Carrizo Plain National Monument

Draft Resource Management Plan
And
Draft Environmental Impact Statement

BLM

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Chapter 4. Environmental Consequences

4.1 Introduction

This chapter evaluates potential environmental impacts that could occur to the natural and human environment from implementing each of the resource management plan (RMP) alternatives described in Chapter 2 for the Carrizo Plain National Monument (CPNM). An impact is defined as a modification of the existing environment that is brought about by an outside action. Potential impacts considered in this chapter include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historical, cultural, economic, social, and health impacts (40 Code of Federal Regulations [CFR] 1508.8). This chapter is organized by resource topic and contains potential impacts that could result from implementing the objectives, allowable uses, and management actions under each of the alternatives. Topics are presented in the same order as in Chapter 3. The baseline information used for determining the potential impacts are the current resource conditions described in Chapter 3.

Administrative actions that are often office-oriented, not ground-disturbing, and are actions and activities associated with ongoing program administration are not addressed in this chapter. Such actions and activities could include but are not limited to:

- Identification of sensitive plant and animal species, paleontological zones and fossil locations
- Identify baseline data and monitor for disturbances of species and zones.
- Encourage valid research and volunteer partnership opportunities associated with Monument areas.
- Encourage valid research and volunteer partnership opportunities to locate fossil, collect specimens, interpret finds, evaluate their significance, and preserve representative fossil formations and localities.
- Interpret, identify, and compile existing research maps and professional reports pertinent to the Monument.
- Use geographic information systems (GIS) and geographic positioning systems (GPS) to track and map data.
- Maintain baseline data in hard copy and electronic GIS format.
- Create geological maps depicting sites of geological and paleontological significance.
- Maintain and enhance the Goodwin Education Center.
- Display resource information at on-site or adjacent locations.
- Provide brochures for guided and self-guided trips.
- Focus interpretative information throughout the Monument.
- Research data collection methods to best suit the Monument.

4.1.1 Approach to the Analysis

The detailed impact analyses and conclusions are based on the Bureau of Land Management's (BLM's) knowledge of resources and the project area, reviews of existing literature, and information provided by experts in BLM, other agencies, interest groups, and concerned citizens. Data from field investigations were used to quantify effects where possible. However, in the absence of quantitative data and qualitative information, best professional judgment was used. Acreage calculations, projected use levels, and other numbers used in this analysis are approximate and provided for comparison and analytic purposes; they do not reflect exact measures of on-the-ground situations. Mitigation measures designed to avoid or reduce impacts were incorporated into the management alternatives and supporting information in the appendices, so impacts in this chapter are considered unavoidable and would result from implementing the management actions and mitigation. If an activity or action is not addressed in a given section, no impacts are expected or the impact is expected to be negligible, based on existing knowledge.

4.1.2 Impact Analysis Terminology

The analysis considers the context, intensity, and duration of an impact. The impacts consider a variety of contexts such as the affected region, the affected interests, the locality, and the broader society. Intensity refers to the severity of the impact—that is, the degree to which the action affects public health or safety or sensitive environmental resources. Duration refers to the permanence or longevity of the impacts, which is depicted as short term or long term. The terminology below is used in the analysis to help describe the relative level of impacts. Unless otherwise stated, the standard definitions for these impact-related terms are as follows:

Direct Impact: These are effects that are caused by the action and occur at the same time and place. Examples include elimination of original land use through erection of a structure. Direct impacts may cause indirect impacts, such as ground disturbance resulting in particulate matter emissions (dust).

Indirect Impact: These are effects that are caused by the action but occur later in time or are farther removed in distance but are still reasonably foreseeable and related to the action by a chain of cause-and-effect. Indirect impacts may reach beyond the natural and physical environment (for example, environmental impact) to include growth-inducing effects and other effects related to induce 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 (BLM NEPA Handbook H-1790-1).

Negligible Impact: The impact is at the lower level of detection; there would be no measurable change.

Minor Impact: The impact is slight but detectable; there would be a small change.

Moderate Impact: The impact is readily apparent; there would be a measurable change that could result in a small but permanent change.

Major Impact: The impact is large; there would be a highly noticeable, long-term, or permanent measurable change.

Localized Impact: The impact would occur in a specific site or area. When comparing changes to existing conditions, the impacts would be detectable only in the localized area.

Short-Term Impact: The effect would occur only during or immediately after implementation of the action/allowable use, and would be reduced to no or negligible levels over the long term.

Long-Term Impact: The effect could occur for an extended period after implementation of the action/allowable use. The effect could last several years or more.

Impacts presented are direct, broad (occurring within the planning area), and long term, unless otherwise noted as indirect, localized, or short-term/temporary. Impacts from implementing the plan include both negative and beneficial impacts to the natural and human environment. As impacts may be perceived as beneficial (positive) or adverse (negative) by different readers, these descriptors are qualified when used in defining impacts. However, in general, an RMP action is considered to be beneficial when it is contributing to the protection or restoration of objects identified in the Monument Proclamation.

4.1.3 Cumulative Impacts

The *National Environmental Policy Act* (NEPA) requires evaluation of an action's potential to contribute to "cumulative" environmental impacts. 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, or reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts can result from similar projects or actions, as well as from projects or actions that have similar impacts" (40 CFR 1508.7).

The objective of cumulative impact analysis is to evaluate the significance of the proposed action's contribution to cumulative environmental impacts. It is accomplished in three steps:

- Step 1: Identify the cumulative impacts assessment area for each resource evaluated. The assessment area will vary by program. For example, for air quality it would be the local air basin, while for water quality it would be the area watershed(s).
- Step 2: Identify and describe past, present, and reasonably foreseeable future actions in the cumulative impact study area that are similar to the proposed action or have substantial impacts to which the proposed action would contribute. The past and present actions are discussed in Chapter 3, Affected Environment, while the future actions are discussed in this chapter.
- Step 3: Evaluate the interaction of the RMP actions with these other past, present, and reasonably foreseeable future actions to contribute to cumulative environmental impacts.

4.1.4 Assumptions for the Analysis

Assumptions are made in the analysis regarding level of land use activity, resource condition, and resource response. Potential impacts are determined partly based on these assumptions. The following assumptions were used in the overall analysis; additional assumptions are presented under each resource or use topic.

- Management actions proposed in the alternatives apply to public lands only. However, cumulative impacts analyses consider potential actions by individuals or entities other than BLM.
- The alternatives would be implemented in accordance with all laws, regulations, and standard management guidelines/best management practices.
- Funding would be available to implement the alternatives, as described in Chapter 2.
- The level of activity on BLM-administered land is expected to increase, based on historical trends, population increases, and statements of interest in land use by individuals and industry organizations. This includes ongoing reasonable access to private land or interests.
- Global climate change will affect the planning area and likely result in warmer and drier conditions.

4.1.5 Availability of Data and Incomplete Information

The best available information that is pertinent to management actions was used in developing this Draft RMP/EIS. However, certain information was unavailable; each resource discussion identifies this incomplete information in the introduction.

Subsequent project-level analysis will provide the opportunity to collect and examine site-specific inventory data required to determine appropriate application of RMP-level guidance. In addition, ongoing inventory and monitoring efforts by BLM and others within the planning area continue to update and refine information that will be used to implement this plan.

4.1.6 Resources or Programs Where No or Negligible Impacts Would Occur

The following resources are either not present within the planning area, or no/negligible impacts to them have been identified from implementing any of the RMP alternatives: prime and unique farmlands, hazardous materials and solid waste, wild and scenic rivers, and public safety. Therefore, these resources are not discussed as stand-alone topics in the impact analysis. The designation of the Carrizo Plain as a National Monument made the area's administrative designation as an area of critical environmental concern (ACEC) redundant, as the same resources identified for protection as an ACEC are also identified in the Monument Proclamation. However, under the No Action Alternative, the ACEC designation would be carried forward. Since the analysis of impacts for all of the resources within the Monument is done in the context of impacts on the objects of the Monument Proclamation, an analysis covering impacts to the ACEC values would also be redundant. Therefore, a separate analysis was not conducted for ACEC impacts. The impacts to the objects protected under the Monument Proclamation should be consulted to determine ACEC impacts under the No Action Alternative.

4.1.7 Chapter Organization

Effects from different management alternatives that could be implemented under the RMP are considered by the following resource topics:

4.2 Wildlife
4.3 Vegetation
4.4 Fire and Fuels Management
4.5 Air Quality
4.6 Soils
4.7 Water Resources
4.8 Global Climate Change
4.9 Geology and Paleontology
4.10 Cultural Resources
4.11 Visual Resources
4.12 Wilderness Study Areas and Other Lands with Wilderness Characteristics
4.13 Livestock Grazing
4.14 Recreation / Interpretation and Administrative Facilities
4.15 Travel Management
4.16 Minerals
4.17 Lands and Realty
4.18 Social and Economic Conditions

For each resource, the discussion includes a list of assumptions and incomplete information, followed by identification of direct and indirect impacts, and finally, cumulative impacts. Each impact is discussed for objectives, actions, and allowable uses common to all alternatives, followed by impacts that vary by alternative.

4.2 Impact Analysis for Wildlife

4.2.1 Assumptions Used for the Analysis

All actions undertaken as a part of this RMP would be assessed in accordance with NEPA and the *Endangered Species Act*. If required, consultation with the U.S. Fish and Wildlife Service (USFWS) will be completed. Standard operating procedures (SOPs), stipulations, mitigation measures, and terms and conditions in this RMP and subsequent NEPA documents and biological opinions will be applied and followed.

Valid existing rights, such as existing oil and gas leases, private mineral rights, existing land use authorizations, would be honored, but SOPs, stipulations, mitigation measures, and terms and conditions in this RMP and subsequent NEPA documents and biological opinions will be applied and followed.

Impacts to wildlife from other programs may actually be an indirect effect of implementing the Biology Program. For example, Fire/Fuels Management or Livestock Grazing actions may be taken to implement a biology objective. The impacts of Fire/Fuels Management or Livestock Grazing are also discussed under the heading of Fire/Fuels Management or Livestock Grazing, but such impacts may actually be associated with implementing the Biology Program.

If additional special status species are designated or discovered, the objectives and management actions in this plan will extend to such species as well.

Critical habitat is not likely to be designated on public lands within the Monument since the USFWS does not include areas where existing management is sufficient to conserve the species. Critical habitat could be designated on private lands within the Monument boundary.

Over time, species distribution may change. Management action locations, including core area boundaries, would change accordingly.

If livestock grazing is used as a tool to manage vegetation, the treatment area would most likely correspond to the area circumscribed by existing fences and any natural barriers. These treatment areas currently correspond to historical pastures based on previous land ownership patterns and not on ecological parameters. Alternatives in this plan include the removal and realignment of fencing, where necessary, to better reflect vegetation management areas and natural ecological boundaries.

Low vegetation biomass years are defined as dry rainfall years in which rainfall is less than 80% of the long-term average. In such years, a relatively low amount of vegetation biomass is likely produced, and this amount would not have negative effects on San Joaquin Valley listed animal species. There have been 34 such years between the 1889-1890 and 2006-2007 water years.

Vegetation biomass produced in years that are within 20% of the long-term average (above or below) would not produce a thick thatch of non-native grasses that would likely hinder the movement and activities of the San Joaquin Valley listed animal species.

High or excessive vegetation biomass years are those in which rainfall produces a thick thatch of non-native grasses that likely hinders the movement and activities of the San Joaquin Valley listed animal species. These conditions may occur as the result of a single year greater than 140% or a series of rainfall years greater than 120% of the long-term average. Non-native grass production depends on a combination of rainfall and species composition of the seedbank. There have been six periods between the 1889-1890 and 2006-2007 water years in which high vegetation biomass of non-native grasses likely occurred.

4.2.2 Incomplete Information

Undiscovered locations of special status species may occur on the Monument, other species may be added to special status lists, and new species may be discovered.

4.2.3 Programs with No or Negligible Impacts

Visual Resources Management establishes zones that allow for certain levels of contrast when new projects are implemented. Although this may impact the location or design of certain wildlife habitat improvements (such as guzzlers, fencing), it would not preclude any of the actions in the alternatives so would have no or negligible impacts. The Paleontology and Geology programs would have negligible to no impacts on wildlife and in the Monument. There would be negligible impacts to overall wildlife communities (excluding nesting raptors) from any of the proposed Cultural Resource actions. New interpretive sites and expansion of existing sites would have impacts discussed in the Recreation program impact analysis. Air Quality management actions to improve air quality and reduce dust would result in negligible to minor beneficial impacts to wildlife species.

4.2.4 General Wildlife Impacts

The following discussion describes general impacts that would occur to many or all of the wildlife species that inhabit the Monument. This general discussion is followed by more specific descriptions of impacts for special status and other species of concern in the Monument.

4.2.4.1 Impacts under the No Action Alternative

Impacts on Wildlife from Implementing the Wildlife Program

The current management goal to achieve and maintain sustainable populations of all extant, non-listed native species and provide for the natural expansion and fluctuations of their populations would have major beneficial impacts to wildlife communities in the Monument. This goal implements the basic principles of conservation biology that sustains ecosystem health. The full complement of native species would provide for the complex functions and ecological processes of plant and animal communities and would sustain the processes of energy flow and nutrient cycling. Land health would be sustained, stable, and more resilient to the uncertainties of annual weather patterns and long-term climate change.

Reintroduction or augmentation of native animals into the Monument would have minor to moderate benefits to the overall wildlife communities by helping to achieve and maintain a robust assemblage of native animals that are appropriate for the species distributions and Monument habitats. A specific screening and decision process (Appendix O, Standard Operating Procedures) is in place to evaluate the appropriateness of each reintroduction or augmentation. The process is expected to avoid impacts inconsistent with Monument objectives and would support the overall ecological health of the plant and animals communities in the Monument.

Impacts on Wildlife from Implementing Other Programs

Vegetation

The current Monument objectives to increase the importance of native species in Monument communities provide for all transitional states of native communities through the natural range of disturbances (for example, fire, non-wildlife grazing, climatic events), and maintain shrub-scrub communities that would have major beneficial impacts to wildlife communities across the Monument in the short and long term. It is generally assumed that the improvement and maintenance of plant communities with a high proportion of native plant species and the control of exotic species and noxious weeds would provide high quality habitat for wildlife within the Monument.

Fire and Fuels Management

Since the effects of fire on altering vegetation and habitat for wildlife depends on the food and cover requirements of a particular species, the effects of wildfire can be beneficial or negative. In the Carrizo Plain itself, the Panorama Hills-Elkhorn Plain area, the Temblor Range, and the southern base of the Caliente Mountain, the protection of saltbush shrub and scrub plants is important to many wildlife species that depend on the shrubs for nesting, escape, and thermal cover. Since common saltbush and spiny saltbush are easily killed by fire and may require a decade or more to become reestablished after a fire, suppression activities that minimize the amount of fire damage to these communities are important to species such as western whiptail, Heermann's kangaroo rat, desert cottontail, pronghorn, sage sparrow, white-crowned sparrow, lark sparrow, house finch, LeConte's thrasher, and loggerhead shrike. Wildfires in these subregions are often suppressed with "mobile attack" tactics (driving fire engines along the edge of the burn to apply water) that have negligible effects to habitat. Although dozer firelines would occasionally be constructed to contain wildfires in the valley bottom of the Monument, the impacts to habitat are generally absent within 2 to 4 years and can be considered minor. However, large wildfires that eliminate saltbush for 1 or more decades would have moderate to major impacts to the wildlife community.

The upper Sonoran subshrub scrub, interior Coast Range saltbush scrub, juniper woodlands, juniper oak woodlands, and Diablan sage scrub plant communities are generally not fire-adapted. This wildlife habitat provides a complex structure of trees and shrubs that provide a wide variety of cover for wildlife. Wildfire in these communities would remove many of these trees and shrubs for many years, converting the sites to grassland. Fire suppression would limit the size of fires in these regions and would benefit animals that depend on the tree and shrub structure. A large portion of the area is within the Caliente WSA or in terrain where Minimum Impact Suppression Tactics (MIST) would be applied. Such tactics and management to suppress wildfires in these areas would have moderate to major beneficial effects to wildlife.

The application of prescribed fire would have moderate to major benefits to wildlife communities since specific wildlife objectives would be incorporated into project design and implementation. Prescribed fire would be applied to control nonnative grass cover or to create a more diverse cover of habitats and seral stages. Prescribed fires would benefit open habitat species such as short-nosed kangaroo rat, giant kangaroo rat, San Joaquin kit fox, horned lark, American pipit, mountain plover, and long-billed curlew. Since prescribed fires could be designed to avoid saltbush scrub habitats, the overall diversity of the grassland and saltbush scrubland habitat mosaic would be maintained to benefit a variety of wildlife species.

Prescribed fire pile burns would have negligible impacts to wildlife due to their small size and limited application in the Monument. These projects can often be timed to avoid wildlife reproduction periods or located to avoid important wildlife features.

Soils

Actions to remediate soil erosion problems and manage livestock grazing to maintain soil in proper functioning condition would have major beneficial impacts to wildlife resources and special status animals. Maintenance of healthy soils would maintain or improve habitat conditions over the long term.

Water

Protection or enhancement of springs, water sources, and drainages would have negligible to moderate beneficial impacts to wildlife resources and special status animals. Water sources are considered critical

habitat features that can determine animal distributions and abundance within the Monument. Actions, such as fencing spring sources from livestock trampling and vegetation use, would create or maintain a diverse habitat structure for a variety of wildlife species. The more diverse herbaceous and shrub layers create more soil litter, nesting sites, food resources, and cover opportunities for wildlife. The presence of natural surface water or water provided at troughs would provide important habitat resources, especially considering the arid climate and limited water sources in the Monument. Protective fencing would be designed and constructed using SOPs to minimize or avoid negative impacts to wildlife. Special consideration would be given to enhance pronghorn water sources while minimizing fencing impacts.

Livestock Grazing

Under current management, livestock grazing in the vegetation management areas would likely be reduced to improve native plant composition, based on recent monitoring data analyses (Christian et al., in prep.). Livestock grazing would likely be applied in the important giant kangaroo rat and blunt-nosed leopard lizard areas in extremely wet years of high non-native biomass production. It is expected that wildlife communities would continue to remain stable considering the mosaic of vegetation structure across the landscape of the Monument. The annual variation of precipitation results in the greatest changes in habitat structure across the landscape. BLM monitoring data on breeding birds, winter raptors, and small mammals (Germano and Saslaw 1996; Ronan and Rosenberg 2002; BLM 2008; Sauer et al. 2008; Sauer et al. 1996; White and Ralls 1993) suggest that there are wide annual fluctuations in the abundances from year to year. Wildlife populations may respond to the amount of open ground cover, taller and denser grass, or the amount of herbaceous ground cover. For species requiring shrub structure, fires and episodic recruitment events influence their abundances and distributions. In both grazed and ungrazed pastures and between years of livestock grazing and no livestock grazing, there is variability of species abundances and distributions that appear to be within the natural range of variation for these grassland and shrubland ecosystems. Animal species composition has varied with changes in annual vegetation structure. In general, all of the species expected to be found in the Monument habitats have been well represented as expected for the climate, vegetation, and landform in the Monument. Vegetation management could result in some distribution and abundance changes over time.

Livestock grazing would create a more open habitat structure that simulates drier years with sparse grass/herbaceous cover. Livestock grazing to reduce excessive residual dry matter would favor open-habitat species like kangaroo rats, whiptail lizard, horned lark, LeConte's thrasher (openings between shrubs), ferruginous hawk, and antelope squirrel. The absence of livestock grazing during wet years and when herbaceous cover accumulates over several years creates greater grass and herbaceous cover and more perches from taller plants. The more closed habitat species like deer mice, harvest mice, California vole, savannah sparrow, grasshopper sparrow, western meadowlark, northern harrier, and short-eared owl, would be more abundant. Shrub-dependent species like sage sparrow, lark sparrow, loggerheaded shrike, California towhee, LeConte's thrasher, desert cottontail, and black-tailed hare, would be fairly abundant where adequate shrub cover exists and other habitat and population factors are favorable (for example, open ground for foraging).

Considering current stocking densities, season of use, mulch management guidelines, and shrub utilization guidelines for the vegetation management areas, the greatest influence of grazing would be in the amount of herbaceous cover, plant composition, and structure. Shrub cover is expected to be maintained at a greater extent since shrub health/impacts would continue to be pasture management indicators/triggers. Through pasture management, shrub recruitment events would not be compromised by livestock grazing activities. Since saltbush seedlings appear in late spring, summer, or early fall, prior to livestock turnout, BLM has the opportunity to not employ grazing management the first year(s) after recruitment. This would be implemented through the annual review of vegetation objectives to assess whether livestock grazing would be conducted. Monitoring of vegetation and grazing effects would feed

back into the annual grazing decisions to promote shrub seedling establishment to maintain/improve this component of wildlife habitat.

Livestock grazing at the pasture scale can influence the amount of grass and herbaceous ground cover. Stocking density, duration, and timing could result in a patchy mosaic or an extensive, even grazed pattern. Some areas are grazed more intensively than others, creating openings or reducing habitat cover in a patchy way. Livestock trampling can also affect ground nesting success and cause burrow collapse. Livestock grazing can have variable impacts on small mammal abundance. Monitoring data on giant kangaroo rats in the Monument have reported lower numbers of burrow systems in grazed relative to ungrazed pastures (Christian et al., in prep.). Other studies have shown little differences between grazed and ungrazed study plots in some years (Germano et al. 2006), or higher numbers of small mammal numbers in a grazed plot in high biomass years (Endangered Species Recovery Program 2005). In high precipitation years and in successive years of nonnative plant material accumulation, livestock grazing could be applied at the pasture level to reduce overall herbaceous cover to favor species requiring more open ground structure. This management would be applied primarily in the Panorama Hills-Elkhorn Plain and Carrizo Plain Central subregions.

Grazing also influences nutrient cycling, waste accumulation and deposition, insect habitat in dung, soil moisture, and soil temperature. These factors can modify habitat structure for invertebrates and change their species composition. These factors may subsequently influence the amount of invertebrate food items for some birds and mammals. While the overall effect of this removal of dry plant material is far from simple relative to soil protection, seed germination, and nutrient cycling, it does result in some predictable changes in bird species composition largely resulting in a change in vertical structure and ground cover, and less apparent changes in prey abundance or availability. At the grazing intensities proposed, there would be a variety of plant cover/soil cover microsites that would favor a diverse invertebrate fauna across the landscape.

Applying the current grazing prescriptions within the vegetation management area would result in minor beneficial impacts to the overall wildlife community. Some species would have beneficial effects from a grazed habitat structure while others would detrimental effects. However, using livestock grazing as a tool to treat non-native grass biomass and provide a mosaic of native habitats and structure in the Monument would have an overall minor beneficial impact to the wildlife communities.

The Section 15 grazing allotments in the Temblor Range, the Caliente Range, and the alluvial fans and drainages in the northern fringe of the Cuyama Valley would continue to provide habitat for native wildlife species under the Standards for Rangeland Health and Caliente RMP guidelines. Livestock grazing in the pastures of the North Temblor allotment has generally occurred annually during the green season of use and would be expected to be authorized when minimum residual dry matter requirements are present. Livestock grazing has been somewhat occasional on the Caliente Range in recent years. While livestock grazing is not applied with the direct intent to manage native wildlife habitats (as in the free use areas), the grazing of forage and biomass would likely continue to maintain suitable habitat structure for native wildlife. Considering the natural mosaic of habitats among soil, landform, precipitation and temperature patterns, and vegetation distributions, most wildlife communities appear to be in a sustainable condition and would be expected to remain so under current livestock management. There would be negligible to major benefits from managing wildlife habitats to meet Rangeland Health Standards in the Section 15 allotments.

Travel Management

There would be negligible anticipated effects to wildlife communities from the current road management system. Vehicle strikes primarily occur along Soda Lake Road where vehicles often travel at highway

speeds, but other strikes have occurred on BLM maintained and un-maintained two-track roads. However, visitor and administrative use of roads is uncommon on most routes and vehicle strikes are relatively rare events. The presence of roads in grassland and shrub-scrub habitats is not considered to cause habitat fragmentation or act as barriers within habitats. Roads are commonly used as travel ways by reptiles and small mammals and as foraging areas by many wildlife species. The road network provides reasonable access to maintain existing wildlife habitat features such as guzzlers, water troughs, and springs.

Minerals

There would be negligible to moderate impacts from energy mineral exploration and development in the Monument.

The construction and operation of the projected oil development activities would result in 30 acres of habitat disturbance in the valley floor portion of the Monument. Geophysical activities would have a transient impact on 115 acres through cross country travel and shothole drilling. On the valley floor, the construction of 8 miles of roads, 6 exploration well pads, 2 tank batteries, and 10 development well pads would result in habitat disturbance that would destroy burrows and remove vegetation within the construction footprint. BLM has SOPs to use existing roads and disturbed sites if possible, minimize the size of the footprint, and avoid wildlife features to the greatest extent practicable. Construction activities would result in a loss of animals directly within the footprint with some disruption to animals directly adjacent to the well locations. Animals adjacent to the construction footprint may wander onto the edge of the construction area and may be harmed by subsequent construction, drilling, operations, maintenance, or restoration activities. There may be some disturbance to the adjacent animals during the drilling operations when nighttime activities and lighting occur. Drilling activities typically last up to 20 days per well. Once a well is drilled, few, if any, nighttime activities would occur.

The duration of the impacts would depend on whether the wells find economic reserves that will be produced. The impacts would be long-term over the life of the well if it has economic reserves. The impacts would be considered temporary if no economic reserves are found. Restoration would be initiated immediately and the site would likely be inhabited by wildlife within several months.

Vehicle travel to the well locations within the Monument (on county roads, on existing BLM roads, and on newly constructed roads) may result in some vehicle strikes and mortality. BLM requires project vehicle speeds below 20 miles per hour off of county roads to minimize the risk of vehicle strikes of listed species.

In the Russell Ranch oilfield, there would be 6.5 acres of new disturbance. There would be 3.5 acres disturbed from new well pads and 3 acres from new roads. Geophysical activities would impact 25 acres through cross-country travel and shot hole drilling. BLM SOPs would minimize project impacts and avoid wildlife habitat features as described above.

Geophysical activities would have a transient impact of 115 acres from cross-country and shot hole drilling. Oil exploration using shot hole seismic methods and implementing avoidance requirements would have negligible to minor impacts to most wildlife. The extent of the impacts would depend on the project design, primarily the number of shot holes and number, length, and distance between seismic source lines. Recent methods using small tractor-mounted drill rigs leave little surface impact as they travel between source points and at the drilling locations. The small tractor vehicles are lightweight and maneuverable and usually able to successfully avoid burrows and cause minimal burrow collapse. The amount of drill tailings and disturbance is typically less than 10 feet in diameter. The duration of drilling at any one point is typically less than 20 minutes. The detonation of the charges is perceptible to humans within 200 feet of a shot hole and some surface movement can be observed at the shot point. It is possible

that the shot hole detonations and testing vibrations may have deleterious effects on burrowing animals. However, the effects of seismic testing noise are unknown.

Lands and Realty

The acquisition of private inholdings would have minor to major beneficial impacts to wildlife depending on the size of the acquisitions, the habitat types, the presence of habitat features, and land uses under private ownership. The protection afforded by BLM ownership under the Monument Proclamation would provide long-term benefits to wildlife.

Authorization of rights-of-way, permits, or other realty actions would have negligible to minor impacts to wildlife considering the existing plan objectives and Monument Proclamation. SOPs would be applied to minimize impacts to wildlife and site-specific avoidance measures would be implemented to the greatest extent practicable (for example, maintaining unobstructed flight paths for raptors and condors).

4.2.4.2 Impacts Common to All Action Alternatives

Impacts on Wildlife from Implementing the Wildlife Program

Management of the core areas for the listed San Joaquin Valley upland species would provide moderate to major beneficial impacts to many wildlife species that inhabit open upland habitats typical of the San Joaquin Valley and more arid regions of the Monument. The collective wildlife management objectives to maintain viable populations, provide habitat for mountain plover and California condor, protect roosting habitat, maintain habitat structural diversity, protect riparian habitat and vernal pools, and conduct research and inventory would have major beneficial impacts to many wildlife species within the Monument over the long term.

Impacts on Wildlife from Implementing Other Programs

Vegetation

Fencing of 500 acres to BLM specifications to protect rare plant populations at one or more sites would have negligible effects on wildlife in the Monument. The fences may serve as perches for some birds. This may be beneficial for the species using the perches for hunting or resting, but may increase predation to prey species nearby.

Restoration activities to reintroduce native plants into previously cultivated farm fields or in habitats with a low proportion of native plant species would have minor direct impacts on wildlife. Restoration activities generally occur in the late fall or early winter seasons prior to significant rainfall events when soils are usually quite hard. Bird nesting would not be affected. Important habitat features would be identified and avoided to the maximum extent practicable. The long-term improvement in native plant community composition would likely benefit a large number of animals with a more diverse array of seeds, forage species, cover, and structural diversity.

Fire and Fuels Management

Wildfire suppression may disturb wildlife habitat along fire control lines, at staging areas, in retardant drops, and in cross-country travel. Vegetation and burrows may be crushed, animals entombed, and vehicle strikes may occur. In grassland habitats the suppression activities are usually kept to the least amount of disturbance needed to control the fire with mobile attack, retardant, or a single dozer line. These impacts are temporary in duration and are usually revegetated by natural processes of annual plants within 1 to 3 years. In the Carrizo Plain, the Elkhorn Plain, and the foothills and drainages of the Caliente

Range and Temblor Range, the effects of wildfire may remove saltbush plants for 1 to several decades (Germano et al. 2001). Saltbush plants occurring in scattered stands and in denser stringers along drainages and alluvial fans provide important nesting, foraging, thermal, escape, and resting cover for many animals. Wildland fire suppression would minimize the extent of damage to saltbush scrub habitats and would maintain these habitat features for wildlife. The short-term nature of suppression activities in the grasslands would be offset by the minor to moderate beneficial effects of minimizing wildfire in these shrub communities damaged for many years by fire.

Livestock Grazing

Livestock grazing would be conducted to meet the Standards for Rangeland Health so that "viable, healthy, productive, and diverse populations of native and desired species, including special status species, are maintained or enhanced, where appropriate." Since the Monument management objectives emphasize an increase of native and indigenous species, livestock grazing management prescriptions and decisions would be designed and administered to meet this standard. There would be negligible to major beneficial impacts to wildlife, depending on habitat conditions, grazing permit terms and conditions, and the need to apply vegetation management prescriptions.

Monitoring impacts from livestock grazing and adjusting authorizations as necessary to meet management objectives would have negligible to major beneficial impacts to wildlife, depending on the extent of the impact and the remedy applied.

Recreation

Dispersed vehicle camping in the Backcountry zone in important wildlife areas could be eliminated if problems are documented during monitoring. Site-specific closures could be made if impacts are unacceptable. Vehicle camping activities would have localized, but negligible effects on wildlife. There is a small chance of inadvertent damage to habitat features (such as burrows, dens, nesting trees and shrubs, springs, logs) from vehicle-related camping activities.

The development of water, signs, and overlooks would have negligible impacts on wildlife. All the direct impacts would be localized, may be avoidable, and would not affect wildlife at the population level. The indirect effects of greater recreational activities near upgraded facilities would have a wider area of human impacts on wildlife, but this is expected to be at a very small scale and would not affect wildlife populations.

The development of recreational activities within the Frontcountry zone would also have negligible impacts on wildlife. Nearly all the direct impacts would be localized, may be avoidable, and would not affect wildlife at the population level. The indirect effects of greater recreational activities near upgraded facilities would have a wider area of human impacts on wildlife habitat, but this is expected to be at a very small scale and would not affect populations of animals.

Travel Management

Closed roads would have minor beneficial impacts to wildlife as the road footprint is reduced to single-track trails and vehicle strikes are eliminated. Occasional administrative access would allow maintenance of wildlife habitat improvements such as protective fences, springs, and guzzlers.

Lands and Realty

The issuance of rights-of-way and permits would have negligible impacts to wildlife communities. BLM would implement standard survey, take avoidance, and mitigation measures that would result in few direct and indirect impacts to wildlife at the community scale. Site-specific impacts may occur to a small number of individuals, but the Monument populations would be negligibly affected.

4.2.4.3 Impacts under Alternative 1

Impacts on Wildlife from Implementing the Wildlife Program

Under Alternative 1, eliminating artificial water sources would have moderate to major impacts on wildlife that depend on those waters. Most of the Carrizo Plain North, Carrizo Plain South, and Panorama Hills-Elkhorn Plain subregions would become uninhabitable for a number of wildlife species for at least some times during the year. Removing guzzlers in the Temblor Range, and Caliente subregions would have major detrimental effects on upland game birds (California quail, mourning dove, and chukar). The removal of nonnative trees and some human structures would eliminate roosting, nesting, and perching sites for several species of bats and some birds such as the house finch, barn owl, and Say's phoebe.

Impacts on Wildlife from Implementing Other Programs

Vegetation

Weed control by hand or mechanical methods on 10 to 100 acres would have negligible affects on wildlife. Projects would be designed and timed to avoid direct impacts during nesting/reproduction when possible. Important habitat features would be avoided to the maximum extent practicable.

Fire and Fuels Management

MIST in the Caliente WSA and Primitive recreation zone (65,218 acres) would have a variety of impacts on wildlife. Overall, there would be beneficial impacts to wildlife by minimizing habitat disturbance from the construction of dozer control lines or mobile attack. In grassland communities, the fires would likely be larger than if maximum suppression tactics are used. This would have detrimental effects if greater acreage of saltbush plants and stands are consumed and damaged by the fires. In the Carrizo Plain, the Elkhorn Plain, and the foothills and drainages of the Caliente Range and Temblor Range, the effects of wildfire may remove saltbush plants for one to several decades (Germano et al. 2001). Saltbush plants occurring in scattered stands and in denser stringers along drainages and alluvial fans provide important nesting, foraging, thermal, escape, and resting cover for many animals. Larger fires may increase the extent of damage to saltbush scrub habitats and would eliminate these habitat features for wildlife.

Similar impacts would be expected in the areas managed for wilderness characteristics in the Caliente Mountains North, Caliente Foothills North, and Caliente Foothills South subregions since these shrub communities are not considered as fire-adapted and the natural occurrence of fires is not common.

Eliminating the use of prescribed fire would remove opportunities to create habitat mosaics of varied plant communities and seral stages. Wildlife that favor open cover, such as horned larks, American pipits, and mountain plovers would generally find fewer acres of suitable habitat in wetter years when prescribed burns would be conducted. Eliminating prescribed fire would have minor to moderate impact to open habitat species.

Livestock Grazing

Under Alternative 1, the impacts of livestock trampling on ground nesting birds and small mammals and use of vegetation would be eliminated. The impacts would be considered major, but could be detrimental or beneficial, depending on habitat requirements. Much of the landscape within the Monument would favor the closed habitat wildlife species that require greater herbaceous ground cover and taller structure in the winter and spring seasons. For example, the abundance of horned lark, American pipit, and mountain plover would decrease while western meadowlark, savannah sparrow, and red-winged blackbird would increase. The more open habitat species would find fewer acres suitable in many years in the northern regions of the Monument, but most of the Carrizo Plain and Elkhorn Plain subregions would remain more open due to giant kangaroo rat clipping activity. While there would be no change in wildlife habitats and communities in the approximately 27,000 acres of currently ungrazed pastures, the vegetation would likely be much denser in the spring and early summer seasons in wet years than currently occurs in the rest of the Monument. There would be little difference between this alternative and the current management in dry years when livestock grazing has not been employed due to low forage production. The greatest difference from current management would occur in an extremely wet year or after a series of above-average rainfall years when nonnative grass accumulates and nonnative grass and forbs cover the greatest portion of the ground surface. This is most pronounced in the spring and early summer seasons, before giant kangaroo rat clipping and annual plant desiccation and shatter occurs. The extent of closed and open ground cover within the Carrizo Plain, Elkhorn Plain, and foothill regions would depend to a large degree on the extent of giant kangaroo rat populations, which have varied greatly across the landscape over the past 20 years. If giant kangaroo rats populations are high and their distributions are extensive, then the standing nonnative herbaceous cover would also likely be removed on their precincts and surrounding areas. However, during low population levels and reduced areas of giant kangaroo rat distributions, the landscape could remain covered by persistent nonnative grasses.

The extent of shrub and tree habitats in the Monument is expected to be similar to the current situation. Shrub stands that currently have livestock grazing impacts would have improved structure and vigor. However, the current season of livestock use and other management guidelines authorized in the Monument generally favor the establishment and maintenance of shrub species. Recruitment of new shrub species is also expected to occur. Whether increased ground cover of nonnative persistent grasses would hamper new seedling establishment is not known. The 1991 event of saltbush establishment occurred when the drought of 1989–1991 was ended by the “March miracle” rains that washed considerable saltbush seed from the hills into the alluvial fans of the Monument and San Joaquin Valley. The lack of ground cover and competition from native and nonnative plants probably helped seedling establishment in this event. Without livestock grazing, the amount of open sites for seedling establishment would depend on climatic conditions and perhaps kangaroo rat vegetation removal. However, shrub habitats are expected to remain healthy and widespread at the landscape level. Thus, there would be negligible impacts to shrub-dependent species.

The arid south slopes of the Temblor and Caliente Ranges are not expected to accumulate persistent grass cover in wet years or for a prolonged wet period. Wildlife habitats in these areas would be negligibly affected by the elimination of livestock grazing since few livestock forage in these arid sites and the vegetation remains sparse even in the wettest of years. Brewer’s sparrows, black-throated sparrow, and Scott’s oriole habitats would not likely change under this alternative.

The elimination of livestock grazing would probably result in the elimination of livestock management fences and some waters. The loss of water sources could change the distributions of some species in the Monument would have minor to moderate detrimental effects to some species.

Travel Management

The impacts of closing approximately 71 miles of roads within the Monument would have a minor positive effect on wildlife communities. These dirt roads do not currently serve as barriers to wildlife but are used as travel corridors by some species. Some roads would be altered from an open surface to a vegetated cover. The linear nature and narrow extent of these roads would probably be imperceptible to the adjacent wildlife. Since existing traffic levels are low on the proposed route closures, the difference in human disturbance would likely be minimal. However, the risk of vehicle strikes and disturbance to animals in the closed two-tracks would be eliminated. In addition, with visitation to the Monument likely to increase steadily over the life of the plan, a reduction in the number of routes, or a restriction in their use, could be even more of a benefit to native plants and animals in the future.

Minerals

Impacts would be the same as the No Action Alternative.

Lands and Realty

Impacts would be the same as the No Action Alternative, except that rights-of-way would be reduced.

4.2.2.4 Impacts under Alternative 2

Impacts on Wildlife from Implementing the Wildlife Program

Protection of raptor nesting sites from human intrusion would provide moderate benefits to a number of nesting birds on the Painted Rock, Selby Rock, and other rock formations. The planting of trees at facilities would provide new nesting opportunities and minor benefits for a number of birds such as house finch, mourning dove, western kingbird, and northern mockingbird. The construction of new guzzlers would provide better habitat conditions for upland game birds (California quail, chukar, and mourning dove). The control of pets would reduce the risk of disease transmission and chasing and capture of animals by dogs.

Impacts on Wildlife from Implementing Other Programs

Vegetation

Constructing 10 to 20 miles of fencing to protect oak trees at one or more sites would have negligible effects on wildlife in the Monument. The fences may serve as perches for some birds. This may be beneficial for the species using the perches for hunting or resting, but may increase predation to prey species nearby.

Restoration activities on 200 to 500 acres per year to reintroduce native plants into previously cultivated farm fields or in habitats with a low proportion of native plant species would have minor impacts on wildlife. The use of a tractor-pulled range drill/seeder may run over and collapse burrows. However, monitoring of recent restoration projects has not found burrow collapse to occur if soils are firm and dry. Restoration activities generally occur in the late fall or early winter seasons prior to significant rainfall events when soils are usually quite hard. Bird nesting would not be affected. Important habitat features would be identified and avoided to the maximum extent practicable. Strip seeding, leaving large areas untreated, would be used in more densely populated giant kangaroo rat habitats if avoidance is warranted. The long-term improvement in native plant community composition would likely have moderate benefits to wildlife with a more diverse array of seeds, but this is presently unknown.

Restoration of up to 10 acres of oak understory soils and litter would be beneficial to a number of wildlife species such as California legless lizard and western skink, deer mouse, and California pocket mouse.

Restoration of biological soil crusts would have negligible impacts on wildlife. The repeated use of prescribed fire and herbicides to promote soil crusts would remove herbaceous vegetation for several years while the crusts develop. This may remove food and cover for small mammals and reptiles on the sites. However, the extent of these activities would be very localized and would not affect populations in the short or long term. The long-term establishment of biological soil crusts would likely benefit wildlife by promoting a composition structure of more native plants.

Weed control by hand or mechanical methods on 10 to 100 acres would have negligible effects on wildlife and special status animals. Projects would be designed and timed to avoid direct impacts during nesting/reproduction when possible. Important habitat features would be avoided to the maximum extent practicable.

Fire and Fuels Management

The impacts would be the same as described in the No Action Alternative.

Livestock Grazing

Livestock grazing would be less frequently applied as a management tool in the vegetation management areas except in high rainfall and vegetation biomass years. Livestock grazing in the Section 15 allotments would also be less frequent (five of ten years) than in the No Action alternative (eight of ten years). However, the impacts to wildlife would be variable, similar to those described in the No Action alternative.

Travel Management

The closure and limited designation of 44 miles of roads in the Monument would reduce the risk of vehicle collisions and inadvertent burrow collapse on road edges. The restricted vehicle access would have a moderate positive effect, reducing the risk of vehicle strikes and habitat disturbance in the Monument.

Lands and Realty

Under Alternative 2, acquisition efforts would be directed to those lands with important biological resources, including wildlife habitat. This would have a moderate to major positive effect on the rate and amount of habitat acquired. Acquisition of privately owned habitat would allow BLM to discontinue any detrimental practices and initiate conservation/restoration actions.

4.2.4.5 Impacts under Alternative 3

Impacts on Wildlife from Implementing the Wildlife Program

The impacts of this alternative to wildlife would be similar to those described in Alternative 2. A greater number of artificial water sources would provide minor to moderate benefits to many wildlife species.

Impacts to Wildlife from Implementing Other Programs

Vegetation

Impacts would be the same as Alternative 2.

Fire and Fuels Management

Although there would be 500 acres treated under this alternative, the impacts would be the same as Alternative 2.

Livestock Grazing

Impacts would be the same as the impacts in the No Action Alternative.

Travel Management

The impacts to wildlife would be the same as the No Action Alternative.

Lands and Realty

Impacts would be the same as Alternative 2.

4.2.5 Special Status Animals

4.2.5.1 Giant Kangaroo Rat

Impacts under the No Action Alternative

Impacts to the Giant Kangaroo Rat from Implementing the Wildlife Program

The current Monument goal to contribute to the recovery of listed species by achieving long-term, viable populations of all extant listed species in the Monument would have major beneficial impacts to the conservation and recovery of this federally and California listed endangered species. Current management is implementing the objectives to manage locations and habitat features of listed species to allow for their continued existence and maintenance of viability, provide for the natural expansion and fluctuations of listed species consistent with species recovery, and reduce human-caused hazards to core species.

Impacts to Giant Kangaroo Rat from Implementing Other Programs

Vegetation. The current Monument objectives to increase the importance of native species in Monument communities, provide for all transitional states of native communities through the natural range of disturbances (for example, fire, non-wildlife grazing, climatic events), and maintain shrub-scrub communities, would have major beneficial impacts to giant kangaroo rats across the Monument in the short and long term. It is generally assumed that the improvement and maintenance of plant communities with a high proportion of native plant species would provide high quality habitat for this species. The most important element of these objectives may be providing all transitional states and disturbances across the Monument to create a mosaic of grassland, shrub-scrub lands, grazed and ungrazed areas, burned and unburned areas, and a wide range of habitat opportunities for giant kangaroo rats. Under this mosaic, the kangaroo rats would occupy plant communities within the range of their habitat needs. This strategy of varied plant communities is expected to maintain giant kangaroo populations across the Monument landscape considering the high amount of climatic and vegetation biomass production and decomposition.

It should be noted that while extensive dense cover and tall structure of nonnative grasses may pose problems for giant kangaroo rats, many of these nonnatives are key seed producers that provide the bulk of their diet. Therefore, management has focused on maintaining suitable open ground cover within whatever mix of natives or nonnatives may occur. Monitoring of giant kangaroo rat populations and plant community composition and structure would be conducted to inform vegetation/habitat management prescriptions for the benefit of this species.

Restoration activities to reintroduce native plants into previously cultivated farm fields, abandoned roads, or in habitats with a low proportion of native plant species would have minor impacts on giant kangaroo rats. The use of a tractor-pulled range drill/seeder may run over and collapse giant kangaroo rat burrows. However, monitoring of recent restoration projects has not found burrow collapse to occur if soils are firm and dry. Restoration activities generally occur in the late fall or early winter seasons prior to significant rainfall events when soils are usually quite hard. Where burrows are scattered, they are easily avoided if collapse is observed to occur. Strip seeding, leaving large areas untreated, would be used in more densely populated giant kangaroo rat habitats if avoidance is warranted. The long-term improvement in native plant community composition would likely have minor to moderate beneficial impacts to giant kangaroo rats with a more diverse array of seeds, but this is presently unknown.

Fire and Fuels Management. The use of prescribed fire on 30,000 acres within the Monument would have moderate to major benefit to giant kangaroo rat populations in most circumstances. Monitoring studies of a prescribed fire in the West Well pasture from 1993 to 1996 indicated that giant kangaroo rats persisted longer in the burned than in the unburned plots during a large-scale population decline (Germano and Saslaw 1996). Similar monitoring of a burn in 1993 in the Lokern Area in western Kern County showed that Heermann's and short-nosed kangaroo rats also persisted in burned areas while animals were no longer captured in the grassy, unburned paired trap lines. Direct mortality to three giant kangaroo rats, presumably from smoke inhalation, was observed at the West Well site. However, this was an extremely low percentage of the total number of kangaroo rats in the burn area, and the population was maintained following the burn.

Water Resources. Protection or enhancement of springs, water sources, and drainages would have negligible beneficial impacts to giant kangaroo rats.

Cultural Resources. There would be negligible impacts to giant kangaroo rats from any of the proposed Cultural Resource actions.

Livestock Grazing. Under current management, livestock grazing would be used as a vegetation management tool on an occasional basis in the Carrizo Plain and Elkhorn Plain vegetation management area to reduce standing biomass of persistent nonnative grasses for the benefit of giant kangaroo rats. Livestock grazing would occur in the Section 15 allotments in an average of eight out of ten years.

Livestock grazing may help maintain favorable habitat conditions for giant kangaroo rats in periods of extremely high standing vegetation biomass, but there may be negative impacts when livestock grazing occurs in more average rainfall and vegetation production years. Monitoring data and research on this kangaroo rat and other kangaroo rats species indicate that wet years and dense persistent vegetation (both herbaceous and shrubs) correlates with lower populations and reduced distributions. In general, the abundance of giant kangaroo rats increases as grass and forb cover decreases (Williams and Kilburn 1991; Rowland and Turner 1964; USFWS 1998; Cypher 2001; Germano et al. 2001; Waser and Ayers 2003; BLM 2007). In most years of average to below average rainfall and vegetation biomass production, giant kangaroo rats are able to clip down the herbaceous vegetation to meet their habitat needs and livestock grazing would not be necessary or desirable. However, in years of excessive herbaceous production they may not be able to create suitable open habitat and population declines may occur.

