are also not anticipated to result in any transportation effects for any of the alternatives.

The proposed action alternatives would all result in an increase in vehicle trips associated with construction and operation of Commercial and Residential Development Activities compared to the No Action Alternative as shown in Table 4.8-17. However, none of the alternatives is expected to result in substantial effects on local roadways or the highway network because sufficient capacity would remain. The potential effects of the CCH Avoidance MSHCP Alternative would be slightly less than the Proposed TU MSHCP and Condor Only HCP Alternatives because there would be fewer residential units developed. The Kern County General Plan Alternative would result in the development of a more expansive area and therefore, slightly greater number of construction trips compared to all the other alternatives.

With respect to cumulative effects, none of the alternatives would be expected to result in cumulatively substantial effects from Existing Ranch Uses or Plan-Wide Activities. None of the alternatives would result in cumulatively substantial effects on public transit, nonmotorized transportation, or other modes of transportation. However, some differences between the alternatives could occur with respect to vehicle trips associated with construction and operation of commercial and residential development. Specifically, the Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives would result in a cumulatively substantial reduction in capacity on I-5 south (south of SR 138) in the year 2030. The Kern County General Plan Buildout Alternative would contribute cumulatively substantial reductions in capacity at both I-5 north and I-5 south (south of SR 138) in 2030.

Table 4.8-17. Comparison of Volume-To-Capacity Ratio for all Alternatives

Location	No Action Alternative	Proposed TU MSHCP/Condor Only HCP Alternative	CCH Avoidance MSHCP Alternative	Kern County General Plan Buildout Alternative
I-5 north	.47	.68	.67	.78
I-5 south (north of SR 138)	.38	.54	.53	.62
I-5 south (south of SR 138)	.38	.54	.54	.63
SR 138	.10	.10	.10	.10

Notes: A volume-to-capacity (V/C) greater than 1.00 represents a deficiency.

4.9 Climate Change and Greenhouse Gases

4.9.1 Overview

This section describes the regulatory setting and methods applicable to climate change and greenhouse gases (GHGs) and includes a discussion of the interactions between climate change, air quality, water resources, and biological resources to the extent they are known. This section also includes a discussion of the potential contribution of the alternatives to GHG emissions and the ability of the alternatives to adapt to climate change on biological resources. Climate change is a global phenomenon; however, the contributions to and effects from climate change are considered here with respect to the Covered Lands. Therefore, as noted in Section 3.9, Climate Change and Greenhouse Gases, the study area for this section is considered concurrent with the Covered Lands. As further discussed in Section 4.9.8, Cumulative Effects, the cumulative effects analysis area for climate change is also considered concurrent with the Covered Lands.

4.9.1.1 Regulatory Setting

Federal Laws, Regulations, and Standards

U.S. EPA Endangerment and Cause or Contribute Findings for Greenhouse Gases

On December 7, 2009, the Administrator of the Environmental Protection Agency (EPA), based on requirements from a U.S. Supreme Court decision,[1] signed a final rule allowing GHGs from motor vehicles to be regulated as air pollutants under the Federal Clean Air Act (Appendix C, Climate Change Effects and the TU MSHCP) (U.S. Environmental Protection Agency 2009).

Council on Environmental Quality Draft NEPA Guidance for Addressing Climate Change

On February 18, 2010, the Council on Environmental Quality (CEQ) released the Draft National Environmental Policy Act (NEPA) Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. Under this guidance, CEQ suggests that Federal agencies, during NEPA scoping, should consider whether a quantitative and qualitative analysis of GHG emissions would provide meaningful information to decision-makers and the public. CEQ recommends that 25,000 tons of carbon dioxide equivalent (CO_2e) of direct emissions be used as an indicator—but not a significance threshold—to determine whether to include a GHG analysis. When GHG emissions are analyzed, CEQ recommends that agencies quantify cumulative emissions over the life of the project; discuss measures to reduce GHG emissions, including consideration of reasonable alternatives; and qualitatively discuss the link between such GHG emissions and climate change. CEQ recognizes that it is not currently feasible to draw a direct link between GHG emissions resulting from a Federal action and specific climate changes.

[1] Massachusetts et al. v. Environmental Protection Agency et al., 549 U.S. 497 (2007) holding that EPA has the statutory authority under Section 202 of the Clean Air Act to regulate GHGs from new motor vehicles and directing the Administrator of the U.S. EPA to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

Additional statutes and regulations regarding GHG regulations have been issued regarding motor vehicles, GHG reporting, stationary sources, and energy sources (Appendix C).

State Laws, Regulations, and Standards

Global Warming Solutions Act of 2006, Assembly Bill 32

The California Global Warming Solutions Act of 2006, also known as Assembly Bill (AB) 32 requires that GHG emissions in California return to year 1990 levels by 2020. The California Air Resources Board (CARB) is responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted pursuant to AB 32.

As required under AB 32, on December 6, 2007, CARB approved the year 1990 GHG emissions inventory, 427 million metric tons of CO_2e, thereby establishing the emissions limit for 2020.

On December 11, 2008, CARB approved the Climate Change Scoping Plan, a Framework for Change (Scoping Plan) to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. CARB determined that achieving the 1990 emission level would require a reduction of GHG emissions of approximately 29% below what would otherwise occur in 2020 in the absence of new laws and regulations, referred to as "business as usual." The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program. Additional development of these measures and adoption of the appropriate regulations will occur over the next 2 years, becoming effective by January 1, 2012.[2]

Sustainable Communities and Climate Protection Act, *Senate Bill* 375

Following AB 32, on September 30, 2008, former Governor Schwarzenegger signed Senate Bill (SB) 375 (Steinberg). SB 375 addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. On September 23, 2010, CARB assigned regional GHG reduction targets for the automobile and light truck sector for 2020 and 2035. The targets reflect consideration of the emission reductions associated with vehicle emission standards (AB 1493), the composition of fuels (Appendix C), and other CARB-approved measures to reduce GHG emissions. Regional metropolitan planning organizations will be responsible for preparing a Sustainable Communities Strategy in the Regional Transportation Plan, which will establish a development plan for the region that will achieve, if feasible, the GHG reduction targets.

Additional statutes and executive orders have been issued that:

[2] In 2009, a coalition of environmental groups challenged the Scoping Plan alleging that it violated AB 32 and that the environmental review document violated CEQA by failing to appropriately analyze alternatives to the proposed cap-and-trade program. On May 20, 2011, the San Francisco Superior Court entered a final judgment in favor of the coalition. The Appellate Court stayed the Superior Court's injunction on June 3, 2011. Meanwhile, in an effort to comply with the Superior Court's Judgment, CARB released a supplemental environmental document that analyzes alternatives to cap-and-trade on June 13, 2011, and adopted final cap-and-trade regulations in October 2011. In December 2011, the Superior Court determined the supplemental environmental analysis satisfied CARB's obligation. All portions of the Scoping Plan, therefore, remain valid.

- address California's goals to increase the amount of electricity produced by renewable energy sources,
- examine effects of sea level rise, and
- reduce GHG emissions from motor vehicles and fuels (Appendix C).

4.9.1.2 Methods

The analysis that follows discusses first the GHGs associated with each alternative using the assumptions and methods described below and then discusses the relationship between climate change and biological resources and the various alternatives.

Methods and Assumptions for GHG Emission Calculation

The analysis of the effects and the magnitude of direct, indirect, and cumulative effects with respect to climate change and GHG emissions are considered in terms of whether each alternative would contribute to cumulatively considerable GHG emissions. In general, potential effects were assumed to be associated with the contribution of construction and operation activities to GHG emissions from Commercial and Residential Development Activities.

GHG emissions for each alternative are compared against emissions present under the No Action Alternative. GHG emissions of the No Action Alternative are compared to existing conditions, under which the primary sources of emissions are associated with ongoing Existing Ranch Uses. Construction emissions could occur as a result of road and utility maintenance, construction of new roads or utilities, and construction of ancillary ranch structures or back-country cabins. Existing residential and commercial uses are limited, but could potentially result in minor amounts of operation emissions. Because these activities generate only incidental, insubstantial GHG emissions, the existing condition is assumed to result in negligible GHG emissions.

General Basis for the Analysis

As discussed above, no adopted guidance is yet available regarding GHG analysis under NEPA, and there are not accepted thresholds applicable to Federal GHG analyses. In addition, state guidance on the issue remains in flux and varies by jurisdiction. Therefore, the methods in this document follow the June 2008 technical guidance advisory from the Governor's Office of Planning and Research (OPR), which recommended that environmental documents prepared in accordance with the California Environmental Quality Act (CEQA) include estimates of the GHGs associated with vehicular traffic, energy consumption, water usage, and construction activities (Governor's Office of Planning and Research 2008). The methodology used to estimate GHG emissions presented for each alternative are consistent with the initial guidance developed by OPR as well as the Draft NEPA Guidance.

Modeling Assumptions

The California Emission Estimator Model (CalEEMod), Version 2011.1.1, was used to generate GHG emissions estimates for construction and operation scenarios under each alternative. CalEEMod estimates GHG emissions from construction equipment, delivery trucks, and worker vehicles during construction and from motor vehicles, natural gas combustion, landscape maintenance equipment, hearth combustion, water supply, wastewater treatment, and solid waste during operation. The GHG emissions were determined for each alternative without regard to the air basins in which they

would occur. The primary assumptions and the general modeling approach are discussed in detail in Section 4.3, Air Quality, under Section 4.3.1.1, Methods. Additional details specific to GHG emissions are discussed below.

The default values in CalEEMod were used to estimate operational emissions for landscape maintenance and natural gas combustion for space and water heating. Adjustments of the CalEEMod default assumptions were made to fireplaces, water, and wastewater, as further explained in Appendix F, Air Quality and Greenhouse Gas Assessment, to better reflect the development scenarios (i.e., a mix of urban-type and rural residential development). Light-duty motor vehicle GHG emissions were reduced to reflect the AB 1493 (Pavley) GHG emission standards and the Low Carbon Fuel Standard as implemented in CalEEMod.

Methods and Assumptions for Analysis of the Relationship Between Climate Change and Other Resources

The discussion that follows describes the current state of knowledge about the relationship between climate change and various other resources—including air quality, water resources, and biological resources—and describes how these relationships are considered with respect to the different alternatives in this Supplemental Draft EIS.

Climate Change and Air Quality

It is generally understood that higher temperatures, conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude and location of the effect, and therefore its indirect effects, are uncertain. For other pollutants, the effects of climate change and/or weather are less well studied and understood. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality (e.g., particulate matter). However, if higher temperatures are accompanied by wetter conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thus ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (California Climate Change Center 2006).

Evidence suggests, therefore, that a relationship between climate change and air quality exists. However, the precise nature of this relationship is not understood. Moreover, the tools do not exist to link a particular action's air quality effects to a change in global temperature, or to determine how the impacts of climate change on air quality might interact with a particular action's air quality or climate change effects. Thus, while the Service recognizes that some relationship between these factors does exist, this Supplemental Draft EIS does not speculate on what precisely this relationship might be.