Extremely wet periods and high residual dry matter levels have coincided with regional declines of kangaroo rats in the southern San Joaquin Valley and the Monument (Single et al. 1996; Germano et al. 2001). Whether the cause(s) of the declines are spoilage of seeds, excessive fungal growth and lethal mycotoxins, wetness and respiratory problems, or greater predation rates due to reduced visibility and impeded escape through the grasses is not fully understood (Germano et al. 2001; Waser and Ayers 2003). Recent studies in the Southern San Joaquin Valley have indicated that when there are low amounts of standing biomass, kangaroo rats are more abundant in the open habitats (Goldingay et al. 1997; Cypher 2001; Germano et al. 2006; ESRP 2005; Germano and Saslaw 1996). It is not clear whether thick grass structure or high moisture resulting from high rainfall is the cause of lower kangaroo rat populations. However, since excessively high grass and herbaceous vegetation can be manipulated by livestock grazing, vegetation management by grazing may be helpful in reducing precipitous declines in greater-than-average rainfall years.

There is some level of uncertainty whether livestock grazing would successfully maintain giant kangaroo rat habitat and populations. Recent monitoring studies in the Monument between 1997 and 2003 indicated that there were lower numbers of active giant kangaroo rat precincts counted in grazed pastures relative to ungrazed pastures in the six years of data analysis (Christian et al, in prep). These data included both the extremely wet El Nino year of 1998 and subsequent low precipitation year of 2002. This study started in 1997 when giant kangaroo rats were at extremely low populations. Monitoring indicated that, overall, active burrow systems increased by nearly 50% and burrow distributions increased from 21% to 35% of the study locations. Increases occurred on both grazed and ungrazed pastures, but there was a statistically lower number of kangaroo rat precincts in the grazed pastures. In contrast to this study, giant kangaroo rat studies on the Elkhorn Plain Ecological Reserve between 1987 and 2005 showed similar numbers of giant kangaroo rats captured on a pair of grazed and ungrazed study plots in most years. However, in the record high rainfall year of 1998 (El Nino), giant kangaroo rats were over four times more abundant in the grazed pasture than in the ungrazed Reserve (Endangered Species Recovery Program 2005). In 1999, they were nearly twice as many animals in the grazed pasture. Observations of giant kangaroo rat distributions on the Monument in the 1998 El Nino year indicated an apparent absence of giant kangaroo rats in most of the Carrizo Plain, but active precincts were apparent in an obviously grazed pasture in the Panorama Hills area. Livestock grazing studies have not been conclusive, but the application of livestock grazing to reduce vegetation biomass to provide more favorable habitat structure appears to have good management potential. Since there appears to be a negative correlation of high vegetation biomass on giant kangaroo rat populations, reducing the amount of standing biomass through livestock grazing may be a prudent course of action to reduce population declines. While livestock trampling of burrow systems has been observed in some soil types, the general improvement of habitat conditions would likely outweigh these effects (Germano et al. 2001).

Livestock grazing in the vegetation management area of the Carrizo Plain and Elkhorn Plain would have moderate to major beneficial impacts to maintain giant kangaroo rat populations on the Monument in wet rainfall years with high non-native vegetation biomass. Livestock grazing would have minor to moderate negative effects to giant kangaroo rat populations in years that do not have high rainfall and thick non-native grass/herbaceous structure.

Livestock grazing under current management in the Section 15 Recruit and South Anderson pastures of the North Temblor allotment, the South Selby pasture of the Selby allotment, and the Sulphur Canyon allotment would likely occur in eight of ten years. The impacts would be beneficial in wet years when management may be needed to reduce high amounts of standing vegetation biomass. The more frequent grazing may have negative effects to giant kangaroo rat populations in some years. Monitoring data from the Monument (Christian et al., in prep.) indicated lower numbers of precincts in grazed pastures relative to ungrazed pastures. Thus, there may be moderate to major beneficial impacts to maintaining giant

kangaroo rats in these areas in the occasional wet years with high vegetation biomass, but minor to moderate negative impacts when livestock grazing occurs in years of less than high vegetation biomass.

Travel Management. There would be minor impacts to giant kangaroo rats from the current road management system. Vehicle strikes primarily occur along the Soda Lake Road where vehicles often travel at highway speeds, but other strikes have occurred on BLM maintained and unmaintained two-track roads. However, visitor and administrative use of roads is uncommon on most routes and vehicle strikes are relatively rare events. Kangaroo rat activity crossing roads occurs at night when there is little vehicle travel off the county roads. The presence of roads in grassland and shrub-scrub habitats is not considered to cause habitat fragmentation or act as barriers within habitats. Kangaroo rats are often seen on graded roads and two-tracks at night.

Minerals. Potential impacts to giant kangaroo rats include direct mortality, loss of burrow systems, loss or alteration of habitat, and harassment. The construction and maintenance of well pads, access roads, pipelines, and other oil field structures may trap or bury kangaroo rats in their burrows. Kangaroo rats can also drown or become entrapped in spilled oil or tarry substances. Kangaroo rats may also be killed by vehicles. Burrows can also be damaged or destroyed by project activities. Some habitat may also be lost or altered.

The construction and operation of the projected oil development activities would result in 30 acres of habitat disturbance in the valley floor portion of the Monument. Geophysical activities would have a transient impact on 115 acres through cross country travel and shothole drilling. On the valley floor, the construction of 8 miles of roads, 6 exploration well pads, 2 tank batteries, and 10 development well pads would result in habitat disturbance that would destroy burrows and remove vegetation within the construction footprint. Although BLM has SOPs to use existing roads and disturbed sites if possible, minimize the size of the footprint, and avoid giant kangaroo rats burrows and minimize take to the greatest extent practicable, the density of giant kangaroo rats in many areas of the Monument would still result in the loss of some burrows. However, mitigation measures that require the capture and release of animals trapped from within and directly adjacent to the construction footprint would be implemented. These animals would be moved from the construction area into suitable habitat where there are few existing giant kangaroo rats (to minimize potential competition). These measures have been implemented in western Kern County on several oil well projects with over 60% known survivorship of transplanted individuals (BLM 2008). Construction activities would result in a loss of animals directly within the footprint with some disruption to animals directly adjacent to the well locations. Animals adjacent to the construction footprint may wander onto the edge of the construction area and may be harmed by subsequent construction, drilling, operations, maintenance, or restoration activities. There may be some disturbance to the adjacent animals during the drilling operations when nighttime activities and lighting occur. Drilling activities typically last up to 20 days per well. Once a well is drilled, few, if any, nighttime activities would occur.

The duration of the impacts would depend on whether the wells find economic reserves that will be produced. The impacts would be long-term over the life of the well if it has economic reserves. The impacts would be considered temporary if no economic reserves are found. Restoration would be initiated immediately and the site would likely be inhabited by kangaroo rats within several months.

Vehicle travel to the well locations within the Monument (on county roads, on existing BLM roads, and on newly constructed roads) may result in some vehicle strikes and mortality. BLM requires project vehicle speeds below 20 miles per hour off of county roads to minimize the risk of vehicle strikes of listed species.

This activity is located within a core management area and the Carrizo Plain population is important for the conservation and recovery of the species. However, oil development activities on 30 acres of the valley floor would have minor to moderate impacts to the local and Monument-wide populations of giant kangaroo rats considering the application of take avoidance measures, their extensive distributions (over approximately 116,000 acres), and the high density (up to 16 per acre) of giant kangaroo rats within the central and southern portions of the CPNM.

In the Russell Ranch oilfield, there would be 6.5 acres of new disturbance. There would be 3.5 acres disturbed from new well pads and 3 acres from new roads. Geophysical activities would impact 25 acres through cross-country travel and shot hole drilling. Giant kangaroo rats are not abundant in this area, and impacts would be avoided (and thus negligible) by implementing buffer zone requirements. This disturbance of 6.5 acres would not impact or would have negligible impacts to giant kangaroo rats with implementation of avoidance criteria.

Geophysical activities would have a transient impact of 115 acres from cross-country and shot hole drilling. Oil exploration using shot hole seismic methods and implementing 50-foot buffer avoidance requirements would have minor to moderate impacts on giant kangaroo rats at the site-specific level. The extent of the impacts would depend on the project design, primarily the number of shot holes and number, length, and distance between seismic source lines. Recent methods using small tractor-mounted drill rigs leave little surface impact as they travel between source points and at the drilling locations. The small tractor vehicles are lightweight and maneuverable and usually able to successfully avoid burrows and cause minimal burrow collapse. The amount of drill tailings and disturbance is typically less than 10 feet in diameter. The duration of drilling at any one point is typically less than 20 minutes. The detonation of the charges is perceptible to humans within 200 feet of a shot hole and some surface movement can be observed at the shot point. It is possible that the shot hole detonations and testing vibrations may have deleterious effects on these animals that use foot drumming in communication and hearing in predator avoidance. However, the effects of seismic testing noise on the kangaroo rat hearing are unknown. Biologists accompanying seismic crews have not reported animals exiting burrows after detonation, but specific monitoring of giant kangaroo rat activity response to shot hole drilling and detonations has not been conducted to date. Monitoring studies on geophysical projects in western Kern County surveyed with vibroseis and shot hole source methods reported a decline in the number of burrows within vibroseis corridors 90 days and 1 year following surveys compared to adjacent sample areas. However, there was a substantial increase in new burrows along the routes when they were resampled one year later (Tabor and Thomas 2002). Following vibroseis activities, small mammal burrows are commonly seen within disturbed soils from vehicle travel and vibroseis pad placement (digging into the side of the depressions). However, vibroseis source point generation would only occur on existing roads in the Monument. Although the impacts of shot hole source point generation are expected to be substantially less than vibroseis, focused studies on shot hole impacts on giant kangaroo rats have not been conducted to date.

Impacts to the Giant Kangaroo Rat Common to All Action Alternatives

Impacts to the Giant Kangaroo Rat from Implementing the Wildlife Program

The wildlife management goals to manage the CPNM in a manner that emphasizes its critical importance for threatened and endangered species conservation and recovery, rare natural communities, and conservation of the regional landscape would have major beneficial impacts to the conservation and recovery of the giant kangaroo rat.

There would be major beneficial impacts to giant kangaroo rats by implementing the specific objectives to:

- identify core geographic areas for endangered species population management and recovery;

- give endangered species habitat primary management priority in the core areas;
- maintain and enhance viable populations within core areas; and
- allow the populations of these target species to naturally fluctuate up and down, in terms of number and distribution, but initiate management actions when populations approach target minimums (population threshold values).

The designation and management of the three listed species core areas (Map 3-2) would maintain giant kangaroo rat populations within the Monument in the long term. However, our ability to achieve effective vegetation management in the core areas varies between Alternative 1 and Alternatives 2 and 3. In the absence of prescribed fire and livestock grazing as vegetation management tools in Alternative 1, it is unknown whether effective habitat management can be implemented to provide suitable habitat for giant kangaroo rats when nonnative grasses and herbaceous vegetation reduce habitat quality.

The management of the core areas applies a strategy of effective habitat management to improve habitat conditions when necessary. In most years the amount of grass and herbaceous vegetation is in balance between providing seeds and green forage and a structure of low, patchy vegetation and bare ground favored by kangaroo rats. When rainfall is below or near the annual average, the amount of native annuals and nonnative grasses and herbs is fairly low and provides these conditions. However, when rainfall exceeds the average for several successive years or when the annual rainfall is far above the average, there is exceptionally high production of the annual native and nonnative vegetation. While most of the native annual flora in the Monument is small herbs and wispy-like grasses, the nonnative grasses (primarily red brome, ripgut brome, soft chess, foxtail barley, and wild oats) are more dense and persistent. The nonnative filaree can also cover a high percentage of the ground, and can be quite dense in the winter and spring seasons. However, it dries during the spring and shatters quite easily as summer progresses. Management of the core areas would trigger vegetation treatments by applying livestock grazing or prescribed fire to reduce the amount of persistent nonnative grasses. Since giant kangaroo rats can generally affect the amount of herbaceous vegetation when they are abundant, the strategy includes a provision to apply vegetation treatment when the amount of annual vegetation (primarily nonnative grasses) exceeds 1,600 pounds per acre and when giant kangaroo rat population are at exceptionally low levels of fewer than 20 per hectare (8 per acre).

It is estimated that exceptionally high herbaceous vegetation production may occur about 20 percent of the time (2 years in 10). Based on past rainfall recorded at Bakersfield from 1889 to 2008, it is estimated that high amounts of nonnative persistent grass cover may have occurred in only 6 periods (totaling 25 years) in 118 years. It is during these periods of persistent nonnative grass cover when vegetation management could be applied through prescribed fire or livestock grazing to improve habitat conditions that may threaten giant kangaroo rat populations. It is unknown if low populations of giant kangaroo rats always coincide with periods of high grass production; however, based on the last such period when populations were monitored (Christian et al., in prep.) or not detected in previously occupied areas (D.J. Saslaw and L.R. Germano, personal observation, 2007) and found to be mostly absent in the CPNM, it is prudent to target the nonnative grasses or excessive biomass under these conditions.

The core areas were selected because they had consistently high populations in most years, appeared to have good long-term habitat quality, and were of a size that could be affected by fire or livestock grazing. The strategy is to have these areas as “safety nets” where there is a high likelihood that the vegetation can be reduced by fire or grazing when needed.

Giant kangaroo rat populations would likely fluctuate in a manner observed in monitoring studies conducted from 1985 through 2008. In most years, giant kangaroo rat populations would be fairly abundant across the landscape in Elkhorn Plain and central portion of the Carrizo Plain, with or without

livestock grazing or prescribed fires to manage vegetation. Vegetation structure would be at a density that would not inhibit giant kangaroo populations. It is expected that during periods of prolonged drought, populations would decline to low numbers with scattered individuals or small colonies that would serve as "founders" to repopulate the landscape when more favorable conditions return. In periods of extremely high precipitation and high biomass of persistent nonnative vegetation, the application of vegetation management (when biomass exceeds 1,600 pounds/acre) to reduce the amount of residual dry matter to around 500 to 1,000 pounds per acre in the core areas would create suitable habitat conditions to curtail widespread declines where the treatments occur. This management approach would likely avoid landscape-scale population and distribution declines similar to those observed during the 1994 to 2000 period. This is expected to reduce the risk of localized and/or more extensive short-term extirpations of giant kangaroo rats across the Monument during unfavorable wet, grassy periods. Thus, giant kangaroo rat populations would be maintained, at least in the core areas, in all but prolonged periods of drought. The persistence of these animals in the core areas would help repopulate giant kangaroo rats into the adjacent non-core areas as well.

The wildlife management objectives that enhance or maintain the variety of animals within the Monument are likely to benefit giant kangaroo rats throughout the life of the plan. For example, the management of low habitat structure for mountain plovers in upland areas outside of the core areas will provide suitable habitat for giant kangaroo rats. Fencing and signing projects would be implemented to avoid burrows and take of kangaroo rats and thus would have negligible effects. Areas that would be removed from livestock grazing to protect vernal pools, washes with Sphinx moths, or riparian habitats would be relatively small in size and would not affect giant kangaroo rats in most years. These areas would not usually occur in core areas and would be compatible with giant kangaroo rat objectives outside of the core areas.

Research and monitoring activities that address habitat quality and ecology of giant kangaroo rats and associated listed and non-listed species would have a long-term moderate to major benefit to this species. Any take or project effects would be authorized under state and federal permitting requirements and would be evaluated and mitigated in project-specific environmental analyses.

Management for a diversity of wildlife habitats would have a moderate to major benefit to giant kangaroo rats in those areas where there is an objective to create a low structure of vegetation. Since the overall objective is to create a diversity of habitat structure within the Monument, a substantial portion of the Monument would be managed to benefit this species in the core areas. The creation and maintenance of a mosaic of grassland and shrubland habitats would likely maintain giant kangaroo rats across the Monument landscape. Population monitoring and AM would indicate habitat management prescriptions to help meet population and distribution objectives.

Impacts to the Giant Kangaroo Rat from Implementing Other Programs

Under all action alternatives, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will have a negligible effect on giant kangaroo rat populations: Air Quality, Soils, Water Resources, Geology and Paleontology, and Visual Resources.

Fire and Fuels Management. Fire suppression activities may disturb habitat along fire control lines, at staging areas, in retardant drops, and in cross-country travel. Burrows may be crushed, animals entombed, and vehicle strikes may occur. In grassland habitats the suppression activities are usually kept to the least amount of disturbance needed to control the fire with mobile attack, retardant, or a single dozer line. These impacts are temporary in duration and are usually revegetated naturally by annual plants within one to three years. Kangaroo rats often reoccupy the disturbed sites immediately following the suppression activities. Restoration of firelines may occur with native plant seedings, which would have negligible impacts similar to those described for restoration activities. Fire control impacts a very small amount of

habitat in the landscape and would not affect animals at the population level. Fire suppression would have negligible benefits to giant kangaroo rats since saltbush is only marginally associated with this species. Scattered saltbush or linear stands along drainages are important habitat features for other species and would be given high priority for protection during fire suppression activities. However, wildfire can open dense saltbush scrub stands creating habitat more favorable for giant kangaroo rats.

Cultural Resources. Habitat disturbance associated with protection, movement, or removal of historic farming equipment or buildings and construction of barriers, boardwalks, or interpretive panels would result in negligible impacts to giant kangaroo rats inhabiting the sites. Activities may cause the collapse and entombment of animals and vehicles strikes may occur. Cultural resource excavations and site facilities may remove habitat for a short period of time. However, implementation of SOP avoidance criteria or the capture, holding, and release of giant kangaroo rats from within project footprints would be implemented to minimize project impacts.

Livestock Grazing. Livestock grazing would be conducted to meet the Standards for Rangeland Health so that "viable, healthy, productive, and diverse populations of native and desired species, including special status species, are maintained or enhanced, where appropriate." Since the Monument management objectives place high priority on the conservation and recovery of special status species, livestock grazing management prescriptions and decisions would be designed and administered to meet this standard. There would be negligible to major beneficial impacts to giant kangaroo rats, depending on habitat conditions, grazing permit terms and conditions, and the need to apply vegetation management prescriptions.

Recreation. The placement of informational signs and the development of potable water at dispersed camping sites and at existing campgrounds would have negligible impacts on giant kangaroo rats. There could be some instances where these projects would occur in giant kangaroo rat habitat, but nearly all the direct impacts would be localized, may be avoidable, and would not affect giant kangaroo rats at the population level. The indirect effects of greater recreational activities near upgraded water sources would have a wider area of human impacts on giant kangaroo rat habitat, but this is expected to be at a very small scale and would not affect populations of this species.

The expansion of the visitor center would have negligible localized impacts on individual animals inhabiting the site. However, mitigation measures would be implemented to minimize take and efforts would be made to move these animals into adjacent habitat around the visitor center, if warranted. There would be benefits to listed species through improved visitor and environmental education opportunities at the center, which may help implement conservation and recovery of the CPNM species.

Minerals. The impacts would be the same as in the No Action Alternative.

Impacts to the Giant Kangaroo Rat under Alternative 1

Impacts to the Giant Kangaroo Rat from Implementing the Wildlife Program

The elimination of livestock grazing and prescribed fire as vegetation management tools would hinder effective habitat management in core areas. As described in the Conservation Target Table, there are vegetation conditions and giant kangaroo rat population levels that require a reduction of biomass or residual dry matter. Livestock grazing or prescribed fire have been used to maintain suitable habitat conditions for this species. This alternative could have moderate to major detrimental impacts on effectively managing the core areas.

The management of the Carrizo Plain North and Caliente Foothills North subregions for the benefit of pronghorn and tule elk would result in habitat structure not generally favorable to giant kangaroo rats.

Pronghorn fawning habitat is best when vegetation height is between 15 and 25 inches tall over up to 80 percent of the fawning area. This structure is too high and thick for suitable giant kangaroo rat habitat. While giant kangaroo rats would be scattered in low numbers in the Carrizo Plain North and Caliente Foothill North subregions, these areas would be considered marginal habitat and giant kangaroo rat populations and distributions would likely be at low numbers when tall/abundant vegetation is present. The removal of water troughs would not affect giant kangaroo rats. The removal of fences would remove artificial perches used by raptors to hunt these animals. The overall impacts of managing pronghorn and tule elk habitat in these two subregions would have negligible impacts to giant kangaroo rats. However, this is similar to the existing situation, and overall giant kangaroo rat populations within the Monument would be maintained in the core and non-core areas to the south.

Under Alternative 1, with the exception of those impacts discussed under General Wildlife Impacts, the following program will have a negligible effect on giant kangaroo rat populations: Vegetation.

Impacts to the Giant Kangaroo Rat from Implementing Other Programs

Fire and Fuels Management. Fire suppression activities (dozer line, handline, mobile attack, fire retardant, off road travel) could disturb habitat, crush vegetation, collapse burrows, entomb animals, or result in vehicle strikes. The activities would be kept to a minimum and the effects to giant kangaroo rats would be negligible.

The elimination of prescribed fire to manage the nonnative grass and herbaceous vegetation within the giant kangaroo rat core and non-core areas would have major detrimental impacts to this species. While there is no need to apply prescribed fire in most years when rainfall is below average or when annual vegetation is not tall and thick, the use of prescribed fire is considered a valuable management tool when thick grassy conditions occur. It is estimated that exceptionally high herbaceous vegetation production may occur about 20 percent of the time (2 years in 10). Based on past rainfall recorded at Bakersfield from 1889 to 2008, it is estimated that high amounts of nonnative persistent grass cover may have occurred in only 6 periods (totaling 22 or 23 years) in 118 years. It is during these periods, when vegetation management could be applied through prescribed fire to improve habitat conditions that may threaten giant kangaroo rat populations.

Mowing vegetation may cause burrow collapse, entombment, and vehicle strikes. Since these activities usually occur when soils are somewhat dry and firm, collapse would not be widespread. The 25 acres to be treated is a very small portion of the landscape and thus the effects to giant kangaroo rat populations would be negligible. Mowing would reduce the thick cover along travel routes, allowing better visibility for animals to avoid vehicles and for motorists to see animals and avoid striking them.

Pile burns may disturb habitat during the piling process and the area under the piles would receive intensive heat that would likely kill animals in the direct heat of the burn. However, burrows and habitat features are avoided and previously disturbed sites are used to the maximum extent practicable. The impact to a small amount of acreage would have negligible effects on giant kangaroo rat populations.

Livestock Grazing. The elimination of livestock grazing in the Monument would result in higher amounts of herbaceous vegetation across the landscape in wet years. In average rainfall years, exceptionally dry rainfall years or in a series of below-average rainfall years, vegetation structure would be at low levels and the habitats would be generally favorable for giant kangaroo rats. Giant kangaroo rats appear to be able to successfully manipulate herbaceous vegetation on their precincts in these conditions and the absence of livestock grazing may be beneficial to giant kangaroo rats in most years. Recent monitoring studies between 1997 and 2003 in the monument indicated that giant kangaroo rat precincts were more abundant in ungrazed relative to grazed pastures (Christian et al., in prep.). However, in high

rainfall years with high vegetation biomass, habitat conditions are less favorable for giant kangaroo rats. Although it is not clear whether thick grass structure or high moisture resulting from high rainfall is the cause of lower kangaroo rat populations, some vegetation management to reduce standing biomass may be helpful to reduce the thick grass structure. As discussed in the No Action Alternative, giant kangaroo rat studies on the Elkhorn Plain Ecological Reserve detected substantially higher numbers of giant kangaroo rats in the grazed pasture during and directly following the record 1998 rainfall. Livestock grazing studies have not been conclusive, but the application of livestock grazing to reduce vegetation biomass to provide more favorable habitat structure appears to have good management potential. Since there appears to be a negative effect of high vegetation biomass on giant kangaroo rat populations, reducing the amount of standing biomass through livestock grazing may be a prudent course of action to reduce population declines. While livestock trampling of burrow systems has been observed in some soil types, the general improvement of habitat conditions would likely outweigh these effects (Germano et al. 2001). The elimination of livestock grazing would not allow Monument managers to apply a common management tool in the core areas for the benefit of this species. Elimination of livestock grazing in giant kangaroo rat habitats, when needed to control high amounts of nonnative persistent grass cover, would be contrary to the conservation strategies identified in the recovery plan for giant kangaroo rats (USFWS 1998).

The elimination of livestock grazing on the southern alluvial fans and flat-bottomed drainages of the Caliente Range on the northern fringe of the Cuyama Valley would have negligible effects in most years. However, when these sites become excessively covered with nonnative grasses in extremely wet periods, the habitat quality might be compromised. The fragmented distribution of the suitable habitat in this area may make repopulation somewhat unlikely for longer periods of time. Prescribed fire could not be applied in these areas without high mortality of saltbush shrubs and without substantial risk of the fire escaping upslope. The chance of effective treatment seems to be quite low without livestock grazing as a possible tool. This may be an important factor in maintaining a viable population of giant kangaroo rats in the Cuyama Valley where most acres across the valley have been converted to intensive agriculture.

The elimination of livestock grazing would have minor to moderate beneficial effects to giant kangaroo rats in most years. However, there could be moderate to major negative effects when vegetation biomass is high by reducing habitat quality across the Monument landscape.

Recreation. The Primitive recreation zones to be managed as having wilderness characteristics overlap with the core area for giant kangaroo rats in the West Well, Silver Gate, East Painted Rock, East Cochora, West Cochora, South Cousins, Kinney-Hahl, and Van Matre pastures. If mowing of vegetation is required to implement core area habitat management actions, this would not be consistent with the wilderness objectives.

Travel Management. The closure and limited designation of approximately 30 miles of roads in giant kangaroo rat habitat in the Monument would reduce the risk of vehicle collisions and inadvertent burrow collapse on road edges. While there is very little driving activity during the night when kangaroo rats are active, the restricted vehicle access would have a positive minor effect, reducing the risk of vehicle strikes in the Monument.

Impacts to the Giant Kangaroo Rat under Alternative 2

Impacts to the Giant Kangaroo Rat from Implementing the Wildlife Program

Management of the non-core areas to maintain populations of giant kangaroo rats would have moderate to major beneficial impacts to giant kangaroo rats. The application of livestock grazing and prescribed fire as vegetation management tools would provide options to apply effective habitat management in these

areas. As described in the Fire/Fuels Management and Livestock Grazing sections, there are periods of rainfall and vegetation production and cover that require the use of livestock grazing or prescribed fire to maintain suitable habitat conditions for this species.

The management of the Carrizo Plain North and Caliente Foothills North subregions for the benefit of pronghorn and tule elk would be the same as described in Alternative 1.

Impacts to the Giant Kangaroo Rat from Implementing Other Programs

Under Alternative 2, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will have a negligible effect on giant kangaroo rat populations: Cultural Resources and Recreation.

Vegetation. Restoration activities to reintroduce native plants into previously cultivated farm fields or in habitats with a low proportion of native plant species would have minor impacts on giant kangaroo rats. The use of a tractor-pulled range drill/seeder may run over and collapse giant kangaroo rat burrows. However, monitoring of recent restoration projects has not found burrow collapse to occur if soils are firm and dry. Restoration activities generally occur in the late fall or early winter seasons prior to significant rainfall events when soils are usually quite hard. Where burrows are scattered, they are easily avoided if collapse is observed to occur. Strip seeding, leaving large areas untreated, would be used in more densely populated giant kangaroo rat, blunt-nosed leopard lizard, San Joaquin antelope squirrel, or other special status animal species habitats if avoidance is warranted. The long-term improvement in native plant community composition would have minor to moderate benefit to giant kangaroo rats with a more diverse array of plant foods, seeds, and cover.

Fire and Fuels Management. Fire suppression activities (dozer line, handline, mobile attack, fire retardant, off-road travel) could disturb habitat, crush vegetation, collapse burrows, entomb animals, or result in vehicle strikes. The activities would be kept to a minimum and the effects to giant kangaroo rats would be negligible.

Prescribed fire would have moderate to major benefits to managing vegetation to maintain giant kangaroo rat populations in high biomass years, as described in the No Action Alternative. Prescribed fire could be used in the core areas and adjacent non-core areas if needed to improve or maintain habitat conditions for giant kangaroo rats. If additional treatment outside of the core areas is needed, it would most likely be applied in the adjacent non-core areas identified in Map 4-1. However, the non-core areas that may be treated could be different than those identified in Map 4-1 if habitat conditions, giant kangaroo rat distributions, and management prescriptions change over time.

Mowing vegetation may cause burrow collapse, entombment, and vehicle strikes. Since these activities usually occur when soils are somewhat dry and firm, collapse would not be widespread. The 350 acres to be mowed is a very small portion of the landscape and thus the effects to giant kangaroo rat populations would be negligible. Mowing would reduce the thick cover along travel routes, allowing better visibility for animals to avoid vehicles and for motorists to see animals and avoid striking them.

Pile burns may disturb habitat during the piling process and the area under the piles would receive intensive heat that would likely kill animals in the direct heat of the burn. However, burrows and habitat features are avoided and previously disturbed sites are used to the maximum extent practicable. The impact to a small amount of acreage would have negligible effects on giant kangaroo rat populations. The 1,000 acres of prescribed burns and 5 miles of dozer line would have impacts similar to those described for wildfire (see Impacts Common to All Action Alternatives), but the damage to saltbush plants may be avoided by placement of fire control lines and by excluding saltbush from within the burn

area. Prescribed fire has been observed to maintain a more open habitat structure favorable to giant kangaroo rats. The burn effects usually last between 3 to 5 years, depending on subsequent annual rainfall. Although there would be some direct mortality to a low percentage of kangaroo rats within the burn areas, the overall effect would be positive at the population level. While there would be a loss of saltbush shrubs in the burn areas, this would have negligible effects on giant kangaroo rat populations within the post-burn areas.

Livestock Grazing. Under Alternative 2, livestock grazing may be occasionally applied in the core areas and adjacent non-core areas to maintain habitat conditions for giant kangaroo rats so that they would not disappear from the Monument. Based on objectives and management prescriptions described in the Conservation Target Table, vegetation management would only be applied when there are low numbers of giant kangaroo rats and biomass is in excess of 1,600 pounds per acre. It is estimated that excessive amounts of standing vegetation biomass may occur in high rainfall periods on average about two years in ten. During these conditions, livestock grazing may be applied to reduce high amounts of standing biomass to improve habitat conditions for giant kangaroo rats. When such conditions occur, approximately 58,000 acres would be potentially treated in pastures that contain the core areas. If additional treatment is needed, it would be applied based on the Decision Tree for Management of San Joaquin Valley Target Species in Non-Core Areas (Figure 2.4-1). Vegetation treatment in the non-core areas would most likely be applied in habitats directly adjacent to the core areas as identified in Map 4-1. Under this scenario, approximately 29,000 acres may be treated with livestock grazing (in addition to the core areas) in pastures that contain the adjacent non-core areas. However, the non-core areas that may be treated could be different than those identified in Map 4-1 if habitat conditions, giant kangaroo rat distributions, and management prescriptions change over time.

The impacts of livestock grazing in the vegetation management areas under this alternative would be the same as those described in the No Action Alternative. Application of the Conservation Target Table would refine management prescriptions to maintain suitable giant kangaroo rat habitat and viable populations. Thus, livestock grazing in the vegetation management areas would have moderate to major beneficial impacts to maintain giant kangaroo rat populations on the Monument.

Livestock grazing in the Section 15 Recruit, South Anderson, South Selby, and Sulphur Canyon pastures under current management would likely occur in five of ten years. The impacts would be the same as described in the No Action Alternative with moderate to major beneficial impacts to maintaining giant kangaroo rats in these areas in the occasional wet years with high vegetation biomass, but minor to moderate negative impacts when livestock grazing occurs in years of less than high vegetation biomass.

Travel Management. The impacts to giant kangaroo rats would be the same as for Alternative 1.

Impacts to the Giant Kangaroo Rat under Alternative 3

Impacts to the Giant Kangaroo Rat from Implementing the Wildlife Program

The impacts would be the same as described for Alternative 2.

Impacts to the Giant Kangaroo Rat from Implementing Other Programs

Under Alternative 3, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will have a negligible effect on giant kangaroo rat populations: Vegetation, and Wilderness Study Area (WSA) and Other Lands with Wilderness Characteristics.

Fire and Fuels Management. The impacts from prescribed fire would be similar to those described in Alternative 2, but prescribed fire may be used in a larger area of suitable habitat if needed to maintain populations in areas of suitable habitat (Map 4-1). Vegetation management may be applied to approximately 29,000 acres of core areas and 67,000 acres of suitable giant kangaroo rat habitat outside of the core areas on the Carrizo Plain, Elkhorn Plain, and alluvial plains of the Cuyama Valley.

Livestock Grazing. The impacts from livestock grazing in the vegetation management areas would be similar to those described in Alternative 2, but prescribed grazing may be used in a larger area of suitable habitat if needed to maintain populations in areas of suitable habitat (Map 4-1). Vegetation management may be applied to approximately 115,000 acres of suitable habitat (57,000 acres of pastures containing core areas and 57,000 acres of suitable giant kangaroo rat habitat on the Carrizo Plain, Elkhorn Plain, and alluvial plains of the Cuyama valley outside of the core areas). Livestock grazing in the vegetation management area as prescribed in the Conservation target Table would have moderate to major beneficial impacts to maintain giant kangaroo rat populations on the Monument.

Livestock grazing in the Section 15 Recruit and South Anderson pastures of the North Temblor allotment, the South Selby pasture of the Selby allotment , and Sulphur Canyon allotment under this alternative would be the same as described in the No Action Alternative: there may be moderate to major beneficial impacts to maintaining giant kangaroo rats in these areas in the occasional wet years with high vegetation biomass, but minor to moderate negative impacts when livestock grazing occurs in years of less than high vegetation biomass.

Recreation. Under Alternative 3, there would be no acres of giant kangaroo rat habitat in the Primitive recreation zone and no impacts to this species.

Dispersed vehicle camping in the Backcountry zone in giant kangaroo rat habitat could be eliminated if problems are documented during monitoring. Site-specific closures could be made if impacts are unacceptable. Vehicle camping activities would have localized, but negligible effects on giant kangaroo rats. There is a small chance of inadvertent damage to habitat features (such as precincts, burrows, dens) from vehicle-related camping activities.

The development of water, signs, and overlooks would have negligible impacts on giant kangaroo rats. There could be some instances where these projects would occur in giant kangaroo rat habitat, but nearly all the direct impacts would be localized, may be avoidable, and would not affect giant kangaroo rats at the population level. The indirect effects of greater recreational activities near upgraded facilities would have a wider area of human impacts on giant kangaroo rat habitat, but this is expected to be at a very small scale and would not affect populations of this species.

The development of recreational activities within the Frontcountry zone would be expanded through the Elkhorn Plain and additional impacts to giant kangaroo rats would be expected. New facilities and visitor services would likely result in more vehicle use during daytime and nighttime hours. The possibility of more direct and indirect impacts from increased visitor activities on the Elkhorn Plain could have minor effects to this species by vehicle collisions, trampling of burrows, nighttime activities, and general disturbance from visitor activities. There could be some instances where new projects would occur in giant kangaroo rat habitat, but nearly all the direct impacts would be localized, may be avoidable, and would not affect giant kangaroo rats at the population level. The indirect effects of greater recreational activities near upgraded facilities would increase the area of human impacts on giant kangaroo rat habitat, but this is still expected to be at a very small scale and would have negligible to minor impacts to populations of this species.

Travel Management. The impacts to wildlife would be the same as the No Action Alternative.

4.2.5.2 San Joaquin Kit Fox

Impacts to the San Joaquin Kit Fox under the No Action Alternative

Impacts to the San Joaquin Kit Fox from Implementing the Wildlife Program

The current Monument goal to contribute to the recovery of listed species by achieving long-term, viable populations of all extant listed species in the Monument would have major beneficial impacts to the conservation and recovery of this federally endangered and California threatened species. The CPNM is considered one of three core conservation areas for the San Joaquin kit fox. Of the three core areas, (western Kern County and the Ciervo-Panoche area are the other two), only the CPNM has acquired substantial acreage in federal, state, or conservation ownership to approach meeting this recovery task. Current management is implementing the objectives to manage locations and habitat features of listed species to allow for their continued existence and maintenance of viability, provide for the natural expansion and fluctuations of listed species consistent with species recovery, and reduce human-caused hazards to core species.

Impacts to the San Joaquin Kit Fox from Implementing Other Programs

Vegetation. The current Monument objectives to increase the importance of native species in Monument communities, provide for all transitional states of native communities through the natural range of disturbances (for example, fire, grazing, climatic events), and maintain shrub-scrub communities, would have major beneficial impacts to San Joaquin kit fox in the short and long term. It is generally assumed that the improvement and maintenance of plant communities with a high proportion of native plant species would provide high quality habitat for this species. The most important element of these objectives may be providing all transitional states and disturbances across the Monument to create a mosaic of grassland, shrub-scrub lands, grazed and ungrazed areas, burned and unburned areas, and a wide range of habitat opportunities for kit foxes and their prey. Under this mosaic, the kit foxes would occupy plant communities within the range of their habitat needs. This strategy of varied plant communities is expected to maintain San Joaquin kit foxes and their prey of giant kangaroo rats, San Joaquin antelope squirrels, deer mice, desert cottontail, black-tailed hare, and California ground squirrels across the Monument landscape.

The restoration of previously farmed fields would have negligible impacts to San Joaquin kit fox since dens would be avoided. The restoration of the vegetation to increase native plant composition would have negligible to minor benefits to San Joaquin kit fox since the overall habitat structure would be similar to the existing fields in most years.

Fire and Fuels Management. The impacts from wildland fire suppression on San Joaquin kit fox would be similar to that described for giant kangaroo rat.

The use of prescribed fire on 30,000 acres within the Monument would provide moderate to major benefits to kit fox populations, depending habitat conditions. Direct mortality is not expected and control lines would avoid den locations. The relative beneficial impacts to habitat would be major when dense vegetation is removed and the habitat stays open for several years. The impacts would be more moderate when vegetation is already quite open and generally suitable. The beneficial response of giant kangaroo rats and other small mammal populations to fire would be of primary benefit to kit foxes.

Soils, Water Resources, Cultural Resources. Impacts to San Joaquin kit fox from these programs would be similar to those described for giant kangaroo rat.

Livestock Grazing. Livestock grazing impacts are generally the same as those described for giant kangaroo rat. Since San Joaquin kit fox populations are influenced by prey availability (Cypher et al. 2000), management of giant kangaroo rat populations would have a large influence on kit fox populations. Habitat structure within the Monument is also greatly influenced by the abundance of giant kangaroo rats, and vegetation management prescriptions that maintain suitable habitat for giant kangaroo rat would also provide suitable habitat for San Joaquin kit fox. Therefore, livestock grazing in the vegetation management area of the Carrizo Plain and Elkhorn Plain would have moderate to major beneficial impacts to maintain San Joaquin kit fox populations on the Monument in wet rainfall years with high non-native vegetation biomass. Livestock grazing would have minor to moderate negative effects to kit fox populations in years that do not have high rainfall and thick non-native grass/herbaceous structure if prey numbers are suppressed.

There may be moderate to major beneficial impacts from livestock grazing in the Section 15 allotments in the occasional wet years with high vegetation biomass, but minor to moderate negative impacts when livestock grazing occurs in years of less than high vegetation biomass if giant kangaroo rat prey numbers are suppressed.

Travel Management. Though some kit fox are killed due to vehicle strikes, the known numbers are relatively few in relation to population size. Since 1997, there have been eight to ten known kit fox deaths caused by vehicles within the Monument, though more are suspected. Road maintenance that reduces vegetation and loosens soils may cause an increase in rodents or their availability to predators along the edges of roads, attracting kit foxes to forage there. Contaminants from vehicle exhaust and spills can concentrate along roadways. The presence of people may disrupt social ecology, displace animals, and reduce productivity (Cypher 2000). According to Cypher et al. (2003), however, food availability and habitat loss are still the most important factors affecting kit fox populations.

Unless numbers of vehicles on the roads increase, fatalities can be expected to be the same as the current numbers. Nearly all of the known kit fox vehicle strikes have occurred on Soda Lake Road with a few occurrences on other county roads. Vehicles on county roads usually travel at higher speeds than on BLM roads. Soda Lake Road receives more traffic than any other road in the Monument with an estimate of over 18,000 vehicles per year. However, county roads are not subject to BLM road designations or speed limits. The existing BLM road network is expected to have negligible effect on kit fox populations considering the relatively low amount of vehicle traffic on BLM roads at night when kit foxes and their kangaroo rat prey are active and most likely to be killed by vehicle strikes.

Minerals. Potential impacts to San Joaquin kit fox include direct mortality, loss of dens, loss or alteration of habitat, human disturbance, and exposure to oil field chemicals. Construction of well pads, access roads, and associated oil field facilities may trap or bury foxes, particularly if the construction occurs on or near a den site. Since dens are ecologically important to kit foxes, measures are implemented to avoid impacts to dens. Since kit fox use multiple dens, the occasional loss of a den is not expected to be significant. Activities near or impacts to natal dens could have more impact, particularly if such impacts occur while young pups are present. Disturbance to dens, especially natal dens, would be minimized with the implementation of SOPs and survey and avoidance measures required by BLM for all actions.

The CPNM core population is one of three core populations identified by the USFWS as important for species recovery. However, habitat loss from projected oil exploration and development in the Monument is not expected to conflict with recovery plan goals since individual projects are expected to be relatively small (0.5 acres per well pad and 0.3 to 0.75 acres of road per well) compared to the home range of a kit fox (average 1,144 acres) and few wells are projected to be drilled. In addition, standard kit fox mitigation measures and BLM SOPs will be applied as appropriate to all BLM authorizations and projects so that impacts to dens would be avoided. Studies conducted in developed oilfields in western Kern County show

a range of kit fox responses to oilfield habitat disturbance and activities. At Elk Hills in western Kern County, there appeared to be similar population density, reproduction, dispersal, and mortality in developed and undeveloped oil fields (cited in USFWS 1998). Moderate intensity oil fields can provide reasonably good habitat for kit foxes if habitat is maintained and mitigation measures are implemented (USFWS 1998).

The duration of the impacts would depend on whether the wells find economic reserves that will be produced. The impacts would be long-term over the life of the well if it has economic reserves. The impacts would be considered temporary if no economic reserves are found. Restoration would be initiated immediately and the site would likely be inhabited by kit foxes and kangaroo rats within several months. Kit foxes are frequently observed near oil field facilities and commonly use developed areas (Cypher et al. 2000). They do not seem to be particularly sensitive to human disturbance.

Vehicle travel to the well locations within the Monument (on county roads, on existing BLM roads, and on newly constructed roads) may result in some vehicle strikes and mortality. BLM requires project vehicle speeds below 20 miles per hour off of county roads to minimize the risk of vehicle strikes of listed species.

Oil development activities on 30 acres of the valley floor would have minor impacts to the local and Monument-wide populations of San Joaquin kit foxes considering the extensive distributions within the Carrizo Plain and Elkhorn Plain portions of the Monument.

In the Russell Ranch oilfield, there would be 6.5 acres of new disturbance. There would be 3.5 acres disturbed from new well pads and 3 acres from new roads. Geophysical activities would impact 25 acres through cross-country travel and shot hole drilling. San Joaquin kit foxes are not common in this area, and impacts would be avoided (and thus negligible) by implementing den avoidance measures. This disturbance of 6.5 acres would not impact or would have negligible impacts to San Joaquin kit fox and giant kangaroo rats with implementation of avoidance criteria.

Geophysical activities would have a transient impact of 115 acres from cross-country and shot hole drilling. Oil exploration using shot hole seismic methods and implementing den avoidance requirements would have minor impacts on San Joaquin kit fox at the site-specific and population levels. The extent of the impacts would depend on the project design, primarily the number of shot holes and number, length, and distance between seismic source lines. Recent methods using small tractor-mounted drill rigs leave little surface impact as they travel between source points and at the drilling locations. The small tractor vehicles are lightweight and maneuverable and usually able to successfully avoid dens and burrows and cause minimal den and burrow collapse.

Impacts to the San Joaquin Kit Fox Common to All Action Alternatives

Impacts to the San Joaquin Kit Fox from Implementing the Wildlife Program

The wildlife management goals to manage the CPNM in a manner that emphasizes its critical importance for threatened and endangered species conservation and recovery, rare natural communities, and conservation of the regional landscape, would have major beneficial impacts to the conservation and recovery of the San Joaquin kit fox.

There would be major beneficial impacts to San Joaquin kit fox by implementing the specific objectives to:

- identify core geographic areas for endangered species population management and recovery;

- give endangered species habitat primary management priority in core areas;
- maintain and enhance viable populations within core areas; and
- allow the populations of these target species to naturally fluctuate up and down, in terms of number and distribution, but initiate management actions when populations approach target minimums (population threshold values).

The designation and management of the three listed species core areas (Map 3-2) would maintain San Joaquin kit fox populations within the Monument in the long term. However, our ability to achieve effective vegetation management varies between Alternative 1 and Alternatives 2 and 3. In the absence of prescribed fire and livestock grazing as vegetation management tools in Alternative 1, it is unknown whether effective habitat management can be implemented to provide suitable habitat for San Joaquin kit fox and their primary prey, giant kangaroo rats, when nonnative grasses and herbaceous vegetation reduce habitat quality.

Management of the core areas would focus on vegetation management needed to maintain suitable habitat and viable populations of giant kangaroo rats and San Joaquin antelope squirrels as the prey of San Joaquin kit foxes. Population declines of kangaroo rats in the Monument and in the San Joaquin Valley in the mid 1990s coincided with declines of San Joaquin kit fox populations (Cypher et al. 2000). The population levels of San Joaquin kit fox generally follow the abundance of their prey and are typical of predator and prey relationships. Management of the core areas within the Monument to maintain viable populations of giant kangaroo rats would be critical to maintaining San Joaquin kit fox populations as well.

The wildlife management goal to restore and maintain a mosaic of natural communities and successional stages to benefit the biodiversity inherent in the ecosystem within the Monument would have a major benefit to San Joaquin kit fox in the short and long term. It is generally assumed that the improvement and maintenance of plant communities with a high proportion of native plant species would provide high quality habitat for this species. The most important element of these objectives may be providing all transitional states and disturbances across the Monument to create a mosaic of grassland, shrub-scrub lands, grazed and ungrazed areas, burned and unburned areas, and a wide range of habitat opportunities for kit foxes and their prey. Under this mosaic, the kit foxes would occupy plant communities within the range of their habitat needs. This strategy of varied plant communities is expected to maintain San Joaquin kit foxes and their prey of giant kangaroo rats, San Joaquin antelope squirrels, deer mice, desert cottontail, black-tailed hare, and California ground squirrels across the Monument landscape.

The wildlife management objectives that enhance or maintain the variety of animals within the Monument are likely to have moderate to major benefit to San Joaquin kit foxes throughout the life of the plan. For example, the management of low habitat structure for mountain plovers in upland areas outside of the core areas will provide suitable habitat for kit foxes. Areas that would be removed from livestock grazing to protect vernal pools, washes with Sphinx moths, or riparian habitats would contribute to providing a variety of prey species in the matrix of grazed and ungrazed habitats.

Research and monitoring activities that address habitat quality and ecology of giant kangaroo rats and associated listed and non-listed species would have a moderate to major long-term benefit to San Joaquin kit fox. Many of the research projects are identified as recovery tasks in the San Joaquin Valley multi-species recovery plan.

The maintenance of habitat linkages between the CPNM and western Kern County San Joaquin kit fox core areas would have major beneficial impacts for the conservation and recovery of this species. The recovery plan identifies the connectivity between these areas as important recovery tasks.