Climate Change and Water Resources

An emerging issue of study and concern is the potential effect of climate change on water resources. The California Academy of Sciences (California Natural Resources Agency 2009) identified several potential effects of climate change on water supplies and water management, including reduced water supply from the Sierra Nevada snowpack; sea level rise and changes in water quality; increased evapotranspiration rates from plants, soils and open water surfaces; moisture deficits in

nonirrigated agriculture, landscaped areas, and natural systems; increased irrigation needs; increased agricultural demands due to a longer growing season; and increased urban water use.

Uncertainty remains, however, with respect to the overall effect of global climate change on future regional water resources in California. Studies have found that "considerable uncertainty about precise effects of climate change on California hydrology and water resources will remain until we have more precise and consistent information about how precipitation patterns, timing, and intensity will change" (Kiparsky and Gleick 2003). Although most of the projected effects of climate change are based on the assumptions of increased temperatures and reduced water supplies, even assuming that climate change leads to long-term increases in precipitation, analysis of the effect of climate change is further complicated by the fact that no studies have identified or quantified the runoff effects that such an increase in precipitation would have on particular watersheds (California Climate Change Center 2006). Also, little is known about how groundwater recharge and water quality will be affected. Reductions in spring runoff and higher evapotranspiration could reduce the amount of water available for recharge, although higher rainfall could lead to greater groundwater recharge and sea level rise could increase saltwater intrusion (California Climate Change Center 2006).

The California Department of Water Resources (DWR), the agency that manages the State Water Project, has concluded that "climate change will likely have a significant effect on California's future water resources [and] future water demand," yet it also reports that much uncertainty about future water demand remains (California Department of Water Resources 2006). Still, changes in water flows and supply are expected to occur, and many regional studies have shown that large changes in the reliability of water yields from reservoirs could result from only small changes in inflows (Kiparsky and Gleick 2003).

As discussed in Section 3.9.1.2, Considerations from Global Climate Change, climate change could affect the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide, and high runoff events); sea-level rise and coastal flooding; coastal erosion; and the potential for saltwater intrusion. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) concluded that continued GHG emissions at or above current rates would cause further warming, and, using model-based projections of global average sea level rise, predicted a range of sea level rise—between 18 and 76 centimeters (7 inches to 2.5 feet) (Siddall et al. 2009). Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Evidence, therefore, indicates that a relationship between climate change and water resources exists; however, the precise nature of this relationship is not understood. Moreover, the tools do not exist to link a particular action's water resources effects to a change in global temperature, or to determine how the effects of climate change on water resources might interact with a particular action's air quality or climate change effects. While the Service recognizes that some relationship between these factors does exist, this Supplemental Draft EIS does not speculate on what precisely this relationship might be.

Climate Change and Biological Resources

The potential effects of climate change on biological resources in the future cannot be predicted with a high level of certainty; however, warmer temperatures, altered precipitation, seasonal shifts, and

lengthening of the growing season are anticipated. The discussion that follows begins by describing, to the extent it is understood, the relationship between climate change and biological resources, in particular with respect to California and the Covered Lands in general. It goes on to describe the framework developed by the EPA to help determine species vulnerability to climate change, and summarizes the results of applying this framework to the Covered Species. Details of this analysis are provided in Appendix C.

With respect to species, numerous studies of the effects of climate change on biota have been conducted. Comprehensive reviews, analyses, and integration of much of this research can be found in various published sources, including Hansen et al. (2001), McCarty (2001), Parmesan (2006, 2007), Parmesan et al. (2000), Parmesan and Yohe (2003), and Walther et al. (2002). Parmesan (2006), for example, concluded that changes in phenology and distribution of well-studied terrestrial, marine, and freshwater plant and animal species groups are occurring and are linked with local or regional climate change. These changes include severe contractions and extinctions of range-restricted polar and mountain-top species; disruptions of predator-prey and plant-insect relationships due to differential responses to warming; evolutionary adaptations to warming in the interior portions of species' ranges, and rapid change in species' resource use and dispersal at range margins; and genetic shifts.

Within California, a hotter and drier climate would facilitate expansion of deserts and grasslands, resulting in a loss of native plant diversity and an increase in nonnative, invasive species (California Natural Resources Agency 2009). The Climate Analysis Section of the National Center for Atmospheric Research (California Natural Resources Agency 2009) also indicated an increase of 57% to 169% in the intensity of wildfires in California, which would result in vegetation alterations and increase recruitment of nonnative grasslands. As noted above, although the specific effects of climate change on the Covered Lands are uncertain, generally, the mountain upland portions of the ranch supporting woodland and shrublands communities could be vulnerable to expansion of savannah communities and nonnative grasses as a result of a hotter and drier climate and increased frequency and/or intensity of wildfires. As a result, the wildlife and botanical resources in the Covered Lands could be directly and indirectly affected by climate change.

Altered hydrology resulting from earlier snowmelt and/or altered geomorphological processes may affect regeneration of early successional riparian vegetation (California Natural Resources Agency 2009), which may affect many riparian and wetland species. The Covered Lands are unlikely to be significantly affected by changes in snowmelt patterns because of its relatively low elevation and lack of accumulation of a seasonal snowpack. However, the hydrology of local drainages could be altered (e.g., longer dry periods), resulting in adverse effects on riparian and wetlands species in the Covered Lands, including spatial or temporal loss or reduction of habitat necessary to support the life histories of some species. For example, riparian vegetation of sufficient patch size or structural complexity to support breeding birds may be lost or reduced in extent. Adequate aquatic breeding and foraging sites for amphibians and semiaquatic reptiles also may be lost or reduced due to premature drying of creeks and ponds in the spring and summer, thus reducing the chance of these species successfully completing their reproductive cycles.

Climate change could also have adverse indirect effects resulting from the introduction of nonnative, invasive species that compound the stress of climate change. The potential adverse effects of nonnative species include herbivory, predation, disease, parasitism, competition, habitat destruction, hybridization, and changed disturbance regimes and nutrient cycles (Simberloff 2000). Climate change could exacerbate these effects by providing habitats for nonnative species that were

not otherwise available. In the Covered Lands, as noted above, woodland and shrubland communities could be vulnerable to conversion to more open savannah and grassland communities directly as result of climate change and indirectly as a result of increased fire intensity or frequency. Lenihan et al. (2003) suggest that grassland would advance into the range of mixed evergreen woodland and shrubland due to a decline in the competitiveness of woody life-forms associated with reduced rainfall and increased or more intense fire events. D'Antonio and Vitousek (1992) identify the mechanisms by which nonnative grasses can outcompete native vegetation, including inhibition of seedlings of woody species by light absorption, water uptake, and nutrient uptake. Invasive grasses may also alter natural fire regimes by increasing fine fuel loads and volatility. Grasses also recover from fire more quickly than woody species. Invasion by grassland therefore can then create a positive feedback grass/fire cycle that increases the frequency, area, and intensity of fires (D'Antonio and Vitousek 1992).

There is currently a high degree of uncertainty about species- and habitat-specific effects of climate change, at least at a community, ecosystem, or regional level (California Natural Resources Agency 2009, Hansen et al. 2001, Hulme 2005, Mustin et al. 2007, Peterson et al. 2002, U.S. Fish and Wildlife Service 2009, Walther et al. 2002). Some species may exhibit substantial effects, and others may show no measurable effect (Parmesan and Yohe 2003, Visser and Both 2005). An understanding of what kinds of life history traits will make a species more or less sensitive to climate change would allow scientists to identify those species that are most vulnerable. For this purpose, the EPA published a notice of public comment period for *A Framework for Categorizing the Relative Vulnerability of Threatened and Endangered Species to Climate Change* (referred to herein as the Draft Framework) on November 25, 2009 (74 FR 61671-61673).[3] The Draft Framework describes a combined quantitative and qualitative method for evaluating threatened and endangered species' relative vulnerability to climate change (note that this evaluation emphasizes a species' relative vulnerability, not its absolute vulnerability to climate change). The Draft Framework states that species that are most sensitive to climate change are those that are:

- Restricted in distribution (e.g., narrow endemic species)
- Small in population size
- Currently undergoing population declines
- Habitat specialists
- Found in habitats that are most likely to be affected by climate change

Species that are least sensitive to climate change are those that:

- Are widely distributed
- Have flexible habitat preferences
- Have stable or increasing populations

An analysis of these life history and other factors as related to the Covered Species identified those species that may be more sensitive to climate change, those species that may be somewhat less sensitive to climate change, and those species that are likely to be insensitive to climate change. This analysis is provided as Appendix C to this Supplemental Draft EIS, and finds the Covered Species likely to be more sensitive to climate change include:

[3] EPA extended the 30-day comment period until March 25, 2010. No action has been taken since then.

- Tehachapi slender salamander
- Yellow-blotched salamander
- Purple martin
- Tricolored blackbird
- Western yellow-billed cuckoo
- Willow flycatcher (both the little willow flycatcher and southwestern willow flycatcher subspecies)
- White-tailed kite
- Valley elderberry longhorn beetle
- Kusche's sandwort
- Round-leaved filaree
- Striped adobe lily

These species tend to share common characteristics associated with potential sensitivity to climate change, such as narrow geographic ranges (including elevation ranges), specialized habitat requirements (e.g., preference for talus slopes by Tehachapi slender salamander), documented declining populations, or habitats that are most likely to be affected by climate change (e.g., wetland and riparian habitats).

Covered Species likely to be somewhat less sensitive to climate change compared to the species listed above include:

- Western spadefoot
- Coast horned lizard
- Two-striped garter snake
- California condor
- Least Bell's vireo
- Yellow warbler
- Ringtail
- Tehachapi pocket mouse
- Fort Tejon woolly sunflower
- Tehachapi buckwheat
- Tejon poppy

These species tend to be more variable in characteristics associated with both potential higher and lower sensitivity to climate change. For example, condors are long-lived and are mobile, opportunistic foragers, which are characteristics of lower risk species. However, while other raptors are categorized as relatively insensitive to climate change, condors, while not in the highest level of sensitivity, are classified as somewhat more sensitive to climate change than other raptors because they have a fairly restricted geographic range, occur in small populations in the wild, and their

natural prey (e.g., deer) could be adversely affected by climate change, As another example, the least Bell's vireo is a riparian species whose breeding habitat is somewhat restricted in California and is most likely to be affected by climate change. However, the vireo population is expanding in California and it has broader habitat requirements than the more restricted willow flycatcher, which therefore may be relatively more sensitive to climate change.

Covered Species that are likely to be insensitive to climate change include:

- American peregrine falcon
- Bald eagle
- Burrowing owl
- Golden eagle

These species tend to share common characteristics associated with low sensitivity to climate change, such as large geographic ranges encompassing a broad range of climate conditions, stable or increasing populations, flexible habitat and foraging requirements, or occupation of generally hotter and more arid environments (e.g., sparse grasslands, open scrub, and desert). For example, the burrowing owl has a broad geographic range (including extremely hot desert environments), its habitat (open grassland, pasture, desert) is unlikely to be substantially affected by a hotter and drier climate in California (and in fact grasslands and deserts are likely to expand), and it is a generalist in its feeding habits (e.g., insects, small mammals, reptiles, birds, and carrion). Although burrowing owl populations may be declining due to several factors, including habitat loss, pesticide use, and introduced predators, it is unlikely that climate change would add to or exacerbate existing stressors.