Impacts to the San Joaquin Kit Fox from Implementing Other Programs

Fire and Fuels Management. Fire suppression activities may disturb habitat along fire control lines, at staging areas, in retardant drops, and in cross-country travel. Prey animal burrows may be crushed, animals entombed, and vehicle strikes may occur. In grassland habitats the suppression activities are usually kept to the least amount of disturbance needed to control the fire with mobile attack, retardant, or a single dozer line. These impacts are temporary in duration and are usually revegetated naturally by annual plants within one to three years. Kit fox prey species often reoccupy the disturbed sites immediately following the suppression activities. Restoration of firelines may occur with native plant seedings, which would have negligible impacts similar to those described for restoration activities. Fire control impacts a very small amount of habitat in the landscape and would have negligible effects to animals at the population level. Fire suppression often benefits kit fox prey species by minimizing the loss of saltbush plants which are intolerant of fire (Germano et al. 2001). Scattered saltbush or linear stands along drainages are important habitat features that provide thermal and escape cover for prey species. However, wildfire can open dense saltbush scrub stands creating habitat more favorable for San Joaquin kit foxes and are necessary for San Joaquin kit foxes to avoid predation by coyotes.

Cultural Resources. Habitat disturbance associated with protection, movement, or removal of historic farming equipment or buildings and construction of barriers, boardwalks, or interpretive panels would result in negligible impacts to kit fox inhabiting the sites. Implementation of SOP avoidance criteria would be implemented to minimize project impacts.

Livestock Grazing. The impacts would be the same as described for the giant kangaroo rat.

Recreation. The placement of informational signs and the development of potable water at dispersed camping sites and at existing campgrounds would have negligible impacts on San Joaquin kit fox. There could be some instances where these projects would occur near dens, but avoidance criteria would be implemented. The indirect effects of greater recreational activities near upgraded water sources would have a wider area of human impacts on kit fox habitat, but this is expected to be at a very small scale and would not affect populations of this species.

The expansion of the visitor center would have negligible benefits to listed species through improved visitor and environmental education opportunities at the center, which may help implement conservation and recovery of the CPNM species.

Minerals. Under all action alternatives, the impacts to San Joaquin kit foxes from minerals will be the same as under the No Action Alternative.

Impacts to the San Joaquin Kit Fox under Alternative 1

Impacts to the San Joaquin Kit Fox from Implementing the Wildlife Program

Management of the non-core areas to maintain populations of San Joaquin kit fox would have moderate to major beneficial impacts to kit foxes. However, the elimination of livestock grazing and prescribed fire as vegetation management tools would hinder effective habitat management in these areas. As described in the Fire/Fuels Management and Livestock Grazing sections, there are periods of rainfall and vegetation production and cover that require the use of livestock grazing or prescribed fire to maintain suitable habitat conditions for foxes and their prey species. This alternative could have moderate to major detrimental impacts on effectively managing the core areas.

The management of the Carrizo Plain North and Caliente Foothills North subregions for the benefit of pronghorn and tule elk would result in habitat structure not generally favorable to San Joaquin kit fox. Pronghorn fawning habitat is best when vegetation height is between 15 and 25 inches tall over up to 80 percent of the fawning area. This structure is too high and thick for suitable San Joaquin kit fox habitat. While kit fox would be scattered in low numbers in the Carrizo Plain North and Caliente Foothill North subregions, these areas would be considered marginal habitat and kit fox populations and distributions would likely be at low numbers when tall/abundant vegetation is present. The overall impacts of managing pronghorn and tule elk habitat in these two subregions would have negligible to minor detrimental impacts to kit fox. However, this is similar to the existing situation, and overall kit fox populations within the Monument would be maintained in the core and non-core areas to the south.

Impacts to the San Joaquin Kit Fox from Implementing Other Programs

Fire and Fuels Management. Fire suppression activities (dozer line, handline, mobile attack, fire retardant, off-road travel) could disturb habitat, crush vegetation, collapse burrows, entomb small mammals, damage den entrances, or result in vehicle strikes. The activities would be kept to a minimum and the effects to San Joaquin kit fox would be negligible.

The elimination of prescribed fire to manage the nonnative grass and herbaceous vegetation within the listed species core and likely non-core treatment areas would have major detrimental impacts to kit foxes. While there is no need to apply prescribed fire in most years when rainfall is below average or when annual vegetation is not tall and thick, the use of prescribed fire is considered a valuable management tool when thick grassy conditions occur. It is estimated that exceptionally high herbaceous vegetation production may occur about 20 percent of the time (2 years in 10). Based on past rainfall recorded at Bakersfield from 1889 to 2008, it is estimated that high amounts of nonnative persistent grass cover may have occurred in only 6 periods (totaling 25 years) in 118 years. It is during these periods of persistent nonnative grass cover when vegetation management could be applied through prescribed fire to improve habitat conditions that may threaten giant kangaroo rat prey populations and maintain a more open habitat structure for kit foxes.

Mowing vegetation may cause damage to den entrances. Since these activities usually occur when soils are somewhat dry and firm, collapse would not be widespread. The 25 acres to be mowed is a very small portion of the landscape and thus the effects to kit fox would be negligible. San Joaquin kit fox dens would be avoided with application of SOPs.

Pile burns would be conducted to avoid impacts to San Joaquin kit fox.

Livestock Grazing. The elimination of livestock grazing would be the same as those described for the giant kangaroo rat since San Joaquin kit fox populations would be strongly affected by the abundance of this prey species. San Joaquin kit fox habitat would be generally suitable in the Monument in most years, but could be much less suitable in years with high vegetation biomass if livestock grazing is not available as a management tool.

Recreation. The Primitive recreation zones to be managed as having wilderness characteristics overlap with the core area for San Joaquin kit foxes in the West Well, Silver Gate, East Painted Rock, East Cochora, West Cochora, South Cousins, Kinney-Hahl, and Van Matre pastures. If mowing of vegetation is required to implement core area habitat management actions, this would not be consistent with the wilderness objectives.

Travel Management. The closure and limited designation of approximately 30 miles of roads in San Joaquin kit fox habitat in the Monument would reduce the risk of vehicle collisions. While there is very

little driving activity during the night when kit fox are active, the restricted vehicle access would have a minor positive effect, reducing the risk of vehicle strikes in the Monument.

Impacts to the San Joaquin Kit Fox under Alternative 2

Impacts to the San Joaquin Kit Fox from Implementing the Wildlife Program

Wildlife. Management of the likely non-core treatment areas to maintain populations of San Joaquin kit foxes would have moderate to major beneficial impacts to kit foxes. The application of livestock grazing and prescribed fire as vegetation management tools would provide options to apply effective habitat management in these areas. As described in the Fire/Fuels Management and Livestock Grazing sections, there are periods of rainfall and vegetation production and cover that require the use of livestock grazing or prescribed fire to maintain suitable habitat conditions for this species.

The management of the Carrizo Plain North and Caliente Foothills North subregions for the benefit of pronghorn and tule elk would be the same as described in Alternative 1.

Impacts to the San Joaquin Kit Fox from Implementing Other Programs

Vegetation. Restoration activities to reintroduce native plants into previously cultivated farm fields or in habitats with a low proportion of native plant species would have negligible to minor beneficial impacts on San Joaquin kit fox. The use of a tractor-pulled range drill/seeder may run over and damage den entrances. However, these features are usually obvious in previously cultivated fields and would be avoided during restoration activities. Restoration activities generally occur in the late fall or early winter seasons prior to significant rainfall events when soils are usually quite hard. Strip seeding, leaving large areas untreated, would be used in more densely populated giant kangaroo rat, blunt-nosed leopard lizard, San Joaquin antelope squirrel, or other special status animal species habitats if avoidance is warranted. The long-term improvement in native plant community composition would likely benefit San Joaquin kit foxes with a more diverse array of habitats for prey species (kangaroo rats, mice, ground squirrels, desert cottontail, hares, and insects).

Fire and Fuels Management. Fire suppression activities (dozer line, handline, mobile attack, fire retardant, off-road travel) could disturb habitat, crush vegetation, collapse burrows, entomb small mammals, damage den entrances, or result in vehicle strikes. The activities would be kept to a minimum and the effects to San Joaquin kit fox would be negligible.

Prescribed fire would have a moderate to major benefit to maintain prey populations and suitable habitat for San Joaquin kit fox in high biomass years, as described in the No Action Alternative. Prescribed fire could be used in the core areas and adjacent non-core areas if needed to improve or maintain habitat conditions for kit fox and their prey species. If additional treatment outside of the core areas is needed, it would most likely be applied in the adjacent non-core areas identified in Map 4-1. However, the non-core areas that may be treated could be different than those identified in Map 4-1 if habitat conditions, prey distributions, and management prescriptions change over time.

Mowing vegetation may cause burrow collapse for prey species and damage to kit fox den entrances. Since these activities usually occur when soils are somewhat dry and firm, damage would not be widespread. The 350 acres to be treated is a very small portion of the landscape and thus the effects to San Joaquin kit fox populations would be negligible. Mowing would reduce the thick cover along travel routes, allowing better visibility for kit foxes to avoid vehicles and for motorists to see kit foxes and avoid striking them.

Pile burns may disturb habitat during the piling process and the area under the piles would receive intensive heat that would likely kill prey animals in the direct heat of the burn. However, dens, burrows, and habitat features are avoided and previously disturbed sites are used to the maximum extent practicable. The small amount of acreage affected would have negligible impacts on San Joaquin kit fox populations.

The 1,000 acres of prescribed burns and 5 miles of dozer line would have impacts similar to those described for wildfire (see Impacts Common to All Action Alternatives), but the damage to saltbush plants may be avoided by placement of fire control lines and by excluding saltbush from within the burn area. Prescribed fire has been observed to maintain a more open habitat structure favorable to San Joaquin kit foxes and their important prey giant kangaroo rats. The burn effects usually last between 3 to 5 years, depending on subsequent annual rainfall. Although there would be some direct mortality to a low percentage of kangaroo rat prey animals within the burn areas, the overall effect would be positive at the prey population level. While there would be a loss of saltbush shrubs in the burn areas, this would have moderate to major effects on San Joaquin kit fox populations within the post-burn areas.

Livestock Grazing. Under Alternative 2, livestock grazing may be occasionally applied in the core areas to maintain habitat conditions for San Joaquin kit fox and their giant kangaroo rat prey, so that they would not disappear from the Monument. If additional treatment is needed, it would most likely be applied in the adjacent non-core areas identified in Map 4-1. Under this scenario, approximately 29,000 acres may be treated with livestock grazing (in addition to the core areas) in pastures that contain the adjacent non-core areas. However, the non-core areas that may be treated could be different than those identified in Map 4-1 if habitat conditions, giant kangaroo rat distributions, and management prescriptions change over time. The impacts would generally be the same as described for the giant kangaroo rat.

The impacts of livestock grazing in the vegetation management areas under this alternative would be the same as those described in the No Action Alternative. Application of the Conservation Target Table would refine management prescriptions to maintain prey populations, suitable habitat structure, and viable kit fox populations. Thus, livestock grazing in the vegetation management areas would have moderate to major beneficial impacts to maintain San Joaquin kit fox populations on the Monument.

Livestock grazing in the Section 15 Recruit, South Anderson, South Selby, and Sulphur Canyon pastures under this alternative would likely occur in five of ten years. The impacts would be the same as described in the No Action Alternative with moderate to major beneficial impacts to maintaining kit fox prey and suitable habitat in these areas in the occasional wet years with high vegetation biomass, but minor to moderate negative impacts when livestock grazing occurs in years of less than high vegetation biomass if prey populations are suppressed.

Travel Management. The impacts to San Joaquin kit fox would be the same as the No Action Alternative.

Impacts to the San Joaquin Kit Fox under Alternative 3

Impacts to the San Joaquin Kit Fox from Implementing the Wildlife Program

The impacts would be the same as described for Alternative 2

Impacts to the San Joaquin Kit Fox from Implementing Other Programs

Vegetation and Fire/Fuels Management. The impacts would be the same as described in Alternative 2, but a larger area of suitable giant kangaroo rat habitat (approximately 67,000 acres) may be treated outside of the core areas.

Livestock Grazing. The impacts from livestock grazing in the vegetation management areas would be similar to those described in Alternative 2, but prescribed grazing may be used in a larger area of suitable habitat if needed to maintain kit fox populations in areas of suitable habitat (Map 4-1). Vegetation management may be applied to approximately 115,000 acres of suitable habitat (57,000 acres of pastures containing core areas plus 57,000 acres of suitable giant kangaroo rat/San Joaquin kit fox habitat on the Carrizo Plain, Elkhorn Plain, and alluvial plains of the Cuyama Valley outside of the core areas). Livestock grazing in the vegetation management area as prescribed in the Conservation Target Table would have moderate to major beneficial impacts on maintaining San Joaquin kit fox populations on the Monument.

Livestock grazing in the Section 15 Recruit and South Anderson pastures of the North Temblor allotment, the South Selby pasture of the Selby allotment , and the Sulphur Canyon allotment under this alternative would be the same as described in the No Action Alternative: there may be moderate to major beneficial impacts to maintaining kit fox habitats in these areas in the occasional wet years with high vegetation biomass, but minor to moderate negative impacts when livestock grazing occurs in years of less than high vegetation biomass if prey populations are suppressed

Recreation. Under Alternative 3, there would be no acres of San Joaquin kit fox habitat in the Primitive recreation zone and no impacts to this species.

Dispersed vehicle camping in the Backcountry zone in San Joaquin kit fox habitat could be eliminated if problems are documented during monitoring. Site-specific closures could be made if impacts are unacceptable. Vehicle camping activities would have localized, but negligible effects on San Joaquin kit fox. There is a small chance of inadvertent damage to dens from vehicle-related camping activities.

The development of water, signs, and overlooks would have negligible impacts on San Joaquin kit fox. There could be some instances where these projects would occur in San Joaquin kit fox habitat, but nearly all the direct impacts would be localized, may be avoidable, and would not affect San Joaquin kit fox at the population level. The indirect effects of greater recreational activities near upgraded facilities would have a wider area of human impacts on San Joaquin kit fox habitat, but this is expected to be at a very small scale and would not affect populations of this species.

The development of recreational activities within the front country zone would be expanded through the Elkhorn Plain and additional impacts to San Joaquin kit fox would be expected. New facilities and visitor services would likely result in more vehicle use during daytime and nighttime hours. The possibility of more direct and indirect impacts from increased visitor activities on the Elkhorn Plain could have minor effects to this species by vehicle collisions, nighttime activities, and general disturbance from visitor activities. There could be some instances where new projects would occur in San Joaquin kit fox habitat, but nearly all the direct impacts would be localized, may be avoidable, and would not affect San Joaquin kit fox at the population level. The indirect effects of greater recreational activities near upgraded facilities would increase the area of human impacts on San Joaquin kit fox habitat, but this is still expected to be at a very small scale and would have negligible effects on populations of this species.

Travel Management. The impacts to kit foxes would be the same as the No Action Alternative.

4.2.5.3 Blunt-Nosed Leopard Lizard

Impacts to the Blunt-Nosed Leopard Lizard under the No Action Alternative

Impacts to the Blunt-Nosed Leopard Lizard from Implementing the Wildlife Program

Wildlife. The current Monument goal to contribute to the recovery of listed species by achieving long-term, viable populations of all extant listed species in the Monument would have major beneficial impacts to the conservation and recovery of this federally and California listed endangered species. Current management is implementing the objectives to manage locations and habitat features of listed species to allow for their continued existence and maintenance of viability, provide for the natural expansion and fluctuations of listed species consistent with species recovery, and reduce human-caused hazards to core species.

Impacts to the Blunt-Nosed Leopard Lizard from Implementing Other Programs

Vegetation. The current Monument objectives to increase the importance of native species in Monument communities, provide for all transitional states of native communities through the natural range of disturbances (for example, fire, grazing, climatic events), and maintain shrub-scrub communities, would have major beneficial impacts to blunt-nosed leopard lizards across the Monument in the short and long term. It is generally assumed that the improvement and maintenance of plant communities with a high proportion of native plant species would provide high quality habitat for this species. However, objectives to increase native plant cover and composition may require avoidance of livestock grazing during the winter and spring seasons of rapid annual plant growth. If this results in an increase of annual plant cover that is structurally too tall or thick for blunt-nosed leopard lizards, habitat quality would be degraded. In many years, annual plant production is low and giant kangaroo rat clipping activities and plant decomposition can maintain favorable habitat conditions for blunt-nosed leopard lizards. During some above-average rainfall years, dense annual plant growth of native plants, and particularly nonnative grass species, limits the habitat quality for this species. Application of livestock grazing during these conditions, prior to the emergence of blunt-nosed leopard lizards in the spring, would reduce the amount of persistent nonnative grass cover, but could be in conflict with plant community objectives.

The most important element of these objectives may be providing all transitional states and disturbances across the Monument to create a mosaic of grassland, shrub-scrub lands, grazed and ungrazed areas, burned and unburned areas, and a wide range of habitat opportunities for blunt-nosed leopard lizards. Within this mosaic, blunt-nosed leopard lizards would occupy plant communities within the range of their habitat needs. This strategy of varied plant communities is expected to maintain leopard lizard populations across the Monument landscape considering the high amount of climatic variation and vegetation biomass production and decomposition.

Restoration activities to reintroduce native plants into previously cultivated farm fields, abandoned roads, or in habitats with a low proportion of native plant species would have minor impacts on blunt-nosed leopard lizards. Fields within the Carrizo Plain North and Caliente Foothills North subregions are generally outside the occupied range of blunt-nosed leopard lizards in the Monument. The use of a tractor-pulled range drill/seeder may run over and collapse small mammal burrows used by leopard lizards. However, monitoring of recent restoration projects has not found burrow collapse to occur if soils are firm and dry. Restoration activities generally occur in the late fall or early winter seasons prior to significant rainfall events when soils are usually quite hard. Where burrows are scattered, they are easily avoided if collapse is observed to occur. Strip seeding, leaving large areas untreated, would be used in blunt-nosed leopard lizard habitats if avoidance is warranted. The long-term improvement in native plant community composition would likely provide a moderate benefit to leopard lizards with a more diverse array of insect prey species.

Fire and Fuels Management. The use of prescribed fire on 30,000 acres within the Monument would provide moderate to major benefits to blunt-nosed leopard lizard populations, depending habitat conditions. There may be some direct mortality to lizards from fire, but this has not been studied to date. The relative beneficial impacts to habitat would be major when dense vegetation is removed and the habitat stays open for several years. The impacts would be more moderate when vegetation is already quite open and generally suitable. Blunt-nosed leopard lizard populations increased following a landscape level burn in the Lokern area in western Kern County between 1997 and 2005 (Germano et al. 2006). However, pre-burn populations and populations in adjacent unburned areas were not monitored to compare effects.

Livestock Grazing. Under the No Action Alternative, livestock grazing would have moderate to major beneficial impacts when used as a vegetation management tool to reduce high amounts of standing biomass of persistent nonnative grasses for the benefit of blunt-nosed leopard lizards in high biomass years. Management of tall nonnative grasses (for example, red brome and foxtail barley) to maintain an open habitat structure for this species is believed to be critical. Ground cover between 15 to 30 percent is considered optimal for blunt-nosed leopard lizards and greater than 50 percent is unsuitable (Chesemore 1980). Blunt-nosed leopard lizards rely on open habitats to capture arthropods and small lizards (Montanucci 1965). They avoid predation by running under shrubs or into small mammal burrows (Germano et al. 2001). In most years, giant kangaroo rats and low vegetation production are able to maintain suitable blunt-nosed leopard habitat structure. Vegetation management is required when biomass and persistent grass cover creates an extensive thatch across the landscape. Recent studies on the effects of grazing on blunt-nosed leopard lizards indicate that this species is more abundant in grazed than ungrazed pastures in the Lokern Natural Area (Germano et al. 2005). Previous studies at the Elkhorn Plain Ecological Reserve from 1991 to 1993, however, indicated that blunt-nosed leopard lizards survived years of low and high plant productivity equally on grazed and ungrazed pastures, though years of drought and a lack of grazing treatment in some years makes these results inconclusive (Williams et al. 1993; Germano et al. 1994; Germano and Williams 2005). The blunt-nosed leopard lizard recovery plan states that light to moderate grazing may be beneficial (USFWS 1998).

Management of nonnative vegetation by grazing or fire could affect distributions of blunt-nosed leopard lizards. Radio telemetry studies conducted by Warrick et al. (1998) showed a strong avoidance for grasslands with dense grass cover and lizards instead used washes, roads, and floodplains. Areas with more open ground cover resulting from recent sheep grazing and wildfire were used in proportion to their availability. In the Monument, large areas of habitat became unsuitable for blunt-nosed leopard lizards when dense grass cover dominated the landscape in mid to late 1990s.

Key problems for blunt-nosed leopard lizards result from dense grass cover during the spring when yearling and adult lizards emerge from winter torpor (greatly slowed metabolic rate while underground). The prescribed burning proposed in the Monument is also a feasible tool to reduce vegetative cover for the benefit of blunt-nosed leopard lizard, but its application occurs after spring growth has been completed and annual plants have dried. This usually occurs in late May or early June, four to six weeks after the emergence of blunt-nosed leopard lizard from winter torpor. During this period, lizards start reproduction activities and replenish body mass through extensive foraging (Germano et al. 1994). This coincides with rapid spring growth of annual vegetation as the result of winter moisture and rising spring temperatures. At this time, blunt-nosed leopard lizards can be impeded from foraging activities, reproductive activities, and predator avoidance with dense grass cover (Warrick et al. 1998). Giant kangaroo rat activity of clearing vegetation on and around their precincts starts as plant seeds begin to ripen (USFWS 1998). This occurs later in the spring, usually several weeks after blunt-nosed leopard lizards have been active, and after the lizards need to regain lost body reserves. In years of extensive nonnative annual plant growth, giant kangaroo rat clearing of vegetation occurs across the landscape only

after late June or July. Until this occurs, blunt-nosed leopard lizards are more likely to use washes, roads, barren soils, or floodplains, which may result in greater predation rates. While the mechanisms of population declines may not be fully understood, population data at several sites throughout the range of blunt-nosed leopard lizards (including some telemetry studies) have documented precipitous declines in years of heavy grass cover. In years of low annual vegetation production, or when the build-up of ground cover is not extensive, the landscape is suitable in nearly all the uplands during the spring period and populations have increased or have been relatively stable.

Livestock grazing during the winter and spring seasons can reduce biomass prior to, or coinciding with, emergence of blunt-nosed leopard lizards in the spring. Application of livestock grazing on most blunt-nosed leopard lizard habitat in the Monument is a feasible management tool in years of extensive nonnative annual plant growth. The current habitat management would provide flexibility for managers to apply grazing as needed to reduce vegetative structure with moderate to major benefit of blunt-nosed leopard lizards.

Livestock grazing can result in removal of shrub cover, soil degradation, and trampling of rodent burrows used as blunt-nosed leopard lizard shelter if livestock stocking rate is too high or animals are left on the range too long after annual plants have died (Chesemore 1981; Williams et al. 1988). However, current livestock grazing guidelines used in the Monument would not result in large impacts to shrubs, soils, or burrows. There may be lower densities of giant kangaroo rats in grazed pastures relative to ungrazed pastures in some years in the Monument (Christian et al., in prep.). This could result in fewer acres clipped by giant kangaroo rats and fewer burrows available for use by leopard lizards in grazed pastures. However, livestock grazing would likely supplement or exceed vegetation biomass removal by all giant kangaroo rats within a grazed pasture.

The Recruit and Anderson pastures in the Section 15 North Temblor Allotment would continue to provide suitable blunt-nosed leopard lizard habitat under the Standards for Rangeland Health and Caliente RMP guidelines. Livestock grazing in these pastures has generally occurred on an annual basis within a green season of use and would be expected to be applied when minimum residual dry matter requirements are present. While livestock grazing is not applied with the direct intent to manage blunt-nosed leopard lizard habitat (as in the vegetation management areas), the grazing of forage and biomass would likely continue to maintain habitat structure and would have moderate to major benefit for the species.

The Section 15 allotments on the south side of the Caliente Range on the alluvial fans and drainages in the northern fringe of the Cuyama Valley would provide suitable habitat for blunt-nosed leopard lizards under the Standards for Rangeland Health and Caliente RMP guidelines. Livestock grazing in these pastures has generally occurred on an annual basis within a green season of use and would be expected to be applied when minimum residual dry matter requirements are present. This would have moderate to major benefit to leopard lizards in years of high vegetation biomass.

Travel Management. Impacts to blunt-nosed leopard lizards from Travel Management would be similar to those described for the giant kangaroo rat.

Minerals. Potential impacts to blunt-nosed leopard lizards include direct mortality, loss of burrows, loss or alteration of habitat, and harassment. The construction and maintenance of well pads, access roads, pipelines, and other oil field structures may trap or bury leopard lizards in their burrows. Lizards can also drown or become entrapped in spilled oil or tarry substances. Blunt-nosed leopard lizards may also be killed by vehicles. Burrows can also be damaged or destroyed by project activities. Some habitat may also be lost or altered.

The construction and operation of the projected oil development activities would result in 30 acres of habitat disturbance in the valley floor portion of the Monument. On the valley floor, the construction of 8 miles of roads, 6 exploration well pads, 2 tank batteries, and 10 development well pads would result in habitat disturbance that would destroy burrows and remove vegetation within the construction footprint. Although BLM has SOPs to use existing roads and disturbed sites if possible, minimize the size of the footprint, avoid leopard lizard burrows, install exclusion barriers, and minimize take to the greatest extent practicable, there would likely be some loss of burrows used by blunt-nosed leopard lizards. Exclusion barriers would keep animals adjacent to the construction footprint from wandering onto the edge of the construction area where they could be harmed by subsequent construction, drilling, operations, maintenance, or restoration activities. There may be some disturbance to the adjacent animals during the drilling operations. Drilling activities typically last up to 20 days per well. Once a well is drilled, operations and maintenance activities may occur daily.

The duration of the impacts would depend on whether the wells find economic reserves that will be produced. The impacts would be long-term over the life of the well if it has economic reserves. The impacts would be considered temporary if no economic reserves are found. Restoration would be initiated immediately and the site would likely be inhabited by blunt-nosed leopard lizards within several months.

Vehicle travel to the well locations within the Monument (on county roads, on existing BLM roads, and on newly constructed roads) may result in some vehicle strikes and mortality. BLM requires project vehicle speeds below 20 miles per hour off of county roads to minimize the risk of vehicle strikes of listed species.

Oil development activities on 30 acres of the valley floor would have minor impacts to the local and Monument-wide populations of blunt-nosed leopard lizards considering the extensive distributions (over 85,000 acres) within the central and southern portions of the CPNM. The disturbance of 6.5 acres in the Russell Ranch oilfield would not impact or would have negligible impacts to blunt-nosed leopard lizards since this area is outside the current range of the species.

Geophysical activities would have a transient impact on 115 acres from cross-country and shot hole drilling. Oil exploration using shot hole seismic methods and implementing 50-foot buffer avoidance requirements would have negligible to minor impacts on blunt-nosed leopard lizards at the site-specific and population levels. The extent of the impacts would depend on the project design, primarily the number of shot holes and number, length, and distance between seismic source lines. Recent methods using small tractor-mounted drill rigs leave little surface impact as they travel between source points and at the drilling locations. The small tractor vehicles are lightweight and maneuverable and usually able to successfully avoid burrows and cause minimal burrow collapse. The amount of drill tailings and disturbance is typically less than ten feet in diameter. The duration of drilling at any one point is typically less than 20 minutes. While the detonation of the charges is perceptible to humans within 200 feet of a shot hole, the effects of the noise on the blunt-nosed leopard lizard is unknown. Specific monitoring of blunt-nosed leopard lizard activity response to shot hole drilling and detonations has not been conducted to date. Vibroseis source point generation would only occur on existing roads in the Monument. Although the impacts of shot hole source point generation are expected to be substantially less than vibroseis, focused studies on shot hole impacts on blunt-nosed leopard lizards have not been conducted to date.

Impacts to the Blunt-Nosed Leopard Lizard Common to All Action Alternatives

Impacts to the Blunt-Nosed Leopard Lizard from Implementing the Wildlife Program

Wildlife. The wildlife management goals to manage the CPNM in a manner that emphasizes its critical importance for threatened and endangered species conservation and recovery, rare natural communities,

and conservation of the regional landscape would have major beneficial impacts to the conservation and recovery of the blunt-nosed leopard lizard.

There would be major beneficial impacts to blunt-nosed leopard lizards by implementing the specific objectives to:

- identify core geographic areas for endangered species population management and recovery ;
- give endangered species habitat primary management priority in core areas;
- maintain and enhance viable populations within core areas; and
- allow the populations of these target species to naturally fluctuate up and down, in terms of number and distribution, but initiate management actions when populations approach target minimums (population threshold values).

The designation and management of the three listed species core areas (Map 3-2) would maintain blunt-nosed leopard lizard populations within the Monument in the long term. However, our ability to achieve effective vegetation management varies between Alternative 1 and Alternatives 2 and 3. In the absence of prescribed fire and livestock grazing as vegetation management tools in Alternative 1, it is unknown whether effective habitat management can be implemented to provide suitable habitat for blunt-nosed leopard lizards when nonnative grasses and herbaceous vegetation reduce habitat quality.

The management of the core areas applies a strategy of effective habitat management to improve habitat conditions when necessary. In most years the amount of grass and herbaceous vegetation is in balance between providing prey (grasshoppers, beetles, side-blotched lizards) for blunt-nosed leopard lizards and a structure of low, patchy vegetation and bare ground favored by blunt-nosed leopard lizards to capture prey and escape predators. When rainfall is below or near the annual average, the amount of native annuals and nonnative grasses and herbs is fairly low and provides these conditions. However, when rainfall exceeds the average for several successive years or when the annual rainfall is far above the average, there is exceptionally high production of the annual native and nonnative vegetation. While most of the native annual flora in the Monument is small herbs and wispy-like grasses, the nonnative grasses (primarily red brome, ripgut brome, soft chess, foxtail barley, and wild oats) are more dense and persistent. The nonnative filaree can also cover a high percentage of the ground, and can be quite dense in the winter and spring seasons to hinder leopard lizard movement. However, filaree dries during the spring and shatters quite easily as summer progresses and may become less of a hindrance for hatchlings that occur in the late summer and fall. Management of the core areas would trigger vegetation treatments by applying livestock grazing or prescribed fire to reduce the amount of persistent nonnative grasses. For blunt-nosed leopard lizard core areas, the threshold is to apply management when herbaceous biomass is greater than 1,000 pounds per acre, to maintain biomass/residual dry matter between 500 pounds per acre and 1,000 pounds per acre during the blunt-nosed leopard lizard active period (May through September). Although there are provisions to apply livestock grazing or prescribed fire based on giant kangaroo rat abundance and biomass levels of 1,600 pounds per acre in the core areas, the habitat requirements of blunt-nosed leopard lizards is for less vegetative cover than for giant kangaroo rats.

It is estimated that exceptionally high herbaceous vegetation production may occur about 20 percent of the time (2 years in 10). Based on past rainfall recorded at Bakersfield from 1889 to 2008, it is estimated that high amounts of nonnative persistent grass cover may have occurred in only 6 periods (totaling 22 or 23 years) in 118 years. It is during these periods of persistent nonnative grass cover when vegetation management could be applied through prescribed fire or livestock grazing to improve habitat conditions that may threaten blunt-nosed leopard lizard populations. It is likely that blunt-nosed leopard lizards would require more frequent vegetation management treatments than giant kangaroo rats since they are less tolerant of thick vegetation structure. It is unknown if low populations of blunt-nosed leopard lizard

always coincide with periods of high grass production, but based on the last such period when populations were monitored and found to be mostly absent in the CPNM, it is prudent to target the nonnative grasses under these conditions.

The core areas were selected because they had consistently high populations in most years, appeared to have good long-term habitat quality, and were of a size that could be affected by fire or livestock grazing. The strategy is to have these areas as "safety nets" where there is a high likelihood that the vegetation can be reduced by fire or grazing when needed.

On the Monument, the distributions and abundance of giant kangaroo rat populations may determine habitat suitability of blunt-nosed leopard lizards across the landscape. Because of this relationship, management of giant kangaroo rats, the keystone species in this ecosystem, strongly affects the blunt-nosed leopard lizard. The impacts described for giant kangaroo rats would be similar for this species, but monitoring of blunt-nosed leopard lizard populations would be necessary to better determine this relationship and apply appropriate management.

The wildlife management objectives that enhance or maintain the variety of animals within the Monument are likely to have moderate to major benefits to blunt-nosed leopard lizards throughout the life of the plan. For example, the management of low habitat structure for mountain plovers in upland areas outside of the core areas will provide suitable habitat for blunt-nosed leopard lizards. Fencing and signing projects would be implemented to avoid burrows and take of blunt-nosed leopard lizards and thus would have negligible effects. Areas that would be removed from livestock grazing to protect vernal pools, washes with Sphinx moths, or riparian habitats would be relatively small in size and would not affect blunt-nosed leopard lizards in most years. These areas would not usually occur in core areas and would be compatible with blunt-nosed leopard lizard objectives outside of the core areas.

Research and monitoring activities that address habitat quality and ecology of blunt-nosed leopard lizards and associated listed and non-listed species would have a long-term benefit to this species. Any take or project effects would be authorized under state and federal permitting requirements and would be evaluated and mitigated in project-specific environmental analyses.

Management for a diversity of wildlife habitats would have moderate to major benefits to blunt-nosed leopard lizards in those areas where there is an objective to create a low structure of vegetation. Since the overall objective is to create a diversity of habitat structure within the Monument, a large portion of the Monument would be managed to benefit this species. The creation and maintenance of a mosaic of grassland and shrubland habitats would likely maintain blunt-nosed leopard lizards across the Monument landscape. Population monitoring and AM would indicate habitat management prescriptions to help meet population and distribution objectives.

Impacts to the Blunt-Nosed Leopard Lizard from Implementing Other Programs

Fire and Fuels Management. Fire suppression activities may disturb habitat along fire control lines, at staging areas, in retardant drops, and in cross-country travel. Burrows may be crushed, animals entombed, and vehicle strikes may occur. In grassland habitats the suppression activities are usually kept to the least amount of disturbance needed to control the fire with mobile attack, retardant, or a single dozer line, resulting in negligible impacts. These impacts are temporary in duration and are usually revegetated naturally by annual plants within one to three years. Kangaroo rats often reoccupy the disturbed sites immediately following the suppression activities, providing habitat for blunt-nosed leopard lizards. Restoration of firelines may occur with native plant seedings, which would have negligible impacts similar to those described for restoration activities. Fire control impacts a very small amount of habitat in the landscape and would not affect animals at the population level. Fire suppression often benefits blunt-

nosed leopard lizards by minimizing the loss of saltbush plants which are intolerant of fire (Germano et al 2001). Scattered saltbush or linear stands along drainages are important habitat features for thermal, feeding, and escape cover. However, wildfire can open dense saltbush scrub stands creating habitat more favorable for blunt-nosed leopard lizards.

Cultural Resources. Habitat disturbance associated with protection, movement, or removal of historic farming equipment or buildings and construction of barriers, boardwalks, or interpretive panels would result in negligible impacts to blunt-nosed leopard lizards inhabiting the sites. Activities may cause the collapse and entombment of animals and vehicles strikes may occur. Cultural resource excavations and site facilities may remove habitat for a short period of time. However, implementation of SOP avoidance criteria within project footprints would be implemented to minimize project impacts.

Livestock Grazing. Livestock grazing would be conducted to meet the Standards for Rangeland Health so that "viable, healthy, productive, and diverse populations of native and desired species, including special status species, are maintained or enhanced, where appropriate." Since the Monument management objectives place high priority on the conservation and recovery of special status species, livestock grazing management prescriptions and decisions would be designed and administered to meet this standard. There would be negligible to major beneficial impacts to blunt-nosed leopard lizards, depending on habitat conditions, grazing permit terms and conditions, and the need to apply vegetation management prescriptions.

Recreation. The placement of informational signs and the development of potable water at dispersed camping sites and at existing campgrounds would have negligible impacts on blunt-nosed leopard lizards. There could be some instances where these projects would occur in blunt-nosed leopard lizard habitat, but nearly all the direct impacts would be localized, would be avoidable, and would not affect blunt-nosed leopard lizards at the population level. The indirect effects of greater recreational activities near upgraded water sources would have a wider area of human impacts on blunt-nosed leopard lizard habitat, but this is expected to be at a very small scale and would not affect populations of this species.

The expansion of the visitor center would not affect blunt-nosed leopard lizard habitat. There would be benefits to listed species through improved visitor and environmental education opportunities at the center, which may help implement conservation and recovery of the CPNM species.

Minerals. The impacts would be the same as under the No Action Alternative.

Impacts to the Blunt-Nosed Leopard Lizard under Alternative 1

Impacts to the Blunt-Nosed Leopard Lizard from Implementing the Wildlife Program

Wildlife. Management of the likely non-core treatment areas to maintain populations of blunt-nosed leopard lizard would have moderate to major beneficial impacts to the species. However, the elimination of livestock grazing and prescribed fire as vegetation management tools would hinder effective habitat management in these areas and could result in moderate to major detrimental effects. As described in the Fire/Fuels Management and Livestock Grazing sections, there are periods of rainfall and vegetation production and cover that require the use of livestock grazing or prescribed fire to maintain suitable habitat conditions for this species.

Impacts to the Blunt-Nosed Leopard Lizard from Implementing Other Programs

Fire and Fuels Management. Fire suppression activities (dozer line, handline, mobile attack, fire retardant, off-road travel) could disturb habitat, crush vegetation, collapse burrows, entomb animals, or

result in vehicle strikes. The activities would be kept to a minimum and the effects to blunt-nosed leopard lizards would be negligible.

The elimination of prescribed fire to manage the nonnative grass and herbaceous vegetation within the blunt-nosed leopard lizard core and likely non-core treatment areas would have major detrimental impacts to this species. While there is no need to apply prescribed fire in most years when rainfall is below average or when annual vegetation is not tall and thick, the use of prescribed fire is considered a valuable management tool when thick grassy conditions occur. It is estimated that exceptionally high herbaceous vegetation production may occur about 20 percent of the time (2 years in 10). Based on past rainfall recorded at Bakersfield from 1889 to 2008, it is estimated that high amounts of nonnative persistent grass cover may have occurred in only 6 periods (totaling 25 years) in 118 years. It is during these periods of persistent nonnative grass cover when vegetation management could be applied through prescribed fire to improve habitat conditions that may threaten blunt-nosed leopard lizard populations.

Mowing vegetation may cause burrow collapse, entombment, and vehicle strikes. Since these activities usually occur when soils are somewhat dry and firm, collapse would not be widespread. The 25 acres to be treated is a very small portion of the landscape and thus the effects to blunt-nosed leopard lizard populations would be negligible.

Pile burns may disturb habitat during the piling process and the area under the piles would receive intensive heat that would likely kill animals in the direct heat of the burn. However, burrows and habitat features are avoided and previously disturbed sites are used to the maximum extent practicable. The impact to a small amount of acreage would have negligible effects on blunt-nosed leopard lizard populations.

Livestock Grazing. The elimination of livestock grazing in the Monument would have major detrimental impacts to blunt-nosed leopard lizard populations and could threaten conservation and recovery of the species. The removal of livestock grazing would result in higher amounts of herbaceous vegetation across the landscape in wet years and as residual dry matter accumulates through time. In areas with high giant kangaroo rat abundance, the accumulation would be much less or would not occur. In exceptionally dry rainfall years or in a series of below-average rainfall years, livestock grazing would not typically occur or would not be a factor in maintaining favorable habitat conditions. Giant kangaroo rats appear to be able to successfully manipulate herbaceous vegetation on their precincts in most years and provide suitable habitat for blunt-nosed leopard lizards. However, in high biomass years, this may not be the case since kangaroo rats typically start to remove standing vegetation one or more months after blunt-nosed leopard lizards emerge from torpor and begin feeding and reproduction activities. The elimination of livestock grazing would become a factor in blunt-nosed leopard lizard habitat suitability in the exceptionally wet years when herbaceous plant cover would produce less-than-optimum, or unfavorable, habitat conditions.

Areas of dense vegetation are not considered suitable for blunt-nosed leopard lizard (Montanucci 1965), and an increase in persistent and thick grass cover has been found to be a detriment to blunt-nosed leopard lizards in several study populations (Warrick et al. 1998; Germano et al. 2006). Lizards would seek open areas in washes, roads, and barren areas in the spring season before the vegetation is removed by giant kangaroo rats. However, such areas would likely be marginally available within the Carrizo and Elkhorn Plains in high grass production years. In addition, giant kangaroo rat census data suggest that in years of extreme rainfall and/or with an accumulation of residual dry matter, giant kangaroo rat populations also decline (Single et al. 1998; Germano and Saslaw 2008). Without the vegetation clipping of giant kangaroo rats, the annual nonnative grasses persist through the summer season as an impediment to hatchling blunt-nosed leopard lizards into the fall season. Successive years of residual dry matter retention that results in a build-up of grassy cover would reduce the habitat quality of extensive acreage in the Monument. Thus, blunt-nosed leopard lizard populations could decline across the landscape during

periods of high biomass production and accumulation. Management of vegetation by livestock grazing or prescribed fire could be applied and it is uncertain if the populations would persist in the core areas.

The elimination of livestock grazing on the southern alluvial fans and flat-bottomed drainages of the Caliente Range on the northern fringe of the Cuyama Valley would have negligible effects in most years. However, when these sites become excessively covered with nonnative grasses in extremely wet periods, the habitat quality would likely be compromised. The fragmented distribution of the suitable habitat in this area may make repopulation somewhat unlikely for longer periods of time. Prescribed fire could not be applied in these areas without high mortality of saltbush shrubs and without substantial risk of the fire escaping upslope. The chance of effective treatment seems to be quite low without livestock grazing as a possible tool. This may be an important factor in maintaining a viable population of blunt-nosed leopard lizards in the Cuyama Valley where most acres across the valley have been converted to intensive agriculture. Thus, the elimination of livestock grazing in this area could have moderate to major detrimental effects in the conservation of blunt-nosed leopard lizards in the Cuyama Valley.

Recreation. The Primitive recreation zones to be managed as having wilderness characteristics overlap with the core area for blunt-nosed leopard lizard in the West Well, Silver Gate, East Painted Rock, East Cochora, West Cochora, South Cousins, Kinney-Hahl, and Van Matre pastures. If mowing of vegetation is required to implement core area habitat management actions, this would not be consistent with the wilderness objectives.

Travel Management. The closure and limited designation of approximately 30 miles of roads in blunt-nosed leopard lizard habitat in the Monument would reduce the risk of vehicle collisions and inadvertent burrow collapse on road edges. Most vehicle travel occurs during daylight when blunt-nosed leopard lizards are active and commonly using roads and adjacent berms. The restricted vehicle access would have a minor to moderate positive effect, to reducing the risk of vehicle strikes in the Monument.

Impacts to the Blunt-Nosed Leopard Lizard under Alternative 2

Impacts to the Blunt-Nosed Leopard Lizard from Implementing the Wildlife Program

Wildlife. Management of the likely non-core treatment areas to maintain populations of blunt-nosed leopard lizards would have moderate to major beneficial impacts to this species. The application of livestock grazing and prescribed fire as vegetation management tools would provide options to apply effective habitat management in these areas. As described in the Fire/Fuels Management and Livestock Grazing sections, there are periods of rainfall and vegetation production and cover that require the use of livestock grazing or prescribed fire to maintain suitable habitat conditions for this species.

Impacts to the Blunt-Nosed Leopard Lizard from Implementing Other Programs

Vegetation. Restoration activities to reintroduce native plants into previously cultivated farm fields or in habitats with a low proportion of native plant species would have minor impacts on blunt-nosed leopard lizards. The use of a tractor-pulled range drill/seeder may run over and collapse giant kangaroo rat burrows. However, monitoring of recent restoration projects has not found burrow collapse to occur if soils are firm and dry. Restoration activities generally occur in the late fall or early winter seasons prior to significant rainfall events when soils are usually quite hard and when blunt-nosed leopard lizards are no longer above ground. Where burrows are scattered, they are easily avoided if collapse is observed to occur. Strip seeding, leaving large areas untreated, would be used in more densely populated giant kangaroo rat, blunt-nosed leopard lizard, San Joaquin antelope squirrel, or other special status animal species habitats if avoidance is warranted. The long-term improvement in native plant community

composition would likely have minor to moderate benefit to blunt-nosed leopard lizards with a more diverse array of plant species that would support a more diverse prey base.

Fire and Fuels Management. Fire suppression activities (dozer line, handline, mobile attack, fire retardant, off road travel) could disturb habitat, crush vegetation, collapse burrows, entomb animals, or result in vehicle strikes. The activities would be kept to a minimum and the effects to blunt-nosed leopard lizards would be negligible.

Mowing vegetation may cause burrow collapse, entombment, and vehicle strikes. Since these activities usually occur when soils are somewhat dry and firm, collapse would not be widespread. However, lizards may be killed by mowing activities if conducted when they are above ground. The 350 acres to be treated is a very small portion of the landscape and thus the effects to blunt-nosed leopard lizard populations would be negligible if conducted when lizards are not above ground. Mowing would reduce the thick cover along travel routes, allowing better visibility for animals to avoid vehicles and for motorists to see animals and avoid striking them.

Pile burns may disturb habitat during the piling process and the area under the piles would receive intensive heat that would likely kill animals in the direct heat of the burn. However, burrows and habitat features are avoided and previously disturbed sites are used to the maximum extent practicable. The impact to a small amount of acreage would have negligible effects on blunt-nosed leopard lizard populations.

Prescribed fire would have moderate to major benefits from managing vegetation to maintain blunt-nosed leopard lizard populations in high biomass years, as described in the No Action Alternative. Prescribed fire could be used in the core areas and adjacent non-core areas if needed to improve or maintain habitat conditions for leopard lizards. If additional treatment outside of the core areas is needed, it would most likely be applied in the adjacent non-core areas identified in Map 4-1. However, the non-core areas that may be treated could be different than those identified in Map 4-1 if habitat conditions, blunt-nosed leopard lizard distributions, and management prescriptions change over time. The damage to saltbush plants may be avoided by placement of fire control lines and by excluding saltbush from within the burn area. Prescribed fire has been observed to maintain a more open habitat structure favorable to blunt-nosed leopard lizards. The burn effects usually last between 3 and 5 years, depending on subsequent annual rainfall. There may be some direct mortality to blunt-nosed leopard lizards within the burn areas, but the extent is unknown. The habitat improvement would likely be positive at the population level. While there would be a loss of saltbush shrubs in the burn areas, this would have moderate to major benefits to blunt-nosed leopard lizard populations within the post-burn areas.

Livestock Grazing. Under Alternative 2, livestock grazing may be occasionally applied in the core areas and adjacent non-core areas to maintain habitat conditions for blunt-nosed leopard lizards so that they would not disappear from the Monument. Based on objectives and management prescriptions described in the Conservation Target Table, vegetation management may be applied when vegetation mass exceeds 1,000 pounds per acre in leopard lizard core areas. It is estimated that excessive amounts of standing vegetation biomass may occur in high rainfall periods on average about two years in ten. During these conditions, livestock grazing may be applied to reduce high amounts of standing biomass to improve habitat conditions for blunt-nosed leopard lizards. When such conditions occur, approximately 58,000 acres would be potentially treated in pastures that contain the core areas. If additional treatment is needed, it would most likely be applied in the adjacent non-core areas identified in Map 4-1. Under this scenario, approximately 29,000 acres may be treated with livestock grazing (in addition to the core areas) in pastures that contain the adjacent non-core areas. However, the non-core areas that may be treated could be different than those identified in Map 4-1 if habitat conditions, leopard lizard distributions, and management prescriptions change over time.

The impacts of livestock grazing in the vegetation management areas under this alternative would be the same as those described in the No Action Alternative. Application of the Conservation Target Table would refine management prescriptions to maintain suitable blunt-nosed leopard lizard habitat and viable populations. Thus, livestock grazing in the vegetation management areas would have moderate to major beneficial impacts to maintain giant kangaroo rat populations on the Monument.