As discussed above, climate change effects are likely to occur in the Covered Lands, and may result in changes in vegetation communities and use of the Covered Lands by some Covered Species. As discussed further in Section 3.4 of Appendix C, because climate change projections are uncertain and species-specific responses to climate change are generally poorly understood, the strategies for coping with climate change effects will need to be flexible and adaptive (California Natural Resources Agency 2009, U.S. Fish and Wildlife Service 2009, Lawler et al. 2010).

Thus, the analysis below considers whether each alternative satisfies the following management prescriptions to address climate change recommended by Halpin (1997) (see Appendix C for further discussion):

- Selection of redundant reserves
- Selection of reserves that protect habitat diversity
- Management for buffer zone flexibility
- Management for landscape connectivity
- Management for habitat maintenance

4.9.2 No Action Alternative

4.9.2.1 Greenhouse Gas Emissions

Commercial and Residential Development Activities

Construction

No Commercial and Residential Development Activities would occur under the No Action Alternative. Therefore, there would be no direct or indirect contribution of GHGs during construction of development infrastructure under the No Action Alternative.

Operations

No Commercial and Residential Development Activities would occur under the No Action Alternative. Therefore, there would be no direct or indirect contribution of GHGs from operation of development infrastructure under the No Action Alternative.

Existing Ranch Uses

Under the No Action Alternative, Existing Ranch Uses would continue similar to existing conditions, subject to the use restrictions and best management practices (BMPs) required pursuant to the Ranchwide Agreement, as currently set forth in the Interim RWMP (Tejon Ranch Company 2009). Such BMPs include provisions to minimize GHG emissions, including designing structures and signs in an energy-efficient manner, and employing off-grid energy technologies when feasible. The Ranchwide Agreement requires that all subsequent RWMPs must similarly reflect BMPs that protect the conservation values of the land and that such restrictions are carried through in the conservation easements required by the Ranchwide Agreement.

As discussed above, minor construction and operation GHG emissions would occur under the No Action Alternative as a result of ongoing Existing Ranch Uses (i.e., associated with filming activities and construction and maintenance of road and utilities infrastructure, ancillary ranch structures, and back-country cabins). Because these activities generate only incidental, insubstantial GHG emissions, it is assumed they would only result in negligible GHG emissions. Thus, Existing Ranch Uses under the No Action Alternative would not result in substantial GHG emissions.

4.9.2.2 Effects of Climate Change on Biological Resources

As discussed above, the No Action Alternative would result in no new commercial and residential development and Existing Ranch Uses would continue to occur as they do under existing conditions. Therefore, there would be no change in GHG emissions resulting from the No Action Alternative as compared to existing conditions. However, climate change effects on biological resources would occur with or without proposed development. Under the No Action Alternative, up to 106,317 acres of lands would likely be permanently protected through the Ranchwide Agreement and the remaining 28,679 acres of open space (excludes Not-A-Part Inholdings) would remain undeveloped, which could reduce the potential effects of climate change in the Covered Lands by providing large, contiguous tracts of open space. However, it is not clear that funding would be available under this alternative to implement any adaptive management strategy to deal with climate change effects over the long term, and requirements to deed-restrict the TMV Planning Area Open Space would not be triggered because development would not occur per the terms of the Ranchwide Agreement. Thus,

Halpin's (1997) recommendations for flexible, adaptive management may not be met under the No Action Alternative.

4.9.3 Proposed TU MSHCP Alternative

4.9.3.1 Greenhouse Gas Emissions

Commercial and Residential Development Activities

Construction

Commercial and Residential Development Activities would result in GHG emissions, primarily associated with on- and off-road construction vehicle and equipment use. For the Proposed TU MSHCP Alternative, the estimates of these emissions are presented in Table 4.9-1. The maximum GHG emissions during construction would range from 676 metric tons of emissions per year (expressed as CO_2e) to 11,972 metric tons per year, peaking in 2025.

Table 4.9-1. Greenhouse Gas Emissions during Construction—Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives (metric tons per year CO_2e)

Analysis Year	Total	Analysis Year	Total
2013	2,813	2027	7,014
2014	3,295	2028	6,987
2015	3,291	2029	11,515
2016	3,278	2030	6,492
2017	6,737	2031	6,492
2018	3,658	2032	6,517
2019	3,645	2033	1,510
2020	3,647	2034	888
2021	6,374	2035	888
2022	3,481	2036	892
2023	3,474	2037	1,508
2024	3,494	2038	888
2025	11,972	2039	885
2026	7,014	2040	676

GHG calculations also include the one-time loss of sequestered carbon resulting from conversion of existing vegetation types to developed uses. CalEEMod calculates project-related GHG emissions resulting from land conversion and uses five general IPCC land use classifications—forest land (scrub), forest land (trees), cropland, grassland, and wetlands—for assigning default CO_2 content values (metric tons CO_2/acre). Calculation of the one-time loss of sequestered carbon in CalEEMod is the product of the converted acreage value and the CO_2 content value for each land use type (vegetation community). The total open space and developed acreages for each vegetation community for the Proposed TU MSHCP Alternative are shown in Table 4.1-2 in Section 4.1, Biological Resources.

The total Disturbance Area under the Proposed TU MSHCP Alternative (5,533 acres; see Table 2-5 in Chapter 2, Proposed TU MSHCP and Alternatives), was divided by an adjusted Development Envelope[4] (8,733 acres; see Table 4.1-2 in Section 4.1, Biological Resources) to estimate that 63% of the total Development Envelope would be disturbed (i.e., vegetation may be removed for development). This value was applied to the development area in each vegetation community and multiplied by a percent affected value to determine the overall affected area (converted area) in each vegetation community. The percent affected value is a factor representing the assumed conversion of a vegetation community to a development land use. The percent affected values for each of the eight vegetation types found on the Covered Lands are presented in Appendix F, and were developed based on an evaluation of vegetation cover type. For example, development in savannah vegetation types was assumed to only convert 20% of the vegetative cover in the disturbed area due to sparse tree cover and the likely ability and desire to avoid tree removals for development purposes. Development in scrub habitats, however, was assumed to convert 75% of the vegetative cover in the disturbed area based on the fact that the vast majority (approximately 95%) of scrub habitats was already being preserved in open space or other non-disturbed areas; thus, a relatively higher percent of the remaining scrub was assumed to be affected. CalEEMod inputs for this calculation include the initial and final acres of a vegetation type. The area affected was subtracted from the initial area in each vegetation community to calculate the final area remaining after development.

With the exception of the forest land (trees) land use classification, the default CalEEMod values for CO_2 content were applied to each vegetation type. Custom values for the CO_2 content of tree-dominated forest land were calculated and incorporated into the CalEEMod model. Specifically, data from the Carbon Online Estimator (COLE) was retrieved and evaluated to provide more accurate representations of sequestered carbon in California forests and woodlands. Based on U.S. Forest Service (USFS) Forest Inventory and Analysis (FIA) plot data, COLE calculates carbon stocks (metric tons carbon/hectare) by forest type for specific geographic areas selected by the user. In this case, data from all FIA plots within a 50-kilometer (km) radius of the approximate center of the Covered Lands was included in the COLE report developed for this analysis. Individual forest types represented in the COLE report were matched to savannah, woodland, and forest types mapped on the Covered Lands. In instances where woodland or forest vegetation types on Covered Lands did not have a direct match with the COLE report, substitutions or adjustments were made (e.g. the carbon stocks value for mixed oak woodland on the Covered Lands was calculated as the average value of the five other oak woodland types included in the COLE report). For savannah types, carbon stocks values correlated to their woodland counterpart minus understory, downed dead wood, and forest floor carbon values as a grass understory is assumed. Total non-soil carbon values (metric tons carbon/hectare) from the COLE report for each savannah, woodland, and forest type were then weighted based on the proportion each subtype (e.g., blue oak woodland) represented on the Covered Lands and summed to determine carbon stock values (metric tons carbon/hectare) for savannahs, woodlands, and forests. These values were converted to metric tons CO_2/acre and were then applied to the savannah, woodland, and forest vegetation types (Appendix F) used in the CalEEMod.

[4] As summarized in Table 2-5 in Chapter 2, Proposed TU MSHCP and Alternatives, the Development Envelope for the Proposed TU MSHCP Alternative is 8,817 acres. The adjusted Development Envelope area of 8,733 acres is based on the assumption that 75% of the riparian/wetland habitats within the Development Envelope would be avoided to comply with Federal, state, and local wetland protection regulations. See Section 4.1, Biological Resources, for an additional discussion of the calculations associated with the Disturbance Area and Development Envelope.

The results of this analysis are shown in Table 4.9-2. Overall land development is estimated to result in a loss of 189,746 metric tons CO_2 of sequestered carbon due to full development under the Proposed TU MSHCP Alternative.

Table 4.9-2. Loss of Sequestered Carbon— Proposed TU MSHCP and Condor Only HCP Alternatives (metric tons, CO_2)

Vegetation Type	Initial (acres)	Final (acres)	Sequestered Carbon
Agriculture	232	88	893
Savannah	33,120	32,763	21,242
Conifer Forest	3,956	3,924	5,357
Woodland	48,736	47,564	149,313
Scrub	7,841	7,686	2,217
Grassland	24,944	23,763	5,090
Chaparral	14,415	14,028	5,634
Riparian Woodland	703	701	0
Total Loss			189,746

As explained in Section 4.9.3.3, Mitigation Measures, Commercial and Residential Development in the Covered Lands would be subject to Federal, state, and local requirements to minimize GHG emissions. As part of the project-level approval process, it is anticipated that the local jurisdiction would require the implementation of minimization and mitigation measures to reduce air emissions. For example, Kern County's approval of the TMV Project requires, among other things, submittal of a focused GHG report identifying measures to reduce GHG emissions prior to issuance of a grading or building permit; use of alternative fuels and sustainable materials during construction; and additional specific measures to reduce energy use and air emissions (Appendix J, MMs 4.3-1 through 4.3-5, 4.3-18 through 4.3-21) (Kern County 2009). For additional details about the mitigation required for the TMV Project, see Appendix J. These measures would further reduce GHG emissions; however, substantial emissions would still occur and would be greater than the No Action Alternative under which no commercial and residential development would proceed.

Operations

Long-term uses associated with Commercial and Residential Development Activities would also result in GHG emissions associated with electricity generation, on-road vehicle use, natural gas and hearth combustion, and water supply. Estimates of these emissions absent implementation of avoidance, minimization, and mitigation measures are presented in Table 4.9-3. The operational emissions at buildout would be 526,752 metric tons of emissions per year (expressed as CO_2e).

The Proposed TU MSHCP Alternative has master-planned-community development, which creates opportunities for innovative approaches to sustainability. Under this alternative, it is anticipated that applicants working together with Kern County may incorporate sustainability features associated with water and energy conservation, such as exceeding Title 24 energy requirements, assigning a Maximum Applied Water Allowance budget to each lot or home, establishing requirements for minimizing construction materials and other solid waste, and establishing a voluntary air quality emissions reduction program. While reductions from operations avoidance measures are expected to be substantial, they cannot be accurately calculated at this time, given such measures change over time.

In addition, Kern County would be the local Lead Agency under CEQA responsible for addressing GHG emissions associated with the development scenario anticipated under this alternative, and would be responsible for imposing specific GHG-reduction requirements. For example, Kern County's approval of the TMV Project requires, among other things, development of a focused greenhouse gas report identifying measures to reduce GHG emissions prior to issuance of a grading or building permit and incorporation of design elements to encourage ride-sharing, alternative vehicle use, and recycling (Appendix J, MMs 4.3-6 through 4.3-14 and 4.3-18 (Kern County 2009). Nonetheless, even with reduction from minimization and mitigation measures, substantial GHG emissions are expected to occur.

Table 4.9-3. Operation Greenhouse Gas Emissions—Proposed TU MSHCP and Condor Only HCP Alternatives (metric tons per year, CO_2e)

Analysis Year	Total	Percent of Total
2017	34,872	—
2021	109,570	—
2025	179,242	—
2029	344,429	—
2033	459,203	—
2037	491,896	—
Proposed MSHCP Alternative Buildout Year 2041		
Area Sources	1,628	0.3%
Energy (Natural Gas and Electrical Generation)	24,908	4.7%
Mobile Sources	495,080	94.0%
Solid Waste	3,692	0.7%
Water Supply and Wastewater	1,444	0.3%
Year 2041 Totals	526,752	100.0%

As discussed in Section 4.3, Air Quality, with respect to criteria pollutants, construction under the Proposed TU MSHCP Alternative would occur over several years, and would overlap with operations for a period. Combined construction and operation GHG emissions for the same 4-year increments used for criteria pollutants presented below in Table 4.9-4.

Table 4.9-4. Combined Construction and Operation GHG Emissions —Proposed TU MSHCP and Condor Only HCP Alternatives (metric tons per year, CO_2e)

Analysis Year	Total
2017	41,609
2021	115,944
2025	191,214
2029	355,944
2033	460,713
2037	493,404
2041	526,752
Maximum Annual Emissions	526,752

Plan-Wide Activities

Although some Plan-Wide Activities under the Proposed TU MSHCP Alternative would generate GHG emissions, these emissions would be minor, similar to existing conditions, and would not result in a substantial increase in GHG emissions compared with the No Action Alternative. In addition, similar to Existing Ranch Uses under the No Action Alternative, the use restrictions and BMPs required by the Ranchwide Agreement (as currently set forth in the Interim RWMP) would include provisions to minimize GHG emissions (e.g., designing structures in an energy efficient manner, employing off-grid energy technologies when feasible). These provisions would further reduce the potential for GHG emissions under the Proposed TU MSHCP Alternative, and keep GHG emissions minor.

4.9.3.2 Effects of Climate Change on Biological Resources

As discussed under the No Action Alternative, climate change effects on biological resources would occur with or without development activities. Under the Proposed TU MSHCP Alternative, up to 526,752 metric tons of emission per year (expressed as CO_2e) would be emitted as a result of Commercial and Residential Development Activities. The Proposed TU MSHCP Alternative would conserve 126,034 acres[5] in Established Open Space, TMV Planning Area Open Space, and Existing Conservation Easement Areas.

Halpin (1997) recommends protection of biodiversity and redundant reserves. The Proposed TU MSHCP Alternative would conserve 94% of the natural vegetation communities (i.e., excluding agriculture, disturbed communities, and developed land covers) in the Covered Lands, as summarized by vegetation type in Table 4.1-2. By acreage, protection of vegetation communities in open space would range from about 50% for scrub (i.e., 281 of 564 acres) to 100% for several other communities, including Mojavean scrub and several types of savannah, woodland, conifers, and riparian/wetlands and washes (Table 4.1-2). Overall, open space would include approximately 94% of the savannah communities in the Covered Lands, 95% of woodlands, 98% of conifer forest, and 93% of riparian/wetlands, riparian woodland, and wash. Protecting these communities is important because they are the communities in California expected to be most affected by climate change (Hansen et al. 2001, Kueppers et al. 2005, Lenihan et al. 2003) (Section 3.2.2 in Appendix C). In addition, 94% of chaparrals and 98% of grasslands (excluding disturbed / non-native grasslands) would be in preserved in open space (Table 4.1-2). In general, it is anticipated that the existing biodiversity of the Covered Lands would be conserved under the Proposed TU MSHCP Alternative in open space areas.

Of the acreage of vegetation assumed to be removed by development under the Proposed TU MSHCP Alternative, excluding developed areas and areas in agricultural production, 26% (2,214 acres) would be nonnative grassland, 23% (1,963 acres) would be oak savannah, and about 23% (1,897 acres) would be blue oak woodland. The nonnative grassland community would be least adversely affected by climate change, as it is actually expected to expand in California with hotter and drier conditions and more frequent and/or more intense wildfires (Appendix C). While a portion of the acreage in savannah (6%) would be developed, 94% of the vegetation community would be preserved in open space under the Proposed TU MSHCP Alternative. Likewise, while 21% of blue oak woodland would be developed, 79% of this community would be in open space. From a

[5] The open space acreage of 126,034 reported here is less than the total open space acreage of 129,318 acres described in Chapter 2, Proposed TU MSHCP and Alternatives, because of the greater Development Envelope area considered to assess direct biological effects.

statewide perspective, this particular oak community is projected to shift its range northward and generally decline in California in the future (Kueppers et al. 2005). However, both a regional climate model and global climate model project that the blue oak woodland community may expand from its current distribution in the Tehachapi Mountains area (Figure 2 of Kueppers et al. 2005) (Appendix C, Section 3.2.2).

In addition to the specific protection of more than 126,000 acres of natural vegetation in the Covered Lands and the protection of modeled habitat for the Covered Species, the Ranchwide Agreement would provide for conservation of 240,000 acres (90%) of Tejon Ranch. This level of protection of natural vegetation communities and modeled habitat for the Covered Species under the Proposed TU MSHCP Alternative, and ultimately up to 240,000 acres ranch-wide, would ensure conservation of existing biodiversity in the Covered Lands, consistent with the recommendation in Halpin (1997) of protecting biodiversity in reserves to address climate change (Appendix C, Section 1.1).

Halpin (1997) also recommends management of species and ecosystems by maintaining buffer flexibility to address climate changes (Appendix C, Section 1.1). Along with conservation of natural vegetation communities and modeled habitat for the Covered Species, specific conservation measures would be included in the Proposed TU MSHCP to minimize the added or interactive effects of climate change on existing stressors. These measures include incorporation of design features at the boundary between modeled habitat and development to avoid, mitigate, and minimize the introduction of exotic plant and animal species, such as the Argentine ant, and urban runoff in natural areas that could be exacerbated by climate change (e.g., increased need for irrigation or degradation of native vegetation communities, making them more vulnerable to invasion); direction of lighting away from open space habitats; and species-specific measures, including prescribed buffer areas to protect sensitive species from human activity. These design features and management measures are described in detail in Section 7.2, Avoidance, Minimization, and Mitigation Measures, of the TU MSHCP, and summarized for each species in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives, in this Supplemental Draft EIS. In addition, as noted above, climate change could exacerbate the potential adverse effects of pests and associated control measures for pests (Appendix C, Section 3.3). The Proposed TU MSHCP Alternative would require preparation of an integrated pest management plan (IPMP) concurrent with landscape improvement plans for the golf course, resort, and common open space. The IPMP would include control measures to address the potential effects of invasive species. Thus, with implementation of project design features to buffer open space from development and the IPMP, the Proposed TU MSHCP Alternative would incorporate the Halpin (1997) recommendation of managing for buffer flexibility to help address climate change effects that may add to or interact with other stressors and adverse edge effects.

Halpin (1997) further recommends management for landscape connectivity to address climate changes (Appendix C, Section 1.1). The size and configuration of the proposed open space system for the Covered Lands under the Proposed TU MSHCP Alternative would ensure that landscape connectivity is maintained, which is important for maintaining flexibility in both wildlife and plant species movements, dispersal, and habitat and range shifts that may occur in response to climate change. As discussed in detail in Section 4.1.3.3, Wildlife Movement and Connectivity, habitat connectivity would be maintained in Tejon Ranch and would allow both landscape-level wildlife movement and access by wildlife to existing undercrossings of I-5. A minimum 2-mile-wide open space area would be protected between the northern boundary of the Covered Lands and the TMV Planning Area. Inclusion of TMV Planning Area Open Space in the low-density mountain residential

area of the TMV Project would provide a linkage at least 4 miles wide along the northern portion of Tejon Ranch.

Finally, Halpin (1997) recommends management for habitat maintenance to address climate changes (Appendix C, Section 1.1). Climate change effects are expected to add to or exacerbate current stressors on sensitive species, but the actual responses by species are generally unknown or poorly understood. It is not possible at this time to make precise, quantitative predictions about local-scale species responses to climate change due to the combined uncertainty of the climate models, a lack of regional or local precision of the climate models, the uncertainty of future emission scenarios, and the complexity of species' responses to climate (Appendix C, Section 3.4). While climate change itself (e.g., changes in precipitation, warmer temperatures, more extreme storm events, increased UV-B radiation) cannot be directly controlled by actions at the local level, its potentially adverse effects can be moderated by managing for other stressors that reduce species populations or cause habitat degradation. Such stressors identified for the Covered Species generally include overgrazing by livestock; trampling of habitat; invasions by nonnative species; use or misuse of pesticides, toxins, and other pollutants; pathogens and disease; water quality degradation; increased fire frequency and intensity; increased urban-related stressors and mesopredators associated with development; and lighting and noise.

As noted above, the Proposed TU MSHCP Alternative would incorporate a variety of design feature and management measures to reduce the effects of potential stressors on Covered Species and their modeled habitats, which would help to counteract the potential additive and/or exacerbating effects of climate change. Additionally, the Proposed TU MSHCP Alternative would allow for flexibility in managing for climate change (i.e., drought or fire) through the Changed Circumstances provisions summarized in Chapter 2, Proposed TU MSHCP and Alternatives. The Proposed TU MSHCP Alternative would therefore include measures to allow for managing for habitat maintenance in accordance with Halpin (1997).

The effects of climate change on the Covered Lands under the Proposed TU MSHCP Alternative would be comparable to those under the No Action Alternative, with the exception that many of the design, management, and conservation measures described above that would ameliorate the potential effects of climate change over time would not occur under the No Action Alternative, except those measures that might occur consistent with the Ranchwide Agreement in conjunction with Existing Ranch Uses.