Livestock grazing in the Section 15 Recruit, South Anderson, South Selby, and Sulphur Canyon pastures under this alternative would likely occur in five of ten years. The impacts would be the same as described in the No Action Alternative with moderate to major beneficial impacts to maintaining blunt-nosed leopard lizards in these areas in the occasional wet years with high vegetation biomass. There would be negligible to moderate beneficial impacts when livestock grazing occurs in years of less than high vegetation biomass.

Travel Management. The impacts to blunt-nosed leopard lizard would be the same as Alternative 1.

Impacts to the Blunt-Nosed Leopard Lizard under Alternative 3

Impacts to the Blunt-Nosed Leopard Lizard from Implementing the Wildlife Program

Wildlife. The impacts would be the same as described for Alternative 2.

Impacts to the Blunt-Nosed Leopard Lizard from Implementing Other Programs

Vegetation and Fire/Fuels Management. The impacts would be the same as Alternative 2.

Livestock Grazing. The impacts from livestock grazing in the vegetation management areas would be similar to those described in Alternative 2, but prescribed grazing may be used in a larger area of suitable habitat if needed to maintain populations in areas of suitable habitat (Map 4-1). Vegetation management may be applied to approximately 115,000 acres of suitable habitat (57,000 acres of pastures containing core areas plus 57,000 acres of suitable blunt-nosed leopard lizard habitat on the Carrizo Plain, Elkhorn Plain, and alluvial plains of the Cuyama valley outside of the core areas). Livestock grazing in the vegetation management area as prescribed in the Conservation Target Table would have moderate to major beneficial impacts to maintain blunt-nosed leopard lizard populations on the Monument.

Livestock grazing in the Section 15 Recruit and South Anderson pastures of the North Temblor allotment, the South Selby pasture of the Selby allotment, and the Sulphur Canyon allotment under this alternative would be the same as described in the No Action Alternative: there may be moderate to major beneficial impacts to maintaining blunt-nosed leopard lizards in these areas in the occasional wet years with high vegetation biomass. There would be negligible to moderate beneficial impacts when livestock grazing occurs in years of less than high vegetation biomass.

Recreation. The development of recreational activities within the front country zone would be expanded through the Elkhorn Plain and additional impacts to blunt-nosed leopard lizards would be expected. New facilities and visitor services would likely result in more vehicle use during daytime hours. The possibility of more direct and indirect impacts from increased visitor activities on the Elkhorn Plain could have moderate to major effects to this species by vehicle collisions, trampling of burrows, and general disturbance from visitor activities. There could be some instances where new projects would occur in blunt-nosed leopard lizard habitat, but nearly all the direct impacts would be localized, may be avoidable, and would not affect blunt-nosed leopard lizards at the population level. The indirect effects of greater

recreational activities near upgraded facilities would increase the area of human impacts on blunt-nosed leopard lizard habitat, and the risk from vehicle strikes may threaten long-term population viability.

Travel Management. The impacts to blunt-nosed leopard lizard would be the same as the No Action Alternative.

4.2.5.4 San Joaquin Antelope Squirrel

Impacts to the San Joaquin Antelope Squirrel under the No Action Alternative

Impacts to the San Joaquin Antelope Squirrel from Implementing the Wildlife Program

Wildlife. The current Monument goal to contribute to the recovery of listed species by achieving long-term, viable populations of all extant listed species in the Monument would have major beneficial impacts to the conservation and recovery of the San Joaquin antelope squirrel, which is a California-listed threatened species. Current management is implementing the objectives to manage locations and habitat features of listed species to allow for their continued existence and maintenance of viability, provide for the natural expansion and fluctuations of listed species consistent with species recovery, and reduce human-caused hazards to core species.

Impacts to the San Joaquin Antelope Squirrel from Implementing Other Programs

Vegetation. The current Monument objectives to increase the importance of native species in Monument communities, provide for all transitional states of native communities through the natural range of disturbances (for example, fire, grazing, climatic events), and maintain shrub-scrub communities, would have major beneficial impacts to San Joaquin antelope squirrels across the Monument in the short and long term. It is generally assumed that the improvement and maintenance of plant communities with a high proportion of native plant species would provide high quality habitat for this species. The most important element of these objectives may be providing all transitional states and disturbances across the Monument to create a mosaic of grassland, shrub-scrub lands, grazed and ungrazed areas, burned and unburned areas, and a wide range of habitat opportunities for antelope squirrels. Under this mosaic, the antelope squirrels would occupy plant communities within the range of their habitat needs. This strategy of varied plant communities is expected to maintain San Joaquin antelope squirrel populations across the Monument landscape considering the high amount of climatic variation and vegetation biomass production and decomposition.

It should be noted that, while extensive dense cover and tall structure of nonnative grasses may pose problems for antelope squirrels, nonnative filaree and grasses can be a substantial part of their diet. Management has focused on maintaining suitable open ground cover within whatever mix of natives or nonnatives may occur. Monitoring of San Joaquin antelope squirrel populations and plant community composition and structure would be conducted to inform vegetation/habitat management prescriptions for the benefit of this species.

Restoration activities to reintroduce native plants into previously cultivated farm fields, abandoned roads, or in habitats with a low proportion of native plant species would have minor impacts on San Joaquin antelope squirrels. The use of a tractor-pulled range drill/seeder may run over and collapse burrows. However, monitoring of recent restoration projects has not found burrow collapse to occur if soils are firm and dry. Restoration activities generally occur in the late fall or early winter seasons prior to significant rainfall events when soils are usually quite hard. Where burrows are scattered, they are easily avoided if collapse is observed to occur. Strip seeding, leaving large areas untreated, would be used in more densely populated San Joaquin antelope squirrel habitats if avoidance is warranted. The long-term

improvement in native plant community composition would likely provide moderate beneficial impacts to antelope squirrels with a more diverse array of seeds, but this is presently unknown.

Fire and Fuels Management. In most cases prescribed burns would have minor direct effect on antelope squirrels. Fire would be used to reduce an overabundance of nonnative plant growth in an effort to reduce the negative effects this growth has on listed species such as antelope squirrels. An exception to this is the removal of piles of dead tumbleweeds. Antelope squirrels tend to use tumbleweeds as cover and perches. During a grass fire, antelope squirrels are apt to immediately retreat into a burrow to escape the flames, but fire engulfing a massive pile of tumbleweed may confuse the antelope squirrels causing them to retreat into other tumbleweeds to escape fire rather than immediately retreating into a burrow. Moving piles to displace any wildlife harbored underneath prior to burning would reduce the risk of mortality.

Cultural Resources. There are negligible impacts from current visitation to Painted Rock or other cultural sites. There are three areas near Painted Rock that are open to visitation when visitors are accessing Painted Rock: the Goodwin Education Center, the Ranch pasture, and the Painted Rock pasture. Antelope squirrels have occurred in the immediate vicinity of the Goodwin Education Center and in portions of the Ranch pasture. However, slope and soil type make the area closed off to protect Painted Rock marginal to unsuitable habitat. In all three locations, squirrel populations have fluctuated in the past 15 years from frequently seen to rarely or not seen at all. At present, squirrels have been seen in the area again (BLM staff, personal observation, 2004-2007). There have not been any recent surveys to show current numbers of squirrels.

Several studies have shown that antelope squirrels and other rodents often take advantage of the loose soil in berms along the edges of unimproved roads (Rathbun 1997; USFWS 1998). In all of the above-mentioned access areas, vehicles pose the most threat to antelope squirrels during years when squirrels are abundant. Painted Rock gets most of its visitors in the spring, which coincides with the time of year when juveniles emerge from burrows. Under Alternative 1, Painted Rock is open to unsupervised access 7.5 months of the year. During this time, visitors may drive to and from the Painted Rock parking area. Between 700 and 900 such trips were estimated from traffic counter data during this period (BLM 2002/2003). Increased visitor use could require more road maintenance and mowing along the edge to reduce hazardous fuels. The number of squirrel fatalities caused by vehicles is not known but, given the small amount of habitat in the area, it is unlikely that many would occur. San Joaquin antelope squirrels are small and fast-moving and their diurnal habits make them easier to see than nocturnal animals. Current night visitation to Painted Rock does not impact antelope squirrels because they are diurnal.

Painted Rock is open only to guided tours for the remaining 4.5 months of the year (200 to 300 vehicles estimated to use the road during this period). During this period, juvenile squirrels, as well as adults, are out of their burrows. Given the small number of vehicles allowed, as well as the large amount of roadless area available to squirrels, mortality by vehicle strike would be highly unlikely.

The road through the Painted Rock pasture does not pass through San Joaquin antelope squirrel habitat, and traffic would have no effects to antelope squirrels in this area.

Livestock Grazing. Livestock grazing would have negligible to major positive effects to San Joaquin antelope squirrels, depending on rainfall and vegetation biomass. Livestock grazing can affect San Joaquin antelope squirrels in several ways. Collapsing of burrows can occur but there is no evidence to support that this has a negative effect on antelope squirrel populations. In a study by Langtimm and Rathbun (1995), squirrels were found to use a number of different night burrows and many different burrows during the day, suggesting flexibility to move if a used burrow becomes collapsed. Also, the giant kangaroo rat burrow systems contain numerous burrow openings allowing for other means of escape (USFWS 1998). Shrub communities can be seriously impacted by livestock. Rubbing, scratching, and

trampling can break branches, remove foliage, and sometimes destroy plants completely. Indirectly, if a shrub or group of shrubs is removed from the plant community it can no longer support insects, an important part of the antelope squirrel's diet (Harris and Stearns 1990). Shrub impacts could also reduce cover for squirrels. This would not affect squirrels that occupy areas where shrubs are not the dominant landscape feature, such as in open grassland. Giant kangaroo rats and their burrow systems may be the key component in the squirrels' habitat in these areas suggesting that what is beneficial for one animal also benefits the other. Where grazing reduces dense, herbaceous ground cover, antelope squirrels could be affected in a positive way. Cypher et al. (2003), found a negative relationship between high, dense vegetation and San Joaquin antelope squirrel abundance. Dense nonnative grasses and other annuals could greatly diminish the inability of squirrels to escape their predators.

There is evidence to suggest that populations of small mammals and reptiles throughout the southern San Joaquin Valley were in decline from 1996 to 2001 (Germano et al. 2001). Giant kangaroo rats, San Joaquin antelope squirrels, blunt-nosed leopard lizards, and other lizard species suffered declines within the Monument (Rathbun 1997). Following the drought in the late 1980s, antelope squirrels were seen in many areas within the known range for antelope squirrels on the Carrizo and Elkhorn Plains. Trapping and tagging of antelope squirrels in the same locations over a period of five years (1994 through 1998) detected a steady decline in the number of antelope squirrels captured (Rathbun 1997). When portions of the study area were included in a prescribed burn to eliminate stands of dense nonnative grasses, more animals were captured in the burned areas. However antelope squirrel numbers continued to decline across the entire region where they were once abundant. Other surveys also show the decline in antelope squirrel abundance on the Carrizo Plain (Langtimm and Rathbun; 1995; Rathbun 1997). The actual cause for the declines is not completely understood, though a number of factors suggest that periods of above-average rainfall followed by tall, dense growth of nonnative grasses impeded movement for foraging as well as for escaping from predators (Germano et al. 2001; Cypher et al. 2003). During the same period, giant kangaroo rats also disappeared from the study sites on the Monument, though at a slower rate (Langtimm and Rathbun 1995). In the Lokern Natural Area, studies on the effect of livestock used as a management tool to reduce the dominance of nonnative grasses and to benefit listed species showed positive results. In the absence of tall, dense vegetation, numbers of small mammals and reptiles have increased, including San Joaquin antelope squirrels (Germano et al. 2006). In the *Recovery Plan for Upland Species of the San Joaquin Valley, California,* controlled livestock grazing is treated as a potential conservation effort needed for giant kangaroo rats (USFWS 1998). Close association between giant kangaroo rats and antelope squirrels implies a positive impact to San Joaquin antelope squirrels from reduced vegetation by grazing or other means.

Minerals. Potential impacts to San Joaquin antelope squirrels include direct mortality, loss of burrow systems, loss or alteration of habitat, and harassment. The construction and maintenance of well pads, access roads, pipelines, and other oil field structures may trap or bury antelope squirrels in their burrows. Antelope squirrels can also drown or become entrapped in spilled oil or tarry substances. Antelope squirrels may also be killed by vehicles. Burrows can also be damaged or destroyed by project activities. Some habitat may also be lost or altered.

The construction and operation of the projected oil development activities would result in 30 acres of habitat disturbance in the valley floor portion of the Monument. On the valley floor, the construction of 8 miles of roads, 6 exploration well pads, 2 tank batteries, and 10 development well pads would result in habitat disturbance that would destroy burrows and remove vegetation within the construction footprint. Although BLM has SOPs to use existing roads and disturbed sites if possible, minimize the size of the footprint, and avoid antelope squirrels burrows (and thus San Joaquin antelope squirrels), and minimize take to the greatest extent practicable, the density of antelope squirrels in many areas of the Monument would still result in the loss of some burrows. However, mitigation measures that require the avoidance of take of antelope squirrels from within and directly adjacent to the construction footprint would be

implemented. Exclusion barriers may be constructed to remove and exclude antelope squirrels from the construction area. These measures have been applied in western Kern County as a measure to protect antelope squirrels. Construction activities would result in a loss of animals directly within the footprint with some disruption to animals directly adjacent to the well locations. Animals adjacent to the construction footprint may wander onto the edge of the construction area and may be harmed by subsequent construction, drilling, operations, maintenance, or restoration activities. There may be some disturbance to the adjacent animals during the drilling operations when nighttime activities and lighting occur. Drilling activities typically last up to 20 days per well. Once a well is drilled, maintenance activities would occur on a daily basis. Slow vehicle speed would reduce impacts from vehicle strikes.

The duration of the impacts would depend on whether the wells find economic reserves that will be produced. The impacts would be long-term over the life of the well if it has economic reserves. The impacts would be considered temporary if no economic reserves are found. Restoration would be initiated immediately and the site would likely be inhabited by antelope squirrels within several months.

Vehicle travel to the well locations within the Monument (on county roads, on existing BLM roads, and on newly constructed roads) may result in some vehicle strikes and mortality. BLM requires project vehicle speeds below 20 miles per hour off of county roads to minimize the risk of vehicle strikes of listed species.

Oil development activities on 30 acres of the valley floor would have minor impacts to the local and Monument-wide populations of San Joaquin antelope squirrels considering the extensive distributions (over approximately 116,000 acres) and their relatively common abundance within the central and southern portions of the Carrizo Plain. The disturbance of 6.5 acres in the Russell Ranch oilfield would not impact San Joaquin antelope squirrels since this activity is outside of their occupied range.

Geophysical activities would have a transient impact of 115 acres from cross-country and shot hole drilling. Oil exploration using shot hole seismic methods and implementing 50-foot buffer avoidance requirements would have minor impacts on San Joaquin antelope squirrels at the site-specific and population levels. The extent of the impacts would depend on the project design, primarily the number of shot holes and number, length, and distance between seismic source lines. Recent methods using small tractor-mounted drill rigs leave little surface impact as they travel between source points and at the drilling locations. The small tractor vehicles are lightweight and maneuverable and usually able to successfully avoid burrows and cause minimal burrow collapse. The amount of drill tailings and disturbance is typically less than 10 feet in diameter. The duration of drilling at any one point is typically less than 20 minutes. While the detonation of the charges is somewhat perceptible to humans within 200 feet of a shot hole, the effects of the noise on antelope squirrel hearing is unknown. However, biologists accompanying seismic crews have not reported animals exiting burrows after detonation. Specific monitoring of San Joaquin antelope squirrel activity response to shot hole drilling and detonations has not been conducted to date. Monitoring studies on geophysical projects in western Kern County surveyed with vibroseis and shot hole source methods reported a decline in the number of burrows within vibroseis corridors 90 days and 1 year following surveys compared to adjacent sample areas. However, there was a substantial increase in new burrows along the routes when they were resampled one year later (Tabor and Thomas 2002). Following vibroseis activities, small mammal burrows are commonly seen within disturbed soils from vehicle travel and vibroseis pad placement (digging into the side of the depressions). However, vibroseis source point generation would only occur on existing roads in the Monument. Although the impacts of shot hole source point generation are expected to be substantially less than vibroseis, focused studies on shot hole impacts on San Joaquin antelope squirrels have not been conducted to date.

Travel Management. Though some antelope squirrels prefer to inhabit burrows along the edges of roads, it is not known how many fatalities occur due to vehicle strikes but it's believed to be minimal. Though numbers of squirrels utilizing road berms is not constant, surveys conducted in 1994 over a 3-month period counted an average of 65 squirrels per transect ranging from 0.6 to 1.1 miles long. The animals were observed crossing roads, using burrows along the edge of roads, or in some way using the road's edge.

Many of the BLM roads on the valley floor and foothill regions of the Monument cross antelope squirrel habitat. Soda Lake Road and Elkhorn Road are the major roads through the Monument and contain the longest distance through antelope squirrel habitat. Traffic on these county roads constitutes the greatest threat to squirrels. However, these roads are not subject to BLM authorizations and are not affected by the BLM access designations.

If traffic numbers remain the same, impacts to squirrels would not change from current impacts. If traffic numbers increase, there may be minor to moderate impacts to antelope squirrels, but the extent is not known.

Impacts to the San Joaquin Antelope Squirrel Common to All Action Alternatives

Impacts to the San Joaquin Antelope Squirrel from Implementing the Wildlife Program

Wildlife. The wildlife management goals to manage the CPNM in a manner that emphasizes its critical importance for threatened and endangered species conservation and recovery, rare natural communities, and conservation of the regional landscape would have major beneficial impacts to the conservation and recovery of the San Joaquin antelope squirrel. The Carrizo Plain is one of the two largest populations of antelope squirrels remaining within their range and appropriate habitat management is a key recovery action (USFWS 1998).

There would be major beneficial impacts to San Joaquin antelope squirrel by implementing the specific objectives to:

- identify core geographic areas for endangered species population management and recovery;
- give endangered species habitat primary management priority in core areas;
- maintain and enhance viable populations within core areas; and
- allow the populations of these target species to naturally fluctuate up and down, in terms of number and distribution, but initiate management actions when populations approach target minimums (population threshold values).

The designation and management of the three listed species core areas would maintain San Joaquin antelope squirrel populations within the Monument in the long term. However, our ability to achieve effective vegetation management varies between Alternative 1 and Alternatives 2 and 3. In the absence of prescribed fire and livestock grazing as vegetation management tools in Alternative 1, it is unknown whether effective habitat management can be implemented to provide suitable habitat for San Joaquin antelope squirrel when nonnative grasses and herbaceous vegetation reduce habitat quality.

The management of the core areas applies a strategy of effective habitat management to improve habitat conditions when necessary. In most years, the amount of grass and herbaceous vegetation is in balance between providing seeds and green forage and a structure of low, patchy vegetation and bare ground favored by antelope squirrels. When rainfall is below or near the annual average, the amount of native annuals and nonnative grasses and herbs is fairly low and provides these conditions. However, when

rainfall exceeds the average for several successive years or when the annual rainfall is far above the average, there is exceptionally high production of the annual native and nonnative vegetation. While most of the native annual flora in the Monument is small herbs and wispy-like grasses, the nonnative grasses (primarily red brome, ripgut brome, soft chess, foxtail barley, and wild oats) are more dense and persistent. The nonnative filaree can also cover a high percentage of the ground, and can be quite dense in the winter and spring seasons. However, filaree dries during the spring and shatters quite easily as summer progresses. Management of the core areas would trigger vegetation treatments by applying livestock grazing or prescribed fire to reduce the amount of persistent nonnative grasses. Since giant kangaroo rats can generally affect the amount of herbaceous vegetation when they are abundant, the strategy includes a provision to apply vegetation treatment when the amount of annual vegetation (primarily nonnative grasses) exceeds 1,600 pounds per acre and when the giant kangaroo rat population is at exceptionally low levels of fewer than 20 animals per hectare (8 animals per acre). Since San Joaquin antelope squirrels are associated with giant kangaroo rats (Rathbun 1998; USFWS 1998) and kangaroo rats in general (Harris and Stearns 1990), this strategy implies that managing the core areas for the habitat requirements of giant kangaroo rats would also meet the habitat requirements of San Joaquin antelope squirrels. Previous studies conducted on antelope squirrels in the CPNM (Langtimm and Rathbun 1995; Rathbun 1998) and the Lokern area in western Kern County (Germano 2005), indicate antelope squirrels also decline when herbaceous vegetation structure becomes thick and dense (Cypher et al. 2003; Germano et al. 2002).

Studies on San Joaquin antelope squirrels and giant kangaroo rats in the Monument (Rathbun 1997; Germano and Saslaw 1996) and in the Lokern area in western Kern County (Germano 2005; Germano and Saslaw 2008) have documented similar population declines and increases from 1995 through 2005. Vegetation management prescriptions are expected to be similar for the two species. It is estimated that exceptionally high herbaceous vegetation production may occur about 20 percent of the time (2 years in 10). Based on past rainfall recorded at Bakersfield from 1889 to 2008, it is estimated that high amounts of nonnative persistent grass cover may have occurred in only 6 periods (totaling 25 years) in 118 years. It is during these periods of persistent nonnative grass cover when vegetation management could be applied through prescribed fire or livestock grazing to improve habitat conditions that may threaten San Joaquin antelope squirrel populations. It is unknown if low populations of antelope squirrels always coincide with periods of high grass production, but based on the last such period when populations were monitored and found to be mostly absent in the CPMN, it is prudent to target the nonnative grasses under these conditions.

The core areas were selected because they had consistently high populations in most years, appeared to have good long-term habitat quality, and were of a size that could be affected by fire or livestock grazing. The strategy is to have these areas as “safety nets” where there is a high likelihood that the vegetation can be reduced by fire or grazing when needed.

San Joaquin antelope squirrel populations would likely fluctuate in a manner observed in monitoring studies conducted on the CPNM and in the Lokern area. In most years, San Joaquin antelope squirrel populations would be fairly abundant across the landscape on the Elkhorn Plain and in the central portion of the Carrizo Plain, with or without livestock grazing or prescribed fires to manage vegetation. Giant kangaroo rats generally maintain adequate vegetation structure that would support antelope squirrel populations. It is expected that during periods of prolonged drought, populations would decline to low numbers with scattered individuals or small colonies that would serve as “founders” to repopulate the landscape when more favorable conditions return. In periods of extremely high precipitation and high biomass of persistent nonnative vegetation, the application of vegetation management (at 1,600 pounds/acre) to reduce the amount of residual dry matter to around 500 to 1,000 pounds per acre in the core areas would create suitable habitat conditions to curtail widespread declines where the treatments occur. This management approach would likely avoid landscape-scale population and distribution

declines similar to those observed during the 1994 to 2000 period. This is expected to reduce the risk of localized and/or more extensive short-term extirpations of giant kangaroo rats across the Monument during unfavorable wet-grassy periods. Thus, San Joaquin antelope squirrel populations would be maintained, at least in the core areas, in all but prolonged periods of drought. The persistence of these animals in the core areas would help repopulate antelope squirrels into the adjacent non-core areas as well.

The wildlife management objectives that enhance or maintain the variety of animals within the Monument are likely to have minor to moderate benefit to San Joaquin antelope squirrels throughout the life of the plan. For example, the management of low habitat structure for mountain plovers in upland areas outside of the core areas will provide suitable habitat for antelope squirrels. Fencing and signing projects would avoid burrows and minimize take of antelope squirrels and thus would have negligible effects.

Research and monitoring activities that address habitat quality and ecology of San Joaquin antelope squirrels and associated listed and non-listed species would have a moderate to major long-term benefit to this species. Any take or project effects would be authorized under state and federal permitting requirements and would be evaluated and mitigated in project-specific environmental analyses.

Management for a diversity of wildlife habitats would have moderate to major benefit to San Joaquin antelope squirrels in those areas where there is an objective to create a low structure of vegetation. Since the overall objective is to create a diversity of habitat structure within the Monument, a large portion of the Monument would be managed to benefit this species. The creation and maintenance of a mosaic of grassland and shrubland habitats would likely maintain San Joaquin antelope squirrels across the Monument landscape. Population monitoring and AM would indicate habitat management prescriptions to help meet population and distribution objectives.

Impacts to the San Joaquin Antelope Squirrel from Implementing Other Programs

Fire and Fuels Management. Fire suppression activities may disturb habitat along fire control lines, at staging areas, in retardant drops, and in cross-country travel. Burrows may be crushed, animals entombed, and vehicle strikes may occur. In grassland habitats the suppression activities are usually kept to the least amount of disturbance needed to control the fire with mobile attack, retardant, or a single dozer line. These impacts are temporary in duration and are usually revegetated naturally by annual plants within one to three years. Antelope squirrels often reoccupy the disturbed sites immediately following the suppression activities. Restoration of firelines may occur with native plant seedings, which would have negligible impacts similar to those described for restoration activities. Fire control impacts a very small amount of habitat in the landscape and would have negligible effects at the population level. Fire suppression often benefits San Joaquin antelope squirrels and the associated San Joaquin Valley listed animals by minimizing the loss of saltbush plants which are intolerant of fire (Germano et al 2001). Scattered saltbush or linear stands along drainages are important habitat features for antelope squirrels and would be given high priority for protection during fire suppression activities.

Cultural Resources. Habitat disturbance associated with protection, movement, or removal of historic farming equipment or buildings and construction of barriers, boardwalks, or interpretive panels would result in minimal impacts to San Joaquin antelope squirrels inhabiting the sites. Activities may cause the collapse and entombment of animals and vehicles strikes may occur. Cultural resource excavations and site facilities may remove habitat for a short period of time. However, implementation of SOP avoidance criteria would be implemented to have negligible project impacts.

Livestock Grazing. The impacts would be the same as described for giant kangaroo rat.

Recreation. The placement of informational signs and the development of potable water at dispersed camping sites and at existing campgrounds would have negligible impacts on San Joaquin antelope squirrels. There could be some instances where these projects would occur in antelope squirrel habitat, but nearly all the direct impacts would be localized, may be avoidable, and would not affect San Joaquin antelope squirrels at the population level. The indirect effects of greater recreational activities near upgraded water sources would have a wider area of human impacts on antelope squirrel habitat, but this is expected to be at a very small scale and would not affect populations of this species.

The expansion of the visitor center would have localized impacts on individual animals inhabiting the site. However, mitigation measures would be implemented to minimize take and efforts would be made to move these animals into adjacent habitat around the visitor center, if warranted. There would be benefits to listed species through improved visitor and environmental education opportunities at the center, which may help implement conservation and recovery of the CPNM species.

Minerals. The impacts would be the same as described in the No Action Alternative.

Impacts to the San Joaquin Antelope Squirrel under Alternative 1

Impacts to the San Joaquin Antelope Squirrel from Implementing the Wildlife Program

Wildlife. Management of the non-core areas to maintain populations of giant kangaroo rats would have moderate to major beneficial impacts to San Joaquin antelope squirrels. However, the elimination of livestock grazing and prescribed fire as vegetation management tools would hinder effective habitat management in these areas. As described in the Fire/Fuels Management and Livestock Grazing sections, there are periods of rainfall and vegetation production and cover that require the use of livestock grazing or prescribed fire to maintain suitable habitat conditions for this species.

The management of the Carrizo Plain North and Caliente Foothills North subregions for the benefit of pronghorn and tule elk would result in habitat structure not generally favorable to antelope squirrels. Pronghorn fawning habitat is best when vegetation height is between 15 and 25 inches tall over up to 80 percent of the fawning area. This structure is too high and thick for suitable San Joaquin antelope squirrel habitat. While antelope squirrels would be scattered in low numbers in the Carrizo Plain North and Caliente Foothill North subregions, these areas would be considered marginal habitat and San Joaquin antelope squirrels populations and distributions would likely be at low numbers when tall/abundant vegetation is present. The removal of fences would remove artificial perches used by raptors to hunt these animals. The overall impacts of managing pronghorn and tule elk habitat in these two subregions would have negligible to minor detrimental impacts to San Joaquin antelope squirrels since these areas are on the edge of their current occupied area. However, this is similar to the existing situation, and overall antelope squirrel populations within the Monument would be maintained in the core and non-core areas to the south.

Impacts to the San Joaquin Antelope Squirrel from Implementing Other Programs

Fire and Fuels Management. Fire suppression activities (dozer line, handline, mobile attack, fire retardant, off-road travel) could disturb habitat, crush vegetation, collapse burrows, entomb animals, or result in vehicle strikes. The activities would be kept to a minimum and the effects to San Joaquin antelope squirrels would be negligible.

The elimination of prescribed fire to manage the nonnative grass and herbaceous vegetation within the San Joaquin antelope squirrel core and likely non-core treatment areas would have major detrimental impacts to this species. While there is no need to apply prescribed fire in most years when rainfall is

below average or when annual vegetation is not tall and thick, the use of prescribed fire is considered a valuable management tool when thick grassy conditions occur. It is estimated that exceptionally high herbaceous vegetation production may occur about 20 percent of the time (2 years in 10). Based on past rainfall recorded at Bakersfield from 1889 to 2008, it is estimated that high amounts of nonnative persistent grass cover may have occurred in only 6 periods (totaling 25 years) in 118 years. It is during these periods of persistent nonnative grass cover when vegetation management could be applied through prescribed fire to improve habitat conditions that may threaten San Joaquin antelope squirrel populations.

Mowing vegetation may cause burrow collapse, entombment, and vehicle strikes. Since these activities usually occur when soils are somewhat dry and firm, collapse would not be widespread. The 25 acres to be treated is a very small portion of the landscape and thus the effects to San Joaquin antelope squirrel populations would be negligible.

Pile burns may disturb habitat during the piling process and the area under the piles would receive intensive heat that would likely kill animals in the direct heat of the burn. However, burrows and habitat features are avoided and previously disturbed sites are used to the maximum extent practicable. Antelope squirrels are active during the day and would likely move away from the immediate project area unless during the early spring when young animals have emerged from breeding burrows and remain in that particular site. The timing of project activities and avoidance measures (SOPs) would mitigate these impacts. In general, the impact to a small amount of acreage would have negligible effects on giant kangaroo rat populations.

Livestock Grazing. The elimination of livestock grazing in the Monument would result in higher amounts of herbaceous vegetation across the landscape in wet years and as residual dry matter accumulates through time. In areas with high giant kangaroo rat abundance, the accumulation would be much less or would not occur. In exceptionally dry rainfall years or in a series of below-average rainfall years, livestock grazing would not typically occur or would not be a factor in maintaining favorable habitat conditions. Giant kangaroo rats appear to be able to successfully manipulate herbaceous vegetation on their precincts in most years to help maintain habitat for San Joaquin antelope squirrels. The elimination of livestock grazing would become a factor in San Joaquin antelope squirrel habitat suitability in the exceptionally wet years when herbaceous plant cover would produce less-than-optimum, or unfavorable, habitat conditions. The drastic giant kangaroo rat and San Joaquin antelope squirrel population declines and contracted distributions experienced from 1994 to 1999 occurred during a period of above-average rainfall and exceptionally high herbaceous plant production (Christian et al., in prep.; Rathbun 1997). The amount of excessive herbaceous plant cover is likely a factor in poor habitat conditions and low populations (Single et al. 1996; Germano et al. 2001). Elimination of livestock grazing would not allow Monument managers to apply a common management tool or prescription for the benefit of these species. In the absence of livestock grazing, some amount of active habitat management to control a thick ground cover of nonnative grasses is necessary in high rainfall years to maintain suitable habitat for kangaroo rats (Germano et al. 2001). It is unknown whether mechanical control methods (mowing) would be practical and cost effective in maintaining the core areas as suitable habitat for kangaroo rats. Past livestock grazing use in the Monument has demonstrated that prescribed livestock grazing can be applied at a scale large enough to reduce ground cover and biomass. Elimination of this tool, applied in a prescribed manner for the benefit of giant kangaroo rats and San Joaquin antelope squirrels, could impose risks to sustaining these populations through prolonged periods of extensive rainfall and high grass production. The impact of this alternative would be negligible to minor in most years, but could be moderate to major in periods of persistent high biomass structure. The elimination of livestock grazing on the southern alluvial fans and flat-bottomed drainages of the Caliente Range on the northern fringe of the Cuyama Valley would be the same as described for the giant kangaroo rat.

Recreation. The Primitive recreation zones to be managed as having wilderness characteristics overlap with the core area for giant kangaroo rats in the West Well, Silver Gate, East Painted Rock, East Cochora, West Cochora, South Cousins, Kinney-Hahl, and Van Matre pastures. If mowing of vegetation is required to implement core area habitat management actions, this would not be consistent with the wilderness objectives.

Travel Management. The closure and limited designation of approximately 30 miles of roads in San Joaquin antelope squirrel habitat in the Monument would reduce the risk of vehicle collisions and inadvertent burrow collapse on road edges. San Joaquin antelope squirrels are active during daylight hours when visitor use and vehicle travel is highest. The restricted vehicle access would have a minor positive effect, reducing the risk of vehicle strikes in the Monument.

Impacts to the San Joaquin Antelope Squirrel under Alternative 2

Impacts to the San Joaquin Antelope Squirrel from Implementing the Wildlife Program

Wildlife. Management of the non-core areas to maintain populations of giant kangaroo rats would have moderate to major beneficial impacts to San Joaquin antelope squirrels. The application of livestock grazing and prescribed fire as vegetation management tools would provide options to apply effective habitat management in these areas. As described in the Fire/Fuels Management and Livestock Grazing sections, there are periods of rainfall and vegetation production and cover that require the use of livestock grazing or prescribed fire to maintain suitable habitat conditions for this species.

The management of the Carrizo Plain North and Caliente Foothills North subregions for the benefit of pronghorn and tule elk would be the same as described in Alternative 1.

Impacts to the San Joaquin Antelope Squirrel from Implementing Other Programs

Vegetation. Restoration activities to reintroduce native plants into previously cultivated farm fields or in habitats with a low proportion of native plant species would have minor to moderate beneficial impacts on San Joaquin antelope squirrels. The use of a tractor-pulled range drill/seeder may run over and collapse giant kangaroo rat burrows. However, monitoring of recent restoration projects has not found burrow collapse to occur if soils are firm and dry. Restoration activities generally occur in the late fall or early winter seasons prior to significant rainfall events when soils are usually quite hard. Where burrows are scattered, they are easily avoided if collapse is observed to occur. Strip seeding, leaving large areas untreated, would be used in more densely populated giant kangaroo rat, blunt-nosed leopard lizard, San Joaquin antelope squirrel, or other special status animal species habitats if avoidance is warranted. The long-term improvement in native plant community composition would likely benefit San Joaquin antelope squirrels with a more diverse array of cover as well as plant, insect, and seed foods.

Fire and Fuels Management. Fire suppression activities (dozer line, handline, mobile attack, fire retardant, off-road travel) could disturb habitat, crush vegetation, collapse burrows, entomb animals, or result in vehicle strikes. The activities would be kept to a minimum and the effects to San Joaquin antelope squirrels would be negligible.

Mowing vegetation may cause burrow collapse, entombment, and vehicle strikes. Since these activities usually occur when soils are somewhat dry and firm, collapse would not be widespread. The 350 acres to be mowed is a very small portion of the landscape and thus the effects to San Joaquin antelope squirrel populations would be negligible. Mowing would reduce the thick cover along travel routes, especially along Soda Lake Road, allowing better visibility for animals to avoid vehicles and for motorists to see antelope squirrels and avoid striking them.

The effects from pile burns would be the same as described in Alternative 1.

The 1,000 acres of prescribed burns and 5 miles of dozer line would have impacts similar to those described for wildfire (see Common to All Action Alternatives), but the damage to saltbush plants may be avoided by placement of fire control lines and by excluding saltbush from within the burn area. Prescribed fire has been observed to maintain a more open habitat structure favorable to San Joaquin antelope squirrels. The burn effects usually last between 3 to 5 years, depending on subsequent annual rainfall. Direct mortality from fire could occur, but such direct effects have not been studied. While there could be a loss of scattered saltbush shrubs or stringers along drainages in some burn areas, shrub stands would be protected with firelines or would be avoided in burn design. Prescribed fire would have moderate to major beneficial impacts to San Joaquin antelope squirrels.

Livestock Grazing. Under Alternative 2, livestock grazing may be occasionally applied in the core areas and adjacent non-core areas to maintain habitat conditions for San Joaquin antelope squirrels so that they would not disappear from the Monument. Based on objectives and management prescriptions described in the Conservation Target Table, vegetation management may be applied when there are low numbers of giant kangaroo rats and biomass is in excess of 1,600 pounds per acre. It is estimated that excessive amounts of standing vegetation biomass may occur in high rainfall periods on average about two years in ten. During these conditions, livestock grazing may be applied to reduce high amounts of standing biomass to improve habitat conditions for antelope squirrels. When such conditions occur, approximately 58,000 acres would be potentially treated in pastures that contain the core areas. If additional treatment is needed, it would most likely be applied in the adjacent non-core areas identified in Map 4-1. Under this scenario, approximately 29,000 acres may be treated with livestock grazing (in addition to the core areas) in pastures that contain the adjacent non-core areas. However, the non-core areas that may be treated could be different than those identified in Map 4-1 if habitat conditions, antelope squirrel distributions, and management prescriptions change over time.

The impacts of livestock grazing in the vegetation management areas under this alternative would be the same as those described in the No Action Alternative. Application of the Conservation Target Table would refine management prescriptions to maintain suitable antelope squirrel habitat and viable populations. Thus, livestock grazing in the vegetation management areas would have moderate to major beneficial impacts to maintain antelope squirrel populations on the Monument.

Livestock grazing in the Section 15 Recruit, South Anderson, South Selby, and Sulphur Canyon pastures under this alternative would likely occur in five of ten years. The impacts would be the same as described in the No Action Alternative with moderate to major beneficial impacts to maintaining San Joaquin antelope squirrels in these areas in the occasional wet years with high vegetation biomass. There would be negligible to moderate beneficial impacts when livestock grazing occurs in years of less than high vegetation biomass.

A more focused giant kangaroo rat study was initiated in 2006 by the managing partners and the University of California, Berkeley, to evaluate livestock grazing between grazed and ungrazed plots in the central Carrizo Plain core area. This study is researching the interactions of cattle grazing and giant kangaroo rat grazing on vegetation composition and structure and on giant kangaroo rat populations in paired grazed and ungrazed (cattle excluded) plots. San Joaquin antelope squirrels are also being studied to determine the associated habitat and grazing effects. This information will be incorporated into future management prescriptions designed to maintain giant kangaroo rat and San Joaquin antelope squirrel populations through habitat management practices.

Travel Management. The closure and limited designation of approximately 30 miles of roads in San Joaquin antelope squirrel habitat in the Monument would have the same impacts described in Alternative 1.

Impacts to the San Joaquin Antelope Squirrel under Alternative 3

Impacts to the San Joaquin Antelope Squirrel from Implementing the Wildlife Program

Wildlife. The impacts would be the same as described for Alternative 2.

Impacts to the San Joaquin Antelope Squirrel from Implementing Other Programs

Fire and Fuels Management. The impacts from prescribed fire would be similar to those described in Alternative 2, but prescribed fire may be used in a larger area of suitable habitat if needed to maintain populations in areas of suitable habitat (Map 4-1). Vegetation management may be applied to approximately 29,000 acres of core areas and 67,000 acres of suitable San Joaquin antelope squirrel and giant kangaroo rat habitat outside of the core areas on the Carrizo Plain, Elkhorn Plain, and alluvial plains of the Cuyama Valley.

Livestock Grazing. The impacts from livestock grazing in the vegetation management areas would be similar to those described in Alternative 2, but prescribed grazing may be used in a larger area of suitable habitat if needed to maintain populations in areas of suitable habitat (Map 4-1). Vegetation management may be applied to approximately 115,000 acres of suitable habitat (57,000 acres of pastures containing core areas + 57,000 acres of suitable antelope squirrel and giant kangaroo rat habitat on the Carrizo Plain, Elkhorn Plain, and alluvial plains of the Cuyama valley outside of the core areas). Livestock grazing in the vegetation management area as prescribed in the Conservation Target Table would have moderate to major beneficial impacts on maintaining San Joaquin antelope squirrel populations on the Monument.

Livestock grazing in the Section 15 Recruit and South Anderson pastures of the North Temblor allotment, the South Selby pasture of the Selby allotment , and Sulphur Canyon allotment under this alternative would be the same as described in the No Action Alternative: there may be moderate to major beneficial impacts to maintaining San Joaquin antelope squirrels in these areas in the occasional wet years with high vegetation biomass, There would be negligible to moderate beneficial impacts when livestock grazing occurs in years of less than high vegetation biomass.

Recreation. Under Alternative 3, there would be no acres of San Joaquin antelope squirrel habitat in the Primitive recreation zone and no impacts to this species.

Dispersed vehicle camping in the Backcountry zone in San Joaquin antelope squirrel habitat could be eliminated if problems are documented during monitoring. Site-specific closures could be made if impacts are unacceptable. Vehicle camping activities would have localized, but negligible effects on San Joaquin antelope squirrels. There is a small chance of inadvertent damage to habitat features (burrows) from vehicle-related camping activities.

The development of water, signs, and overlooks would have negligible impacts on San Joaquin antelope squirrel. There could be some instances where these projects would occur in San Joaquin antelope squirrel habitat, but nearly all the direct impacts would be localized, may be avoidable, and would not affect antelope squirrels at the population level. The indirect effects of greater recreational activities near upgraded facilities would have a wider area of human impacts on San Joaquin antelope squirrel habitat, but this is expected to be at a very small scale and would not affect populations of this species.

The development of recreational activities within the Frontcountry zone would be expanded through the Elkhorn Plain and additional impacts to San Joaquin antelope squirrels would be expected. New facilities and visitor services would likely result in more vehicle use during daytime hours. The possibility of more direct and indirect impacts from increased visitor activities on the Elkhorn Plain could have minor effects to this species by vehicle collisions, trampling of burrows, and general disturbance from visitor activities. There could be some instances where new projects would occur in San Joaquin antelope squirrel habitat, but nearly all the direct impacts would be localized, may be avoidable, and would not affect San Joaquin antelope squirrels at the population level. The indirect effects of greater recreational activities near upgraded facilities would increase the area of human impacts on San Joaquin antelope squirrel habitat, but this is still expected to be at a very small scale and would not affect populations of this species.

Travel Management. The impacts to San Joaquin antelope squirrel would be the same as the No Action Alternative.

4.2.5.5 Pallid Bat, Western Mastiff Bat, and Other Bats

Impacts to Bats under the No Action Alternative

Impacts from Implementing the Wildlife Program

Wildlife. Under the No Action Alternative, actions will be taken to maintain viable populations of bats. Occasional surveys to monitor populations and to assess habitat quality and threats may be completed. Support for research and education will be provided. Actions may be taken to protect natural roosts and important human-made roosts. Structures may be retained if they are important bat roosts. Open water (troughs and ponds) near known roosts would be made safe and accessible to bats. This would have a moderate to major positive impacts on bat populations.

Impacts to Bats from Implementing Other Programs

Under the No Action Alternative, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will have a negligible effect on bat populations: Vegetation, Fire and Fuels Management, Air Quality, Soils, Water Resources, Geology and Paleontology, Cultural Resources, Travel Management, Minerals, and Lands and Realty.

Cultural Resources. Bats roost at Painted Rock and other rocks with cultural features, but there have been no reported impacts to bats or bat roosts from Painted Rock monitoring, research, or restoration. Under the No Action Alternative, cultural resource monitoring, research, or restoration at rock art sites will have a minor negative effect on bat populations.

Bats make use of many ranching and farming structures. Removal of these structures will eliminate existing or potential bat roosts. Allowance will be made to retain important bat roosts as long as the structure remains useful. Restoration of structures may result in the loss of bat roosts. After a structure is restored, bats that may have roosted in the structure would be discouraged from using the restored structure. Under the No Action Alternative, Cultural Resources actions may have a minor to moderate negative effect on bat populations.

Visual Resources and WSA/Other Lands with Wilderness Characteristics. Under the No Action Alternative, the only structures that fall within VRM Class I, or are lands having wilderness characteristics, are located within the Caliente Mountain WSA. Management for VRM Class I and wilderness characteristics may require these structures to be removed. If such structures are used by bats, roosting habitat will be lost. The loss of these structures may only have a minor effect since they are

located in the Caliente Range and in close proximity to rock faces that may be suitable as natural roost sites.

The remaining structures fall within VRM Class II and outside lands with wilderness characteristics. Structures within VRM Class II may be allowed to remain, but may need to be modified so as not to attract the attention of the casual user. Some of these structures may be retained because of their value to other programs. Should the only value be potential bat roosting habitat, it is likely that only structures known to be important bat roosts will be retained. Other potential roosts or less important roosts will probably be removed. The loss of these structures may result in minor to moderate negative impacts to bat populations.

Livestock Grazing. Bats require roosting habitat and foraging habitat. Open water sources are also important as they frequently concentrate insects and provide fresh water for bats. Under the No Action Alternative, grazing is not expected to affect bat roosting habitat on the CPNM. The pallid bat feeds predominately on ground-dwelling arthropods. Grazing may promote foraging conditions preferred by pallid bats by reducing the height and density of vegetation. Water troughs, as a byproduct of grazing, provide open water where bats can drink and forage. It is unknown how grazing affects the availability of nocturnal invertebrates. The continuation of grazing will have a minor positive effect on bat populations.

Recreation. Potential impacts to bat populations from the recreation program include vandalism of roosts, disturbance at roosts, and purposeful displacement. Vandalism and disturbance at natural roosts has not been reported within the Monument, although it is a common problem in other locations. Vandalism of structures used by roosting bats has occurred at the KCL, Van Matre, and Traver Ranches. Removal of wood from the KCL barn eventually contributed to the collapse of the building, rendering it unsuitable for continued bat use. Shooting of the metal shed at Van Matre has created large holes in the walls that modify airflow patterns and weaken the structure. Despite the placement of metal grates and gates at openings at the Traver Ranch, the structure has been repeatedly vandalized. Vandalism contributes to an attitude that such structures are “attractive nuisances” that should be removed from the landscape. Structures that are vandalized are viewed as unattractive, a bother to secure, and not worth retaining. The vandalism probably results from the repeated actions of a few individuals. Continued vandalism, due to public use of the Monument, could result in a moderate to major negative change in bat populations.

Disturbance at roosts can occur as a result of vandalism or authorized incompatible human activity in the vicinity of roosts. For example, at the KCL Ranch, placement of new campsites in the vicinity of the shed used by roosting bats may introduce disturbances. Such disturbance could include light from campsites, smoke from campfires, pets such as dogs, and sounds from campers that makes the KCL shed less suitable for night roosting bats. Although the KCL shed has been secured against human entrance, curious campers may still attempt to enter the closed areas. Human presence could result in bats choosing not to use a site on a given night. Repeated discouragement is likely to result in the abandonment of the roost site. Disturbance at roosts, due to public use of the Monument, could result in a moderate to major negative change in bat populations.

Bats sometimes choose to night roost within porches and entryways of recreational facilities. Although the animal is not present during daylight hours, the small amount of guano deposited during the night has been viewed as a nuisance to some. In some instances, the situation is used as an educational opportunity, which results in a minor positive impact on bat populations. In other instances, attempts have been made to preclude use by bats, which results in a minor negative impact on bat populations.

The opportunity to provide environmental education on bats is a positive aspect of the recreation program. The Traver Ranch kiosk provides information on Monument bats and bat ecology. Periodically, bats are

featured in Monument newsletters. Exposing the public to environmental education on bats has a minor to moderate positive effect.

Impacts to Bats Common to All Action Alternatives

Impacts to Bats from Implementing the Wildlife Program

Wildlife. Under All Action Alternatives, actions will be taken to maintain or increase viable populations of bats. Bat roosts will be periodically monitored to determine continued use. Natural bat roosts will be protected, actions may be taken to prolong the usefulness of important human-made roosts, and additional roosts may be constructed. Important bat roosts may be protected with grates or other means to limit human disturbance. Action will be taken to ensure accessible water is available near known and suspected bat roosts. This would have a moderate to major positive impact on bat populations.

Impacts to Bats from Implementing Other Programs

Under All Action Alternatives, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will have a negligible effect on bat populations: Vegetation, Fire and Fuels Management, Air Quality, Soils, Water Resources, Paleontology/Geology, Cultural Resources, Travel Management, Minerals, and Lands and Realty.

Impacts to Bats under Alternative 1

Impacts to Bats from Implementing the Wildlife Program

See impacts to bats common to all action alternatives.

Impacts to Bats from Implementing Other Programs

Cultural Resources. Under Alternative 1, Painted Rock and other rocks used by bats are likely to receive some visitation associated with cultural resource monitoring, research, or rock art restoration. Such use will have a minor negative effect on bat populations.

Under Alternative 1, more structures will be razed and slightly fewer may be restored than under the No Action Alternative, resulting in about the same number of structures being unavailable to bats as potential roosts. Non-eligible structures, such as the Traver Ranch and KCL Shed, which are important roosts for bats, may not be retained. The loss of potential roosts and potential lack of retention of non-eligible structures, which are important bat roosts, may have a moderate negative effect on bat populations.

Visual Resources and WSA/Other Lands with Wilderness Characteristics. Under the Alternative 1, structures that fall within VRM Class I or lands having wilderness characteristics are located within the Caliente Mountain WSA or at the Cochora Ranch. Management for VRM Class I and wilderness characteristics may require these structures to be removed. The loss of the structures within the Caliente Mountain WSA may only have a minor negative effect since they are located in the Caliente Range and in close proximity to rock faces that may be suitable as natural roost sites. The loss of the structures at Cochora Ranch may have a moderate negative impact as bats have been documented from the general area and the nearby Temblor Range does not contain many rocky features.

The remaining structures fall within VRM Class II or III and outside lands having wilderness characteristics. Impacts to bat populations would be the same as under the No Action Alternative and have minor to moderate negative impacts to bat populations.

Livestock Grazing. Under Alternative 1, grazing would be discontinued on the CPNM. With cessation of a grazing program, water troughs may be eliminated or reduced in number. The reduction in water may reduce the quality of foraging habitat for bats on the CPNM. Bats may need to fly further from suitable roosts to forage or access open water. Except for water troughs, open water areas accessible to bats are scarce on the CPNM. The lack of grazing may also allow vegetation to grow taller or denser in some years. Such areas might become unsuitable as foraging habitat for the pallid bat. The discontinuation of grazing, if it leads to a reduction in water troughs, will have a moderate negative effect on bat populations.

Recreation. The effects to bat populations from implementation of recreation management zones (RMZs) will be the same as discussed under Visual Resources and Wilderness and may result in a minor to moderate impact on bat populations.

Under Alternative 1, potential impacts to bats from recreation activities would be the same as the No Action Alternative. The lack of dispersed camping may focus more use at KCL Ranch.

Impacts to Bats under Alternative 2

Impacts to Bats from Implementing the Wildlife Program

See impacts to bats common to all action alternatives.

Impacts to Bats from Implementing Other Programs

Cultural Resources. Under Alternative 2, Painted Rock and other rocks used by bats are likely to receive some visitation associated with cultural resource monitoring, research, or rock art restoration. Such use will have a minor negative effect on bat populations.

Under Alternative 2, fewer structures will be razed but more may be restored than under the No Action Alternative and Alternative 1, resulting in more structures being unavailable to bats as potential roosts. This may be offset by the retention of non-eligible structures, such as the Traver Ranch and KCL Shed, which are important roosts for bats. Under Alternative 2, Cultural Resources actions may have a minor to moderate negative effect on bat populations.

Visual Resources and WSA/Other Lands with Wilderness Characteristics. Under Alternative 2, structures that fall within VRM Class I or lands having wilderness characteristics are located within the Caliente Mountain WSA or at the Cochora Ranch. Impacts would be the same as discussed under Alternative 1 and result in a minor to moderate negative effect on bat populations.

The remaining structures fall within VRM Class II or III and outside lands having wilderness characteristics. Impacts to bat populations would be the same as under the No Action Alternative and have minor to moderate negative impacts to bat populations.

Livestock Grazing. Under Alternative 2, grazing would continue and effects to bat populations would be similar to those described under the No Action Alternative. The continuation of grazing will have a minor positive effect on bat populations.

Recreation. The effects to bat populations from implementation of RMZs will be the same as discussed under Wilderness and may result in a minor to moderate negative impact on bat populations.

Under Alternative 2, potential impacts to bats from recreation activities would be the same as the No Action Alternative.

Impacts under Alternative 3

Impacts to Bats from Implementing the Wildlife Program

See impacts to bats common to all action alternatives.

Impacts to Bats from Implementing Other Programs

Cultural Resources. Under Alternative 3, Painted Rock and other rocks used by bats are likely to receive some visitation associated with cultural resource monitoring, research, or rock art restoration. Such use will have a minor negative effect on bat populations.

Under Alternative 3, the greatest number of structures will be razed or restored. Additionally, non-eligible structures, such as the Traver Ranch and KCL shed would not be saved. Under Alternative 3, Cultural Resources actions may have a moderate to major negative effect on bat populations.

Visual Resources and WSA/Other Lands with Wilderness Characteristics. Under Alternative 3, the only structures that fall within VRM Class I or Lands having Wilderness Characteristics are located within the Caliente Mountain WSA. Impacts would be the same as discussed under the No Action Alternative and result in a minor negative impact to bat populations.

The remaining structures fall within VRM Class II or III and outside lands having wilderness characteristics. Impacts to bat populations would be the same as under the No Action Alternative and have minor to moderate negative impacts to bat populations.

Livestock Grazing. Under Alternative 3, grazing would continue and effects to bat populations would be similar to those described under the No Action Alternative. The continuation of grazing will have a minor positive effect on bat populations.

Recreation. The effects to bat populations from implementation of RMZs will be the same as discussed under Visual Resources and WSA/Lands with Wilderness Characteristics and may result in a minor to moderate negative impact on bat populations.

Under Alternative 3, potential impacts to bats from recreation activities could be slightly greater than the No Action Alternative and Alternatives 1 and 2. The increased emphasis on providing recreation facilities, allowance of dispersed camping, additional trails, and improvements will increase visitor use. Increased visitor use may increase the likelihood of vandalism, disturbance, and purposeful displacement. Increased visitor use will also, however, increase the number of people that can be provided with environmental education on bats.

4.2.5.6 California Condor

Impacts to the California Condor under the No Action Alternative

Impacts to the California Condor from Implementing the Wildlife Program

Under the No Action Alternative, the placement of new transmission lines, towers, or other potentially disruptive structures may be restricted or prohibited in condor habitat. Support will be provided to the USFWS in the implementation of recovery actions, such as the establishment of supplemental feeding

stations or condor monitoring. These actions should have a moderate positive effect on condor foraging habitat.

Under the No Action Alternative, management actions will be taken to provide habitat sufficient to support California Department of Fish and Game (CDFG) herd unit objectives for pronghorn and elk. CDFG's current objectives target a pronghorn herd of 250 and an elk herd of 500. This will retain the availability of pronghorn and elk carcasses and have a minor positive effect on condor foraging habitat.

Impacts to the California Condor from Implementing Other Programs

Under the No Action Alternative, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will result in negligible impacts on condors: Vegetation, Fire and Fuels Management, Air Quality, Soils, Water, Geology and Paleontology, Cultural Resources, Visual Resources, WSA/Lands with Wilderness Characteristics, and Travel Management.

Livestock Grazing. Under the No Action Alternative, potential condor foraging habitat will remain available and the opportunity to provide carcasses as a byproduct of grazing will remain an option.

California condors historically foraged primarily over rangelands and often depended on dead livestock as a primary food source (USFWS 1984a; USFWS 1994). The Carrizo Plain, the Panorama Hills, and the Elkhorn Hills were all important condor foraging areas (USFWS 1984a). Livestock carcasses probably were the major food item, as pronghorn had not yet been reintroduced and few deer and elk occur in these flatter regions. Historically, livestock grazing occurred throughout the year and more livestock grazed in the area. This probably resulted in more carcasses being available at more times of the year. On the CPNM, the current grazing management and stocker operations provide a few livestock carcasses a year. Condors do not currently make use of these carcasses.

Under the No Action Alternative, the areas historically used by foraging condors on the CPNM would continue to be grazed. The USFWS 1994 Biological Opinion concluded that livestock grazing on the CPNM could benefit the California condor by providing a potential source of food (USFWS 1994). The nearby Bittercreek National Wildlife Refuge, which is managed by the USFWS as condor foraging habitat, is also grazed by domestic livestock. Although livestock operations on the CPNM do not currently provide an important source of food for condors, it would remain a potential source of food in the future.

Under the No Action Alternative, continuation of grazing is expected to have a minor positive effect on condor foraging habitat.

Recreation. After July 2008, the use of lead ammunition for hunting deer, wild pig, elk, pronghorn, coyote, ground squirrel, and non-game wildlife within the Monument will be prohibited by the Ridley-Tree Condor Preservation Act. Potential sources of lead exposure will be limited to jackrabbits, cottontail, and game birds that are shot by hunters but not retrieved. The risk of lead exposure from hunting activities under the No Action Alternative on the Monument is expected to be minor.

Minerals. Condors are not known to frequent (currently or historically) the oilfield areas within the Monument. Risks to condors associated with oilfields include contamination by or ingestion of harmful liquids (such as oil or antifreeze), collisions with power lines and poles, electrocution, and ingestion of trash. These risks most often occur in oilfields near nesting locations, such as in the Hopper Mountain area. Since there are no historic or likely condor nesting locations near the Monument oilfields, impacts to condors from these hazards under the No Action Alternative are expected to be minor.

Lands and Realty. Right-of-way actions and other land uses would only be authorized if they are compatible with maintaining unobstructed flight paths and suitable foraging habitat for condors. Under the No Action Alternative, realty actions are expected to have a minor negative effect on condors.

Impacts to the California Condor Common to All Action Alternatives

Impacts to the California Condor from Implementing the Wildlife Program

Under All Action Alternatives, unobstructed flight paths and suitable foraging habitat will be maintained on the Monument. The placement of new transmission lines, towers, or other potentially disruptive structures will be restricted or prohibited in condor habitat. Support will be provided to the USFWS in the implementation of recovery actions, such as the establishment of supplemental feeding stations or condor monitoring. These actions should have a moderate positive effect on condor foraging habitat.

Impacts to the California Condor from Implementing Other Programs

Under All Action Alternatives, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will result in negligible impacts on condors: Vegetation, Fire and Fuels Management, Air Quality, Soils, Water, Paleontology/Geology, Cultural Resources, Visual Resources, WSA/Lands with Wilderness Characteristics, and Travel Management.

Recreation. After July 2008, the use of lead ammunition for hunting deer, wild pig, elk, pronghorn, coyote, ground squirrel, and non-game wildlife within the Monument will be prohibited by the Ridley-Tree Condor Preservation Act. Potential sources of lead exposure will be limited to jackrabbits, cottontail, and game birds that are shot by hunters but not retrieved. The risk of lead exposure from hunting activities on the Monument is expected to be minor.

Minerals. Condors are not known to frequent (currently or historically) the oilfield areas within the Monument. Risks to condors associated with oilfields include contamination by or ingestion of harmful liquids (such as oil or antifreeze), collisions with power lines and poles, electrocution, and ingestion of trash. These risks most often occur in oilfields near nesting locations, such as in the Hopper Mountain area. Since there are no historic or likely condor nesting locations near the Monument oilfields, impacts to condors from these hazards are expected to be minor.

Lands and Realty. Right-of-way actions and other land uses would only be authorized if they are compatible with maintaining unobstructed flight paths and suitable foraging habitat for condors. Realty actions are expected to have a minor negative effect on condors.

Impacts to the California Condor under Alternative 1

Impacts to the California Condor from Implementing the Wildlife Program

Under Alternative 1, pronghorn and elk numbers will be allowed to naturally fluctuate, including allowing the populations to disappear if dictated by natural conditions. This may reduce the availability of pronghorn and elk carcasses and have a minor negative effect on condors.

Impacts to the California Condor from Implementing Other Programs

Livestock Grazing. Under Alternative 1, potential condor foraging habitat will remain available, but livestock carcasses, as a byproduct of grazing would not be available in the future. The lack of cattle carcasses may have a negligible effect as the hide of mature cattle tends to be too tough for condors to penetrate (Jesse Grantham, USFWS, personal communication, 22 April 2008). Potential large food items

on BLM lands would be pronghorn, deer, and elk. Pronghorn are not very numerous within the Monument and may not provide many carcass opportunities. Deer are preferred by condors, but have the tendency to die in canyon bottoms, which are inaccessible to condors (USFWS 1984). Deer are also not numerous within the Monument. Elk currently have a tendency to use the northwest portion of the Monument, which was historically less used by condors. Livestock grazing on private lands may still provide some food items in the region. Condors are capable of landing on slopes with woody vegetation (Jesse Grantham, USFWS, personal communication, 22 April 2008). If larger food items are restricted to the foothill regions, condors may still be able to access such carcasses. Under Alternative 1, the discontinuation of grazing is expected to have a minor negative effect on condor foraging habitat.

Impacts to the California Condor under Alternative 2

Impacts to the California Condor from Implementing the Wildlife Program

Under Alternative 2, management actions will be taken to provide habitat sufficient to support a pronghorn herd of 250 and an elk herd of 500. This will retain the availability of pronghorn and elk carcasses and have a minor positive effect on condor foraging habitat.

Impacts to the California Condor from Implementing Other Programs

Livestock Grazing. Under Alternative 2, potential condor foraging habitat will remain available and the opportunity to provide carcasses as a byproduct of grazing will remain an option.

Under this Alternative, it is estimated that, in 2 years out of every 10 years, livestock grazing could occur within some of the area historically used by foraging condors on the Carrizo. In such years, livestock carcasses, as a byproduct of grazing, may potentially be available for condors. Other areas within the Monument, such as within the Section 15 allotments in the North Temblor, Caliente, and portions of the Panorama Hills, may be grazed 5 years out of every 10 years.

The reduced availability of livestock carcasses may have a minor negative effect on the suitability of historical foraging habitat.

Impacts to the California Condor under Alternative 3

Impacts to the California Condor from Implementing the Wildlife Program

Under Alternative 3, management actions will be taken to provide habitat sufficient to support a pronghorn herd of 250 and an elk herd of 500. This will retain the availability of pronghorn and elk carcasses and have a minor positive effect on condor foraging habitat.

Impacts to the California Condor from Implementing Other Programs

Livestock Grazing. Under Alternative 3, it is estimated that 2 years out of every 10 years, livestock grazing could occur within most of the area historically used by foraging condors on the CPNM. In such years, livestock carcasses, as a byproduct of grazing, may potentially be available for condors. Other areas within the Monument, such as within the Section 15 allotments in the North Temblor, Caliente, and portions of the Panorama Hills, may be grazed more frequently.

The maintenance of pronghorn and elk populations will continue to provide potential carcasses for condors. The reduced availability of livestock carcasses may have a minor negative effect on the suitability of historical foraging habitat.

4.2.5.7 Greater Sandhill Crane and Lesser Sandhill Crane

With the exception of those impacts discussed under the General Wildlife Impacts or avoided through implementation of SOPs the following programs will have negligible to no effect on greater and lesser sandhill cranes: Air Quality, Soils, Water, Geology and Paleontology, Cultural Resources, Visual, WSA/Lands with Wilderness Characteristics, Travel Management, Minerals, and Lands and Realty.

Impacts to Sandhill Cranes under the No Action Alternative

Impacts to Sandhill Cranes from Implementing the Wildlife Program

Under the No Action Alternative, viable populations will continue to be maintained by providing wintering habitat for greater and lesser sandhill cranes. Actions include conducting surveys including the Breeding Bird Survey, monitoring and surveying wintering cranes to document presence and to determine numbers of both species, and coordinating survey efforts with other agencies such as USFWS and CDFG. Roosting sites will be protected from human disturbance (primarily in and around Soda Lake). There will be support for crane research including long-term studies of species as well as roosting and foraging habitat features. Management actions will be designed to result in minimal impacts to cranes especially at roosting sites. Private lands will be acquired as they become available. These actions would have a moderate to major positive impact on wintering cranes.

Impacts to Sandhill Cranes from Implementing Other Programs

Vegetation. Current actions under the No Action Alternative call for the eradication of noxious weeds including tamarisk, which occurs in different areas at the edge of Soda Lake and some of its ponds. This action is expected to have minor positive impacts to sandhill cranes.

Fire and Fuels Management. Fire management actions under the No Action Alternative currently protect saltbush and the rare plant community surrounding Soda Lake. Soda Lake and adjacent lands are used by sandhill cranes for roosting, feeding, and resting, resulting in major beneficial impacts to sandhill cranes.

Livestock Grazing. Livestock grazing would have negligible impacts on sandhill crane distribution in the Monument under the No Action Alternative (and Alternatives 2 and 3). These birds are most often associated with cultivated grain crops north of the Monument and the shallow roosting sites in Soda Lake. While upland habitat use of the grasslands occurs in the green season, the density and distribution of livestock to the west of Soda Lake are minimal. The area around Soda Lake (12,880 acres) is ungrazed, and there are an additional 5,440 acres of ungrazed CDFG lands adjacent to Soda Lake. The availability of water in Soda Lake and grain crops on adjacent private lands are the primary factors that determine crane numbers in the Monument.

Impacts to Sandhill Cranes Common to All Action Alternatives

Impacts to Sandhill Cranes from Implementing the Wildlife Program

Actions common to all action alternatives to maintain roosting and foraging habitat within the Monument for sandhill cranes include identifying roost areas and protecting them from human disturbances, conducting annual surveys, and supporting research to learn habitat needs. These actions would have a minor positive impact on wintering sandhill cranes.

Impacts to Sandhill Cranes from Implementing Other Programs

Fire and Fuels Management. Impacts would be the same as the No Action Alternative.

Livestock Grazing. Under all action alternatives, livestock grazing would have negligible impacts on sandhill crane numbers and distribution in the Monument

Recreation and Administrative Facilities. Soda Lake and its system of satellite ponds were once used as roosting sites for thousands of wintering sandhill cranes. Several factors, including the cessation of dryland farming within the Monument, reduced grain available to cranes in adjacent lands and the availability of water and grain at nearby USFWS wildlife refuges have resulted in most cranes passing over Soda Lake and wintering at Pixley and Kern National Wildlife Refuges (P. Williams, personal communication, 2006). The CPNM now receives on average fewer than 500 cranes per year (BLM staff, personal observation, 2008). Future management actions encouraging cranes to return will place roosting sites within the proposed Frontcountry zone, which contains the highest concentration of visitor facilities, kiosks, and interpretation. All proposed recreation actions and uses however, must be compatible with all Monument Proclamation cultural and biological resource objectives including protecting sandhill crane roosting sites from human disturbance and minimizing any detrimental impacts from interactions with humans and pets. As a result, actions in the Frontcountry zone are expected to have negligible impacts to wintering sandhill cranes.

Impacts to Sandhill Cranes under Alternative 1

Impacts to Sandhill Cranes from Implementing the Wildlife Program

Actions proposed under Alternatives 1 and 2 include restricting the release of native animals that have previously been held in captivity to prevent the spread of disease. A separate action would allow measures to be implemented if necessary to protect wildlife from visitor or free-roaming pets. These actions would have a minor positive impact on sandhill cranes.

Impacts to Sandhill Cranes from Implementing Other Programs

Fire and Fuels Management. There will be no authorized prescribed fire under Alternative 1. Wild or human-caused fires would be suppressed along roads or natural barriers. Other fire suppression tactics such as the use of dozers or mobile attack would be reserved to protect life or property or when suppression at barriers would be hazardous. These actions could result in a potential loss of saltbush and other alkali sink plants that grow near Soda Lake. Soda Lake and adjacent lands are used by sandhill cranes for roosting, feeding, and resting. Since many of the alkali sink plants are not fire tolerant the result of these actions are expected to be a moderate, long-term change. Depending on the extent of the damage to the alkali sink community, negligible to major negative impacts to wintering cranes may result.

Livestock Grazing. There will be no authorized grazing under Alternative 1. Impacts from no grazing are expected to have negligible or no impacts to greater or lesser sandhill cranes on the Monument.

Recreation and Administrative Facilities. All proposed recreation actions and uses must be compatible with all Monument Proclamation cultural and biological resource objectives including protecting sandhill crane roosting sites from human disturbance and minimizing any detrimental impacts from interactions with humans and pets. As a result, actions in the Frontcountry zone under Alternative 1 are expected to have negligible impacts to sandhill cranes.

Impacts to Sandhill Cranes under Alternative 2

Impacts to Sandhill Cranes from Implementing the Wildlife Program

See impacts under Alternative 1.

Impacts to Sandhill Cranes from Implementing Other Programs

Fire and Fuels Management. Impacts would be the same as the No Action Alternative.

Livestock Grazing. See impacts under the No Action Alternative.

Recreation and Administrative Facilities. Actions proposed under Alternative 2 would increase the acreage of the Frontcountry zone and nearly triple the number of overlooks and interpretive sites from 10 to 20 and trail heads and staging areas from 5 to 10. Increased acreage and interpretive sites implies more visitors, or at least that visitors will be drawn to these sites for information, but this is not known. This analysis assumes that some of these sites will be at or near Soda Lake and sandhill cranes. Cranes are huge and beautiful birds that understandably attract visitors. If sites are placed relatively close to where cranes are using the lake, visitors may disturb the cranes. Sites are expected to be compatible with the Monument Proclamation and any biological resource objectives including protecting Soda Lake and sandhill crane roosting sites from human disturbance and pets. At this writing, wintering crane numbers on the CPNM are low, still, disturbance of birds during important activities such as resting (from migratory travels) and "loafing" or engaging in social behaviors important to breeding success in the spring, could be problematic. Different species of birds and different individuals respond to humans in various ways, and many visitors may not be able to detect when birds are stressed. Animals that are stressed are often at risk of predation (Rosenfield et al. 2007). As a result, cranes may choose another part of the lake to rest or they may leave altogether. Impacts as a result of actions proposed under Alternative 2 are expected to be negligible (if no disturbance to cranes) to moderate for sandhill cranes visiting or wintering on the Monument.

Impacts to Sandhill Cranes under Alternative 3

Impacts to Sandhill Cranes from Implementing the Wildlife Program

Alternative 3 proposes to coordinate with private landowners outside of the Monument to plant grain as forage for sandhill cranes on land already in production for farming and in close proximity to Soda Lake. This action would provide an alternate food source for cranes. The action would first be identified as a priority in the Conservation Target Table. If funds are needed, it would be implemented as funds become available. Crane monitoring will take place to determine effectiveness. This action is expected to have a moderate to major positive impact on wintering and migrating sandhill cranes by providing additional foraging grounds.

Impacts to Sandhill Cranes from Implementing Other Programs

Fire and Fuels Management. Impacts would be the same as impacts under the No Action Alternative.

Livestock Grazing. See impacts under the No Action Alternative.

Recreation and Administrative Facilities. Actions proposed under Alternative 3 would increase the acreage of the Frontcountry zone by 10,560 acres (total of 29,944) and increase from 15 to 25 the number of overlooks and interpretive sites, and from 8 to 15 the number of trail heads and staging areas. Impacts from Alternative 3 would be similar to Alternative 2 but the probability increases as to impacts occurring from the potential and assumed increased access to Soda Lake. Impacts as a result of these actions proposed under Alternative 3 are expected to be negligible (if no disturbance to cranes) to moderate for sandhill cranes visiting or wintering on the Monument. Alternative 1 has the least impact to sandhill cranes.

4.2.5.8 Mountain Plover

Impacts to Mountain Plovers under the No Action Alternative

Impacts to Mountain Plovers from Implementing the Wildlife Program

The current Monument goal to contribute to the recovery of listed species by achieving long-term, viable populations of all extant listed species in the Monument would have major beneficial impacts to mountain plovers as a conservation measure to avoid the need to list the mountain plover as a threatened or endangered species. Current management is implementing the objectives to manage locations and habitat features of listed species to allow for their continued existence and maintenance of viability, provide for the natural expansion and fluctuations of listed species consistent with species recovery, and reduce human-caused hazards to core species. Although the USFWS determined that listing this species was not warranted at this time (USFWS 2003), conservation measures on the CPNM would contribute to ongoing conservation measures so that listing is not warranted.

Impacts to Mountain Plover from Implementing Other Programs

Vegetation. The current Monument objectives to increase the importance of native species in Monument communities, provide for all transitional states of native communities through the natural range of disturbances (for example, fire, grazing, climatic events), and maintain shrub-scrub communities, would have major beneficial impacts to mountain plovers across the Monument in the short and long term. The most important element of these objectives may be providing all transitional states and disturbances across the Monument to create a mosaic of grassland, shrub-scrub lands, grazed and ungrazed areas, burned and unburned areas, and a wide range of habitat opportunities for mountain plovers. Under this mosaic, the plovers would occupy plant communities within the range of their habitat needs. This strategy of varied plant communities is expected to provide winter habitat to mountain plovers at various locations within the Monument landscape. This is considered to be an important conservation measure to provide alternative wintering sites to the San Joaquin Valley where the use of pesticides is common on the agricultural fields where these birds often forage and roost (Knopf and Ruppert 1995).

Fire and Fuels Management. The use of prescribed fire on 30,000 acres within the Monument would have major benefits to mountain plover populations. Monitoring studies of a prescribed fire in the West Well pasture from 1993 to 1996 indicated that mountain plovers used the burned sites for foraging and roosting (Knopf and Rupert 1995). Current management emphasizes the need to maintain a large percentage of the Monument as suitable habitat for wintering mountain plovers. The amount of open habitat with low vegetative structure is a key factor in habitat use by this species. Vegetation management that reduces the extent of thick grass cover would benefit mountain plovers. Studies in the Monument (Knopf and Rupert 1995) indicate that mountain plovers prefer heavily grazed annual grasslands or burned fields. The application of prescribed fire within the Valley/Plains subregions would benefit this species in years when nonnative grasses and filaree create an unsuitable structure. Burning would not be required in dry years or in periods when persistent grasses are absent. Maintaining suitable habitat in the Monument may reduce pesticide exposure that may occur when these birds use the San Joaquin Valley if the CPNM does not provide suitable habitat.

Livestock Grazing. Under current management, livestock grazing would be used as a vegetation management tool to reduce standing biomass of persistent nonnative grasses for the benefit of mountain plovers. Monitoring data and research on mountain plovers indicate that they do not use areas with dense vegetation. Foraging generally occurs in habitats with bare ground and less than 1 inch of vegetation, in disturbed kangaroo rat precincts, on sites of heavy sheep or cattle grazing or concentrations around water facilities, on dirt or gravel roads, and in plowed or fallowed fields.

Vegetation management could help provide winter habitat for mountain plovers in periods or in areas where giant kangaroo rat clipping activity would not reduce residual dry matter. Giant kangaroo rats would likely provide suitable habitat in the fall in nearly all but the wettest of years with high biomass production. In years of greater vegetation production and buildup of residual dry matter over successive years, livestock grazing and prescribed fire could be used to reduce standing biomass for the benefit of mountain plovers. In periods of drought and during many near-normal precipitation years, there would likely be no need for livestock grazing. Livestock grazing as a vegetation management tool for the benefit of mountain plovers could be critical to avoid an accumulation of standing nonnative grass ground cover during wet years when few areas of low habitat structure would be available. In exceptionally wet years, grazed areas to create suitable habitat would be especially important if dry playas and bare areas are under water and would not be used by mountain plovers.

Current management of the Monument would continue to provide habitat for wintering mountain plovers. The AM process of assessing vegetation objectives, evaluating pasture resources, applying current scientific knowledge, applying management prescriptions, and evaluating monitoring data, would have minor to moderate benefit by providing suitable winter habitat within the Monument landscape. The mosaic of vegetation communities, the grazed and ungrazed pastures, the patchiness of standing vegetation in grazed areas, and occasional fire treatments, would be expected to maintain sustainable habitat within the Monument but management decisions must be made early in the growing season (winter) if management is to be effective for this winter visitor.

Minerals. Oil exploration and development would have negligible impacts to wintering mountain plovers in the Monument. Oil development activities on 30 acres of the valley floor would have negligible impacts to the amount of wintering habitat. Mountain plovers do not avoid areas with human disturbance or activity such as farm fields being cultivated or areas near ongoing oil operations. There are no Mountain Plovers in the Russell Ranch Unit area.

Geophysical activities would have a transient impact of 115 acres from cross-country and shot hole drilling. Oil exploration using shot hole seismic methods would have negligible impacts since the activities would likely occur at times of the year when mountain plovers are not present.

Impacts to Mountain Plovers Common to All Action Alternatives

Impacts to Mountain Plovers from Implementing the Wildlife Program

The wildlife management goals to manage the CPNM in a manner that emphasizes its critical importance for threatened and endangered species conservation and recovery, for rare natural communities, and for conservation of the regional landscape, would have major beneficial impacts to the conservation of the mountain plover. There would be major beneficial impacts to mountain plovers by implementing the specific objectives to:

- identify core geographic areas for endangered species population management and recovery;
- give endangered species habitat primary management priority in core area;
- maintain and enhance viable populations within core areas; and
- allow the populations of these target species to naturally fluctuate up and down, in terms of number and distribution, but initiate management actions when populations approach target minimums (population threshold values).

The designation and management of mountain plover core areas and the three listed species core areas would maintain mountain plover wintering habitat within the Monument in the long term. However, our ability to achieve effective vegetation management varies between Alternative 1 and Alternatives 2 and 3. In the absence of prescribed fire and livestock grazing as vegetation management tools in Alternative 1, it is unknown whether effective habitat management can be implemented to provide suitable habitat for mountain plover when nonnative grasses and herbaceous vegetation reduce habitat quality.

The management of the core areas applies a strategy of effective habitat management to improve habitat conditions when necessary. In most years, giant kangaroo rat activity would provide the amount of low vegetation or bare ground required by wintering mountain plovers somewhere within the Monument. When rainfall is below or near the annual average, the amount of native annuals and nonnative grasses and herbs is fairly low and provides these conditions. However, when rainfall exceeds the average for several successive years or when the annual rainfall is far above the average, there is exceptionally high production of the annual native and nonnative vegetation. This can occur prior to or during the late fall/early winter when mountain plovers arrive on the Monument. Both nonnative grasses and nonnative filaree can cover a high percentage of the ground and can be quite dense in the winter and spring seasons. Management decisions prescribed in the Conservation Target Table to improve mountain plover habitat would be applied to reduce standing residual dry matter in the fall or the amount of new annual herbaceous plant growth in at least one mountain plover or listed species core area in the early winter. Treatments may include livestock grazing in the early winter season or apply prescribed fire in the summer or fall seasons to reduce the amount of new annual vegetation or persistent nonnative grasses.

It is estimated that exceptionally high herbaceous vegetation production may occur about 20 percent of the time (2 years in 10). Based on past rainfall recorded at Bakersfield from 1889 to 2008, it is estimated that high amounts of nonnative persistent grass cover may have occurred in only 6 periods (totaling 25 years) in 118 years. It is during these periods of persistent nonnative grass cover when vegetation management could be applied through prescribed fire or livestock grazing to improve habitat conditions for wintering mountain plovers during the winter season before giant kangaroo rat activity would create suitable habitat. The extent of treatment would likely vary from year to year, depending on how many core areas would have suitable habitat with or without vegetation treatments.

The core areas were selected because they had consistent annual use by wintering mountain plovers and were of a size that could be affected by fire or livestock grazing. The strategy is to have these areas as "safety nets" where there is a high likelihood that the vegetation can be reduced by fire or grazing when needed.

Research and monitoring activities that address the habitat quality and ecology of mountain plovers would have a long-term benefit to this species. Any take or project effects would be authorized under state and federal permitting requirements and would be evaluated and mitigated in project-specific environmental analyses.

Management for a diversity of wildlife habitats would have moderate benefit to mountain plovers in those areas where there is an objective to create a low structure of vegetation. Since the overall objective is to create a diversity of habitat structure within the Monument, a portion of the Monument would be managed to benefit this species. The creation and maintenance of a mosaic of grassland and shrubland habitats would likely maintain mountain plover winter habitat across the Monument landscape. Population monitoring and AM would indicate habitat management prescriptions to help meet habitat and distribution objectives.

Impacts to Mountain Plovers from Implementing Other Programs

Livestock Grazing. The impacts would be the same as described in the General Wildlife section.

Impacts to Mountain Plovers under Alternative 1

Impacts to Mountain Plovers from Implementing the Wildlife Program

Management of the likely non-core treatment areas to provide suitable wintering habitat for mountain plovers would have moderate to major beneficial impacts to mountain plovers. However, the elimination of livestock grazing and prescribed fire as vegetation management tools would hinder effective habitat management in these areas. As described in the Fire/Fuels Management and Livestock Grazing sections, there are periods of rainfall and vegetation production and cover that require vegetation treatments to maintain suitable habitat conditions for this species. Repeated mowing of one or more grassland core areas to a height of less than 1 inch would be required when winter herbaceous production would exceed mountain plover habitat requirements. Treatment areas would probably range from 30 to 100 acres in size. The effectiveness is unknown since this treatment has not been applied in the Monument to date.

Impacts to Mountain Plovers from Implementing Other Programs

Fire and Fuels Management. The elimination of prescribed fire to manage the nonnative grass and herbaceous vegetation within the mountain plover and listed species core and areas would have moderate detrimental impacts to mountain plover. While there is no need to apply prescribed fire in most years when rainfall is below average or when annual vegetation is not tall and thick, the use of prescribed fire is considered a valuable management tool when thick grassy conditions occur. Prescribed fire has been successfully applied to provide mountain plover habitat (Knopf and Rupert 1995). It is estimated that exceptionally high herbaceous vegetation production may occur about 20 percent of the time (2 years in 10). Based on past rainfall recorded at Bakersfield from 1889 to 2008, it is estimated that high amounts of nonnative persistent grass cover may have occurred in only 6 periods (totaling 25 years) in 118 years. It is during these periods of persistent nonnative grass cover when vegetation management could be applied through prescribed fire to improve habitat conditions for wintering mountain plovers.

Livestock Grazing. The elimination of livestock grazing in the Monument would result in higher amounts of herbaceous vegetation across the landscape in wet years and as residual dry matter accumulates through time. In areas with high giant kangaroo rat abundance, the accumulation would be much less or would not occur. In exceptionally dry rainfall years, or in a series of below-average rainfall years, livestock grazing would not typically occur or would not be a factor in maintaining favorable habitat conditions for mountain plovers. Giant kangaroo rats appear to be able to successfully manipulate herbaceous vegetation on their precincts in all but the wettest years. The elimination of livestock grazing would become a factor in providing mountain plover habitat in the exceptionally wet years when herbaceous plant cover would produce less-than-optimum, or unfavorable, habitat conditions and if giant kangaroo rats are unable to provide suitable habitat conditions. On their winter ranges on the CPNM, mountain plovers prefer heavily grazed annual grasslands or burned fields (Knopf and Rupert 1995). Foraging generally occurs in habitats with bare ground and less than 1 inch of vegetation, in disturbed kangaroo rat precincts, on sites of heavy sheep or cattle grazing or concentrations around water facilities, on dirt or gravel roads, and in plowed or fallowed fields.

Prey items are primarily invertebrates such as crickets, beetles, centipedes, scorpions, and others. Insect abundance is increased with the burrowing activities of kangaroo rats, which provide underground habitat. Also, in the absence of burrows, or a cracked soil profile that also creates insect habitat, abundant cattle dung can compensate by providing habitat for insect prey and scarab beetles, which can be tremendously abundant in heavily grazed areas (S. Fitton, BLM, personal communication, 2008).

It is unknown whether mechanical control methods (mowing) would be practical and cost effective in maintaining the core areas as suitable habitat for mountain plovers. Past livestock grazing use in the Monument has demonstrated that prescribed livestock grazing can be applied at a scale large enough to reduce ground cover of nonnative grasses. Elimination of this tool, applied in a prescribed manner for the benefit of mountain plovers, could impose risks to providing suitable winter habitat during prolonged periods of extensive rainfall and high grass production. The elimination of this management tool would have moderate detrimental effects to mountain plovers in the Monument.

Impacts to Mountain Plovers under Alternative 2

Impacts to Mountain Plovers from Implementing the Wildlife Program

Management of the non-core areas to maintain populations of giant kangaroo rats and provide suitable winter habitat for mountain plovers would have moderate to major beneficial impacts to mountain plovers. The application of livestock grazing and prescribed fire as vegetation management tools would provide options to apply effective habitat management in these areas. As described in the Fire/Fuels Management and Livestock Grazing sections, there are periods of rainfall and vegetation production and cover that require the use of livestock grazing or prescribed fire to maintain suitable habitat conditions for this species.

Impacts to Mountain Plovers from Implementing Other Programs

Fire and Fuels Management. The 1,000 acres of prescribed burns and 5 miles of dozer line would have moderate to major beneficial impacts to mountain plovers. Previous studies on the Monument showed that mountain plovers prefer heavily grazed annual grasslands or burned fields (Knopf and Rupert 1995). In this study, prescribed fire was used to provide suitable roosting habitat so that birds could be captured and marked for the study. Burn effects of providing low vegetation cover and structure for mountain plovers usually last between one to three years, depending on subsequent annual rainfall.

Livestock Grazing. Under Alternative 2, livestock grazing may be occasionally applied in the core areas and adjacent non-core areas to maintain habitat conditions for giant kangaroo rats and wintering mountain plovers so that they would not disappear from the Monument. Based on objectives and management prescriptions described in the Conservation Target Table, vegetation management may be applied to maintain three core areas for wintering mountain plovers. It is estimated that excessive amounts of standing vegetation biomass may occur in high rainfall periods on average about two years in ten. During these conditions, livestock grazing may be applied to reduce high amounts of standing biomass to improve habitat conditions for mountain plovers. When such conditions occur, approximately 58,000 acres would be potentially treated in pastures that contain the core areas. If additional treatment is needed, it would most likely be applied in the adjacent non-core areas identified in Map 4-1. Under this scenario, approximately 29,000 acres may be treated with livestock grazing (in addition to the core areas) in pastures that contain the adjacent non-core areas. However, the non-core areas that may be treated could be different than those identified in Map 4-1 if habitat conditions, habitat needs of mountain plovers, and management prescriptions change over time.

The impacts of livestock grazing in the vegetation management areas under this alternative would be the same as those described in the No Action Alternative. Application of the Conservation Target Table would refine management prescriptions to maintain mountain plover habitat and wintering populations. Thus, livestock grazing in the vegetation management areas would have moderate to major beneficial impacts to maintain habitat for wintering mountain plovers on the Monument.

Livestock grazing in the Section 15 Recruit, and South Anderson pastures under this alternative would likely occur in five of ten years. The impacts would be the same as described in the No Action Alternative with moderate to major beneficial impacts to maintaining mountain plover winter habitat in these areas in the occasional wet years with high vegetation biomass.

Impacts to Mountain Plovers under Alternative 3

Impacts to Mountain Plovers from Implementing the Wildlife Program

The impacts would be the same as described for Alternative 2

Impacts to Mountain Plovers from Implementing Other Programs

Fire and Fuels Management. The impacts would be the same as described for Alternative 2

Livestock Grazing. The impacts from livestock grazing in the vegetation management areas would be similar to those described in Alternative 2, but prescribed grazing may be used in a larger area of suitable habitat if needed to maintain populations in areas of suitable habitat (Map 4-1). Vegetation management may be applied to approximately 115,000 acres of suitable giant kangaroo rat habitat (57,000 acres of pastures containing core areas plus 57,000 acres of suitable giant kangaroo rat habitat on the Carrizo Plain, Elkhorn Plain, and alluvial plains of the Cuyama valley outside of the core areas). Livestock grazing in the vegetation management area as prescribed in the Conservation target Table would have moderate to major beneficial impacts to maintain giant kangaroo rat populations on the Monument.

Livestock grazing in the Section 15 Recruit and South Anderson pastures of the North Temblor allotment under this alternative would be the same as described in the No Action Alternative: there may be moderate to major beneficial impacts to maintaining mountain plover habitat in these pastures in the occasional wet years with high vegetation biomass.

4.2.5.9 Western Burrowing Owl

Impacts to Burrowing Owls under the No Action Alternative

Impacts to Burrowing Owls from Implementing the Wildlife Program

Under the No Action Alternative, actions will be taken to maintain viable populations of burrowing owls. Occasional surveys to monitor populations and to assess habitat quality and threats may be completed. Support for research and education will be provided. Actions will be taken to ensure adequate burrows are available and to reduce vehicles strikes. This would have a moderate to major positive effect on burrowing owl populations.

On the CPNM, owls use burrows created primarily by California ground squirrels. California ground squirrels and their burrows are abundant on the CPNM. Under the No Action Alternative, California ground squirrel burrows are expected to remain abundant.

Prey items on the CPNM include a variety of insects and small mammals. Ronan (2002) observed that when nests were successful on the CPNM, productivity appeared to be influenced by the higher proportion of rodents in the diet. Under the No Action Alternative, the availability of prey items, including small rodents, would remain the same as in previous years.

Burrowing owl populations on the CPNM appear to be stable (Ronan and Rosenberg 2000; Klute et al. 2003). Although the density of owls in the CPNM is low when compared to other study sites in

California, this may be normal for large natural landscapes (Dan Rosenberg, Oregon State University, personal communication, 25 January 2004). Under the No Action Alternative, the CPNM burrowing owl population is expected to remain stable.

Impacts to Burrowing Owls from Implementing Other Programs

Under the No Action Alternative, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will result in negligible impacts on burrowing owls: Vegetation, Air Quality, Soil, Water, Geology and Paleontology, Cultural Resources, Visual Resources, WSA/Lands with Wilderness Characteristics, Minerals, and Lands and Realty.

Fire and Fuels Management. Potential impacts to burrowing owls from wildland fire include disturbance by fire activity, vehicle strikes, burrow collapse, and smoke inhalation. Under the No Action Alternative, prescribed fires would be designed to minimize direct impacts to burrowing owls. The project area would be surveyed for owls, fire lines would avoid burrows, and vegetation around burrows would be removed by hand to reduce fire intensity in the vicinity of the burrow entrance. Active burrows in the vicinity of access roads would be flagged and personnel would be advised to drive with caution when driving past the burrow. Where possible, fires would be timed to avoid the period between hatching and when chicks are 4 weeks old and able to fly.

Not much is known about how owls react to fire. Jim Belthoff, Boise State University, provides some observations from a study site in Idaho after wildfires in 1996, 2002 and 2003 (J. Belthoff, Boise State University, personal communication, 14 June 2006). These fires occurred at various stages of the nesting cycle, but tended to be later in the year. In the case of the 1996 fire, some of the owls had radio collars, allowing examination of movements. In all cases, owls escaped effects of the fire and remained in the same location they were before the fires. Belthoff presumes the owls weathered the fires below ground, but cannot be certain since he was not able to track the owls during the burn. The owls were in the vicinity of their burrows the day following the fire.

Disturbance by fire activity, vehicle strikes, burrow collapse, and smoke inhalation may result in a minor to moderate short-term negative impact to burrowing owls.

Burrowing owls prefer areas characterized by short, sparse vegetation and open ground. In spite of the potential for direct impacts to burrowing owls immediately before and during wildland fire, the resulting habitat change should have a moderate positive effect on burrowing owls.

Livestock Grazing. Grazing by domestic livestock, prairie dogs, and other grazing species has historically been an important mechanism in the maintenance of suitable burrowing owl habitat in natural landscapes. Within the Monument, clipping by giant kangaroo rats may also play a role in maintaining suitable burrowing owl habitat. In areas managed to promote burrowing owls, grazing and mowing are commonly used to maintain an appropriate vegetation structure. At Wildlands Inc.'s Haera and Brushy Creek Conservation Banks, California, for burrowing owls, grazing is used to reduce vegetation height to approximately 3 inches (Craig Bailey, Wildlands Inc., personal communication, November 2003). Regular mowing of airport infields maintains suitable habitat for burrowing owls at San Jose International Airport (Jack Barclay, Albion Environmental, personal communication, November 2003). Similarly, regular mowing of grounds provides habitat for owls at Allensworth State Historical Park (Jeannine Koshear, California State Parks, personal communication, November 2003). In years with rainfall patterns that result in taller grasses and vegetation, owls will move to areas with lower grass and sparser vegetation. At Whelan Lake in San Diego County, burrowing owls disappeared after grazing was discontinued and the vegetation became tall (Jeff Lincer, Wildlife Research Institute, personal

communication, November 2003). Under the No Action Alternative, grazing should continue to promote a vegetation structure preferred by burrowing owls.

There is some suggestion that burrowing owls may favor areas of livestock use. At the Brushy Creek and Haera Conservation Banks, burrowing owl use was greater in areas used more heavily by livestock, including around water troughs (Craig Bailey, Wildlands Inc., personal communication, November 2003). At Altamont Pass, owls were found to favor the base of wind turbines where cattle tend to congregate (Shawn Smallwood, biological consultant, personal communication, November 2003). Heavy cattle use at the base of the turbines may promote herbaceous vegetation that is favored by rodents. Owls could then be attracted by the availability of rodents. Areas that are too heavily stocked, however, could result in burrow collapse. Moderate grazing to maintain a short vegetation structure is probably key to maintaining owl habitat (Dan Rosenberg, Oregon State University, personal communication, 25 January 2004). In the CPNM, ground squirrels are also important in this regard (Dan Rosenberg, personal communication, 25 January 2004.). Giant kangaroo rats also play a role in modifying habitat on the CPNM.

In addition to modifying vegetation structure, livestock grazing may have other effects on burrowing owls. During the 2000 field season, 51 historic nest locations were checked and 19 of these were found to be collapsed (Ronan and Rosenberg 2000). Some of the collapses appeared to be cattle related (Ronan and Rosenberg 2000). Although the percentage of collapsed burrows was relatively high, this may not greatly affect owls in an environment that is not burrow limited. The collapsed burrow would no longer be available for nesting, but in many cases another burrow nearby may be chosen, and this was repeatedly observed by Ronan and Rosenberg during their study. In addition, nest burrow fidelity does not appear to be high in the CPNM (Ronan and Rosenberg 2000; Tice and Rosenberg 2002). Another effect of burrow collapse is that owls could become entombed inside collapsed burrows. In 2000, a radio-marked female was exhumed from a satellite burrow that appeared to have naturally collapsed (Rosier et al. 2001).

Nest tunnels in the CPNM often exhibit nest decoration, most often pieces of cow manure (Tice and Rosenberg 2002). Burrowing owls commonly use shredded manure to line their nest and burrow entrances, possibly to mask nest odors from predators (Haug et al. 1993; Dechant et al. 1999). Management guidelines for the Columbia Basin in Oregon recommend that fresh cattle dung be provided near nesting areas if mammalian predators, especially badgers, occur in the area (Green and Anthony 1997). Nests, however, can often be lined with materials other than manure, and may represent a means of maintaining nest defense from conspecifics rather than predators (Dan Rosenberg, Oregon State University, personal communication, 25 January 2004). Predation appears to be a cause of low nest success at CPNM, with mammalian, avian, and reptilian predation being the most common cause of mortality (Ronan 2002). The continuation of grazing will provide a source of manure that may play a role in reducing nest predation or maintaining nest defense from conspecifics.

The continuation of grazing should have a moderate positive effect on burrowing owl populations.