4.9.3.3 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the Proposed TU MSHCP Alternative on GHG emissions, and vegetation communities and wildlife. The Proposed TU MSHCP Alternative would also include conservation measures (Table 2-3 and 2-4 in Chapter 2, Proposed TU MSCHP and Alternatives) to respond to future climate change that could affect the Covered Species, as well as drought- or fire-related adaptive management measures to respond to climate change effects on the Covered Species. If the Service issues an incidental take permit (ITP) to TRC for the 27 species covered under the TU MSHCP, these measures would be enforceable under the Endangered Species Act (ESA) through the ITP and applicable conservation easements.

The following mitigation measures would further reduce potential effects associated with GHG emissions and climate change that may be associated with the Proposed TU MSHCP Alternative.

- ***Comply with Applicable Federal, State, and Local GHG Emissions Requirements*.** Existing Ranch Uses will comply, at a minimum, with applicable Federal, state, and local climate change laws and regulations, including the Federal Clean Air Act, AB 32, SB 375, and all applicable San Joaquin Valley Air Pollution Control District (SJVAPCD) rules and regulations.
- ***Comply with Applicable Federal, State, and Local Biological Resource Protection Regulations***. All development in the Covered Lands will comply, at a minimum, with applicable Federal, state, and local laws and regulations that directly or indirectly protect biological resources, including the Federal Clean Water Act (CWA), Porter-Cologne Water Quality Control Act, California Endangered Species Act (CESA), Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act (BGEPA), and the Kern County General Plan. For example, all development will identify and implement structural and treatment BMPs, such as detention basins, bioswales, and stormwater filters or other project design features, as required by applicable Federal, state, and local water quality protection laws and regulations, to protect surface water quality and potential habitat for aquatic dependent species. In addition, development will avoid, minimize, and mitigate for effects on wetland areas, as required by applicable Federal, state, or local laws and regulations, and, as required by those laws and regulations, not result in a net loss of wetlands in the Covered Lands.

4.9.4 Condor Only HCP Alternative

4.9.4.1 Greenhouse Gas Emissions

Commercial and Residential Development Activities

Construction

GHG emissions associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Operations

GHG emissions associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

GHG emissions associated with Plan-Wide Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

4.9.4.2 Effects of Climate Change on Biological Resources

Climate change effects under the Condor Only HCP Alternative would be generally the same as under the Proposed TU MSHCP Alternative. However, under the Condor Only HCP Alternative, habitat management would only occur for the condor and its associated habitat. No management to respond to climate change effects on other Covered Species would occur under the Condor Only HCP Alternative, except measures that might occur consistent with the Ranchwide Agreement in

conjunction with Plan-Wide Activities. The effects of climate change under the Condor Only HCP Alternative would also be comparable to those under the No Action Alternative, with the exception that design, management, and conservation measures specific to condor (e.g., habitat buffers) that would ameliorate the potential effects of climate change over time would not occur under the No Action Alternative, except those measures that might occur consistent with the Ranchwide Agreement in conjunction with Existing Ranch Uses.

4.9.4.3 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the Condor Only HCP Alternative related to GHG emissions. The Condor Only HCP Alternative would also include conservation measures to respond to future climate change, although only conservation measures for California condor (Table 2-3 in Chapter 2, Proposed TU MSHCP and Alternatives) would be implemented under this alternative. The Condor Only HCP Alternative would also implement fire- and drought-related adaptive management measures to respond to climate change effects on the condor. The proposed mitigation measure listed in Section 4.9.3.3, Mitigation Measures, would also be implemented under the Condor HCP Alternative.

4.9.5 CCH Avoidance MSHCP Alternative

4.9.5.1 Greenhouse Gas Emissions

Commercial and Residential Development Activities

Construction

As described above, Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would be similar to those that would occur under the Proposed TU MSHCP Alternative except there would be 471 fewer residential units. Therefore, GHG emissions from construction would be marginally less than under the Proposed TU MSHCP Alternative. As indicated in Section 4.9.3.1, Greenhouse Gas Emissions, Table 4.9-1, the maximum GHG emissions during construction would range from 676 metric tons of emissions per year (expressed as CO_2e) to 11,972 metric tons per year, peaking in 2025.

As with the Proposed TU MSHCP Alternative, the CCH Avoidance MSHCP Alternative would result in the one-time loss of sequestered carbon resulting from conversion of existing vegetation types to developed uses. The loss of sequestered carbon would be similar under the CCH Avoidance MSHCP Alternative to the loss of 189,746 metric tons of CO_2 lost under the Proposed TU MSHCP Alternative, but would be slightly lower due to the smaller amount of construction activity.

As identified in Section 4.9.3.3, Mitigation Measures, Commercial and Residential Development in the Covered Lands would be subject to Federal, state, and local air quality protection requirements. As part of the project-level approval process, it is anticipated that the local jurisdiction would require the implementation of minimization and mitigation measures to reduce air emissions. For example, Kern County's approval of the TMV Project requires submittal of a focused greenhouse gas report identifying measures to reduce GHG emissions prior to issuance of a grading or building permit; use of alternative fuels and sustainable materials during construction; and additional specific measures to reduce energy use and air emissions (Appendix J, MMs 4.3-1 through 4.3-5, 4.3-

18 through 4.3-21) (Kern County 2009). Similar requirements are anticipated to be imposed for development under this alternative.

Operations

Long-term land uses under the CCH Avoidance MSHCP Alternative would result in GHG emissions associated with electricity generation, on-road vehicle use, natural gas and hearth combustion, and water supply. Estimates of these emissions are presented in Table 4.9-5 without implementation of avoidance, minimization, and mitigation measures. The total emissions at buildout would be approximately 496,206 metric tons of emissions per year (expressed as CO_2e). The reduction in GHG emissions compared to the Proposed TU MSHCP Alternative is a result of the reduction in residential units and related vehicle trips (Section 4.8, Transportation).

As under the Proposed TU MSHCP Alternative, the GHG-related mitigation measures imposed at the time of development would likely substantially reduce GHG emissions. For example, although this alternative does not include the TMV Project per se, Kern County's approval of the TMV Project requires development of a focused greenhouse gas report identifying measures to reduce GHG emissions prior to issuance of a grading or building permit and incorporation of design elements to encourage ride-sharing, alternative vehicle use, and recycling (Appendix J, MMs 4.3-6 through 4.3-14 and 4.3-18) (Kern County 2009). Similar requirements are anticipated to be imposed for development under this alternative. However, as discussed above with respect to the Proposed TU MSHCP Alternative, quantifying these reductions is not possible. Nonetheless, even with reduction from mitigation, substantial GHG emissions are expected to occur.

Table 4.9-5. Operation Greenhouse Gas Emissions—CCH Avoidance MSHCP Alternative (metric tons per year, CO_2e)

Analysis Year	Total	Percent of Total
2017	32,018	—
2021	101,326	—
2025	167,127	—
2029	323,544	—
2033	427,877	—
2037	461,061	—
Proposed CCH Avoidance MSHCP Alternative Buildout Year 2041		
Area Sources	1,417	0.3%
Energy (Natural Gas and Electrical Generation)	22,981	4.6%
Mobile Sources	467,013	94.1%
Solid Waste	3,441	0.7%
Water Supply and Wastewater	1,354	0.3%
Year 2041 Totals	496,206	100.0%

Construction under the CCH Avoidance MSHCP Alternative would occur over several years, and would overlap with operations for a period. Combined construction and operation GHG emissions for the same 4-year increments utilized for criteria pollutant emissions (Section 4.3, Air Quality) are presented in Table 4.9-6 below.

Table 4.9-6. Combined Construction and Operation GHG Emissions—CCH Avoidance MSHCP Alternative (metric tons per year, CO_2e)

Analysis Year	Total
2017	38,755
2021	107,700
2025	179,099
2029	335,059
2033	429,387
2037	462,569
2041	496,206
Maximum Annual Emissions	496,206

Plan-Wide Activities

Although some Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would generate GHG emissions, theses emissions would be minor, similar to existing conditions, and would not result in a substantial increase in GHG emissions compared with the No Action Alternative**.** In addition, similar to Existing Ranch Uses under the No Action Alternative, the use restrictions and BMPs required by the Ranchwide Agreement (as currently set forth in the Interim RWMP) would include provisions to minimize GHG emissions (e.g., designing structures in an energy efficient manner, employing off-grid energy technologies when feasible). These provisions would further reduce the potential for GHG emissions under the CCH Avoidance MSHCP Alternative, and would keep GHG emissions minor.

4.9.5.2 Effects of Climate Change on Biological Resources

As discussed under the No Action Alternative, climate change effects on biological resources would occur with or without development activities. Under the CCH Avoidance MSHCP Alternative, up to 496,206 metric tons of emissions per year (expressed as CO_2e) would be emitted as a result of Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative. These annual emissions would be slightly less than those for the Proposed TU MSHCP Alternative.

Under the CCH Avoidance MSCHP Alternative, the same ESA-related conservation measures as proposed for the Proposed TU MSHCP Alternative would be implemented, as presented in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives. With 4,496 acres subject to development and 130,339 acres permanently conserved as open space, the CCH Avoidance MSHCP Alternative would provide substantial protection of biodiversity and redundancy in protection of vegetation and wildlife habitats in the region at a level similar to the Proposed TU MSHCP Alternative, and as recommended by Halpin (1997). The analysis of the relationship of climate change to the Proposed TU MSHCP Alternative presented in Section 4.9.3.2, Effects of Climate Change on Biological Resources, is directly applicable to the CCH Avoidance MSHCP Alternative. Potential climate change effects under the CCH Avoidance MSHCP Alternative would be comparable to those under the No Action Alternative, with the exception that many of the design, management, and conservation measures included in this alternative that would ameliorate the potential effects of climate change over time would not occur under the No Action Alternative, except those measures that might occur consistent with the Ranchwide Agreement in conjunction with Existing Ranch Uses.

4.9.5.3 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would reduce the effects of the CCH Avoidance MSHCP Alternative related to GHG emissions. Species-specific conservation measures, similar to those provided in Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives, would also be implemented to avoid, mitigate, and minimize the effects of the Covered Activities on the Covered Species, each of which would be enforceable under the ESA through the ITP and applicable conservation easements. In addition, this alternative would include fire- and drought-related adaptive management measures to respond to climate change effects on the Covered Species. The proposed mitigation measure listed in Section 4.9.3.3, Mitigation Measures, would also be implemented under the CCH Avoidance MSHCP Alternative.

4.9.6 Kern County General Plan Buildout Alternative

4.9.6.1 Contribution to Greenhouse Gas Emissions

Commercial and Residential Development Activities

Construction

Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would also result in GHG emissions, primarily associated with on- and off-road construction vehicle and equipment use. For this alternative, the estimates of these emissions are presented in Table 4.9-7. The maximum GHG emissions during construction would range from 2,813 metric tons of emissions (expressed as CO_2e) to 18,349 metric tons per year, peaking in 2025.