Recreation. Potential impacts to burrowing owls from recreation activities include harassment by pets, disturbance by human activity, and accidental shooting. Pets, including dogs are required to be under the control of their owners while on the Monument. Some owls do make use of recreation sites, such as the Painted Rock parking lot. These owls may be subject to some disturbance or harassment by human use. Concern for accidental shooting, as ground squirrels and burrowing owls can look similar from a distance, has been expressed, although no instances have been reported or discovered. Under the No Action Alternative, educational materials, such as posters and information on the webpage, can be provided to hunters to reduce the likelihood of accidental shootings. Under the No Action Alternative, Recreation is expected to have a minor negative impact to burrowing owls.

Travel Management. Vehicle caused mortality is a concern as many owls on the CPNM select nest sites next to roads (Ronan and Rosenberg 2000) and forage extensively on roads. Soda Lake Road is the primary road of concern. A common behavior noted on the CPNM was that as chicks become capable of flight, family groups begin to hunt on roads (Ronan and Rosenberg 1999). It is estimated that many owls per year are struck by vehicles traveling on Soda Lake Road, although no data has been collected on the numbers (Dan Rosenberg, Oregon State University, personal communication, 2004).

Under the No Action Alternative, as the speed limit and condition for Soda Lake Road is not expected to change, burrowing owls will continue to be occasionally struck and killed by vehicles. This may have a minor to moderate negative effect on burrowing owls.

Impacts to Burrowing Owls Common to All Action Alternatives

Impacts to Burrowing Owls from Implementing the Wildlife Program

Under All Action Alternatives, actions will be taken to maintain or increase viable populations of burrowing owls. Periodic surveys to monitor populations and to assess habitat quality and threats will be completed. Support for research and education will be provided. Actions will be takes to ensure adequate burrows are available and measures will be taken to protect against vehicles strikes. This would have a moderate to major positive effect on burrowing owl populations.

On the CPNM, owls use burrows created primarily by California ground squirrels. California ground squirrels and their burrows are abundant on the CPNM. Under All Action Alternatives, California ground squirrel burrows are expected to remain abundant.

Prey items are expected to remain available. Although insect and rodent species composition may shift, burrowing owls are opportunistic feeders and can adjust to many types of change.

Impacts to Burrowing Owls from Implementing Other Programs

Under all action alternatives, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will result in negligible impacts on burrowing owls: Vegetation, Air Quality, Soil, Water, Geology and Paleontology, Cultural Resources, Visual Resources, WSA/Lands with Wilderness Characteristics, Minerals, and Lands and Realty.

Impacts to Burrowing Owls under Alternative 1

Impacts to Burrowing Owls from Implementing the Wildlife Program

See Impacts Common to All Action Alternatives.

Impacts to Burrowing Owls from Implementing Other Programs

Fire and Fuels Management. Under Alternative 1, prescribed burning would not be conducted. Impacts from wildland fire activities would be restricted to those associated with fire suppression. In certain years, when the precipitation pattern promotes denser and taller vegetation (average 2 years out of 10), there could be fewer acres of suitable nesting habitat for burrowing owl. This could have a moderate negative impact on burrowing owl populations.

Livestock Grazing. Under Alternative 1, grazing would be discontinued on the CPNM. Vegetation management, including prescribed burning and mowing, would also be discontinued.

In certain years, when the precipitation pattern promotes denser and taller vegetation (average 2 years out of 10), there could be fewer acres of suitable nesting habitat for burrowing owl. Over time, if the density and height of vegetation persists, the reduction in suitable nesting habitat could result in reduced burrowing owl populations on the CPNM.

The absence of grazing would reduce the availability of manure used to line nest burrows. If manure helps to mask nest odors from predators, or plays a role in nest defense from conspecifics, the discontinuation of grazing would make manure less available for such uses.

Prey items are expected to be available. Although insect and rodent species composition may shift with the discontinuation of grazing, burrowing owls are opportunistic feeders and can adjust to many types of change. Burrowing owls forage in a variety of habitats. Vegetation greater than 1 meter may be too tall for burrowing owls to locate of catch prey (Dechant et al. 1999). In certain high rainfall years (average 2 years out of 10), there may be some areas of the CPNM that produce tall vegetation, such as prickly lettuce (*Lactuca serriola*), that grow greater than 1 meter. Many of the nonnative annual grasses can also grow tall and dense which negatively affects owl nesting and foraging habitat (Dan Rosenberg, Oregon State University, personal communication, 25 January 2004).

Discontinuation of grazing may have a moderate negative effect on burrowing owl populations.

Recreation. Under Alternative 1, potential impacts to burrowing owls from recreation activities would be the same or slightly less than the No Action Alternative. The lack of dispersed camping, fewer trails and improvements, may prevent visitor use from increasing. Under Alternative 1, Recreation is expected to have a minor negative effect on burrowing owls.

Travel Management. The effects would be the same as the No Action Alternative as Soda Lake Road would continue to be used by vehicles under Alternative 1 and visitor use may not increase. This may have a minor to moderate negative effect on burrowing owls.

Impacts to Burrowing Owls under Alternative 2

Impacts to Burrowing Owls from Implementing the Wildlife Program

See Impacts Common to All Action Alternatives.

Impacts to Burrowing Owls from Implementing Other Programs

Fire and Fuels Management. Under Alternative 2, prescribed burning would continue to be conducted. Impacts from wildland fire activities would be similar to those discussed under the No Action Alternative and have a moderate positive effect on burrowing owl habitat but a minor to moderate short-term negative impact to any burrowing owls in the fire area.

Livestock Grazing. Under Alternative 2, grazing would continue and effects to burrowing owls would be similar to those described under the No Action Alternative. The continuation of grazing should have a moderate positive effect on burrowing owl populations.

Recreation. Under Alternative 2, potential impacts to burrowing owls from recreation activities would be the same or slightly greater than the No Action Alternative. The allowance of dispersed camping and additional trails and improvements may increase visitor use. Under Alternative 2, Recreation is expected to have a minor negative effect on burrowing owls.

Travel Management. The effects would be the same or slightly greater than the No Action Alternative as Soda Lake Road would continue to be used by vehicles and visitor use may slightly increase. This may have a minor to moderate negative impact on burrowing owls.

Impacts to Burrowing Owls under Alternative 3

Impacts to Burrowing Owls from Implementing the Wildlife Program

See Impacts Common to All Action Alternatives.

Impacts to Burrowing Owls from Implementing Other Programs

Fire and Fuels Management. Under Alternative 3, prescribed burning would continue to be conducted. Impacts from wildland fire activities would be similar to those discussed under the No Action Alternative and have a moderate positive effect on burrowing owl habitat but a minor to moderate short-term negative impact to any burrowing owls in the fire area.

Livestock Grazing. Under Alternative 3, grazing would continue and effects to burrowing owls would be similar to those described under the No Action Alternative. The continuation of grazing should have a moderate positive effect on burrowing owl populations.

Recreation. Under Alternative 3, potential impacts to burrowing owls from recreation activities would be slightly greater than the No Action Alternative and Alternative 2. The increased emphasis on providing recreation facilities, allowance of dispersed camping, and additional trails and improvements will increase visitor use. Under Alternative 3, Recreation is expected to have a minor to moderate negative effect on burrowing owls.

Travel Management. The effects would be the slightly greater than the No Action Alternative and Alternative 2 as Soda Lake Road would continue to be used by vehicles and visitor use may increase. This may have a moderate negative effect on burrowing owls.

4.2.5.10 Western Spadefoot Toad

Impacts to the Western Spadefoot Toad under the No Action Alternative

Impacts to the Western Spadefoot Toad from Implementing the Wildlife Program

There are no actions specifically targeted for spadefoot toads in the current management plan; however, management actions that protect vernal pools and fairy shrimp species also provide the basis for protection of spadefoot toads. Western spadefoot toads are for most of their lives terrestrial animals but reproduction and early developmental life stages occur in temporary (lentic) pools and ponds including sag ponds, man-made stock ponds, or playas in low-lying areas that collect water (referred to as vernal pools or pools in the remaining text). Since little is known about the terrestrial activities of toads, management is focused on the reproductive cycle and the habitat requirements necessary for the cycle to occur. These actions are designed to minimize negative impacts and to ultimately have positive outcomes for vernal pool species within the Monument while providing long-term protection within the state. The current management plan lists several actions for vernal pools (affecting spadefoot toads) to achieve the goals of increasing the importance of native species in communities, increasing our understanding, and for managing habitat.

Impacts to the Western Spadefoot Toad from Implementing Other Programs

Under the No Action Alternative, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will result in negligible impacts on spadefoot toads: Vegetation, Air Quality, Soils, Water, Cultural Resources, WSA/Lands with Wilderness Characteristics, and Minerals.

Fire and Fuels Management. Under current management practices, areas with vernal pools are restricted from the use of fire retardant chemicals, the use of dozers, or other forms of surface disturbance. There is no known history of wildfire or prescribed fires in areas of vernal pools. Impacts resulting from actions under fire and fuels management are expected to be negligible.

Livestock Grazing. Western spadefoot toads occupy two types of habitat over the course of their lives. For eight or more months, spadefoot toads are subterranean, using burrows in upland habitat "spaded" out by them or utilizing a burrow created by some other animal including ground squirrel, kangaroo rat, or gopher (Stebbins 1985). In years with sufficient rainfall, spadefoot toads will leave their upland burrows and descend into lentic pools that have accumulated enough water to potentially last long enough for reproduction to occur, eggs to be laid, and for tadpoles to develop and reach metamorphosis. Tadpoles can develop into toads in just 30 to 79 days with the average of 58 days (Morey 1998). Toads generally come above ground in nighttime to reproduce or, if conditions outside the burrow are cool and moist, they will emerge to forage. Most of the known CPNM populations of western spadefoot toads occur within the southwestern half of the Monument. There have been a few known sightings of adult toads near the southern end of Soda Lake and tadpoles of spadefoot toads have been documented in some of the pools located north of Soda Lake with some occurring outside of the Monument boundaries. Tadpoles have also been documented in one of the natural basins in a rock outcropping, but these did not reach to metamorphose. It is likely there are more pools that support toads near Soda Lake and in the eastern foothills of the Caliente Mountains.

Little is known about the habitat requirements of the Western spadefoot toad including the number, location, and suitability of breeding sites. The CPNM populations are generally found to breed in lowland areas of the valley floor or sag ponds and alkali flats in the foothills of the Caliente Mountains. On the southeast end of the Monument there are over 20 pools of different sizes and depths that span an area of several thousand acres. These "complexes" of pools are important for the conservation of metapopulations. It's believed that adults migrate to different pools resulting in genetic variation within the population but little is known about the migratory habits or what factors might act as barriers to migration. Pool requirements are also unknown. It is assumed that pool chemistry, pool depth, and pool longevity or hydroperiod are all important factors necessary for successful reproduction and complete metamorphosis of larvae.

There are a number of possible impacts to toads from livestock grazing. According to USFWS (2005), grazing may play an important role in maintaining the necessary hydroperiod by reducing vegetation surrounding pools, thereby preventing water loss due to evapotranspiration. Conversely, livestock may also cause premature drawdown of the pool through drinking, preventing complete metamorphosis (and desiccation), or causing accelerated metamorphosis resulting in less fit individuals (Morey 1998). Livestock may also crush eggs, larvae, and adult or juvenile toads by trampling. As newly developed juvenile toads begin to leave their pool environment, they often spend the first few days going from water to pool's edge and back again, making them vulnerable to trampling (BLM staff, personal observation, 2005). The incorporation of urine and fecal material by livestock may also play a role. Though the exact food habits of western spadefoot toad larvae are unknown (USFWS 2005), other spadefoot species consume fairy shrimp. Eriksen and Belk (1999), in their discussion of longhorn fairy shrimp, a federally listed species which often co-occurs with spadefoot toads, suggested that livestock may be necessary to create the water chemistry needed to support them and advised against changing historic use patterns.

This may also be true for spadefoot toads, though Morey's study appears to indicate that toads may benefit from a longer hydroperiod where tadpoles can accumulate larger fat stores resulting in fitter individuals at metamorphosis (Morey 1998).

There are no known pools that support spadefoot toads within any of the Section 15 allotments. Pastures within vegetation management areas identified as having vernal pools that have been used for breeding by spadefoot toads include: MU House, MU Horse, Hostetter, Calf Shed, Quail Springs, Padrone, and Foothill. The historic grazing regime has been maintained within pastures with known locations of longhorn fairy shrimp (Calf Shed and Hostetter). Water drawdown from livestock use at these pools has not been noticeable.

Impacts to spadefoot toads under current livestock management are expected to range from negligible to minor. All pastures with the exception of the Foothill pasture have been grazed historically and one pool in the Foothill pasture experienced drawdown from sheep trespass and has been posted to prevent sheep from further using the pool as a water source. Adult toads, however, have persisted in using these pools for reproduction though it is not known how many individuals successfully reach metamorphosis, then adulthood, to continue the cycle. It's unclear how spadefoot toads will be affected by removing livestock grazing from the other pastures. (Pools can go for many years without sufficient rain to fill them; the last year tadpoles metamorphosed from a non-grazed pasture [the MU House] was in 2005). These pools will be monitored and grazing applied if evapotranspiration is determined to be accelerating drawdown. Likewise, pools will be monitored to ensure that cattle be pulled off prior to noticeable drawdown or when tadpoles begin to metamorphose.

Recreation and Administrative Facilities. Recreational activities such as dispersed camping and hunting are expected to have a negligible impact on adults migrating to and from pools during breeding and a negligible impact on juvenile toads as they disperse away from pools. Individuals may be crushed by camping activities or passing traffic but it is unknown to what degree this occurs. Monitoring shows that adults continue to use the pools to breed when conditions are suitable. Eggs hatch and some tadpoles are able to metamorphose if the pool level is sufficient. With these factors, and the assumption that recreation user numbers will level off, the number of toad mortalities is not expected to be measurable.

Travel Management. Effects to spadefoot toads are expected to be negligible to minor under current management actions. Approximately 30 percent of pools that have supported toads at one time are located near or along the edge of roads currently classified as open to the public. It is unknown however, to what degree mortality occurs to adult and juvenile toads migrating in and along roads. Adult toads, eggs, tadpoles, and juvenile toads using pools on the edge of roads (less than 1 percent), may experience minor to moderate, localized impacts such as direct mortality by crushing or displacement of water. Impacts to the remainder of pools would occur when toads are using the road or as a result of illegal off-road use.

Impacts to the Western Spadefoot Toad Common to All Action Alternatives

Impacts to the Western Spadefoot Toad from Implementing the Wildlife Program

Implementation of actions common to all action alternatives will result in minor to major positive impacts for spadefoot toads such as maintaining current protections in place for vernal pools; instigating a more rigorous monitoring program to detect any negative changes to toad populations or habitat; protecting areas that collect and maintain water during very wet years (these areas can be used by spadefoot toads for breeding and reproduction); maintaining the ecological processes and hydrologic vitality of Soda Lake and nearby pools; determining the role of livestock grazing in vernal pools; and improving our knowledge of species through research.

Impacts to the Western Spadefoot Toads from Implementing Other Programs

Vegetation. Actions proposed under the vegetation program common to all action alternatives are expected to have positive impacts for spadefoot toads. By eliminating noxious weeds that occur near pools and in upland habitat, the integrity of the habitat is maintained. This action along with maintaining a mosaic of habitat structure and diversity will allow for toad migration as well as providing a more diverse prey base available throughout the year.

Fire and Fuels Management. There is little known about the effect of wildfire on spadefoot toads. Most CPNM wildfires have occurred in the dry months of late spring to early fall (BLM 2006) and since this species of toad is generally underground or dormant from May through November (Stebbins 1985) when most wildfires occur, it is generally believed that toads are not likely to be directly affected by fire (Howard 1996; Pilliod et al. 2003). However, little is known about adult toad above-ground foraging and migration activities before and after the breeding season. It is also unclear how far newly metamorphosed toads disperse from their birth pond or how deep underground they are by the time fires are most likely to occur. Impacts of some large California wildfires have been analyzed on different types of amphibians and have been found to be negative or positive depending on the timing, location, size, and duration (Pilliod et al. 2003). Benefits have been shown when fire has reduced effects of evapotranspiration resulting in water remaining in pools longer (Pilliod et al. 2003).

The average fire of 500 acres is expected to have negligible to no impact (if outside of toad habitat) or minor impacts (if occurrence is in spadefoot toad habitat). Minor impacts are expected to be short-term but could range to long-term if a period of drought occurs in years following the fire. Larger fires of 500 to 5,000 acres are expected to have the same effects as an average fire with the highest impacts occurring if the fire is within spadefoot toad habitat. Due to the sensitivity of vernal pools as habitat for fairy shrimp and spadefoot toads, it is not expected that prescribed fire would be used in these areas. SOPs restrict the use of dozers and foam and retardant chemicals in sensitive habitat. Potential impacts include direct mortality caused by vehicles or heavy equipment collapsing shallow burrows, possibly entombing or crushing individuals; damage to habitat from possible dozer activity; and loss of vegetation that may reduce insect prey. Unless drought occurs following fire, this is expected to be a temporary and negligible effect. Changes in the landscape following a fire may impact toads positively (by removing thick vegetation difficult to move through) or negatively (by creating barriers to movement or restructuring migration corridors or pathways).

Livestock Grazing. Livestock grazing under all action alternatives is expected to have positive or negligible impacts to spadefoot toads. Monitoring of grazing and compliance, or adjusting fence boundaries will likely result in benefits to toads.

Recreation and Administrative Facilities. Activities and impacts associated with those activities common to all action alternatives vary by zone. Cache activities (in any zone) will be prohibited in sensitive areas, including habitat of sensitive species such as the spadefoot toad, resulting in no impacts. Activities in the Primitive zone are expected to have negligible to no impacts to spadefoot toads. If SOPs are followed when developing potable water at high use dispersed camping areas in the Backcountry, impacts to spadefoot toads are expected to be negligible. The development of two or three driving/riding tours in the Backcountry could cause a slight increase in traffic on some roads, which could potentially increase mortality to adult and immature toads in areas where and when migration occurs. This would be a localized impact only in those areas where pools are in the roads or in very close proximity (approximately 30 percent of pools), and generally late winter to late spring. An increase in vehicles may also cause an increase in off-road use, potentially damaging habitat and causing direct mortality to toads during the times when toads are active above ground. However, driving/riding tours have the potential to also provide an opportunity to educate visitors about the sensitivity of the habitat damage that can result

from driving off roads. Overnight camping fees may result in a reduction of dispersed camping, reducing traffic in and around toad habitat. Recreational activities common to All Action Alternatives proposed for the Frontcountry are expected to have negligible or no impacts to spadefoot toads, as most occur outside of habitat.

Travel Management. Actions common to All Action Alternatives are expected to result in minor to moderate positive impacts for natural resources and spadefoot toads. Travel information, signage, a road maintenance plan to protect natural and cultural resources, and temporary closures during wet periods will aid in protection of toads, pools, and upland habitat.

Impacts to the Western Spadefoot Toad under Alternative 1

Impacts to the Western Spadefoot Toad from Implementing the Wildlife Program

See Impacts Common to All Action Alternatives.

Impacts to the Western Spadefoot Toad from Implementing Other Programs

Vegetation. Actions to remove 10 to 100 acres of noxious weeds are expected to have a positive impact on spadefoot toads in those cases where weeds occur near pools and in upland habitat. Noxious weeds may make migration to and from different ponds during breeding difficult. A monoculture of weeds would reduce the quality of habitat by eliminating a more diverse prey base that would be available throughout the year from having a variety of native plant species.

Fire and Fuels Management. Implementing actions under Alternative 1 for wildfire suppression could result in the following impacts to spadefoot toads: minor to moderate, but localized, impacts from 1 mile of dozer line that could be long-term if followed by drought. If SOPs are adhered to, 1 mile of dozer line and 3 miles of handline, as well as the use of foam and fire retardant, would be avoided in areas of vernal pools. Off-road travel by engines and command vehicles would be reduced as much as possible resulting in a negligible to minor impact of crushing or entombing toads in burrows.

Livestock Grazing. There will be no authorized livestock grazing under Alternative 1. Impacts resulting from trespass sheep grazing to spadefoot toads in the Foothill pasture will be the same as the No Action Alternative. Actions to remove grazing from vernal pools may result in accumulation of vegetation and a reduction in hydroperiod, though other means may be used to remove vegetation such as hand removal or mowing. Water chemistry may change, which may result in impacts to toads ranging from negligible to major.

Recreation and Administrative Facilities. Actions to implement Recreation and Administrative Facilities uses under Alternative 1 are expected to have negligible to no impacts to spadefoot toads in the Primitive, Backcountry, and Frontcountry zones if all overlooks, interpretive sites, trail head staging sites, and hiking trails are developed in a manner that follows SOPs by avoiding vernal pools and adjacent habitat or are closed at critical stages of toad migration and development. If the above actions result in focusing or directing visitors away from sensitive areas and pools, these actions may have a minor to moderate positive impact for toads.

Travel Management. Actions to implement Alternative 1 are expected to result in minor to moderate positive impacts for natural resources and spadefoot toads. Certain prohibited activities in the Backcountry, such as riding vehicles registered through the green or red sticker state off-highway vehicle (OHV) program (off-road motorcycles, four wheelers, and other OHVs) are expected to result in fewer

visitors using Backcountry roads and less illegal off-road use that can cause habitat destruction and mortality to some individuals. Alternative 1 offers the most protection for toads.

Impacts to the Western Spadefoot Toad under Alternative 2

Impacts to the Western Spadefoot Toad from Implementing the Wildlife Program

See Impacts Common to All Action Alternatives.

Impacts to the Western Spadefoot Toad from Implementing Other Programs

Vegetation. Providing SOPs are adhered to when implementing the use of herbicides or prescribed fire, these actions are expected to have negligible to no impacts on spadefoot toads. Vernal pools and amphibians are regarded as sensitive, resulting in the use of fire and herbicides under strict guidelines only such as no surface disturbance (by fire equipment and vehicles); using herbicides that would cause the least amount of harm to toads; and application of herbicides only when water and toads are not present.

Fire and Fuels Management. Implementing actions under Alternative 2 for wildfire suppression could result in the following impacts to spadefoot toads: minor to moderate but localized, could be long-term from one mile of dozer line or if followed by drought. If SOPs are adhered to, 1 mile of dozer and 3 miles of handline, as well as the use of foam and fire retardant would be avoided in areas of vernal pools. Off-road travel by engines and command vehicles would be reduced as much as possible resulting in a negligible to minor impact of crushing or entombing toads in burrows.

Livestock Grazing. Actions to implement Livestock Grazing under Alternative 2 are expected to have negligible to minor but short-term impacts to toads. Temporary use of livestock to graze at vernal pools to reduce vegetation will result in a longer hydroperiod and maintain a water chemistry believed to be beneficial for toads. If grazing is determined to be detrimental to toads or other vernal pool species, grazing will be no longer used. A minor, short-term, negative impact may result through crushing or drinking egg masses or trampling on tadpoles. Impacts resulting from trespass sheep grazing to spadefoot toads in the Foothill pasture will be the same as under the No Action Alternative.

Recreation and Administrative Facilities. Actions to implement Recreation and Administrative Facilities uses under Alternative 2 are expected to have negligible to no impacts to spadefoot toads in the Primitive, Backcountry, and Frontcountry zones if all overlooks, interpretive sites, trail head staging sites, and hiking trails are developed in a manner that follows SOPs by avoiding vernal pools and adjacent habitat at critical stages of toad migration and development. If the above actions result in focusing or directing visitors away from sensitive areas and pools, these actions may have a minor to moderate positive impact for toads.

Travel Management. Impacts to spadefoot toads under Alternative 2 would be similar to the No Action Alternative but with added protections proposed as common to All Action Alternatives of fewer miles of roads open to the public. There would be negligible to minor impacts to the toad population overall with expected minor to moderate, localized impacts to pools in roads and habitat adjacent to roads. There would be minor to moderate positive impacts resulting from additional protection measures.

Impacts to the Western Spadefoot Toad under Alternative 3

Impacts to the Western Spadefoot Toad from Implementing the Wildlife Program

See Impacts Common to All Action Alternatives.

Impacts to the Western Spadefoot Toad from Implementing Other Programs

Vegetation. Impacts to spadefoot toads under Alternative 3 are the same as Alternative 2.

Fire and Fuels Management. Implementing actions under Alternative 3 for wildfire suppression could result in the following impacts to spadefoot toads: minor to moderate but localized, could be long-term from 1 mile of dozer line or if followed by drought. If SOPs are adhered to, 1 mile of dozer line and 3 miles of handline, as well as the use of foam and fire retardant would be avoided in areas of vernal pools. Off-road travel by engines and command vehicles would be reduced as much as possible resulting in a negligible to minor impact of crushing or entombing toads in burrows.

Livestock Grazing. Actions to implement Livestock Grazing under Alternative 3 are expected to have similar effects as Alternative 2. Temporary use of livestock to graze at vernal pools to reduce vegetation will result in a longer hydroperiod and maintain a water chemistry believed to be beneficial for toads. If grazing is determined to be detrimental to toads or other vernal pool species, grazing will be no longer used. A minor, short-term, negative impact may result through crushing or drinking egg masses or trampling on tadpoles.

Recreation and Administrative Facilities. Actions to implement Recreation and Administrative Facilities uses under Alternative 3 are expected to have negligible to no impacts to spadefoot toads in the primitive, Backcountry, and Frontcountry zones if all overlooks, interpretive sites, trail head staging sites, and hiking trails are developed in a manner that follows SOPs by avoiding vernal pools and adjacent habitat at critical stages of toad migration and development. If the above actions result in focusing or directing visitors away from sensitive areas and pools, these actions may have a minor to moderate positive impact for toads.

Travel Management. There would be negligible to minor impacts to the toad population overall with expected minor to moderate, localized impacts to pools in roads and in habitat adjacent to roads. The same number of miles of roads would open to the public as are currently open. There would be minor to moderate positive impacts resulting from additional protection measures.

4.2.5.11 Kern Primrose Sphinx Moth

Impacts to the Kern Primrose Sphinx Moth under the No Action Alternative

Impacts to the Kern Primrose Sphinx Moth from Implementing the Wildlife Program

Under the No Action Alternative, actions will be taken to maintain viable populations of Kern primrose sphinx moths. Occasional surveys to monitor populations and to assess habitat quality and threats may be completed. Support for research and education will be provided. Actions may be taken to protect sphinx moth habitat from surface impacts. This would have a moderate to major positive impact on moth populations.

Impacts to the Kern Primrose Sphinx Moth from Implementing Other Programs

Under the No Action Alternative, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will have a negligible effect on sphinx moth populations: Vegetation, Fire and Fuels Management, Air Quality, Soil, Water, Geology and Paleontology, Cultural Resources, Visual Resources, WSA/Lands with Wilderness Characteristics, and Minerals.

Livestock Grazing. Several moth populations are located within pastures (Fault and Foothills) that are not authorized for grazing by BLM. Sheep grazing on private lands, however, occurs within these pastures. Trampling of food plants, and presumably eggs and larva, occurs as a result of private grazing. BLM authorized grazing will have no effect on Kern primrose sphinx moth within these pastures.

One moth population is located in the Calf Shed pasture. Under the No Action Alternative, this pasture may be grazed by cattle. Cattle grazing use is not high in the moth washes as there is very little vegetation. Livestock, however, do travel in the washes, trampling *Camissonia* plants, and potentially moth eggs and larvae. Soil crust becomes broken up and the disturbed areas may be less suitable for germination and establishment of *Camissonia* plants. To address this effect, BLM has considered installing a fence that would segregate the moth population from the rest of the pasture. If installed, livestock impacts would no longer occur in the moth drainage. The entire pasture could also be removed from grazing or be prescribed with a different season of use.

An unconfirmed moth population is located in the West Cochora pasture. Under the No Action Alternative, the West Cochora pasture may be grazed by cattle. Adjacent drainages were also examined, but no moths were observed. Evidence of livestock use, such as hoof prints and fecal material, was observed in these adjacent drainages. It is possible that livestock use in these adjacent washes has precluded *Camissonia,* and subsequently moths, from these adjacent areas (Peter Jump, personal communication, 2003).

Under the No Action Alternative, grazing could result in minor to moderate negative impacts on moth populations.

Recreation. Walking, horseback riding, and pet travel down moth washes can trample food plants, moth eggs, and larvae. Soil crust becomes broken up and the disturbed areas may be less suitable for germination and establishment of *Camissonia* plants. Under the No Action Alternative, moth drainages would continue to be open to public use. This could result in a minor to moderate negative impacts on moth populations.

Travel Management. There has been some unauthorized vehicle travel down a portion of the Agave moth wash where it crosses Soda Lake Road. Vehicle travel can trample *Camissonia* plants, and potentially moth eggs and larvae. Soil crust becomes broken up and the disturbed areas may be less suitable for germination and establishment of *Camissonia* plants. Unauthorized vehicle travel has also occurred in the Calf Shed moth wash. Vehicles access the wash where the roads cross the moth wash. At both locations, BLM has installed signs and barriers to prevent additional travel down the washes. Both Soda Lake Road and Calf Shed road will remain available for vehicles to use under the No Action Alternative, providing a potential source of unauthorized vehicle use. The barriers that have been installed, however, should prevent additional travel down the washes. It is possible that the barriers could be damaged or driven around by vehicles.

The wash inhabited by the unconfirmed Elkhorn Scarp population is crossed several times by a rugged, dirt road. The road receives little use due to the roughness of the road, and availability of other roads in better condition. Unauthorized vehicle travel into the wash has not been a problem. It is possible that vehicles could travel off the road and into the wash, in the future. Vehicle travel in the moth wash could result in trampling of *Camissonia* plants, larvae, and soil crust.

Under the No Action Alternative, Travel Management could result in a minor to moderate negative impact on moth populations.

Lands and Realty. Under the No Action Alternative, privately owned moth habitat could be acquired as the opportunity arises. Acquisition of privately owned moth habitat would allow BLM to discontinue detrimental practices, such as sheep grazing. This would have a moderate to major positive impact on moth populations.

Impacts to the Kern Primrose Sphinx Moth Common to All Action Alternatives

Impacts to the Kern Primrose Sphinx Moth from Implementing the Wildlife Program

Under all action alternatives, actions will be taken to maintain or increase viable populations of Kern primrose sphinx moths. When appropriate conditions exist, surveys will be conducted for sphinx moths adults, larva, and host plants. Support for research and education will be provided. Sphinx moth habitat will be protected from surface impacts (such as livestock, horses, walking) during critical stages of reproduction and development. This would have a moderate to major positive impact on moth populations.

Impacts to the Kern Primrose Sphinx Moth from Implementing Other Programs

Under all action alternatives, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will have a negligible effect on sphinx moth populations: Vegetation, Fire and Fuels Management, Air Quality, Soil, Water, Geology and Paleontology, Cultural Resources, Visual Resources, WSA/Lands with Wilderness Characteristics, and Minerals.

Impacts to the Kern Primrose Sphinx Moth under Alternative 1

Impacts to the Kern Primrose Sphinx Moth from Implementing the Wildlife Program

See Impacts Common to All Action Alternatives.

Impacts to the Kern Primrose Sphinx Moth from Implementing Other Programs

Livestock Grazing. Under Alternative 1, grazing would not be authorized on BLM lands and there would be no impacts to sphinx moths from BLM authorized grazing. Grazing on private lands, however, may still occur. Because the moth drainages are naturally sparsely vegetated, vegetation management, including grazing, is not necessary to maintain the open structure preferred by the moths and its host plant, *Camissonia*.

Recreation. Under the Alternative 1, moth drainages would continue to be open to public use. Impacts would be the same as described under the No Action Alternative and could result in a minor to moderate negative impacts on moth populations.

Travel Management. Under Alternative 1, Soda Lake Road, and Calf Shed Road would remain available for vehicles use. The potential impacts in Agave Wash and Calf Shed Wash would be the same as in the No Action Alternative and could result in minor to moderate negative impacts to moth populations.

A road that crosses the Elkhorn Scarp wash would be closed under Alternative 1. This would remove the potential for unauthorized vehicles to drive down the moth wash. This could result in a minor positive impact to moth populations.

Lands and Realty. Under the Alternative 1, privately owned moth habitat could be acquired as the opportunity arises. Acquisition of privately owned moth habitat would allow BLM to discontinue detrimental practices, such as sheep grazing. This would have a moderate to major positive impact on

moth populations. The actual rate and amount of sphinx moth habitat acquired is expected to be low based on past rates and patterns of acquisition.

Impacts to the Kern Primrose Sphinx Moth under Alternative 2

Impacts to the Kern Primrose Sphinx Moth from Implementing the Wildlife Program

See Impacts Common to All Action Alternatives.

Impacts to the Kern Primrose Sphinx Moth from Implementing Other Programs

Livestock Grazing. Under Alternative 2, grazing could occur within some sphinx moth pastures (Fault, West Cochora, and Calf Shed), but only in a manner that protects moth habitat. For example, fencing may be installed to partition off the moth habitat from the rest of the pasture. Grazing would not be authorized in the Foothills pasture. Grazing on private lands could occur at any time. Under the Alternative 2, Grazing could have a minor to moderate negative impact on moth populations.

Recreation. Under Alternative 2, moth drainages would continue to be open to public use. Impacts would be the same as described under the No Action Alternative and could result in minor to moderate negative impacts on moth populations.

Travel Management. Under Alternative 2, Soda Lake Road, Calf Shed road and the road that crosses the Elkhorn Scarp would remain available for vehicles use. The potential impacts would be the same as in the No Action Alternative and could result in minor to moderate negative impacts to moth populations.

Lands and Realty. Under Alternative 2, acquisition efforts would be directed to those lands with important biological resources, such as sphinx moth habitat. This would have a moderate to major positive effect on the rate and amount of sphinx moth habitat acquired. Acquisition of privately owned moth habitat would allow BLM to discontinue detrimental practices, such as sheep grazing. This would have a moderate to major positive impact on moth populations.

Impacts to the Kern Primrose Sphinx Moth under Alternative 3

Impacts to the Kern Primrose Sphinx Moth from Implementation of Wildlife Program.

See Impacts Common to All Action Alternatives.

Impacts to the Kern Primrose Sphinx Moth from Implementing Other Programs

Livestock Grazing. The impacts would be the same as Alternative 2 and could result in a minor to moderate impact on moth populations.

Recreation. Under Alternative 3, moth drainages would continue to be open to public use. Impacts would be slightly greater than the No Action Alternative. The increased emphasis on providing recreation facilities, allowance of dispersed camping, additional trails, and improvements will increase visitor use. Increased visitor use may increase the likelihood of travel down moth washes. This could result in moderate negative impacts on moth populations.

Travel Management. Under Alternative 3, Soda Lake Road, Calf Shed road and the road that crosses the Elkhorn Scarp would remain available for vehicles use. The potential impacts would be the same as in the No Action Alternative and could result in minor to moderate negative impacts to moth populations.

Lands and Realty. Under Alternative 3, acquisition efforts would be directed to those lands with important biological resources, such as sphinx moth habitat. This would have a moderate to major positive effect on the rate and amount of sphinx moth habitat acquired. Acquisition of privately owned moth habitat would allow BLM to discontinue detrimental practices, such as sheep grazing. This would have a moderate to major positive impact on moth populations.

4.2.5.12 Longhorn, Vernal Pool, and Other Fairy Shrimp

Impacts to Fairy Shrimp under the No Action Alternative

Impacts to Fairy Shrimp from Implementing the Wildlife Program

Under the No Action Alternative, actions will be taken to maintain viable populations of longhorn, vernal pool, and other fairy shrimp species. Periodic surveys to confirm continued presence and to assess threats may be completed. Support for research will be provided. Actions may be taken to protect fairy shrimp habitat from surface impacts. This would have a moderate to major positive impact on shrimp populations.

Impacts to Fairy Shrimp from Implementing Other Programs

Under the No Action Alternative, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will have a negligible effect on fairy shrimp populations: Vegetation, Fire and Fuels Management, Air Quality, Soil, Water, Paleontology/Geology, Cultural Resources, Visual Resources, WSA/Lands with Wilderness Characteristics, Recreation, Travel Management, and Minerals.

Livestock Grazing. Loss of vernal pool habitat is the primary factor affecting fairy shrimp conservation in California. Vernal pool habitat has been converted to agriculture, urban areas, or water supply and flood control projects (Eng et al. 1990). Off-road vehicle use and overgrazing has also been cited as a threat to some fairy shrimp populations (USFWS 2003a).

Water chemistry, pool depth, and pool longevity are the main factors that determine what species of shrimp, if any, will occur in a particular pool. Pool depth and pool longevity affect water temperature, which regulates cyst hatching. Pool longevity determines whether a species will be able to mature and reproduce before the pool becomes dry. Activities that alter water chemistry or the hydrologic regime of the pool can affect the fairy shrimp composition of the pool.

Fairy shrimp become established where water chemistry and hydrologic regime are appropriate for a given species. Maintaining the conditions that result in a particular water chemistry and hydrologic regime should maintain an established fairy shrimp population. Conversely, if an environmental change occurs that alters water chemistry or hydrologic regime, the species may no longer hatch and reproduce in the pool. The environmental change could result in pool conditions where no cysts hatch at all. Alternately, cysts could hatch but the new conditions could disrupt reproductive efforts and new cysts could fail to be produced. Even if new cysts are not produced, it is possible that old cysts in the soil bank would continue to hatch. This would give the appearance that the environmental change had no effect on the species. If reproduction is not occurring, new cysts do not replace those that hatch. Eventually, the cyst bank would be depleted, and the species would no longer occur in the pool. Since cysts in the soil bank could continue to hatch, it is important to evaluate a pool for a number of years after an environmental change to determine the effects of the environmental change.

Certain levels of livestock grazing are believed to have no impact on pool ecosystems (USFWS 2003a). California vernal pool species evolved in the presence of large ungulates. Grazing may also have beneficial effects. Grazing can deter encroachment of grass and other upland species into the vernal pool.

Marty (2005) found that discontinuation of grazing reduced pool inundation period by 50 to 80%. The primary cause of the decrease in pool hydroperiod may be the increased evapotranspiration rates that resulted from the abundance of vegetation, principally grasses, in and around the ungrazed pools. The amount and timing of grazing is important. Heavy trampling by livestock could alter the micro topography of a pool complex, altering the hydrologic regime. Heavy use by livestock in the upland areas surrounding the pools could also alter hydrologic regimes. Livestock also deposit urine and fecal material that would alter water chemistry. Consumption of vernal pool water by livestock would reduce the pool duration. Shrimp could also be trampled or buried by livestock that walk in the pool.

The vernal pool fairy shrimp has not been documented from inside the Monument boundary. The most likely location for the species in the Monument is on the north end of the Monument, in and near the longhorn fairy shrimp locations. These areas are not currently grazed except for the occasional trespass of sheep from the adjacent private lands on to the location adjacent to Seven Mile Road.

The two northern locations of the longhorn fairy shrimp are not grazed except for the occasional trespass of sheep from private lands on the location adjacent to Seven Mile Road. The Seven Mile Road location is a vernal pool that often contains a sufficient amount of water to support mature fairy shrimp. Longhorn fairy shrimp were observed at the Seven Mile Road location in 1993, 1998, 2000, 2001, and 2003. The second location is a roadside ditch along Soda Lake Road that only fills with water in the wettest years. The Soda Lake Road location has not been monitored due to the lack of regular filling. The Soda Lake Road location may be occasionally modified by county road maintenance activities.

The southern locations of the longhorn fairy shrimp are located in the Calf Shed, Hostetter, and Foothill pastures. The Calf Shed and Hostetter areas were acquired by BLM in 1991. Prior to BLM acquisition, the area was heavily grazed by cattle for several decades. In 1992, BLM reduced the level and duration of livestock grazing in the area. Upon discovery of the longhorn fairy shrimp in the Hostetter pasture in 1995, BLM considered fencing the pools to remove grazing. Species expert Denton Belk advised against making any changes that could alter pool chemistry or hydrologic regime, including the removal of grazing. Based on this advice, BLM continued the grazing and began monitoring of the pools for longhorn fairy shrimp. Longhorn fairy shrimp were observed in the Hostetter pools in 1995, 1996, 1997, 2000, 2001, 2003, 2004, and 2005. Females with full egg sacs are often observed. Livestock continue to use the general pool area in the Hostetter pastures. It is not unusual to see a cow or two in the vicinity of Hostetter pools. Hoof prints and fecal material are often seen at the Hostetter pools. Livestock may consume some of the water in the pools. The amount of water consumed does not noticeably draw down the pools, perhaps because there is a livestock trough nearby. Removal of vegetation by grazing may also reduce the amount of water lost to evapotranspiration (Marty 2005), balancing any loss due to consumption.

The Calf Shed pool does not fill as often as the Hostetter pools. When the Calf Shed pool does fill, it supports fairy shrimp and spadefoot toad tadpoles. Spadefoot toad tadpoles will consume fairy shrimp. Fairy shrimp were observed in 1995, 1997, 1998, and 2005. The longhorn fairy shrimp was documented in 1995 and 2005. The species may have been present in 1997 and 1998, but pool sampling was minimized to avoid damaging spadefoot toad egg masses. Livestock hoof prints and fecal material are often seen at the Calf Shed pool. Livestock do not target this pool, but probably make regular use of the water in years where the grazing season extends into the warmer months.

Longhorn fairy shrimp were confirmed in the Foothills pasture pools in 2005. Grazing is not authorized on BLM lands in this pasture. Private land in this pasture is typically sheep grazed and occasionally sheep trespass and graze at the longhorn fairy shrimp locations. On at least once occasion, sheep use of one of the shrimp ponds appeared to accelerate the drying up of the pool. BLM has since posted “no grazing” signs at the boundaries of BLM lands in this area. BLM authorized grazing will have no effect on

longhorn fairy shrimp since grazing is not authorized on BLM lands in the Foothills pasture. Trespass private grazing, however may continue to occur.

The current lack of grazing, with the exception of occasional trespass sheep grazing, appears to be compatible with longhorn fairy shrimp in the Seven Mile Road pool based on the persistence of the species in the pool from 1993 through 2003. The lack of grazing is suspected to be compatible with the longhorn fairy shrimp in the Soda Lake Road location, but this area has not been monitored. Maintenance activities conducted by the county are more likely to influence this location. The level and duration of grazing appears to be compatible with the longhorn fairy shrimp in the Hostetter pools based on the persistence of the species in these pools from 1995 through 2003, and the presence of females with full egg sacs. The current level and duration of grazing is suspected to be compatible with the longhorn fairy shrimp in the Calf Shed pool, although this area has not been intensely monitored. The lack of BLM authorized grazing appears to be compatible with longhorn fairy shrimp in the Foothills pasture.

The remaining four species of fairy shrimp (versatile fairy shrimp, alkali fairy shrimp, pouch-pocketed fairy shrimp, and brine shrimp) occur at various grazed and ungrazed locations. The versatile fairy shrimp and brine shrimp have been consistently observed in the documented locations from 1994 through 2003. The current level of grazing or lack of grazing, depending on the location, appears to be compatible with these two species given their persistence in the various locations. The pouch-pocketed fairy shrimp is located in Soda Lake, which is ungrazed, and on private land that is grazed. Three of the alkali fairy shrimp locations are ungrazed, and the fourth is grazed. The current ungrazed and grazed condition at each of these sites has been in place for several decades. A continuation of the historic grazed and ungrazed use patterns should preserve the pouch-pocketed and alkali fairy shrimp populations.

Lands and Realty. Under the No Action Alternative, privately owned fairy shrimp habitat could be acquired as the opportunity arises. Acquisition of privately owned fairy shrimp habitat would allow BLM to conduct monitoring of shrimp populations and protect against detrimental activities. This would have a moderate to major positive impact on fairy shrimp populations.

Impacts to Fairy Shrimp Common to All Action Alternatives

Impacts to Fairy Shrimp from Implementing the Wildlife Program

Under All Action Alternatives, actions will be taken to maintain or increase viable populations of longhorn, vernal pool, and other shrimp species. When appropriate conditions exist, certain known locations will be checked for the presence fairy shrimp. Information, such as water quality and shrimp demographics, will be collected. Support for research and education will be provided. Vernal pools and sag ponds that provide fairy shrimp habitat will be protected. Current conditions will be maintained while the knowledge base is improved. Management will be modified to reflect new information. Vernal pool monitoring will be designed for the early detection of negative changes, such as reduced fairy shrimp numbers, altered hydrology, or detrimental nonnative species, and action will be taken to remedy negative changes. These actions will have a moderate to major positive effect on fairy shrimp populations.

Impacts to Fairy Shrimp from Implementing Other Programs

Under All Action Alternatives, with the exception of those impacts discussed under General Wildlife Impacts, the following programs will have a negligible effect on fairy shrimp populations: Vegetation, Fire and Fuels Management, Air Quality, Soils, Water, Geology and Paleontology, Cultural Resources, Visual Resources, WSA/Lands with Wilderness Characteristics, Recreation, Travel Management, and Minerals.

Impacts to Fairy Shrimp under Alternative 1

Impacts to Fairy Shrimp from Implementing the Wildlife Program

See Impacts Common to All Action Alternatives.

Impacts to Fairy Shrimp from Implementing Other Programs

Livestock Grazing. Under Alternative 1, grazing would not be authorized on any BLM lands including the areas supporting fairy shrimp. Grazing is currently not authorized for the two northern longhorn fairy shrimp locations and the area with the highest potential for vernal pool fairy shrimp. The effects under Alternative 1 to the northern longhorn fairy shrimp locations and potential habitat for the vernal pool fairy shrimp are the same as described for the No Action Alternative.

The southern population of the longhorn fairy shrimp in the Foothills pasture would continue to be not authorized for grazing by BLM. Trespass private sheep grazing may still occasionally occur.

The southern populations of the longhorn fairy shrimp in the Calf Shed and Hostetter pastures would no longer be grazed. The resulting accumulation of vegetation could alter the hydrologic regime of the pools. Marty (2005) found that discontinuing grazing reduced pool inundation period by 50 to 80%. The primary cause of the decrease in pool hydroperiod may be the increased evapotranspiration rates that resulted from the abundance of vegetation, principally grasses, in and around the ungrazed pools. The removal of livestock fecal and urine from the area could alter water chemistry of the pools. Alteration of pool hydrology and water chemistry could alter the fairy shrimp composition of the pools. It is unknown how the longhorn fairy shrimp would respond. The longhorn fairy shrimp population could remain stable, increase or decrease, or disappear from some or all of the pools.

The remaining four species of fairy shrimp (versatile fairy shrimp, alkali fairy shrimp, pouch-pocketed fairy shrimp, and brine shrimp) occur at various grazed and ungrazed locations. There would be no change to the locations that are currently ungrazed and locations that are on private land. This includes all of the pouch-pocketed and alkali fairy shrimp locations, half of the brine shrimp locations, and a few of the versatile fairy shrimp locations. The cessation of grazing at the remaining locations could alter pool hydrology and water chemistry. This includes three of the brine shrimp locations and several of the versatile fairy shrimp locations. It is unknown how the brine shrimp and versatile fairy shrimp populations would respond. The populations could remain stable, increase or decrease, or disappear from some or all of the locations. Since the versatile fairy shrimp and brine shrimp are relatively common in the region, should there be a loss of a few locations due to the cessation of grazing, this would be only a minor impact.

Impacts to Fairy Shrimp under Alternative 2

Impacts to Fairy Shrimp from Implementing the Wildlife Program

See Impacts Common to All Action Alternatives.

Impacts to Fairy Shrimp from Implementing Other Programs

Livestock Grazing. Under Alternative 2, the existing grazing regime would be applied for known locations of longhorn, pouch-pocketed, and alkali fairy shrimp and brine shrimp. Longhorn fairy shrimp populations that have not been grazed (northern populations and Foothills pasture) would remain ungrazed. Longhorn fairy shrimp populations that have been grazed (Calf Shed and Hostetter pastures) would continue to be grazed. If monitoring or new information indicates a change is appropriate, the

grazing treatment can be modified or discontinued. Grazing under Alternative 2 is expected to maintain longhorn, pouch-pocketed, and alkali fairy shrimp and brine shrimp populations. Some of the versatile fairy shrimp locations that were grazed will no longer be grazed under Alternative 2. Since the versatile fairy shrimp is relatively common in the region, should there be a loss of a few locations due to the cessation of grazing, this would be only a minor impact.

Impacts to Fairy Shrimp under Alternative 3

Impacts to Fairy Shrimp from Implementing the Wildlife Program

See impacts common to all action alternatives.

Impacts to Fairy Shrimp from Implementing Other Programs

Livestock Grazing. Under Alternative 3, the existing grazing regime would be applied for known locations of longhorn, pouch-pocketed, and alkali fairy shrimp and brine shrimp. The effects would be the same as Alternative 2 and is expected to maintain longhorn, pouch-pocketed, alkali, and versatile fairy shrimp and brine shrimp populations.

4.2.6 Featured Species

4.2.6.1 Pronghorn

Impacts to Pronghorn under the No Action Alternative

Impacts to Pronghorn from Implementing the Wildlife Program

The current Monument goals and objectives to increase the importance of native species, achieve and maintain sustainable populations of extant non-listed native species, and reintroduce native plants and animals when appropriate would have major beneficial impacts to pronghorn over the long term. The current management objective to maintain a population of 250 pronghorn on the Monument would provide management direction to implement habitat management and population management actions to sustain a viable population.

Under current management, pronghorn inhabiting the Monument would be expected to be sustained over the long term. BLM and the CDFG would evaluate pronghorn use and habitat requirements on an annual basis to determine if livestock grazing, prescribed fire, or other vegetation management prescriptions would be needed to improve pronghorn habitat. In pronghorn use areas in the Carrizo Plain North and Caliente Foothills North subregions, a decline in pronghorn numbers from 2000 to 2005 prompted removal of livestock grazing in several key pronghorn fawning pastures to determine if this would improve habitat quality and maintain population numbers. In other fawning areas, the season of livestock use was shortened to remove livestock before fawning occurs, and the level of residual dry matter has been raised to increase fawning cover and overall vegetation height between 15 to 25 inches tall. Prescribed fire, with or without a grazing treatment, would continue to be applied to manipulate vegetation to increase pronghorn forage habitat quality.

The maintenance of existing water sources and the construction of new sources would have major beneficial impacts to the pronghorn population on the Monument. Pronghorn generally require water sources every 1 to 5 miles (Yoakum 1978). Current water sources are within this range in the Carrizo Plain North and Caliente Foothills subregions inhabited by pronghorn.

Impacts to Pronghorn from Implementing Other Programs

Vegetation. The current Monument objectives to increase the importance of native species in Monument communities, provide for all transitional states of native communities through the natural range of disturbances (for example, fire, grazing, climatic events), and maintain shrub-scrub communities, would have major beneficial impacts to pronghorn across the Monument in the short and long term. Pronghorn prefer habitats with a mix of grasses, forbs, and shrubs. Yoakum (1980) reports that in sagebrush-grassland steppe, pronghorn require 50 percent vegetative ground cover, a composition of 30 to 40 percent grasses, 10 to 30 percent forbs, and 5 to 30 percent shrubs, and a wide variety of preferred forage species (5 to 10 grass species, 10 to 50 forb species, and 5 to 10 shrub species). It is generally assumed that the improvement and maintenance of plant communities with a high proportion of native plant species would provide high quality habitat for pronghorn. However, recent studies of pronghorn on the Monument (Longshore and Lowrey 2007) indicate that the existing native annual plant communities provide only marginal quality habitat due to the annual plant communities that do not contain high nutrient forbs for lactation and fawn forage in the late spring and summer months.

The most important element of the current management objectives may be providing all transitional states and disturbances across the Monument to create a mosaic of grassland, shrub-scrub lands, grazed and ungrazed areas, burned and unburned areas, and a wide range of habitat opportunities for pronghorn. Under this mosaic, pronghorn would occupy plant communities within the range of their habitat needs. This strategy of varied plant communities is expected to maintain pronghorn populations across the Monument landscape and have major benefits to the pronghorn population.

Restoration activities to reintroduce native plants into previously cultivated farm fields, abandoned roads, or in habitats with a low proportion of native plant species would have moderate to major beneficial impacts on pronghorn. Restoration could improve both available forage species and vegetation structure of taller grasses, forbs, and shrubs. Most of the restoration activities would occur in the previously cultivated farm fields in the Carrizo Plain North and Caliente Foothills North subregions where pronghorn are given high management priority.

Fire and Fuels Management. Fire suppression activities that protect the loss of shrub communities would have moderate to major beneficial impacts to pronghorn. The construction of fire control lines, conducting mobile attack, and retardant drops would generally not affect pronghorn habitat use except during actual suppression activities. The animals would be expected to easily escape to areas away from suppression activities. Early season wildfires are extremely rare during the fawning season and disturbance to fawning habitat would be minimized if possible.

Prescribed fire would provide moderate to major beneficial impacts to pronghorn by improving forage species composition during the following winter and spring growing seasons for 1 to several years, depending on rainfall. Management practices that favor native forbs (and nonnative succulent forbs) may be helpful in providing for pronghorn habitat needs. Forbs are considered to be preferred forage and important in meeting nutritional needs. Management practices that favor succulent forbs could improve female body condition during gestation and lactation, and thus improve fawn survivorship. Fire could be an important tool to increase succulent forage. Several studies have shown a positive, but short-term, effect of fire on the composition of native annual forbs (D'Antonio et al. 2002). Pronghorn make disproportionate use of recently burned rangelands for foraging, especially in the first growing season after fire (Kindschy et al. 1982).

Livestock Grazing. Occasional to routine livestock grazing within the pronghorn use area(s) would be applied to manipulate vegetation structure and plant species composition. Pronghorn prefer habitats with a mix of grasses, forbs, and shrubs. Yoakum (1980) reports that in sagebrush-grassland steppe, pronghorn

require 50 percent vegetative ground cover, a composition of 30 to 40 percent grasses, 10 to 30 percent forbs, 5 to 30 percent shrubs, and a wide variety of preferred forage species (5 to 10 grasses, 10to 50 forbs, and 5 to 10 shrubs). A vegetation height between 15 and 25 inches is preferred. Livestock may be prescribed when vegetation exceeds 25 inches over 80 percent of the key area. Livestock would be removed or excluded when vegetation height is between 15 to 25 inches. Grazing would be removed during fawning season. Summer livestock grazing may be used to decrease residual dry matter to favor forb production in the following growing season.

The succulence of forage appears to be an important factor in habitat selection and animal health. Jones (1991) studied pronghorn several miles north of the Monument and speculated that plant cover, diversity, biomass, and cover of forb species are primary factors that influence forage site selection in the Cholame area, especially in the summer. Jones found that nonnative black mustard was highly used since it, saltgrass, and alkali mallow were the only green vegetation in the area. Other researchers have observed that succulence of vegetation is important in pronghorn food selection, and forbs are highly preferred in grassland habitats (O'Gara and Yoakum 2004). In addition, some researchers have noted a greater importance of forbs and the diminished importance of shrubs in the diet of pronghorn in southern and grassland ranges (O'Gara 1978; O'Gara and Yoakum 2004). A study of pronghorn in the Painted Rock area of the Monument (Godoy and Oberhoff 1998) noted that the core use area was heavily populated by actively growing succulent forbs/herbs, mainly prickly lettuce, and the pronghorn selected areas of this succulent vegetation. While this study found higher forb/herb cover and lower bare ground cover within the core use area and higher grass cover outside the core use area, the sample sizes were too low to be conclusive.

Recent studies on pronghorn diets in the Monument (Longshore and Lowry 2007) estimated that pronghorn annual diets were composed of 66.2% forbs, 13.5% grass, 9.5% shrubs, 8% seeds, and 1% insects. In a nearby study, Jones (1991) stated that pronghorn use of grasses was not well understood in the Cholame study, but it appeared that grass use was somewhat important in the spring. O'Gara (1978) noted that grasses are used in the spring and fall as they become green. While grasses are not a large percentage of pronghorn diets in the northern sagebrush ranges (Yoakum 1980), grasses have been from 15 to 52 percent of the diet in the southern ranges (O'Gara 1978).

This information suggests that management practices that favor the native forbs (and nonnative succulent forbs) may be helpful in providing for pronghorn habitat needs. Forbs are considered to be preferred forage and important in meeting nutritional needs. Management practices that favor succulent forbs could improve female body condition during gestation and lactation, and thus improve fawn survivorship. In a synopsis of livestock grazing and fire in the restoration of California grasslands, D'Antonio et al. (2002) identified several studies that showed a range of positive, negative, and neutral effects to native bunchgrasses and native annual forbs from different grazing treatments. Several studies observed an increase in native plants with a decrease in exotic plants in controlled studies. However, while livestock grazing has been shown to benefit some native plant populations, the positive response to grazing is not universal among native species or across locales for any one species. Initial analysis of grazed and ungrazed pastures in areas of the Monument indicated that there was a higher percentage of native species cover and higher native species richness in ungrazed pastures than grazed pastures (Christian et al., in prep.).

Diets of pronghorn and cattle suggest that there is little dietary overlap between these species, with cattle preferring grasses and pronghorn preferring forbs and browse (Yoakum 1980). Competition for forage on grasslands is usually minor (O'Gara and Yoakum 2004), but dietary overlap studies between cattle and pronghorn have not been conducted on the Monument. Yoakum (1980) notes that significant competition between pronghorn and livestock would not be anticipated as long as all classes of forage are in adequate supply. Livestock grazing management guidelines that maintain adequate residual dry matter and avoid

shrub utilization above 20 percent are currently designed to apply light to moderate levels of livestock use in the pronghorn use areas. However, recent monitoring studies in the Monument indicate that current grazing practices and prescription resulted in lower relative cover of native species and native species richness in grazed pastures relative to ungrazed pastures. Thus, the current winter season grazing prescriptions may have moderate negative effects on native forage for pronghorn. Based on this information and application of the Conservation Target Table, livestock use has been curtailed in some pastures used by pronghorn for foraging.

Another issue of concern regarding livestock grazing in pronghorn fawning pastures is the height of vegetation. Pronghorn fawn mortality is often the result of coyote predation (Byers 2003). There is concern that in grazed pastures there is too low of structure to conceal fawns for the first 3 to 4 weeks following birth. Studies in Texas (Canon and Bryant 1997) and Wyoming (Alldredge et al. 1991) concluded that environmental factors that provided adequate concealment (vegetation height and shrub canopy cover) and long-range visibility of the area appeared to be favored for birthing and bedding. In response to this need, pronghorn management guidelines recommend an average height of 15 inches of vegetation (Yoakum 1980). While shrub stands measured in the Monument range in height from 1 to 5 feet, their distributions do not always coincide with pronghorn fawning areas. Based on comparisons of aerial photography taken between 1984 and 2003, the distribution of shrubs and their vigor has greatly increased in the Monument since managing partner acquisitions began in 1987. The height of herbaceous vegetation is often adequate in the Carrizo Plain and Caliente Foothills North subregions, but only rarely adequate in the remaining subregions of the Carrizo and Elkhorn plains. However, as noted above, livestock grazing levels have been decreased in fawning pastures to minimize this impact. Fawn survival in 2003 did improve over the previous years coincident with the absence of grazing in the Monument. Pronghorn numbers in the Monument have declined since their reintroduction. The reasons they have failed to thrive in the Monument have not been adequately determined. However, due to the large size of the Monument and the habitat mosaic present, current management appears to provide ample opportunity for this species to find suitable areas.

Pronghorn are disturbed by fences and do not cross any kind readily. Fences disrupt daily and seasonal movement patterns, and may separate mothers and fawns during the period when fawns are most vulnerable to coyotes (Byers 2003). Several fence-related mortalities have been reported in the Monument over the past 15 years (Koch and Yoakum 2004). Some deaths have occurred as a result of entanglements, and others have been related to being trapped and hit by vehicles along Soda Lake Road, or by being trapped by coyotes when pursued. Over the past eight years, the CDFG and BLM have modified or removed over 150 miles of fence to meet recommended configurations to benefit pronghorn. While not all fences have been modified to the BLM standard, the bottom wires are being raised to the minimum in all pronghorn use areas within the Monument. Fence modification would have moderate to major benefits to maintaining the population.

Impacts to Pronghorn Common to All Action Alternatives

Impacts to Pronghorn from Implementing the Wildlife Program

The collective wildlife management objectives to maintain viable populations, provide habitat for mountain plover and California condor, protect roosting habitat, maintain habitat structural diversity, protect riparian habitat and vernal pools, and conduct research and inventory would have negligible to moderate beneficial impacts to pronghorn within the Monument over the long term.

Impacts to Pronghorn from Implementing Other Programs

Livestock Grazing. The impacts would be the same as described in the General Wildlife section.

Impacts to Pronghorn under Alternative 1

Impacts to Pronghorn from Implementing the Wildlife Program

This alternative would allow pronghorn populations to naturally fluctuate and possibly disappear if dictated by natural conditions. While the CPNM herd has declined from the initial release population of 239 to a number between 54 and 150, prescribed burns, some supplemental feeding, and maintenance of water troughs and springs have been conducted to improve habitat conditions or help animals survive drought. The direct and indirect effects of these actions have not been studied, but monitoring has indicated an increase of the herd over the past several years. Factors affecting overall pronghorn herd condition and trends are currently being investigated. Without vegetation management tools to implement study results and possibly improve habitat conditions, it is likely that the CPNM herd would continue to decline below a viable number. Foregoing habitat management actions such as providing artificial waters sources, prescribed fire, restoration of previously cultivated fields, or interseeding with native forage species would result in major detrimental impacts to the CPNM pronghorn herd.

The removal of fences would provide moderate to major benefits to the pronghorn herd by eliminating a risk of fence entanglements, being hindered in escape from coyotes or other predators, or trapped within roadways and being killed by vehicle collisions. With the low numbers of pronghorn currently in the herd, these measures may be important in meeting and sustaining herd management objectives.

Not allowing herd augmentation could have major detrimental impacts to meeting the herd objective and would eliminate an important herd management option if the CDFG wishes to release animals on the Monument. It is unknown if this may be necessary in the future, but augmentation may be an option to reach herd viability. Under Alternative 1 it is likely that pronghorn would not continue to inhabit the Monument and animals may relocate to adjacent private, CDFG, or BLM lands outside of the Monument.

Impacts to Pronghorn from Implementing Other Programs

Vegetation. Under Alternative 1, the quality of pronghorn habitat on the Monument would be determined by natural conditions. Neither prescribed fire, prescribed livestock grazing, mechanical treatments, nor restoration of native plant communities would be conducted to improve or maintain pronghorn habitat. The elimination of livestock grazing could have variable effects on pronghorn populations. The removal of competing domestic grazers would be beneficial if there is a limitation of preferred forage, resulting in direct competition for food. However, it is not known whether or not forage competition with livestock is a factor in limiting this herd.

Fire and Fuels Management. The elimination of prescribed fire in the Monument would remove an important tool to improve forage quality and alter habitat structure and would have major detrimental impacts to pronghorn in the Monument. Management practices that favor the native forbs (and nonnative succulent forbs) may be helpful in providing for pronghorn habitat needs. Forbs are considered to be preferred forage and important in meeting nutritional needs. Management practices that favor succulent forbs could improve female body condition during gestation and lactation, and thus improve fawn survivorship. Fire could be an important tool to increase succulent forage. Several studies have shown a positive, but short-term, effect of fire on the composition of native annual forbs (D'Antonio et al. 2002). Pronghorn make disproportionate use of recently burned rangelands for foraging, especially in the first growing season after fire (Kindschy et al. 1982).

Livestock Grazing. The elimination of grazing would have moderate to major benefit and could improve habitat structure for hiding fawns in wet years when the herbaceous vegetation responds to increased

rainfall. However, there would be a negligible effect in normal and below normal rainfall years when structure is low and shrubs are maintained regardless of ungulate use. BLM would not authorize grazing during these years due to low vegetation production.

The biggest effect may be due to changes in vegetation composition in the pronghorn use pastures. Recent pasture monitoring in the Monument indicate that there is higher relative cover of native species and higher native species richness in ungrazed versus grazed pastures (Christian et al., in prep.). Elimination of livestock grazing would likely continue to improve native species composition. However, plant community responses to protection from grazing in several long-term studies reviewed by D'Antonio et al. (2002) showed that plant composition was relatively stable over time, indicating that native species as a group failed to return to dominance after livestock exclusion. In a study looking at vegetation after 13 years of livestock removal, Harrison (1999) found that native species did not dominate sites protected from grazing. The elimination of domestic livestock grazing in areas of pronghorn use would likely improve cover and composition of forage and pronghorn forage quality could improve marginally. However, the herd could still be limited by nutritional limitations associated with a grassland that does not provide succulent forage in the post-partum period and succeeding summer months. While an increase in shrub cover would be beneficial for fawn survivorship and improved spring forage would likely improve, it is not known whether the pronghorn population in the Monument would increase.

Impacts to Pronghorn under Alternative 2

Impacts to Pronghorn from Implementing the Wildlife Program

Managing the pronghorn habitats in the Carrizo Plain North and Caliente Foothills North subregions to meet the herd objective of 250 pronghorn would have major beneficial impacts to pronghorn in the long term. Implementing livestock grazing, prescribed fire, habitat restoration (especially native forbs and shrubs), supplemental water and feeding prescriptions, and habitat improvements would provide critical forage, cover, and water requirements necessary to reach and maintain the herd objective. Considering the past herd population trends and recent habitat studies, implementing these actions may be necessary to provide suitable habitat.

The practice of supplying supplemental feed to pronghorn during periods of critically low natural forage availability could have major benefits and may determine if population objectives can be met. Although the Carrizo Plain North and Caliente Foothills regions receive consistently higher amounts of annual rainfall than the other portions of the Carrizo Plain proper, the 8.5 inches of rainfall appears to be marginal in most years to provide adequate succulent forage for pronghorn in the late spring and summer seasons when females are lactating and producing milk for fawns and when fawns are weaned onto forage plants. A general lack of native succulent forbs in the diet of pronghorn females and fawns is likely inhibiting fawn survivorship. Supplying the critical resource in years when herd viability is threatened may be needed not only to meet herd population objectives, but to maintain a smaller population of pronghorn on the Monument at all.

The modification of all fences to pronghorn passage standards or the realignment or removal some fences would provide moderate to major benefits to the pronghorn herd by facilitating movement and eliminating a risk of fence entanglements, being hindered in escape from coyotes or other predators, or trapped within roadways and being killed by vehicle collisions. With the low numbers of pronghorn currently in the herd, these measures may be important in meeting and sustaining herd management objectives.

Measures to reduce vehicle-pronghorn collisions would provide moderate to major beneficial impacts to pronghorn if such measures would reduce pronghorn mortalities. In the currently low population levels, eliminating even low vehicle-induced mortality may help achieve herd management objectives.

Augmentation of pronghorn from other herds to achieve herd objectives would provide major beneficial impacts to the herd. The currently low population levels may be at a point where natural mortality does not produce enough fawn production to increase the population. Augmentation of additional females would improve the likelihood to have an increasing herd population. This action, along with habitat improvements and altered grazing management prescriptions, may help reach and maintain the 250 member herd objective. However, the availability of surplus pronghorn from other regions of California or adjacent states would determine if augmentations are possible.

Impacts to Pronghorn from Implementing Other Programs

Vegetation. Restoration of native plant communities to restore shrubs, tall grasses and forbs, and perennial grasses; managing for a mosaic of forage resources; and maintaining adequate habitat structure and adequate fawning cover would provide major beneficial impacts to pronghorn in the long term. Promoting forb and perennial grass production by vegetation treatments would have positive impacts described for vegetation objectives under the current management alternative.

Fire and Fuels Management. The use of prescribed fire would have major beneficial impacts described in the Fire and Fuels Management section of the No Action Alternative.

Livestock Grazing. The maintenance and improvement of foraging and fawning habitat by prescribed grazing identified in the conservation target table would have moderate beneficial impacts.

Impacts to Pronghorn under Alternative 3

Impacts to Pronghorn from Implementing the Wildlife Program

Managing the pronghorn habitats in the Carrizo Plain North and Caliente Foothills North subregions to meet the herd objective of 250 pronghorn would have major beneficial impacts to pronghorn in the long term. Implementing livestock grazing, prescribed fire, habitat restoration, supplemental water and feeding prescriptions, and habitat improvements would provide critical forage, cover, and water necessary to reach and maintain the herd objective. Considering the past herd population trends and recent habitat studies, implementing these actions may be necessary to provide suitable habitat, albeit with artificial forage and water habitat improvements.

The construction of new water sources in the Carrizo Plain North and Caliente Foothills North subregions within 2 miles from important forage and fawning habitats would have moderate beneficial impacts to pronghorn. Current water distributions are generally adequate at approximately one source every 2 to 3 miles on the valley floor, but additional waters would improve reliability of water to less than one source every 2 miles. Water availability is a critical habitat feature for pronghorn populations in the dry summer and fall months when forage is dry and temperatures are high (O'Gara and Yoakum 2004) and increased water would likely improve animal health, vigor, and fawn survivorship and help determine if population objectives can be achieved.

The practice of supplying supplemental feed to pronghorn during periods of critically low natural forage availability could have a major benefit and may determine if population objectives can be met. Although the Carrizo North and Caliente Foothill regions receive consistently higher amounts of annual rainfall than the other portions of the Carrizo Plain proper, the 8.5 inches of rainfall appears to be marginal in most years to provide adequate succulent forage for pronghorn in the late spring and summer seasons when females are lactating and producing milk for fawns and when fawns are weaned onto forage plants. A general lack of native succulent forbs in the diet of pronghorn females and fawns is likely inhibiting

fawn survivorship. Supplying the critical resource may be needed on a regular basis, in below-average rainfall years, to meet herd population objectives.

The modification of all fences to pronghorn passage standards or the realignment or removal of unnecessary fences in the Monument would provide moderate to major benefits to the pronghorn herd by eliminating a risk of fence entanglements, being hindered in escape from coyotes or other predators, or trapped within roadways and being killed by vehicle collisions. With the low numbers of pronghorn currently in the herd, these measures may be important in meeting and sustaining herd management objectives.

Augmentation of pronghorn from other herds to achieve herd objectives over the next 10 years would provide major beneficial impacts to the herd. The currently low population levels may be at a point where natural mortality does not produce enough fawn production to increase the population. Augmentation of additional females would improve the likelihood of increasing the herd population. This action, along with habitat improvements and altered grazing management prescriptions may help reach and maintain the 250 member herd objective within the next 10 to 15 years. However, the availability of surplus pronghorn from other regions of California or adjacent states would determine if augmentations are possible.

Impacts to Pronghorn from Implementing Other Programs

Vegetation. Restoration of native plant communities to restore shrubs, tall grasses and forbs, and perennial grasses; managing for a mosaic of forage resources; and maintaining adequate habitat structure and adequate fawning cover would provide major beneficial impacts to pronghorn in the long term. Promoting forb and perennial grass production by vegetation treatments would have positive impacts described for vegetation objectives under the current management alternative.

Fire and Fuels Management. The use of prescribed fire would have major beneficial impacts described in the Fire and Fuels Management section of the No Action Alternative.

Livestock Grazing. The maintenance and improvement of foraging and fawning habitat by prescribed grazing identified in the conservation target table (Appendix C), would have moderate beneficial impacts.

4.2.6.2 Tule Elk

Impacts to Tule Elk under the No Action Alternative

Impacts to Tule Elk from Implementing the Wildlife Program

The current Monument goals and objectives to increase the importance of native species, achieve and maintain sustainable populations of extant non-listed native species, and reintroduce native plants and animals when appropriate would have moderate beneficial impacts to tule elk over the long term. The current management objective to maintain a population of 500 tule elk on the Monument would provide management direction to implement habitat management and population management actions to sustain a viable population.

Under current management, tule elk inhabiting the Monument would be expected to be sustained over the long term. BLM and the CDFG would evaluate tule elk use and habitat requirements on an annual basis to determine if livestock grazing, prescribed fire, or other vegetation management prescriptions would be needed to improve elk habitat. In elk use areas in the Carrizo Plain North and Caliente Foothills North subregions, water developments, native plant restoration, and prescribed fire, with or without a grazing

treatment, would continue to be applied to manipulate vegetation to increase tule elk forage habitat quality.

The maintenance of existing water sources and the construction of new sources would have moderate beneficial impacts to the tule elk population on the Monument. Elk generally inhabit habitats within 0.25 to 0.5 miles from water sources (Thomas and Toweill 1982), but longer distances usually occur in the LaPanza herd. Current water sources are spaced about every 1 to 2 miles in the Carrizo Plain North and Caliente Foothill subregions inhabited by tule elk.

Impacts to Tule Elk from Implementing Other Programs

Vegetation. The current Monument objectives to increase the importance of native species in Monument communities, provide for all transitional states of native communities through the natural range of disturbances (for example, fire, grazing, climatic events), and maintain shrub-scrub communities, would have moderate beneficial impacts to tule elk in the short and long term. While grasses comprise about 50 percent of tule elk diets throughout the year, succulent forbs are important for lactating cows and for general nutrition in the summer and fall months, with shrubs being important food items in the winter (Thomas and Toweill 1982). These objectives would provide a variety of forage species to meet elk habitat requirements.

The most important element of the current management objectives may be providing all transitional states and disturbances across the Monument to create a mosaic of grassland, shrub-scrub lands, grazed and ungrazed areas, burned and unburned areas, and a wide range of habitat opportunities for tule elk. Under this mosaic, elk would occupy plant communities within the range of their habitat needs. This strategy of varied plant communities is expected to maintain tule elk populations in the Carrizo Plain North, Caliente Foothills North, Caliente Mountain North, and Caliente Mountain South subregions. The population of Tule elk inhabiting the Monument would be expected to remain healthy and contribute to meeting the CDFG herd management goals. BLM's vegetation management activities would have little effect on this herd, and livestock grazing would be managed in a manner compatible with those objectives.

Restoration activities to reintroduce native plants into previously cultivated farm fields, abandoned roads, or in habitats with a low proportion of native plant species, would have moderate beneficial impacts on tule elk. Restoration could improve both available forage species and vegetation structure of taller grasses, forbs, and shrubs. Most of the restoration activities would occur in the previously cultivated farm fields in the Carrizo Plain North and Caliente Foothills North subregions, where tule elk are becoming more common and are given high management priority.

Fire and Fuels Management. Fire suppression activities that include the construction of fire control lines, conducting mobile attack, and retardant drops would have negligible effects on tule elk habitat use except during actual suppression activities. The animals would be expected to easily escape to areas away from suppression activities. Early season wildfires are extremely rare during the calving season and disturbance to calving habitat would be minimized if possible.

Prescribed fire would provide moderate beneficial impacts to tule elk by improving forage species composition during the following winter and spring growing seasons for one to several years, depending on rainfall. Management practices that favor native grasses and forbs (and nonnative succulent forbs) may be helpful in providing for elk habitat needs. Grasses and forbs are preferred forage and important in meeting nutritional needs. Management practices that favor native grasses and succulent forbs could improve female body condition during gestation and lactation, and thus improve calf survivorship. Fire could be an important tool to increase preferred forage. Several studies have shown that elk exploit burned areas to feed on improved forage (Thomas and Toweill 1982).

Livestock Grazing. Elk generally occur in the Brumley, Elk Canyon, South Goodwin, Ranch, Hill, Sheep Camp, Powerline, and Dillard pastures. Of these BLM pastures, 6,120 acres are available for livestock grazing and 1,200 acres are in the ungrazed Elk Canyon pasture. These pastures are also bisected by 5,440 acres of CDFG lands that are not grazed by livestock. More importantly, the herd usually resides on the CDFG pastures in the American and Chimineas Units. However, the elk are becoming more common in the Selby and Washburn areas to the south. Current elk distributions probably reflect higher grass and forb production in the foothills and alluvial fans and a lack of cattle use since 2003. The herd has been increasing under the existing management practices, and would likely continue this trend into the foreseeable future. Current management would have moderate benefit to the herd population.

There is a high degree of dietary overlap between elk and cattle. The high amounts of grass and forb production and generally light amount of cattle use would not cause competition since forage is not limiting. Current management prescriptions have reduced cattle use in the Carrizo Plain North and Caliente Foothills North subregions. It appears that the elk have responded to lower livestock presence by spending more time in the Ranch, Painted Rock, Sheep Camp, Brumley, Selby, and Tripod pastures.

Impacts to Elk Common to All Action Alternatives

Impacts to Elk from Implementing the Wildlife Program

The collective wildlife management objectives to maintain viable populations, provide habitat for mountain plover and California condor, protect roosting habitat, maintain habitat structural diversity, protect riparian habitat and vernal pools, and conduct research and inventory would have negligible to minor beneficial impacts to elk within the Monument over the long term.

Impacts to Elk from Implementing Other Programs

Livestock Grazing. The impacts would be the same as described in the General Wildlife section.

Impacts to Tule Elk under Alternative 1

Impacts to Tule Elk from Implementing the Wildlife Program

Alternative 1 would allow tule elk populations to naturally fluctuate and possibly disappear if dictated by natural conditions. The LaPanza tule elk herd has been steadily increasing and that trend would likely continue with the elimination of livestock grazing. Foregoing habitat management actions such as providing artificial waters, prescribed fire, restoring previously cultivated fields, or interseeding with native forage species would result in moderate detrimental impacts to the CPNM segment of the LaPanza herd. Without these management actions, it is likely that the elk would not use the lower foothills and flats of the northern Carrizo Plain.

The removal of fences would provide minor to moderate benefits to the tule elk herd by eliminating a risk of fence entanglements, or being trapped within roadways and being killed by vehicle collisions.

Impacts to Tule Elk from Implementing Other Programs

Vegetation. Under Alternative 1, the quality of tule elk habitat on the Monument would be determined by natural conditions. Neither prescribed fire, prescribed livestock grazing, mechanical treatments, nor restoration of native plant communities would be conducted to improve or maintain elk habitat. Foregoing restoration activities would have minor detrimental impacts on the herd.

Fire and Fuels Management. The elimination of prescribed fire in the Monument would remove an important tool to improve forage quality and would have moderate detrimental impacts to tule elk in the Monument. Management practices that favor the native grasses and forbs (and nonnative succulent forbs) may be helpful in providing for elk habitat needs. Grasses and forbs are considered to be preferred forage and important in meeting nutritional needs. Management practices that favor succulent forbs could improve cow body condition during gestation and lactation, and thus improve calf survivorship. Fire could be an important tool to increase succulent forage. Several studies have shown a positive, but short-term, effect of fire on the composition of native annual forbs (D'Antonio et al. 2002). Elk often exploit burned areas to feed on improved forage quality.

Livestock Grazing. The elimination of grazing would have moderate beneficial impacts to tule elk. Competition for succulent green forage would probably be eliminated when these resources are limited by rainfall or production and if there is a limitation of preferred forage. However, it is not known whether or not forage competition with livestock is a factor in limiting this herd. More importantly, elk apparently avoid cattle use areas and may avoid water sources when cattle are present. Cattle would not be present on the Monument during the spring calving season and in the summer and fall seasons when water is most limiting. The distributions of elk would likely expand onto more of the Carrizo Plain North and Caliente Foothill subregions of the Monument.

Impacts to Tule Elk under Alternative 2

Impacts to Tule Elk from Implementing the Wildlife Program

Managing the tule elk habitats in the Carrizo Plain North and Caliente Foothills North subregions to meet the herd objective of 500 tule elk would have moderate beneficial impacts to elk in the long term. Implementing livestock grazing prescriptions, prescribed fire, habitat restoration, and supplemental water would contribute critical forage, cover, and water requirements necessary to reach and maintain the herd objective. Considering the past herd population trends, the number of elk using the Monument would likely increase under Alternative 2.

Augmentation of tule elk from other herds to achieve herd objectives would provide minor beneficial impacts to the herd.

Impacts to Tule Elk from Implementing Other Programs

Vegetation. Restoration of native plant communities to restore shrubs, tall forbs, and grasses; managing for a mosaic of forage resources; maintaining adequate habitat structure and adequate calving cover would provide moderate beneficial impacts to tule elk in the long term. Promoting native grass and forb production by vegetation treatments would have positive impacts described for vegetation objectives under the No Action Alternative.

Fire and Fuels Management. The use of prescribed fire would have moderate beneficial impacts described in the Fire and Fuels Management section of the No Action Alternative.

Livestock Grazing. Implementing livestock grazing prescriptions within the Conservation Target Table would have moderate benefits to tule elk. The grazing prescriptions would maintain adequate cover for calving and would remove cattle from calving areas during the calving season. Cattle would not be allowed in high elk use areas and in elk foraging areas during some spring seasons when forb production is high.

Impacts to Tule Elk under Alternative 3

Impacts to Tule Elk from Implementing the Wildlife Program

Managing the elk habitats in the Carrizo Plain North and Caliente Foothills North subregions to meet the herd objective of 500 tule elk would have moderate beneficial impacts in the long term. Implementing habitat management actions would be the same as described in Alternative 2.

The construction of new water sources in the Carrizo Plain North and Caliente Foothills North subregions would have moderate beneficial impacts to tule elk. Current water distributions are generally adequate at approximately one source every 1 to 2 miles in the foothills and 2-3 miles on the valley floor, but additional waters would improve distributions to the desired one source every mile. Water availability is a critical habitat feature for tule elk populations and increased water would likely improve animal health and vigor and support population objectives.

Augmentation of tule from other herds to improve genetic diversity and to achieve herd objectives over the next 10 years would provide moderate beneficial impacts to the herd.

Impacts to Tule Elk from Implementing Other Programs

Vegetation. Restoration of native plant communities to restore shrubs, tall forbs, and grasses; managing for a mosaic of forage resources; maintaining adequate habitat structure and adequate fawning cover would provide moderate beneficial impacts to tule elk in the long term. Promoting forb production by vegetation treatments would have positive impacts described for vegetation objectives under the current management alternative.

Fire and Fuels Management. The use of prescribed fire would have moderate beneficial impacts described in the Fire and Fuels Management section of the No Action Alternative.

Livestock Grazing. The maintenance and improvement of calving habitat by prescribed grazing identified in the Conservation Target Table (Appendix C) would have moderate beneficial impacts described in the Livestock Grazing section of the No Action Alternative.

4.2.6.3 Long-Billed Curlew

Impacts to the Long-Billed Curlew under the No Action Alternative

With the exception of those impacts discussed under the General Wildlife Impacts or avoided through implementation of SOPs, the following programs will have a negligible on long-billed curlews: Air Quality, Soils, Water, Geology and Paleontology, Cultural Resources, Visual, WSA/Lands with Wilderness Characteristics, Travel Management, Minerals, and Lands and Realty.

Impacts to the Long-Billed Curlew from Implementing the Wildlife Program

Under the No Action Alternative, actions will be taken to maintain viable populations of long-billed curlews with a focus on inland, non-breeding populations and on foraging and roosting habitat. Annual long-billed curlew surveys will be conducted and numbers documented during annual raptor/sensitive species surveys. Roosting sites will be protected from human disturbance (primarily in and around Soda Lake) and foraging areas will be documented. There will be support for research including long-term studies of species as well as roosting and foraging habitat features. Management actions will be designed to result in minimal impacts to curlews especially at roosting sites. Private lands will be acquired as they become available. These actions will have a moderate to major positive impact on wintering long-billed curlews.

Impacts to the Long-Billed Curlew from Implementing Other Programs

Vegetation. Actions to increase and maintain native plant species and communities including grasslands and shrubs at different seral stages, maintaining a mosaic of structure and habitat types, and using a variety of restoration methods to increase diversity and species richness are expected to have a moderate to major positive impact on long-billed curlews by providing quality foraging and wintering habitat.

Fire and Fuels Management. Long-billed curlews are strictly carnivores whose diet consists primarily of invertebrates that may also include bird eggs and chicks (Dugger and Dugger. 2002). Prescribed burning often results in an immediate availability of invertebrate prey as insects return above ground after retreating to cracks in the soil or half-charred insects lay on the bare ground. Fitton (S. Fitton, personal communication, 2008) has observed long-billed curlews on recently burned areas both on the CPNM and at the Salton Sea and one instance where curlews were landing while the fire was still burning in the distance. Actions for prescribed fire are expected to have a localized, short-term beneficial impact to curlews.

Livestock Grazing. Long-billed curlews winter on the CPNM. They generally arrive in late fall or early winter and the majority of birds leave by the end of March. Curlews have been sighted in April or even later into the summer months though it is unclear whether these birds are migrants or holdovers from winter flocks (BLM staff, personal observations, 1995-2007). Curlews usually forage in small to large flocks in the grasslands of both the Carrizo and Elkhorn Plains. Long-billed curlews eat primarily invertebrates. Studies on curlews and their use patterns of nonbreeding habitat have generally looked at wetlands, playas with shallow water, rice fields, and other agricultural fields (Shuford et al. 1998; Dugger and Dugger. 2002) but curlews on the CPNM are rarely associated with water except when roosting at night where they occupy protected wetlands associated with Soda Lake. Counts taken as curlews approached their roost site suggest that many more birds may roost on the CPNM than forage there during the winter (S. Fitton, personal communication, 2008). Little is known of their forage use outside of wetlands or flooded agricultural fields; their preferred foraging habitat on the CPNM is also unknown. Observations of breeding birds suggests that short grass (~ 3 inches is preferred) and that tall grass (taller than the curlew), was avoided, but the reason was unknown (Dugger and Dugger 2002). Observations of foraging birds on the CPNM have found them in tall grasses (same height or slightly taller than bird), short grasses of varying lengths (up to the height of bird), and shorter grass and bare ground (BLM staff, personal observations, 1995-2008; S. Fitton, personal communication, 2008). Fitton has also observed long-billed curlews foraging on prescribed burn areas both on the CPNM and the Salton Sea; one observation saw birds taking advantage of invertebrate prey on a prescribed burn that was still in progress (S. Fitton, personal communication, 2008). This behavior suggests that curlews are very opportunistic and will forage in a number of habitats.

On the plains of the Carrizo and Elkhorn valleys current livestock grazing management under the No Action Alternative allows 110,000 acres to be grazed (under existing guidelines which vary by resource value in each pasture, including the amount of dried mulch per acre, height of vegetation, or species composition), and keeps 49,136 acres out of grazing. These acres include both vegetation management areas and Section 15 allotments. The result is a landscape made up of differing plant species, and vegetation that varies both in height and amount. Observations of foraging long-billed curlews suggests that actions resulting from the No Action Alternative for livestock grazing are expected to have negligible impacts to long-billed curlews.

Impacts to the Long-Billed Curlew Common to All Action Alternatives

Impacts to the Long-Billed Curlew from Implementing the Wildlife Program

Actions proposed common to All Action Alternatives to maintain roosting and foraging habitat within the Monument for long-billed curlews include identifying roost areas and protecting them from human disturbances such as illegal dumping, sheep grazing, or nighttime activities; working with the outside community to prevent illegal activities; conducting annual surveys; supporting research to learn habitat needs; and taking actions to make improvements if habitat deteriorates. These actions would have a moderate to major positive impact on long-billed curlews.

Impacts to the Long-Billed Curlews from Implementing Other Programs

Vegetation. Actions under the vegetation program common to all alternatives include increasing and maintaining native plant species and communities including grasslands and shrubs at different seral stages, the use of a variety of restoration methods to increase diversity and species richness, working towards eliminating noxious weeds in foraging and roosting areas. These actions are expected to have moderate to major, positive and indirect impact on migrant and wintering, long-billed curlews on the Monument. Impacts from these actions are the same under Alternatives 1, 2, and 3.

Livestock Grazing. Impacts from implementing actions common to all alternatives under the Livestock Grazing program are expected to be negligible for long-billed curlews.

Impacts to the Long-Billed Curlew under Alternative 1

Impacts to the Long-Billed Curlew from Implementing the Wildlife Program

Actions to implement objectives from the Wildlife program for long-billed curlews under Alternative 1 to maintain viable populations of long-billed curlews focusing on inland, non-breeding populations and on foraging and roosting habitat. Annual long-billed curlew surveys will be conducted and numbers documented during annual raptor surveys. Roosting sites will be protected from human disturbance (primarily in and around Soda Lake) and foraging areas documented. No actions will be taken to modify or manage vegetation. There will be support for research including long-term studies of species as well as roosting and foraging habitat features. Management actions will be designed to result in minimal impacts to curlews especially at roosting sites. These actions will have a moderate to major positive impact on wintering long-billed curlews.

Impacts to the Long-Billed Curlew from Implementing Other Programs

Vegetation. See Impacts Common to All Action Alternatives.

Fire and Fuels Management. Actions under Alternative 1 emphasize a hands-off approach prohibiting prescribed fire as a management tool. Habitat preferences of long-billed curlews, which winter on the CPNM, are little understood. Observations of foraging curlews on the Monument have found them to use burned areas, however, they also use a variety of other habitats. Actions proposed under Alternative 1 are expected to have negligible impacts to long-billed curlews.

Livestock Grazing. Actions under Alternative 1 emphasize a hands-off approach prohibiting livestock grazing as a management tool. Habitat preferences of long-billed curlews, which winter on the CPNM, are little understood. Observations of foraging curlews on the Monument have found them to use grazed areas; however, they also use a variety of other habitats. Actions proposed under Alternative 1 are expected to have negligible impacts to long-billed curlews.

Recreation and Administrative Facilities. Soda Lake and its system of satellite ponds are used as roosting sites for hundreds and sometimes thousands of long-billed curlews (BLM 2007-2008). This

important roosting area lies within the proposed Frontcountry zone, which contains the highest concentration of visitor facilities, kiosks, and interpretation. Actions must be compatible with all Monument Proclamation and biological resource objectives including protecting long-billed curlew roosting sites from human disturbance and minimizing any detrimental impacts from interactions with humans and pets. Also, long-billed curlews spend daylight hours away from Soda Lake and their roosting spots. As a result, actions in the Frontcountry zone are expected to have negligible impacts to long-billed curlews.

Impacts to the Long-Billed Curlew under Alternative 2

Impacts to the Long-Billed Curlew from Implementing the Wildlife Program

Actions to implement objectives from the Wildlife Program for long-billed curlews under Alternative 2 (and Alternative 3) to maintain viable populations of long-billed curlews focus on inland, non-breeding populations and on foraging and roosting habitat. Annual long-billed curlew surveys will be conducted and numbers documented during annual raptor surveys. Roosting sites will be protected from human disturbance (primarily in and around Soda Lake) and foraging areas documented. There will be support for research including long-term studies of species as well as roosting and foraging habitat features. Management actions will be designed to result in minimal impacts to curlews especially at roosting sites. Release of nonnative animals will be prohibited as well as native animals previously held in captivity to prevent the spread of disease or to cause other impacts. These actions will have a moderate to major positive impact on wintering long-billed curlews.

Impacts to Long-Billed Curlews from Implementing Other Programs

Vegetation. See Impacts Common to All Action Alternatives.

Fire and Fuels Management. Long-billed curlews are carnivores eating primarily invertebrates. Prescribed burning often results in an immediate availability of invertebrate prey as insects return above ground after retreating to cracks in the soil or half charred insects lay on the bare ground providing curlews with bounty of prey. Actions for prescribed fire are expected to have a localized, short-term beneficial impact to curlews.

Livestock Grazing. The importance of grazing in maintaining foraging habitat for long-billed curlews within the Monument is not known. Curlews on breeding grounds have been shown to prefer “short” grasses but observations of wintering curlews on the plains of the Carrizo and Elkhorn valleys show that they use a variety of habitats. Livestock use under Alternative 2 is expected to have negligible impacts to long-billed curlews.

Recreation and Administrative Facilities. Impacts would be the same as Alternative 1.

Impacts to the Long-Billed Curlew under Alternative 3

Impacts to the Long-Billed Curlew from Implementing the Wildlife Program

Impacts would be the same as Alternative 2.

Impacts to Long-Billed Curlew from Implementing Other Programs

Vegetation. See Impacts Common to All Action Alternatives.

Fire and Fuels Management. Impacts would be the same as Alternative 2.

Livestock Grazing. Impacts would be the same as Alternative 2.

Recreation and Administrative Facilities. Impacts would be the same as Alternative 1.

4.2.6.4 Raptors

Impacts to Raptors under the No Action Alternative

With the exception of those impacts discussed under the General Wildlife Impacts or avoided through implementation of SOPs, the following programs will have a negligible effect on raptors: Air Quality, Soils, Water, Geology and Paleontology, Visual Resources, WSA/Lands with Wilderness Characteristics, Recreation, Administrative Facilities, Travel Management, and Minerals.

Impacts to Raptors from Implementing the Wildlife Program

Under the No Action Alternative, actions will be taken to maintain viable populations of raptors with efforts focused on breeding, wintering, and/or year-round species. Surveys and monitoring will take place, including winter raptor surveys, the Breeding Bird Survey, and other efforts in coordination with other agencies, ornithologists, and volunteers. Raptor nest sites will be inventoried and recorded. There will be support for research including long-term studies of species and habitat features. Management actions will be designed to result in minimal impacts to raptors, nesting, and roosting sites. Actions focused on the recovery of giant kangaroo rats and San Joaquin antelope squirrels will benefit raptors by ensuring a prey base. These actions will have a moderate to major positive impact on raptor species on the Monument and elsewhere.

Impacts to Raptors from Implementing Other Programs

Vegetation. Actions that include increasing and maintaining native plant species and communities including grasslands and shrubs; maintaining a mosaic of structure and habitat types; and using a variety of restoration methods to increase diversity and species richness are expected to benefit native animal species including those considered prey items by raptors. These actions are expected to have a moderate to major positive impact on raptor species on the Monument.

Fire and Fuels Management. Raptors are often found using tall trees, structures, rock outcroppings, or other natural and manmade features to roost or nest. This preference for height often draws raptors to facilities such as campgrounds and historic ranch sites within the Monument. Fuel reduction practices such as mowing and weed-eating are a necessary part of fire protection for these important sites that can sometimes conflict with nesting and day roosting. Factors that may affect birds include temperature, time of day the disturbance occurs, duration of disturbance, growth stage of chicks, and the presence of predators. By monitoring and adjusting the disturbance to minimize impacts to the birds, implementing fuel reduction practices is expected to have negligible effects to raptors. Actions to protect facilities from fire and rock outcroppings from retardant drops will benefit raptors. Efforts to use prescribed fire for the benefit of plant and animal species may provide indirect benefits to raptors.

Cultural Resources. Actions under the current Cultural Resources program are expected to have negligible to minor effects on some raptor species in localized settings including tours to Painted Rock and El Saucito Ranch during the raptor nesting season. Painted Rock is one of the tallest and largest rock outcroppings found within the Monument. Its height and numerous cavities and shaded ledges have made it a preferred nesting site for prairie falcons, golden eagles, great-horned owls, barn owls, and ravens. Currently, Painted Rock is closed to visitors except by guided tour only, to limit disturbance during times

when nesting birds are present. Numbers of tours are limited per week as well as the number of participants. An estimated 18 guided tours take place each year (18 tours x 25 people per tour on average) during the closed period, totaling 450 visitors. Closure begins March 1 to allow birds to choose Painted Rock as a nest site and does not open again to free visitation until July 15 so that incubation, hatching, and fledging can occur with minimal intrusions. Other restrictions apply, including no visitation during cold and/or windy weather when exposing eggs or young would prove harmful. If no birds are nesting, restrictions may not be implemented regarding the number of tours and number of participants per tour. Seasonal closures to Painted Rock were put in place in response to a pair of nesting prairie falcons. Different species have different levels of tolerance for human disturbance during nesting (Rosenfield et al. 2007). Using strict guidelines when nesting birds are present, prairie falcons nested four times inside the alcove, successfully fledging young. The following year a nest failed for unknown reasons and prairie falcons have no longer nested at Painted Rock. In 1999 and 2000, golden eagles nested outside of the alcove near the top of the rock and chicks successfully fledged both times. Great horned owls occasionally nest inside the alcove. Barn owls are the most common raptor at Painted Rock, nesting or roosting both inside and outside the alcove nearly every year.