Table 4.9-7. Greenhouse Gas Emissions during Construction—Kern County General Plan Buildout Alternative (metric tons per year CO_2e)

Analysis Year	Total	Analysis Year	Total
2013	2,813	2027	10,415
2014	3,295	2028	10,375
2015	3,291	2029	13,957
2016	3,278	2030	7,928
2017	6,737	2031	7,928
2018	3,658	2032	7,958
2019	3,645	2033	6,054
2020	3,647	2034	3,902
2021	8,826	2035	3,908
2022	4,938	2036	3,923
2023	4,926	2037	7,005
2024	4,953	2038	4,077
2025	18,349	2039	4,062
2026	10,415	2040	3,076

GHG emissions can also occur as a result of the one-time loss of sequestered carbon associated with the conversion of existing vegetation types to developed uses. The total existing, open space, and developed acreages for each vegetation community for the Kern County General Plan Buildout Alternative are shown in Table 4.1-9 in Section 4.1, Biological Resources. The total disturbed area (12,142 acres as shown in Table 2-5 in Chapter 2, Proposed TU MSHCP and Alternatives) was divided by an adjusted development area[6] (14,828 acres as shown in Table 4.1-9) to estimate that 82% of the total Development Envelope would be disturbed (i.e., vegetation may be removed for development). This value was applied to the development area in each vegetation community and multiplied by a percent affected value to determine the overall affected area (converted area) in each vegetation community. CalEEMod inputs for this calculation include the initial and final acres of a vegetation type. The area affected was subtracted from the initial area in each vegetation community to calculate the final area remaining after development.

The results of this analysis are shown in Table 4.9-8. Overall land development is estimated to result in a loss of 436,244 metric tons CO_2 of sequestered carbon due to full development under the Kern County General Plan Buildout Alternative.

Table 4.9-8. Loss of Sequestered Carbon—Kern County General Plan Buildout Alternative (metric tons, CO_2)

Vegetation Type	Initial (acres)	Final (acres)	Sequestered Carbon
Agriculture	232	46	1,153.2
Savannah	33,120	32,385	43,732.5
Conifer Forest	3,956	3,838	19,753.2
Woodland	48,736	46,001	348,439.0
Scrub	7,841	7,589	3,603.6
Grassland	24,944	22,857	8,995.0
Chaparral	14,415	13,676	10,567.7
Riparian Woodland	703	701	0.0
Total			436,244.2

As identified in Section 4.9.3.3, Mitigation Measures, Commercial and Residential Development Activities in the Covered Lands would be subject to Federal, state, and local air quality protection requirements. As part of the project-level approval process, it is anticipated that the local jurisdiction would require the implementation of minimization and mitigation measures to reduce air emissions. For example, Kern County's approval of the TMV Project requires submittal of a focused greenhouse gas report identifying measures to reduce GHG emissions prior to issuance of a grading or building permit; use of alternative fuels and sustainable materials during construction; and additional specific measures to reduce energy use and air emissions (Appendix J, MMs 4.3-1 through 4.3-5, 4.3-18 through 4.3-21) (Kern County 2009). These measures would further reduce GHG emissions; however, substantial emissions would still occur and would be greater than the No Action Alternative under which no commercial and residential development would occur.

[6] As summarized in Table 2-5 in Chapter 2, Proposed TU MSHCP and Alternatives, the total assumed Development Envelope for the Kern County General Plan Buildout Alternative is 14,934 acres. The adjusted Development Envelope area of 12,142 acres is based on the assumption that 75% of the riparian/wetland habitats within the Development Envelope would be avoided to comply with Federal, state, and local wetland protection regulations. See Section 4.1, Biological Resources, for an additional discussion of the calculations associated with the Disturbance Area and Development Envelope.

Operations

Long-term land uses associated with Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would also result in GHG emissions associated with electricity generation, on road vehicle use, natural gas and hearth combustion, and water supply. Estimates of these emissions are presented in Table 4.9-9 without implementation of avoidance, minimization, and mitigation measures. The total emissions at buildout would be 803,038 metric tons of emissions per year (expressed as CO_2e).

As under the Proposed TU MSHCP Alternative, the GHG-related mitigation measures imposed at the time of development would likely substantially reduce the GHG emissions. For example, Kern County's approval of the TMV Project requires development of a focused greenhouse gas report identifying measures to reduce GHG emissions prior to issuance of a grading or building permit and incorporation of design elements to encourage ride-sharing, alternative vehicle use, and recycling (Appendix J, MMs 4.3-6 through 4.3-14 and 4.3-18) (Kern County 2009). However, for the reasons discussed under the Proposed TU MSHCP Alternative, quantifying the reductions is not possible. Further, even with reduction from mitigation, substantial GHG emissions are expected to occur.

Table 4.9-9. Detailed Operation Greenhouse Gas Emissions—Kern County General Plan Buildout Alternative, 2041 (metric tons per year, CO_2e)

Analysis Year	Total	Percent of Total
2017	34,872	—
2021	109,570	—
2025	237,848	—
2029	457,721	—
2033	629,206	—
2037	714,954	—
Kern County General Plan Buildout Alternative Buildout Year 2041		
Area Sources	7,122	0.9%
Energy (Natural Gas and Electrical Generation)	41,061	5.1%
Mobile Sources	746,825	93.0%
Solid Waste	5,764	0.7%
Water and Wastewater	2,266	0.3%
Year 2041Totals	803,038	100.0%

Under the Kern County General Plan Buildout Alternative construction would occur over several years and would overlap with operations for a period. Combined construction and operation GHG emissions for the same 4-year increments used for criteria pollutant emissions (Section 4.3, Air Quality) are presented in Table 4.9-10.

Table 4.9-10. Combined Construction and Operation GHG Emissions—Kern County General Plan Buildout Alternative (metric tons per year, CO_2e)

Analysis Year	Total
2017	41,609
2021	118,396
2025	256,197
2029	471,678
2033	635,260
2037	721,958
2041	803,038
Maximum Annual Emissions	803,038

Existing Ranch Uses

The extent and nature of the Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be similar to those under the No Action Alternative. Under the Kern County General Plan Buildout Alternative, Existing Ranch Uses would continue at existing levels and would not result in substantial GHG emissions.

As described in Chapter 2, Proposed TU MSHCP and Alternatives, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as reflected in the Interim RWMP are anticipated to continue (although they cannot be assured), and compliance with legal requirements governing GHG emissions would apply.

4.9.6.2 Effects of Climate Change on Biological Resources

As discussed under the No Action Alternative, climate change effects on biological resources would occur with or without development. Under the Kern County General Plan Buildout Alternative, up to 803,038 metric tons of emissions per year (expressed as CO_2e) would be emitted as a result of Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative. Approximately 34,130 acres would be permanently protected in open space and an additional 85,262 acres would be in Restricted Open Space, totaling 119,392 acres of potential open space under this alternative.

The protection of biodiversity and redundancy in protection of vegetation and wildlife habitats in the region, as recommended by Halpin (1997), would not occur to the same degree under the Kern County General Plan Buildout Alternative compared to the other proposed action alternatives given the smaller area that would be conserved in open space, and the larger, more dispersed area set aside for development. In addition, although ESA-related conservation measures could be applied on a project-by-project basis, it not likely that all the protected open space would be jointly managed and subject to the same adaptive management scheme as the other action alternatives.

Under the Kern County General Plan Buildout Alternative, development would potentially occur in eleven separate specific plan areas scattered throughout the Covered Lands (Figure 2-7). Potential indirect effects, including those associated with invasive species, degradation of water quality, noise, lighting, and other human-related effects, are more likely to occur under this alternative due to the scattered distribution of the proposed development areas. Appropriate buffers would have to be

incorporated separately into each specific plan area, the designs of which are unknown at this time. In addition, implementation of buffers for the disturbed areas in the large-lot rural/agricultural areas may be difficult. Therefore, the effectiveness of buffers to help address climate change effects as recommended by Halpin (1997) is uncertain under the Kern County General Plan Buildout Alternative.

Habitat fragmentation could also occur as a result of the dispersed development pattern under the Kern County General Plan Buildout Alternative. The large-lot rural/agricultural development areas could result in a checkerboard development pattern and exacerbate habitat fragmentation. As a consequence, landscape habitat connectivity under the Kern County General Plan Buildout Alternative would generally be impaired. Counter to the recommendation in Halpin (1997), potential species movements and range and habitat shifts in response to climate change may be restricted under the Kern County General Plan Buildout Alternative.

Finally, because the development under this alternative would proceed project by project and would not include a large scale conservation plan, there would not be a holistic adaptive management approach as recommended by Halpin (1997). The level of management required under this alternative to address effects of climate change would likely be substantial because the open space system would be more fragmented, where smaller reserves typically require more intense management to maintain habitat values due to adverse edge effects and potential fire risks. The potential effects of climate change under the Kern County General Plan Buildout Alternative would be more substantial than those associated with the No Action Alternative, given that less area would be in open space.

4.9.6.3 Mitigation Measures

As described above, the limitations of the Ranchwide Agreement would not apply under the Kern County General Plan Buildout Alternative. However, even in the absence of the Ranchwide Agreement, BMPs (as currently set forth in the Interim RWMP) are anticipated to continue (although they cannot be assured). Restrictions imposed by the TMV Project Approvals and by easement language in the Existing Conservation Easement Areas would apply under the Kern County General Plan Buildout Alternative. Comparable measures to those provided in Tables 2-3 and 2-4 would likely be implemented to avoid, mitigate, and minimize effects on special-status species (i.e., state or federally listed species, species protected as special-status species under CEQA), which could reduce effects related to GHG emissions. In addition, the proposed mitigation measure listed in Section 4.9.3.3, Mitigation Measures, would also be implemented under the Kern County General Plan Buildout Alternative.

4.9.7 Cumulative Effects

Cumulative effects associated with climate change and GHG emissions are considered to be indirect effects of the proposed action, in that they are related to future development that may be facilitated by issuance of an ITP by the Service. Whether or not such effects are substantial cumulatively is primarily dependent on the mitigation measures put in place by other Federal, state, and local authorities pursuant to their project-specific approval process (as well as emission controls instituted by other countries).

As discussed in Section 3.9, Climate Change and Greenhouse Gases, climate change is a cumulative problem that results from the combined contribution of GHGs throughout the world; however, as

noted previously, climate change and GHGs are considered with respect to the Covered Lands. GHG emissions attributable to a single project do not themselves result in identifiable climate change effects. Rather, the combined emissions from GHG-generating activities throughout the world result in climate change effects. Thus, the GHG emissions that could result from the Federal action are examined on a cumulative level and are assessed based on their contribution to the global phenomenon of climate change. Additional information regarding climate change effects is provided in Appendix C.

Because no development would occur under the No Action Alternative, and because Existing Ranch Uses would not involve substantial GHG emission sources, the No Action Alternative would not result in a cumulative effect on GHG emissions.

As explained in Section 4.9.3.1, Greenhouse Gas Emissions, under the Proposed TU MSHCP Alternative, GHG emissions would occur as a result of the construction and operation of development that would be facilitated by the proposed action. Plan-Wide Activities are not considered a substantial source of GHGs. Development would result in GHG emissions from on- and off-road construction vehicle and equipment use; and from long-term uses in the Covered Lands associated with electricity generation, on-road vehicle use, natural gas and hearth combustion, water supply, wastewater treatment, and solid waste disposal. Similar GHG emissions would be anticipated for the other proposed action alternatives considered in this EIS, including the Condor Only HCP Alternative, the CCH Avoidance MSHCP Alternative, and the Kern County Buildout Alternative.

As discussed above, climate change is a global problem resulting from the incremental contribution of GHG emissions from activities throughout the world. Unlike criteria pollutant emissions that are properly considered at a local and regional level, GHG emissions are considered at a global level. Therefore, the interaction between the development considered under the Proposed TU MSHCP Alternative, Condor Only HCP Alternative, CCH Avoidance MSHCP Alternative and Kern County General Plan Buildout Alternative and other activities in the area, such as the projects described in Section 4.0.4, Methods for Assessing Cumulative Effects, is not relevant for purposes of a cumulative climate change analysis. However, it is recognized that these projects would also contribute to the global phenomenon of climate change.

Although there is no Federal threshold by which to judge the significance of GHG emissions, and although it is anticipated that avoidance, minimization, and mitigation measures to reduce potential GHG effects resulting from development would be imposed by local jurisdictions during project approval (e.g., measures prescribed for the TMV Project [which is a large element of most of the development alternatives] would mitigate its GHG impacts under state and local standards as provided in the Tejon Mountain Village Environmental Impact Report [Kern County 2009]), unmitigated GHG emissions are likely to occur under each of the proposed action alternatives. When considered in combination with other projects in the region, and due in part to the uncertainties and changing legal requirements around GHGs, it is anticipated that the effects of all the development alternatives (Proposed TU MSHCP Alternative, Condor Only HCP Alternative, CCH Avoidance MSHCP Alternative and Kern County General Plan Buildout Alternative) would be cumulatively substantial.

4.9.8 Comparison of Alternatives

4.9.8.1 Greenhouse Gas Emissions

Table 4.9-11 summarizes the maximum annual construction GHG emissions in any year for development under each alternative. The No Action Alternative would not involve any development construction and would not result in GHG emissions. The Condor Only HCP Alternative would generate the same amount of GHG emissions as the Proposed TU MSHCP Alternative, and the CCH Avoidance MSHCP Alternative would generate slightly less. The Kern County General Plan Buildout Alternative would generate 6,377 metric tons CO_2e (53%) more than the Proposed TU MSHCP Alternative. These figures do not account for GHG emission reductions that would result from compliance with Federal, state and local GHG requirements.

Table 4.9-11. Comparison of Total Construction Emissions (Greenhouse Gases) (maximum metric tons CO_2e per year)

Alternative	Greenhouse Gases
No Action Alternative	—
Proposed TU MSHCP Alternative	11,972
Condor HCP Alternative	11,972
CCH Avoidance MSHCP Alternative	>11,972
Kern County General Plan Buildout Alternative	18,349

Table 4.9-12 summarizes the annual operation GHG emissions at full buildout for development under each alternative. The No Action Alternative, which would not include development, would not result in substantial operation GHG emissions. The Condor Only HCP Alternative would generate the same amount of GHG emissions as the Proposed TU MSHCP Alternative. The CCH Avoidance MSHCP Alternative would generate 496,206 metric tons CO_2e, resulting in 5.8% less emissions than the Proposed MSHCP Alternative. The Kern County General Plan Buildout Alternative would generate 276,286 metric tons CO_2e (52%) more than the Proposed TU MSHCP Alternative. The maximum annual GHG emissions would occur at full buildout in 2041 after completion of construction. Thus, the emissions in 2041 represent the maximum annual GHG emissions for the purpose of comparing the alternatives. These figures do not account for GHG emission reductions that would result from compliance with Federal, state and local GHG requirements. In addition, the No Action, Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives would all be subject to the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) that protect conservation values, and would serve to reduce GHG emissions associated with these activities. Although it cannot be guaranteed, it is anticipated that historic ranch practices, as reflected in the Interim RWMP, would continue under the Kern County General Plan Buildout Alternative.

Table 4.9-12. Comparison of Total Operation Emissions (Greenhouse Gases) Maximum Metric Tons CO_2e per Year

Alternative	Greenhouse Gases
No Action Alternative	—
Proposed MSHCP Alternative	526,752
Condor HCP Alternative	526,752
CCH Avoidance MSHCP Alternative	496,206
Kern County General Plan Buildout Alternative	803,038

4.9.8.2 Effects of Climate Change on Biological Resources

As discussed above, it is anticipated that the effects of climate change under all the alternatives would be similar and would occur with or without the proposed development activities. However, the alternatives vary with respect to the specific design, management, and conservation measures that would be implemented to ameliorate the potential effects of climate change overtime. Specifically, the conservation and management measures described above that would occur under the Proposed TU MSHCP and CCH Avoidance MSHCP Alternatives would not occur under the No Action Alternative, except for those that might occur consistent with the Ranchwide Agreement in conjunction with Existing Ranch Uses. Under the Condor Only HCP Alternative, conservation and management measures would only occur for the condor and its associated habitat. No management to respond to climate change effects on other Covered Species would occur except those that might occur consistent with the Ranchwide Agreement in conjunction with the Plan-Wide Activities. The protection of biodiversity and redundancy of protection of vegetation and wildlife would occur to the same general degree under the Kern County General Plan Buildout Alternative compared to the other proposed action alternatives; however, a smaller area would be conserved in open space, and due to the project-by-project nature of the approvals, the mitigation lands would likely be managed separately, and more potential habitat fragmentation and degradation could occur. This would affect the quality of the reserve available to address climate change issues compared with the other alternatives.

Chapter 5
Additional Topics Required By NEPA

This section addresses additional effects relating to the irreversible or irretrievable commitment of resources and growth-inducing effects.

5.1 Significant Irreversible or Irretrievable Commitment of Resources

As required under the National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] 4321 *et seq.,* Council on Environmental Quality [CEQ] Section 102; 40 Code of Federal Regulations [CFR] 1500 (1502.16)), this environmental document must include a discussion of any irreversible and irretrievable commitments of resources that would result from the proposed action—approval of the proposed Tehachapi Uplands Multiple Species Habitat Conservation Plan (TU MSHCP) and issuance of an incidental take permit (ITP). Categories evaluated under this analysis include the following:

- Substantial adverse environmental effects that cannot be avoided (40 CFR 1500 (1502.10))
- The relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity (40 CFR 1500 (1502.16))
- Irreversible or irretrievable commitments of resources (40 CFR 1500 (1502.16))
- Energy requirements and conservation potential (40 CFR 1500 (1502.16))
- Natural or depletable resource requirements and conservation potential (40 CFR 1500 (1502.16(f))
- Economic and social effects (40 CFR 1500 (1508.8(b))
- Effects on urban quality, historical and cultural resources, and the design of the built environment, including the reuse and conservation potential (40 CFR 1500 (1502.16))

These categories generally overlap with the effects analysis provided in Chapter 4, Environmental Consequences, of this Supplemental Draft EIS, and are briefly summarized below.

5.1.1 Substantial Adverse Effects That Cannot Be Avoided

As described for each resource area in Chapter 4, Environmental Consequences, in general, there would be no greater than minor adverse effects associated with the No Action Alternative. Environmental effects could occur under all the action alternatives, primarily associated with Commercial and Residential Development Activities. As further discussed in Chapter 4, implementation of the required mitigation measures and BMPs would, for the most part, ensure that these effects were not substantial. However, some substantial adverse effects could remain even after mitigation as indicated below.

For the Proposed TU MSHCP Alternative, the measures in the TU MSHCP would preserve 129,318 acres (91%) of the Covered Lands for management as open space for the benefit of the Covered Species, and to mitigate for direct and indirect effects associated with the Covered Activities, including development. Although the preservation of substantial portions of the Covered Lands, in combination with the conservation measures provided in the TU MSHCP and mitigation measures

stated in this Supplemental Draft EIS, would minimize many of the adverse effects associated with the Covered Activities, some air quality, transportation, and greenhouse gas effects associated with the Commercial and Residential Development Activities facilitated by the proposed action could result in unavoidable, substantial adverse effects (Section 4.3, Air Quality, Section 4.8, Transportation, and Section 4.9, Climate Change and Greenhouse Gases). Mitigation measures have been incorporated into Sections 4.3, 4.8, and 4.9 requiring that the applicant, at the time the actual development is proposed, obtain all required Federal, state, and local permits prior to construction, including local land use approvals that would consider potential air quality or greenhouse gas and transportation-related effects. The Service would also enforce the species-specific conservation measures from the TU MSHCP, some of which would reduce effects on these resource areas (e.g., requirements for dust control). Nonetheless, as discussed in Sections 4.3, 4.8, and 4.9, these potential effects may be unavoidable and substantial. The Proposed TU MSHCP Alternative would also result in cumulatively substantial effects on biological resources, air quality, visual resources, transportation, and greenhouse gases and climate change, as discussed in Sections 4.1, Biological Resources, 4.3, Air Quality, 4.6, Visual Resources, 4.8, Transportation, and 4.9, Greenhouse Gases and Climate Change.

The potential unavoidable adverse effects on air quality, greenhouse gases, and transportation resources, as well as cumulatively substantial effects on biological resources, air quality, visual resources, transportation, and greenhouse gasses and climate change, would be the same for the Condor Only HCP Alternative as described for the Proposed TU MSHCP Alternative.

For the CCH Avoidance MSHCP Alternative, in addition to the unavoidable adverse effects on air quality, greenhouse gases and transportation resources identified for the Proposed TU MSHCP Alternative, the greater intensity of development near Castac Lake would result in additional adverse effects on wildlife connectivity in the southwestern portion of the Covered Lands that would not be fully avoided and could be substantial. Potential effects on local populations of Kuche's sandwort would also be substantial. These effects are described in Section 4.1, Biological Resources. More concentrated development under this alternative would also result in greater visual effects, which, as discussed in Section 4.6, Visual Resources, would also be substantial. Similar to the Proposed TU MSHCP and Condor Only HCP Alternatives, the CCH Avoidance MSHCP Alternative would also result in cumulatively substantial effects on biological resources, air quality, visual resources, transportation, and greenhouse gases and climate change that would remain even after mitigation.

Finally, because of the larger area of potential development and more fragmented open space available for mitigation (i.e., Restricted Open Space), the Kern County General Plan Buildout Alternative could result in substantial, unavoidable adverse effects on biological resources, air quality, visual resources, transportation and climate change and greenhouse gases. With respect to biological resources and climate change, these effects would be because the preservation of habitat and wildlife linkages across the Covered Lands could not be ensured, or because a coordinated, holistic adaptive management for climate change could not be achieved if development is considered on a project-by-project basis. In addition, project-by-project development would not allow for the same level of coordination to plan and minimize potential effects. Additional visual effects would also occur along State Route (SR) 58 and would be more visible to a greater number of sensitive viewers than Commercial and Residential Development Activities in the southern portion of the Covered Lands under the other proposed action alternatives and would result in substantial visual effects even after mitigation.

5.1.2 Short-Term Uses of the Environment and Long-Term Productivity

The No Action Alternative would consist of ongoing ranch activities and would not facilitate any development in the Covered Lands. However, there would be no permanent protection of the TMV Planning Area Open Space and, because no development would occur under this alternative, conservation easement triggers may not be met (except for the Existing Conservation Easement Areas) and the Tejon Ranch Conservancy may not receive full funding to effectuate permanent protection and management of the open space areas.

The Proposed TU MSHCP Alternative would provide for the permanent preservation of the open space and habitat values of 91% of the Covered Lands. No short-term uses are proposed. The long-term productivity of the open space would be ensured through the funding, management, reporting, and adaptive management provisions of the TU MSHCP.

The Condor Only HCP Alternative would provide the same acreage of permanent protections as the Proposed TU MSHCP Alternative, but the long-term management, reporting, and adaptive management provisions would be limited to the California condor.

The CCH Avoidance MSHCP Alternative would provide for long-term productivity of permanently conserved areas on 92% of the Covered Lands, slightly more than the Proposed TU MSHCP and Condor Only HCP Alternatives (an additional 1,021 acres of conserved and managed open space).

Finally, the Kern County General Plan Buildout Alternative would involve the least amount of permanently protected lands (84%) and no comprehensive land management, reporting, and adaptive management program.

5.1.3 Energy and Natural Resource Requirements, and Conservation Potential

The No Action Alternative would not include development, so its use of energy and natural resources would be consistent with ongoing existing conditions (i.e., minimal and associated with operation of existing ranch facilities). In addition, as described above, under the No Action Alternative there would be no permanent protection of the TMV Planning Area Open Space and conservation easement triggers tied to development may not occur.

The Proposed TU MSHCP Alternative would increase energy and natural resource consumption as a result of the construction and operation of up to 3,632 residential units and 1,804,390 square feet of commercial uses, as well as hotel and resort facilities. It would also preserve in perpetuity as open space 91% of the Covered Lands.

Increased energy and natural resources consumption under the Condor Only HCP Alternative would be the same as that of the Proposed TU MSHCP Alternative. This alternative would also preserve 91% of the Covered Lands.

The CCH Avoidance MSHCP Alternative would also increase energy and natural resources consumption to facilitate construction and operation of up to 3,161 residential units and 1,804,390 square feet of commercial uses, as well as hotel and resort facilities. This consumption would be approximately the same as the Proposed TU MSHCP and Condor Only HCP Alternatives, because there would be 471 fewer residential units, but increased need for earthmoving and grading. This alternative would preserve 92% of the Covered Lands.

Finally, the Kern County General Plan Buildout Alternative would further increase energy and natural resource consumption to serve up to 7,238 residential units and 2,144,810 square feet of

commercial uses, as well as hotel and resort facilities, a substantial increase over the other alternatives. This alternative would preserve 84% of the Covered Lands as open space or Restricted Open Space (see Table 2-1 in Chapter 2, Proposed TU MSHCP and Alternatives, for a definition of Restricted Open Space).

5.1.4 Economic and Social Effects

As discussed in Section 4.7.7, none of the alternatives are expected to cause any adverse economic or social effects.

5.1.5 Urban Quality, Historical and Cultural Resources, and the Design of the Built Environment, including Reuse and Conservation Potential

There are no urban areas in the Covered Lands, and none of the alternatives would affect urban quality.

No development would occur under the No Action Alternative. As a result, there would be no effect on the built environment and Existing Ranch Uses would be subject to Ranchwide Agreement use restrictions and BMPs that protect cultural values; therefore, only minor effects on cultural resources would be expected.

Potential effects on cultural resources from ground disturbance under the Proposed TU MSHCP Alternative, either in open space areas or as part of the proposed Commercial and Residential Development Activities, would be minimized through implementation of the mitigation measures prescribed in Section 4.5, Cultural Resources, of this Supplemental Draft EIS. In addition, the development- related design requirements in the TU MSHCP would require preservation of the major landforms in the Covered Lands, as well as overall compatibility with the natural environment. This alternative would include permanent preservation of as much as 91% of the Covered Lands and would provide a comprehensive, integrated specific plan development review and approval process for almost all of the development areas, accounting for 4% of the Covered Lands. The Proposed TU MSHCP Alternative would also limit permanent disturbance acreage amounts to approximately 5,533 acres of the Covered Lands.

Potential effects on cultural resources and the built environment would be the same for the Condor Only HCP Alternative as those described for the Proposed TU MSHCP Alternative.

Permanent disturbance acreage under the CCH Avoidance MSHCP Alternative would be 4,496 acres, 1,037 acres fewer than under the Proposed TU MSHCP and Condor Only HCP Alternatives. However, development under this alternative would be consolidated and could have more effects on the natural landforms, cultural resources, water, or wetlands, prior to mitigation.

The Kern County General Plan Buildout Alternative would have a disturbance footprint of approximately 12,142 acres, which would be substantially larger than the development footprint associated with the other development alternatives. The dispersed nature of the development and project-by-project approach under the Kern County General Plan Buildout Alternative could result in additional effects on the natural landforms, water, wetland, and cultural resources prior to mitigation.

5.2 Growth-Inducing Effects

NEPA requires that an environmental impact statement (EIS) address the indirect effects of a proposed action. Indirect effects may include "growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR 1500 (1508.8(b)). Growth-inducing effects are indirect effects of a Federal action "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable" (40 CFR 1500 (1508.8(b)). Direct growth-inducing effects occur if a Federal action would foster population growth, including the construction of housing; lead to urbanization of land in a remote area; or lead to substantial economic expansion or growth. Indirect growth inducement may occur where the Federal action removes impediments to growth in an area such as one with a lack of infrastructure. Examples of growth-inducing projects include construction of a road or wastewater treatment facilities.

The Federal action being analyzed in this EIS—approval of the TU MSHCP and issuance of an ITP—would not directly authorize or promote growth, construction, or development. It is anticipated that a certain level of population growth would occur regardless of approval of the TU MSHCP and issuance of an ITP. There are additional Federal, state, and local regulatory requirements that would have to be addressed by the landowner before such growth would occur. However, the proposed issuance of the ITP would remove an existing obstacle to growth in the sense that the Service's authorization of the incidental take of listed species would allow for certain activities to go forward without violation of Section 9 of the Federal Endangered Species Act (ESA). The TU MSHCP/ITP would lessen the existing constraint on development by enabling development activities to go forward in accordance with the terms of the ITP in areas that otherwise would be subject to restrictions from potential take of federally listed species. Issuance of an ITP based on the TU MSHCP would indirectly allow for a currently undeveloped area to accommodate residential and commercial development by providing a streamlined mechanism for compliance with the ESA.

Many growth-inducing effects are mitigated by conservation restrictions, such as those described in this Supplemental Draft EIS and provided for in the TU MSHCP. Conservation restrictions are also often considered in environmental review documents prepared pursuant to the California Environmental Quality Act (CEQA) as part of the local entitlement process for proposed development. Although development activities covered under the TU MSHCP would not result in growth in the Covered Lands that exceeds regional growth projections, compared to existing conditions and the No Action Alternative, the development contemplated as a Covered Activity under the proposed TU MSHCP would result in a significant increase in residential and commercial structures on Tejon Ranch. As such, the Service has determined that approval of the TU MSHCP and issuance of the ITP would facilitate commercial and residential development on the Covered Lands (such as the TMV Project) and, in that sense, would result in indirect, growth-inducing effects resulting from the Covered Activities. Because the Service cannot quantify the extent to which future growth would be attributable solely to the obstacle removed by approval of the TU MSHCP and issuance of the ITP, for simplification, the Service has attributed all growth-related effects of the Covered Activities to approval of the TU MSHCP and issuance of the ITP.

The effects of the growth induced by each alternative are analyzed in Chapter 4, Environmental Consequences, of this Supplemental Draft EIS. Effects considered in this chapter include those related to the increased population from residential housing and commercial development. In particular, the EIS analyzes whether the future development activities directly or indirectly affect the ability of agencies to provide needed public services and infrastructure, or if the potential growth significantly affects the environment in some other way.

The No Action Alternative represents continuation of existing conditions and does not assume that any planned development would occur. As such, the No Action Alternative would not result in growth-inducing effects. For the other alternatives, substantial growth in the number of housing units, residents, and employment opportunities would be expected in accordance with population projections and current local planning documents, compared to existing conditions. Under the Proposed TU MSHCP and Condor Only HCP Alternatives, the population of the Covered Lands would be increased by 11,441 new residents. Population increase under the CCH Avoidance MSHCP Alternative would be 9,957 new residents. Although the coordinated and concentrated development pattern under the Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives would be designed to facilitate integrated, coordinated development and would maximize the efficiency of infrastructure improvements, the Proposed TU MSHCP, Condor Only HCP and CCH Avoidance MSHCP Alternatives would result in higher populations than currently exist on the Covered Lands, and therefore higher growth-inducing effects relative to the No Action Alternative. However, the Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives would result in less population growth, and therefore fewer growth inducing impacts than the Kern County General Plan Buildout Alternative, which would increase the population in the Covered Lands by 22,800 new residents and would not have an integrated land preservation plan, nor would it reflect the additional protections afforded by the Ranchwide Agreement, both within and adjacent to the Covered Lands.

From a cumulative effects standpoint, the No Action Alternative would not contribute to cumulative growth-inducing effects, as no development is assumed under this alternative. For the other alternatives, the development on the Covered Lands, in combination with other development projects, may synergistically induce growth in the nearby mountain communities. Under the Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives, the development-related Covered Activities may include commercial or community facilities that serve residents and visitors of other commercial and residential development, and may have the potential to induce other growth, such as increased utilization of services along the Interstate 5 (I-5) corridor and increased demand for employees in the mountain communities. Similarly, the Kern County General Plan Buildout Alternative may also induce growth along I-5 and in the mountain communities. However, because the Kern County General Plan Buildout Alternative would not include an integrated, comprehensive HCP that would limit infrastructure development, (e.g., permanent restrictions on new roads and new infrastructure in open space), or the protections of the Ranchwide Agreement, which would do the same, the Kern County General Plan Buildout Alternative may have increased growth-inducing effects outside the Covered Lands in the long term. Therefore, the Kern County General Plan Buildout Alternative would result in higher cumulative growth-inducing effects than the Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives in the long term. Nevertheless, all development alternatives would enable future development that could result in significant cumulative growth-inducing effects relative to current baseline conditions and the No Action Alternative.

Chapter 6

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Capt. A.J. Gonzales, Program Director Environment, Department of Navy, letter dated July 23, 2004

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Chapter 8
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Chapter 3 Affected Environment

Section 3.0 Introduction

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Section 3.1 Biological Resources

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Chapter 5 Additional Topics Required by NEPA

No references

Chapter 6 List of Agencies and Organizations Consulted

No references

Chapter 7 List of Preparers

No references