Native American use of the Rock during Solstice Ceremony often occurs shortly after chicks have fledged. To date, there have been no conflicts between the two events.

Continuing tours using the same method and employing the same guidelines is expected to result in negligible to minor impacts to nesting raptors.

Similar restrictions are planned for tours to Saucito Ranch. Birds nest in large trees at the Ranch, as opposed to a rock outcropping, but similar effects are expected. Trees will be monitored each spring to determine whether raptors are nesting or roosting along with their locations. Guidelines will be put in place regarding timing of tours and training of guides to avoid or minimize disturbance to nesting raptors. Since many of the trees are located away from the trail, and birds and nests are often hidden from view, tours along the Saucito Ranch trail are expected have negligible impacts to nesting and roosting raptors.

Livestock Grazing. Most raptor use on the Monument can be categorized by two distinct uses: breeding and wintering. These uses have somewhat different habitat requirements, but all raptors rely on sufficient numbers of high quality prey, both for nurturing young and for building high energy stores needed for migration and reproduction at breeding grounds elsewhere.

Livestock grazing on the Monument under the current No Action Alternative is used as vegetation management for the benefit of species on much of the Carrizo and Elkhorn Plains most notably, the suite of San Joaquin Valley listed species including giant kangaroo rat, blunt-nosed leopard lizard, San Joaquin antelope squirrel, and San Joaquin kit fox, by removing excessive amounts of nonnative grasses. Section 15 allotments (in place to provide forage for livestock) occur primarily in the mountain and foothill regions of both mountain ranges. Nesting raptors often use rock outcroppings in the Caliente and Temblor Ranges but most likely forage in the open areas of the Carrizo and Elkhorn Plains. Animal populations that occur within these areas are what make up many of the food items that are important sources for raptors that use the CPNM to winter and breed. Some of these include lagomorphs (desert cottontail and black-tailed jackrabbit), rodents such as kangaroo rats and squirrels, reptiles, amphibians, other bird species, and insects. Larger raptors, such as golden eagles and red-tailed hawks, also feed on carcasses of ungulates such as pronghorn antelope, tule elk, and domestic livestock. Different plant communities including shrubs, perennial grasses, annual grasses, and forbs make up the habitat for prey species. Vegetation height and density can change from year to year for many plant species in a system that is often driven by the annual rainfall and winter temperatures.

The most current data guiding the use of grazing as a management tool come from a seven-year monitoring study on the Monument. Data were analyzed six years out of the seven (grazing did not occur in one year), with results on both relative cover of exotic annual grasses and the density of giant kangaroo rat precincts. In soil types 3 and 7, which most directly relate to raptor prey species, relative cover of exotic annual grasses increased in soil type 7 in areas grazed by livestock, while in soil type 3 there was no effect. These soil types reflect much of the valley floors of both the Carrizo and Elkhorn Plains. Four out of six years of the data analyzed showed a higher density of giant kangaroo rat precincts in ungrazed pastures and the remaining two showed grazing had no effect on the density of precincts (Christian et al., in prep.). These monitoring results have implications for management and its possible effects on prey availability of a number of species for raptors. As a result, many of the pastures on the Carrizo and Elkhorn Plains may not be grazed except in core areas for the San Joaquin Valley species and other areas where low vegetation is preferred by species such as the mountain plover. It is estimated that exceptionally high herbaceous vegetation production may occur on an average of two out of ten years. It is during these periods of persistent nonnative grass cover when vegetation management could be applied through prescribed fire or livestock grazing to improve habitat conditions that may threaten giant kangaroo rat populations. It is unknown if low populations of giant kangaroo rat always coincide with periods of high grass production, but based on the last such period when populations were monitored and found to be mostly absent in the CPNM, it is prudent to target the nonnative grasses under these conditions. A more focused scientific experiment is currently underway to define the relationship between livestock grazing and giant kangaroo rats. Results of this study will be incorporated into our adaptive management model.

Overall, actions to implement livestock grazing under No Action are expected to have negligible to minor impacts for raptors since many actions taken to positively affect prey species may not have immediate results for predators in the system.

Impacts to Raptors Common to All Action Alternatives

Impacts to Raptors from Implementing the Wildlife Program

Actions common to All Action Alternatives will be taken to maintain viable populations of raptors with efforts focused on breeding, wintering, and/or year round species. Surveys and monitoring will take place including winter raptor surveys, the Breeding Bird Survey, and other efforts in coordination with other agencies, ornithologists, and volunteers. Raptor nest sites will be inventoried and recorded. There will be support for research including long-term studies of species and habitat features. Management actions will be designed to result in minimal impacts to raptors' nesting and roosting sites. Actions focused on the recovery of giant kangaroo rat, San Joaquin antelope squirrel, San Joaquin kit fox, and blunt-nosed leopard lizard will benefit raptors by ensuring a prey base. These actions will have a moderate to major positive impact on raptor species on the Monument and elsewhere.

Impacts to Raptors from Implementing Other Programs

See impacts specific to alternatives below.

Impacts to Raptors under Alternative 1

Impacts to Raptors from Implementing the Wildlife Program

Wildlife actions under Alternative 1 affecting raptors include allowing natural conditions to dictate nesting and roosting habitat for raptors. Nesting sites at rock outcroppings will be protected. Nonnative animals would be prohibited from being released on the Monument along with native species previously held in captivity to protect from disease transmission. Actions that protect nesting sites and are proactive

in preventing disease introduction from animals outside the Monument are expected to have minor to moderate positive impacts for raptors.

Impacts to Raptors from Implementing Other Programs

Fire and Fuels Management. Prescribed fire would not be authorized under Alternative 1. The role of fire as an effective tool to improve habitat for raptor prey species is not well understood within the Monument. The effects of its unavailability as a tool are unknown. Two prescribed burns were conducted on the Monument in 1993 and 1994 to create more suitable habitat for mountain plover that resulted in successfully attracting birds in the winter (Knopf and Rupert 1995). Mountain plover are a prey species for some raptors. Pre- and post-burn observations following another prescribed burn in 2006 showed an apparent increased use in burned areas by burrowing owls (BLM staff, personal observations, 2007).

Wildland fire suppression would have negligible impacts to raptors if retardant drops avoid rock outcroppings.

Impacts from fuel reduction at facilities would be the same as those common to all alternatives.

Cultural Resources. Painted Rock would be closed to public access greatly minimizing any effects on nesting raptors. Impacts from visitation to the El Saucito Ranch would be the same as the No Action Alternative. Cultural Resources actions are expected to have negligible or no impacts to raptors. Alternative 1 would have the least impacts to raptors.

Livestock Grazing. Livestock grazing would not be authorized under Alternative 1. In the 2 out of 10 years where some vegetation management may be needed to prevent listed San Joaquin Valley species from disappearing, actions will be taken in core areas for the species. Treating core areas, however, will most likely mean that many of these species are not occurring in great numbers elsewhere. If treating core areas results in positive impacts to raptor prey species, most likely there will be positive impacts to raptors. It is likely, though, that reduced numbers of prey will be available to many raptors before reaching that point. Overall, actions to implement livestock grazing will have negligible to minor impacts to raptors.

Impacts to Raptors under Alternative 2

Impacts to Raptors from Implementing the Wildlife Program

Actions include annual surveys of wintering raptors, inventories of raptor nesting sites in the CPNM, protection of nesting sites from human disturbance as much as possible, identifying problems with power poles causing electrocution (and taking actions to modify poles within the CPNM), and prohibiting the release of nonnative animals and native animals previously held in captivity to prevent disease. These actions are expected to have minor to major positive impacts to raptors.

Impacts to Raptors from Implementing Other Programs

Vegetation. Actions to increase and maintain native plant species and communities including grasslands and shrubs; maintaining a mosaic of structure and habitat types; and using a variety of restoration methods to increase diversity and species richness are expected to benefit native animal species including those considered prey items by raptors. Actions that include fencing plants or plant communities are expected to have a minor, localized positive impact on raptors by providing artificial perches (posts) from which to watch and go after prey. These actions are expected to have a moderate to major, positive and indirect impact on raptor species on the Monument.

Fire and Fuels Management. Most raptors that nest on the Monument nest in trees, structures, or rock outcroppings. A few, such as northern harriers and short-eared owls, are ground nesting birds. Actions to implement Fire and Fuels Management common to all action alternatives would emphasize the use of roads or other barriers to burn to or backburn from as a fire suppression tactic during a wildfire to minimize soil disturbance. This action may result in nests or chicks being burned over, however, the extent to which both of these species nest on the Monument is unknown. Nesting by short-eared owls were reported in 1992 (Roberson 2008), and northern harriers in 1999 (BLM staff, personal observation). The timing of any wildfires, the location, and extent are all factors that would result in mortality to birds. The potential for this impact to occur would be negligible to minor and localized.

Prescribed fires would be designed to minimize impacts to ground nesting birds by monitoring sites and avoiding those areas that are revealed to be nesting sites for either of these species or timing burning activities to occur post fledging.

Cultural Resources. Visitation to Painted Rock would be reduced from the current numbers. Numbers of group tours would be similar and visitation to the El Saucito Ranch would be the same as the No Action Alternative. Cultural Resources actions are expected to have negligible impacts to raptors.

Livestock Grazing. Impacts would be the same as the No Action Alternative.

Impacts to Raptors under Alternative 3

Impacts to Raptors from Implementing the Wildlife Program

Actions include annual surveys of wintering raptors, inventories of raptor nesting sites in the CPNM, protection of nesting sites from human disturbance as much as possible, identifying problems with power poles causing electrocution (and taking actions to modify poles within the CPNM), and prohibiting the release of nonnative animals and native animals previously held in captivity to prevent disease. These actions are expected to have minor to major positive impacts to raptors.

Impacts to Raptors from Implementing Other Programs

Vegetation. Impacts would be the same as Alternative 2.

Fire and Fuels Management. Impacts would be the same as Alternative 2.

Cultural Resources. Visitation to Painted Rock would be even more reduced from the numbers in Alternative 2. Numbers of group tours would be similar and visitation to the El Saucito Ranch would be the same as the No Action Alternative. Cultural Resources program actions are expected to have negligible impacts to raptors.

Livestock Grazing. Impacts would be the same as the No Action Alternative.

4.2.7 Cumulative Impacts to Wildlife

4.2.7.1 Assessment Area

The assessment area varies based on species and includes the following: Southern San Joaquin Valley; the CPNM; Cuyama Valley (general wildlife including San Joaquin kit fox, giant kangaroo rat, blunt-nosed leopard lizard, San Joaquin antelope squirrel, mountain plover, Kern primrose sphinx moth, vernal pool fairy shrimp, long-horned fairy shrimp, spadefoot toad, sandhill cranes, long-billed curlew, raptors, bats,

and burrowing owl); southern California (California condor); range of the Carrizo Plain pronghorn herd unit; and La Panza tule elk herd unit.

4.2.7.2 Past, Present, and Reasonably Foreseeable Future Actions within the Assessment Area

Development in the San Joaquin Valley and adjacent Coast Range foothills and valleys continues to threaten the survival of species in the region. Habitat loss and fragmentation, vehicle strikes, oilfield hazards, mining, urban and rural housing, and impacts from pets, off-highway vehicle use, proliferation of roads, pesticide exposure, microtrash exposure, predation from native and nonnative carnivores, population isolation ,and a general lack of large-scale habitat conservation continue to be the primary impacts. Over 11,000 acres of solar energy development are being proposed on rangelands and agricultural lands within 10 miles of the northern boundary of the Monument. More intensive land use of rural ranchette homes, housing developments, vineyards, irrigated agriculture in the Cuyama Valley, and upgraded state highways and county roads are other impacts in the areas immediately surrounding the Monument.

4.2.7.3 Cumulative Impacts

The CPNM is one of several core recovery areas for the San Joaquin kit fox, giant kangaroo rat, blunt-nosed leopard lizard, San Joaquin antelope squirrel, short-nosed kangaroo rat, and Le Conte's thrasher. BLM and CDFG ownership have conserved 83 percent and 4 percent on the CPNM, respectively. The San Joaquin Valley upland species recovery plan set an objective of 100 percent conservation acquisition of the Monument (Natural Area). Only the CPNM has made substantial progress in meeting land conservation goals for the three core areas and 12 satellite areas in the Recovery Plan. The long-term management of the CPNM for the conservation and recovery of the San Joaquin Valley upland species will help offset continued habitat loss and environmental threats to these species. The management plan proposes to manage the core and non-core areas to maintain viable populations of these species. However, appropriate habitat management is needed to maintain suitable habitat conditions for the suite of species. San Joaquin kit fox, giant kangaroo rat, blunt-nosed leopard lizard, and San Joaquin antelope squirrel population monitoring, habitat monitoring, application and appropriate habitat management prescriptions for these species, maintaining movement linkages to western Kern County, and application of AM principles would help meet recovery plan goals to maintain a viable population on the Monument. Land uses outside the Monument would continue to threaten the conservation and recovery of these species. However, implementation of the CPNM plan would help offset these negative land uses and environmental threats.

The management of the CPNM to achieve population herd objectives for pronghorn antelope and Tule elk will contribute to maintaining viability of the herds. Habitat management and improvement projects would offset reduced habitat capability and carrying capacity losses on adjacent private lands and other areas within the herd units. Additional habitat conservation actions taking place on the adjacent CDFG lands (American and Chimineas Ranch Units) will complement CPNM management.

The management of the CPNM to maintain suitable wintering habitat for mountain plovers would provide a large landscape without the use of pesticides as an alternative to agricultural fields within the San Joaquin Valley proper. Appropriate habitat management prescriptions would be applied to maintain suitable habitat to offset environmental threats within other portions of the mountain plover winter range.

Trespass of sheep and cattle into sensitive habitats within the Monument would add to habitat degradation for species such as fairy shrimp, spadefoot toad, and Kern primrose sphinx moth. Lead exposure, microtrash ingestion, limited natural foraging potential, and other hazards in southern California would continue to threaten conservation and recovery of the southern California condor population.

4.2.7.4 Impacts on Wildlife from Climate Change

The Intergovernmental Panel on Climate Change reports that the southwestern United States is likely to become hotter and drier (Christensen et al., in prep.). Drier conditions for the CPNM mean that overall there would be less vegetative growth. A change in vegetation zones is also expected. Oak and juniper woodlands would tend to shift to scrublands, scrublands to grasslands, and grasslands to desert-like habitat with significant portions of bare soils or, hopefully, biological crusts. Woodlands may be lost altogether from the Monument (Kueppers et al. 2005). With a slight drying, the wild oat grasslands in the northern part of the Monument would be expected to shift to brome-dominated grasslands. The conversion of grasslands to desert may be accelerated if winds erode unprotected soils exposed during droughts. As the general area becomes drier, plant communities and animal guilds are expected to migrate northward or upward in elevation, at least those species that can. Depending on the strength and rapidity of the change, some elements of the flora may disappear. As precipitation levels and recharge decline, some springs would dry up, while others would diminish in flow.

The amount and persistence of vegetation is expected to change. There would be less thatch generated, but, because winter moisture levels would be lower, less thatch would decompose. How this would affect the total amount of persistent biomass is unclear and would depend on the amount and pattern of precipitation as well as on the activities of kangaroo rats and other herbivores. With less precipitation, there would be less annual production and, overall, less food and water resources for animals. Less vegetative growth and a corresponding decrease in seed production are expected to depress population size of herbivorous and granivorous species such as kangaroo rats, rabbits, pronghorn, ants, and grasshoppers. Carnivores that prey on these primary consumers would be similarly affected.

With a drier climate, there should be more drought years, more years where the introduced annual grasses do poorly, and more years where the grassland vegetation is dominated by native drought-adapted species with long-lived seeds. However, there may be an invasion of weedy exotic species now prevalent in southern California deserts such as *Brassica tournefortii* (Saharan mustard) and *Schismus* spp. (Mediterranean grass). With fewer wet years, the grassland vegetation should remain at a lower, more open structure, thought to be optimum for the San Joaquin Valley species (giant kangaroo rat, San Joaquin antelope ground squirrel, blunt-nosed leopard lizard, and horned lizard) and thus fewer years where vegetation management may need to be applied in the core areas. Overall, population levels of these species are expected to reflect the benefits associated with a more open habitat versus the liabilities of increased droughts and an overall decrease in food and water resources.

Spadefoot toads are well adapted to arid climates; however, it is unclear how they would be affected. Reduced reproductive success and some population declines to amphibian populations have been linked to climate change but most effects are expected to occur in montane species (Semlitsch 2000). Specific changes to the region may result in fewer years that pools receive enough water and retain it long enough for spadefoot toad larvae to be able to metamorphose. Effects to insect populations may result in less fat stores in adults prior to dormancy, thus affecting reproductive success or survival. Juvenile toads may not be as fit when leaving the pool with a shorter hydroperiod and may be less likely to survive longer periods of drought as well.

Other vernal pool adapted species, such as fairy shrimp, may be affected similarly to spadefoot toads. Fairy shrimp cysts are adapted to withstand long periods of drought. Species that depend on the waters of Soda Lake, such as greater and lesser sandhill cranes, would be affected negatively and may stop using the Monument altogether.

4.3 Impacts to Vegetation

4.3.1 Assumptions Used for the Analysis

Generally, most activities that disturb habitat and impact vegetation will be detrimental to most plants. However, some plants are adapted to certain types of disturbance or are less likely to be impacted by the disturbance, due to some physical, chemical, or behavioral/phenological trait. For example, ground-hugging plants tend to do better in grazed areas than their taller counterparts; non-palatable plants like *Isocoma*, *Ericameria*, and *Gutierrizia* are known as increasers because livestock preferentially avoid them while foraging; and bulb species are generally not affected by dry season fires, other than possible loss of seeds from the seed bank.

Disturbance associated with site development would eliminate habitat (usually in a small and well-defined area and which usually includes mitigation measures to avoid or minimize negative effects to important resources).

Activities that disturb soils are generally not beneficial to plants, although there are a number of native species that are adapted to disturbed habitats. Soil disturbance creates dust, increases the chance of erosion and soil degradation, and often promotes the establishment and persistence of nonnative weedy species. Soil disturbance can also degrade or eliminate biological crust communities, resulting in a loss of soil fertility (Barger et al. 2006; Belnap and Eldridge 2001; Belnap et al. 2001; Housman et al. 2006). Soil disturbance may also destroy nesting sites for pollinators such as ground-nesting solitary bees and bee flies. On the other hand, soil disturbance may bring buried seeds up to the surface where they can germinate and may increase localized soil water infiltration.

Although nonnative grasses currently dominate the vegetation in the valley floor and the shrub/woodland understory, Monument vegetation prior to European contact was probably more open and had a higher percentage of forbs. However, in wet years, the native annual flora responded vigorously and created stands, dominated by forbs but including native grasses such as few-flowered fescue (*Vulpia microstachys* var. *pauciflora*), one-sided bluegrass (*Poa secunda* spp. *secunda*), nodding needlegrass (*Nasella cernua*), and saltgrass (*Distichlis spicata*).

Dust negatively impacts plants (Auerbach et al. 1997; Eveling 1986; Forman and Alexander 1998; Sharifi et al. 1997; Trombulak and Frissell 2000). Plant growth decreases as dust increases on leaf surfaces. Photosynthesis is reduced because dust particles clog stomata, thereby inhibiting gas exchange, and because the particles shade the chloroplasts, which need light for the conversion of water and carbon dioxide into sugars. Dust also harms plant reproduction by clogging stigmatic surfaces, hampering pollen germination, and by making flowers less visible and attractive to pollinators.

Management actions would be designed to avoid or minimize negative impacts to vegetation.

4.3.2 Incomplete Information

The exact species composition of the Monument's vegetation is unknown prior to the introduction of the weedy Mediterranean grasses and forbs and prior to the livestock grazing and farming period. A reasonable assumption is that the valley floor vegetation consisted of a mosaic of drought-tolerant shrubs, ephemeral annual herbs, and a few native grasses (Hamilton 1997; Jepson 1925; Schiffman 1994; Twisselmann 1967). Most likely, there are fewer trees on the Monument now, since they would have been used for fence posts, as construction materials, and for firewood. Some shrublands may have been lost or the composition altered by grazing, especially since, in time of drought, livestock forage heavily on the more palatable native shrubs. For example, the high percentage of the unpalatable interior goldenbush

(*Ericameria linearifolia*) around Selby cow camp may be an artifact of livestock preferentially grazing on other shrubs.

The effects of livestock grazing on the individual components of the native vegetation and pollinators are not well understood. Overall, native annual species appear to do better in ungrazed sites, but individual species response is not clear. Data on bunchgrass indicate that green season grazing is of limited use as a management tool and that, generally, the effect is negative (Christian et al., in prep.).

There is no indication of the extent or importance of crust habitat in the valley floor and foothills prior to the farming and grazing period. Whether conditions still exist to restore stable crust habitat remains to be tested, although early successional crust species (colonizing cyanobacteria and mosses) are common. It may have been that mature stable biological crusts were not common on the valley floor, judging from the current dominance of the giant kangaroo rat; however, these excavating rodents may be in greater densities today due to the abundance of introduced bromes and filarees that serve as food resources.

It is assumed that native vegetation, before the invasion of the Mediterranean species, responded to varying levels of precipitation in a manner similar to what occurs today. A dry year would result in annual plants (mostly herbs) that were short, with limited reproduction, and in general the annual vegetation would be open and sparse. In years of higher precipitation, the season would be extended, with lots of reproduction, and the annual vegetation would be dense and tall and would generate a lot of biomass. Most of the native annual species appear to be not as persistent as today's introduced annual grasses; however, even without the exotic grasses, dense vegetation would be expected during the spring to early summer in years with high precipitation.

4.3.3 Programs with No or Negligible Impacts to Vegetation

Visual resource management will have no or negligible impacts on vegetation under any of the alternatives

4.3.4 Impacts to Vegetation under the No Action Alternative

4.3.4.1 Impacts to Vegetation from Implementing the Vegetation Program

Implementation of the vegetation program would have moderate to major positive impacts to vegetation. Restoration of 600 to 1,200 acres of native vegetation would benefit vegetation. Burning to improve habitat (5,000 to 10,000 acres) and to pretreat restoration sites (500 to 2,000 acres) would initially damage plants, but result in an overall benefit to vegetation. Restoration (10 acres) and protection of riparian habitats would benefit spring, seep, and vernal pool vegetation. Construction and maintenance of plant propagation facilities would benefit vegetation by providing a source of restoration materials. Weed control of yellow star thistle, tamarisk, and nonnative trees has the possibility to temporarily damage adjacent vegetation, but overall would benefit vegetation.

4.3.4.2 Impacts to Vegetation from Implementing Other Programs

Wildlife

The management of habitats and vegetation to benefit native animals, both listed and not, would have varying impacts to vegetation, depending on the amount of acreage and the methods used to manage them. Under the No Action Alternative, habitat management is mostly by livestock grazing, with a smaller amount of acreage treated by burning. Grazing during the green season has been employed under the assumption that it was "an effective tool to remove standing biomass, reduce the importance of nonnative species, and enhance the reestablishment of native species" (BLM 1996). Recent analyses of

BLM monitoring data from the Monument (Christian et al., in prep.) indicate that green season grazing would not be an effective tool for reducing the importance of nonnative species and would have minor to major negative impacts to native vegetation, especially native annual species in the upper Sonoran subshrub scrub community. Approximately 115,000 acres would be grazed by livestock for vegetation management purposes under the No Action Alternative. A more detailed accounting of impacts to vegetation from grazing can be found under the livestock grazing alternatives below. Actions taken to reduce human-caused hazards to core species would be of general benefit to vegetation since many of those hazards also impact plants and plant habitat. Prescribed fires initially damage some vegetation, but overall, would be beneficial to native grassland vegetation. For shrub and woodland communities, fire would have the potential to be much more damaging and could result in the replacement of these communities by nonnative grassland (Brooks 1999; D'Antonio and Vitousek 1992; Keeley 2001; Keeley et al. 2005).

Restoration actions involving the reintroduction of native plants to degraded sites would benefit vegetation by increasing the native component within grassland communities. Actions to maintain riparian habitat, vernal pools, and shrub-scrub and other natural communities would also benefit vegetation. Actions taken to increase the number and distribution of native ungulates should, in general, benefit vegetation; however, there may be negative effects to some localized resources. Plants may be trampled, riparian areas degraded, and populations of rare plants impacted by elk and pronghorn, depending on foraging behavior, numbers of animals, and area use patterns. Monitoring should help determine the effects of increasing native ungulate populations on vegetation.

Water diverted from natural springs and seeps to maintain livestock or wildlife surface water would be lost to riparian plants and would be expected to shrink the size of the natural riparian habitat. This action could lessen damage to riparian plants by relocating livestock and large native ungulate watering sites away from sensitive riparian habitat. Actions taken to control exotic animal species would help protect vulnerable riparian areas, populations of native bulbs, and other vegetation from soil damage from wild pigs.

Fire and Fuels Management

Implementation of the Fire and Fuels Management program would generally have minor to major positive impacts to vegetation; recurring wildfires could result in major negative impacts to shrub communities. Developing an understanding of the history and potential role of fire and the effects of fire and suppression on the Monument's vegetation would benefit vegetation. Over a 10-year period, approximately 50,000 acres of native vegetation are expected to be consumed by wildfires; suppression actions (primarily fire lines) would result in 25 acres of temporary disturbance. Impacts to native vegetation and other vegetation would depend on the location, intensity, and timing of the fire. Grassland vegetation would generally benefit from occasional fires, while shrub and woodland communities could be seriously impacted or even replaced by grassland.

In the course of fire suppression activities to protect people, facilities, and equipment from wildfires, some vegetation may be damaged. Actions taken to reduce the adverse impacts of fire management would benefit vegetation. Fire education that helps reduce wildfires would help protect sensitive vegetation. Measures taken to minimize the ignition and spread of wildfires, such as mowing, would have overall benefit to vegetation, although some vegetation in target areas may be affected.

Air Quality

Lowering dust production, either by mitigation measures during management activities or by specifically targeted management actions, would have moderate positive impacts to vegetation by minimizing the negative impacts associated with dust.

Soils

Conserving soils by minimizing erosion would provide moderate to major positive impacts to the local vegetation, including rare plants and nonnative species. Other soil resource actions proposed under the No Action Alternative are expected to have negligible or no impacts to vegetation.

Water

Implementation of the water program would generally have minor to major positive impacts to vegetation. Protecting watersheds and surface and subsurface water sources would have a generalized benefit to native and other vegetation, and would be critical in maintaining the integrity of Soda Lake and the Monument's vernal pools. Fencing vulnerable springs and removing nonnative species would increase the native component of spring vegetation.

Geology and Paleontology

Research activities associated with the Monument's paleontological and geological resources would temporarily disturb a small amount of habitat. Research in the Soda Lake area would have mitigation measures to avoid or minimize impacts to rare plants such as *Delphinium recurvatum* and *Lepidium jaredii* ssp. *jaredii*. Nonnative plants may be introduced and spread by research equipment, vehicles, and personnel. Other paleontological/geological resource actions proposed under the No Action Alternative are expected to have negligible or no impacts to vegetation.

Cultural Resources

Implementation of the Cultural Resources program would generally have no to minor positive impacts to vegetation. With some actions, there could be minor temporary and localized negative impacts to vegetation. Closing or restricting public access in areas of sensitive cultural resources would help to protect vegetation by limiting human impacts. A small amount of vegetation would be impacted during fence construction. Tours and/or regulated self-guided visits are expected to result in a slight amount of vegetation disturbance via foot travel in the vicinity of Painted Rock and the KCL basalt cone. The installation of signs would result in a negligible amount of disturbance to vegetation. Temporary disturbance associated with the restoration and relocation of historical farming equipment and structures would impact a minor amount of vegetation, but would not result in a loss of habitat. The razing and removal of unwanted structures would cause temporary disturbance, but would ultimately result in a slight increase in natural habitat. Weeds may be introduced or spread by tour participants and by equipment and personnel associated with the relocation or demolishing of historical structures and equipment. Other cultural resource actions proposed under the No Action Alternative are expected to have negligible or no impacts to vegetation.

WSA/Lands with Wilderness Characteristics

The wilderness resource actions proposed under the No Action Alternative would continue management of the existing Caliente Mountain WSA (17,984 acres) to protect wilderness values. This would continue protection of vegetation at current levels.

Livestock Grazing

Implementation of the grazing program would generally have minor to moderate negative impacts to vegetation. In some areas, there would be localized major negative impacts. Under some situations, grazing would have minor to moderate beneficial impacts to vegetation. Under the No Action Alternative, about 58,000 acres would be available for grazing within Section 15 allotments and about 115,000 acres would be available for grazing to meet specific biological objectives within vegetation management areas. Generally, the Section 15 pastures are in the Caliente and Temblor Ranges and the vegetation management pastures are on the valley floor. It is anticipated that forage conditions would allow grazing on all Section 15 allotments on an average of 8 years out of 10. Based on past livestock grazing frequency for the purpose of vegetation management (5 out of 6 years during the grazing study), grazing would be applied on an average of 8 out of 10 years on about 115,000 acres of the vegetation management pastures. Grazing would be mostly by cattle and occur during the winter and spring seasons, when annual plants are green. Grazing would not occur on about 35,000 acres unavailable for any type of grazing.

Grazing affects vegetation via the consumption of forage, the impacts of hooves, the deposition of urine and manure, and the dispersal of seeds by fur and manure. The effects on vegetation tend to be related to the intensity and timing of grazing: higher levels and green season grazing tend to have greater impacts. Additional impacts to vegetation are related to infrastructure associated with grazing operations: water systems, roads, salt licks, and others.

Livestock foraging patterns affect vegetation in a number of ways. Because animals tend to be selective in what they eat, grazing can influence the composition and diversity of plants within a pasture (Christian et al., in prep.; DiTomaso 2000; Kinucan and Smeins 1992; Rook et al. 2003; Sternberg et al. 2003; Stromberg and Griffen 1996). As with all environmental influences, some plants benefit, while others are negatively impacted. Livestock show a preference for palatable species (Vesk and Westoby 2001; USDA 1937). Unpalatable plants with chemical or mechanical defenses are grazed less or avoided completely and therefore tend to increase under a grazing regime (DiTomaso 2000; Kingsbury 1964; Khumalo et al. 2007; McIntyre et al. 2003; Provenza 2003; Twisselmann 1967). Native species with chemical defenses include snakeweed (*Guterrezia californica*), interior goldenbush (*Ericameria linearifolia*), alkali goldenbush (*Isocoma acradenia* var. *bracteosa*), locoweeds (*Astragalus* spp.), and larkspur (*Delphinium* spp.), although the latter are readily eaten by sheep (Allison 1990; Fusco et al. 1995; Kingsbury 1964; Twisselmann 1956; USDA 1937). The summer annual doveweed (*Eremocarpus setigerus*), has stiff hairs that deter grazing. All of these unpalatable species do well in grazed areas. Shorter species also tend to be favored over taller because they seem to withstand herbivory better (Branson 1953; Díaz 2001; Noy-Meir et al. 1989). Favored also are species with an indeterminate and branching growth pattern which tolerates a fair amount of herbivory (Kimball and Schiffman 2003; Mack and Thompson 1982). This growth pattern may be one reason why the introduced filaree (*Erodium cicutarium*) does so well in grazed pastures, despite it being one of the earliest available forages after the onset of fall rains. In many grasses, the growth meristem is at the base of the plant, where it is relatively protected from grazing. The reason why many of our introduced Mediterranean weeds do so well in grazing systems may be due to these growth patterns and the species' long association with cattle and sheep (Noy-Meir et al. 1989**)**.

An additional concern is the potential effect of forage removal on the native seed bank. Grazing, by removing biomass, lowers seed production, either by direct removal of reproductive structures (flowers and fruits) or by depressing photosynthetic output (Anderson and Frank 2003; Kinucan and Smeins 1992; Sternberg et al. 2003; Wright 1967). For some native annual plants, recharge of the seed bank may only happen occasionally, in those years in which conditions are optimum for that particular species (Wilson 2007). Grazing during this type of year may have a greater impact on the seed bank than at other times. These "recharge years" are not the same for all species; each individual year may be critical in maintaining the seed bank for a particular species.

Grazing may limit the spread or lower the intensity of wildland fire by reducing fine fuels, especially nonnative grasses. This would be of benefit to the Monument's shrub and woodland plant communities, which have little in the way of fire-adapted species.

The BLM-directed grazing study on the Monument (Christian et al., in prep.) indicated that, in terms of relative cover and diversity, green season grazing is detrimental to native annual plants. This was the same conclusion reached from a previous study on the Carrizo (Kimball and Schiffman 2003). In the BLM study, grazing was particularly detrimental to the native annual flora in the upper Sonoran subshrub scrub vegetation. The study results for two native bunchgrass species, one-sided bluegrass (*Poa secunda* spp. *secunda*) and nodding needlegrass (*Nasella cernua*), was variable. Overall, the effect of grazing on *Poa* was negative and especially in areas with annual grassland. However, there was little difference in the frequency of *Poa* between grazed and ungrazed areas in the scrub communities. For *Nasella*, there was no overall effect, but the species did better in soil 3 (alluvial flats and fans) and worse in soils 7 and 8 (annual grassland and scrub communities in the foothills). The study also indicated that, overall, nonnative annual grasses did better in grazed pastures.

Livestock movement across a landscape affects soil characteristics, damages plants and habitat, and can affect water flow patterns. Hoof action disturbs soils, which creates dust, creates habitat for ruderal species, and can result in the loss of crust communities (Belnap et al. 2007; Memmott et al. 1998). Trails can act as conduits for water, which changes the local hydrology and may result in erosion and gullying. Movement of livestock across steep slopes results in a generalized net movement of soil down slope, one hoof print at a time. This initial terracing of slopes creates a lot of microtopography and may act to slow the movement of water down slope, allowing more time for infiltration and less opportunity for erosion, assuming that trails are perpendicular to the slope. However, repeated travel by livestock across hill slopes accelerates the movement of soils down slope, resulting in a general deterioration of plant habitat. Hooves can also disrupt biological crusts and create habitat for introduced weedy grasses. Depending on the amount of trampling, native plants can be damaged or eliminated altogether, especially in areas where livestock congregate or create trails (Brooks 2000, 2003, 2006; Fusco et al. 1995; Mack and Thompson 1982). Areas near troughs and corrals are often devoid of native species and can act as source points for weedy species to invade surrounding natural habitat. Compacted soil means that water will not infiltrate easily and roots may have difficulty penetrating (McIlvaney 1942). Studies of soil compaction by livestock (Liacos1962, McIlvaney 1942) correlated grazing with less porous soils, depressed soil formation, lower water infiltration and holding capacity, and a shallower portion of the soil profile utilized by plants

The deposition of urine and manure increases soil nitrogen and moisture levels, generally favoring nonnative weedy species (Brooks 2003; Parker and Muller 1982). Impacts to vegetation tend to be most pronounced near troughs and other locations where livestock congregate. These same sites tend to have high levels of soil compaction and disturbance. Vegetation around trough areas on the Monument are often composed of Mediterranean species such as cheeseweed (*Malva parviflora*), foxtail (*Hordeum murinum* ssp. *leporinum*), bromes (*Bromus* spp.), horehound (*Marrubium vulgare*), and mustards (various Brassicaceae) and may serve as points of spread into surrounding vegetation. Away from these congregation areas, the deposition of urine and manure has highly localized effects, but little overall effect on native vegetation.

Livestock impact native vegetation by dispersing seeds via fur and manure (Janzen 1984). Nonnative weedy species may be introduced when animals are first brought onto a pasture and existing weed populations may be spread by animal movement across the landscape. Native species may be spread in a similar manner.

Additional impacts to vegetation stem from infrastructure associated with grazing operations. Livestock watering systems that rely on springs divert water from native vegetation. Roads eliminate potential habitat for native vegetation, disrupt overland water flow, and serve as a source of dust (Forman and Alexander 1998). Salt licks create small, localized zones too salty to support plants.

Foraging behavior affects native shrubs in two ways: a) leaves and reproductive tissues may be consumed, and b) shrub architecture may be modified due to mechanical damage incurred as livestock forage on the annual vegetation growing underneath the shrub canopy. Cattle mostly forage on grasses and annual forbs; however, during the dry season, they will often switch to, or at least consume some shrub species. Saltbush (*Atriplex* spp.) can be a good forage species during the summer months (Twisselmann 1956, 1967; USDA 1937). Scrub oak (*Quercus john-tuckeri*) can also be good forage during those periods before the onset of winter rains (USDA 1937). The effect on these species is entirely dependent on the intensity of grazing. Most of the allotments within the Monument have summer restrictions so as to minimize any potential impacts to saltbush. Hedging of shrubs, either by consumption or mechanical damage, can occur during drought conditions or in areas where livestock tend to congregate. Annual vegetation is more lush underneath shrubs than between them and, as such, can be attractive forage for livestock. Overall, shrub populations tend to show more damage closer to water troughs (Brooks 2006). Trampling by livestock can damage or kill shrub seedlings. The soil disturbance created by livestock may provide germination sites for some species.

Some of the Monument's oak trees have been impacted as a result of cattle foraging behavior. Grazing on the oaks produces the typical pasture tree architecture, where all branches have been trimmed up as high a cow can reach. Cattle foraging and loafing beneath trees can result in the removal of the herbaceous understory, the elimination of leaf litter and mulch, erosion of the soil, and, as a consequence, a loss of understory habitat and its associated biota (such as herbaceous plants, microfauna, fungi) (Borchert et al. 1989; Dahlgren et al. 1997; Parker and Muller 1982) This can also hasten the death of individual trees and eliminates habitat for oak seedlings (Adams et al. 1992; Momen et al. 1994). Livestock also consume oak seedlings and acorns, further impacting oak reproduction and recruitment (Borchert et al. 1989). Spring and summer grazing would result in the lowest survival rates for blue oak seedlings (Hall et al. 1992). The emergence of blue oak seedlings was highest during a season of above average precipitation (Adams et al. 1992) when livestock are most likely to be present and for the longest period of time, thus increasing the likelihood that seedlings will be impacted. Grazing, by reducing fine fuels in adjacent grasslands and by trimming the lower branches, helps protect oaks against wildland fires.

The area around Soda Lake is not grazed, so there would be no impacts to the surrounding vegetation, nor to the area's rare plants.

Riparian areas on the Monument, primarily springs and seeps, are vulnerable to damage by livestock. Because these sites support lush vegetation and are surrounded by much drier habitat, they are attractive to foraging livestock. If not fenced, soils can become hoof-pocked, the riparian vegetation trampled, and the palatable species eaten. Unpalatable species such as bull thistle (*Cirsium vulgare*) and salt cedar (*Tamarix* spp.) may become established and/or spread.

Some vernal pool vegetation may be damaged via trampling or grazing by livestock; however, grazing has been shown to be of overall benefit to native plants in some Central Valley vernal pools by lessening the competitive impact of introduced weedy grasses (Marty 2005). Whether this would be true for the depauperate flora associated with the Monument's vernal pools is uncertain. The few obligate pool species tend to be of short stature and are unlikely to be consumed as forage.

Crust communities, including those associated with some of the vernal pools, would be vulnerable to damage by trampling. Nesting areas for native solitary bees (important pollinators) within these crust

areas may also be degraded by soil disturbance associated with grazing. Manure deposited on crust surfaces shades and kills the photosynthetic component of crust biota (cyanobacteria, mosses, and lichens). Hoof prints disrupt the crust surface and provide microhabitat for introduced annual grasses (D. Kearns, BLM, personal observation, 5 March 2004). Where they are present, giant kangaroo rats create so much disturbance on their precincts that soil crusts are unlikely to develop, regardless of whether an area is grazed or not; however, interprecinct areas may support crust species.

Habitat for the endangered California jewelflower (*Caulanthus californica*) is protected from grazing because the species appears to be highly palatable to cattle. Populations of San Joaquin wooly threads (*Monolopia congdonii*) appear to be doing fine under the current grazing management. During a demographic study (Cypher 1994), green season grazing was shown be beneficial in some situations and neutral or detrimental in others. At one of the sites on the Monument, trampling was a problem. Wooly threads stems grow either upright or prostrate. Since prostrate forms are less likely to be grazed, grazing may act as a selection factor favoring the prostrate form. Hoover's woolly-star (*Eriastrum hooveri*) does not appear to be impacted by grazing (USFWS 2003).

Rare plant response to grazing is variable in the Monument. Some rare plants are not affected by livestock because their populations are not subjected to grazing. Rare plant populations within grazed pastures have the potential for being damaged by livestock; however, the relationship between population health and livestock grazing is poorly understood. The species that grow in the vicinity of Soda Lake tend not to be affected since the area is closed to grazing; however, large populations of Jared's peppergrass (*Lepidium jaredii* ssp. *jaredii*) are found within the northernmost mountain plover core area. These peppergrass populations would be moderately to majorly negatively impacted by green season grazing. The grazing impact to forked fiddleneck (*Amsinckia vernicosa* var. *furcata*) is expected to be negligible since cattle do not appear to forage in plant's dry shale habitat. Similarly, San Joaquin bluecurls (*Trichostema ovatum*) is not likely to be impacted since it is a summer annual and livestock are off the Caliente Range by June. For two rare buckwheats, Temblor buckwheat (*Eriogonum temblorense*) and cottony buckwheat (*Eriogonum gossypinum*), the impacts of livestock grazing on the Carrizo populations are uncertain.

Although gypsum-loving larkspur (*Delphinium gypsophilum* ssp. *gypsophilum*) is poisonous to cattle, the plant is not distasteful to livestock (Kingsbury 1964; USFS 1937) and early season rosettes are easily consumed by cattle foraging in the plant's grassland habitat. Sheep will eat larkspur species with little effect (Kingsbury 1964). It is unknown how grazing affects larkspur populations on the Monument. Cattle "will graze oval-leaved snapdragon (*Antirrhinum ovatum*) down to practically ground level" and eat the plants "with gusto" (BLM 1991); however, it is uncertain how much, if any, grazing occurs in the vicinity of the plant populations. It is also unknown how livestock grazing impacts heart-leaved thornmint (*Acanthomintha obovata* ssp. *cordata*), which grows in the same clay soils as oval-leaved snapdragon. The effect of grazing on stinkbells (*Fritillaria agrestis*) is also unknown.

Recreation and Administrative Facilities

Impacts from the recreation program would range from moderate positive impacts to potential major localized negative impacts. Education directed at the appreciation and conservation of natural resources would benefit vegetation, as would education to combat destructive human behavior. Potential visitor impacts to vegetation generally include trampling, picking, or other destruction of vegetation. Access to areas sometimes invites illegal behavior such as off-road vehicular travel. Escaped fire would also be a possibility. Allowing uncontrolled dispersed camping has the potential to impact specific vegetation because the public generally has a poor understanding of sensitive vegetation and usually have other interests in deciding where to camp or recreate. Populations of rare plants could be inadvertently damaged by uninformed publics. Continued horse camping would have impacts to native vegetation from hoof

action, grazing, and the potential to introduce and spread weeds via fur and feces. Recreation travel on dirt roads would create dust and be detrimental to nearby vegetation.

Travel Management

Impacts from the travel program would range from minor to major localized negative effects. Dust generated by road maintenance and use (322 miles public, 115 administrative only) would negatively affect nearby vegetation by interfering with photosynthesis and reproduction; the degree of impairment would depend on the timing and amount of dust generated. Generally, when roads are used for the purposes of recreational riding there is more dust created, especially with all-terrain vehicle (ATV) travel or if riders are driving fast. ATV travel has a greater tendency to erode dirt roads and would consequently generate more dust.

Many of the roads on the Monument were user-designed and not necessarily located in the most appropriate sites for the protection of soils and vegetation. Roads change hydrological patterns, which changes vegetation patterns. Roads channel rainwater, disrupt cross-landscape water flow patterns, and, via runoff, cause an increase of soil moisture along their edges (Forman and Alexander 1998; Trombulak and Frissell 2000). The natural distribution of some saltbush populations on the Monument have been restricted by roads across slopes. In some areas, erosion of the adjacent landscape is a problem; the most notable example, once a section of Soda Lake Road, is now a large canyon with a concrete apron where it intersects the re-aligned Soda Lake Road. Wet roads may cause drivers to drive on adjacent vegetation to avoid mud and ruts, resulting in additional damage to vegetation.

Roads change hydrological patterns, which changes vegetation patterns. A common effect is that roadsides tend to receive more water that adjacent areas and vegetation tends to be taller. Because roadsides also tend to be disturbed sites, they generally support a higher percentage of nonnative weedy species. Road edges provide weed habitat and facilitate the spread of weeds into adjoining natural habitat. Although some dirt roads, if little used, can provide nesting habitat for bees, vehicle travel on roads generally results in negative impacts to numerous insects, including pollinators.

Minerals

Impacts from the minerals program would range from minor to major localized negative effects. Disturbance associated with oil and gas exploration and extraction would adversely affect native vegetation; however, mitigation measures would help protect sensitive and listed species and other important vegetation. It is anticipated that approximately 23 acres of vegetation would be lost due to conversion to well pad or access road, with the affected vegetation community depending on the location of the oil and gas activities. By encouraging operators to reclaim unneeded disturbed areas, additional native habitat would be restored. Dust generated by road and pad construction, maintenance, and use would negatively affect nearby vegetation by interfering with photosynthesis and reproduction; the degree of impairment would depend on the timing and amount of dust generated. Oil and gas activities would also create approximately 13 acres of temporary disturbance (including dust), afterward to be restored with native species. About 140 acres would have a minor amount of transient disturbance due to the boring of shot holes and associated cross-country travel during seismic exploration. Routes would be designed to minimize negative and overall effects on vegetation. Because of standard mitigation measures, oil and gas activities are expected to have negligible or no impacts to rare plants. Additional weeds may be introduced and spread via oilfield equipment, vehicles, and personnel. Disturbed soils created during pad and road construction would provide habitat for weedy species and access for additional human impacts. Pads and roads, especially if they do not have a lot of use, would also provide bare substrate, possibly suitable as nesting habitat for ground-nesting solitary bees (pollinators of native plants).

Lands and Realty

Impacts from the lands and realty program would depend on the type of action. Land acquisition actions would result in major beneficial positive effects. Development-oriented actions would be expected to result in minor to major negative impacts on a localized scale. Proposed acquisitions would result in additional acres of habitat preserved under public ownership. The benefit to specific vegetation resources would depend on what property is acquired. Rights-of-way and other realty actions would eliminate a small amount of vegetation in the project footprint and would damage adjacent vegetation due to dust generated by the development and use of the project. Little-used roads may provide nesting habitat for ground-nesting solitary bees (pollinators of native plants). Vegetation could also be affected by the alteration of water flow patterns due to road construction and orientation. Impacts to rare plants would be avoided by mitigation measures. Filming permits may result in temporary disturbance and have the potential to introduce weed seeds to the Monument. Other realty actions proposed under the No Action Alternative are expected to have negligible or no impacts to vegetation.

Climate Change Impacts

(Note: These impacts are common to all alternatives.) Impacts to vegetation from climate change are uncertain and depend, to a large extent, on the amount and rapidity of change. For drought- adapted species, there would be minor to major beneficial impacts; for more mesic species, the impacts would be expected to be negative and range from minor to major. The Intergovernmental Panel on Climate Change reports that the southwestern United States is likely to become hotter and drier (Christensen et al. 2007). Drier conditions for the CPNM mean that, overall, there would be less vegetative growth. A change in vegetation zones is also expected. Oak and juniper woodlands would tend to shift to scrublands, scrublands to grasslands, and grasslands to desert-like habitat with significant portions of bare soils or, possibly, biological crusts. Woodlands may be lost altogether from the Monument (Kueppers et al. 2005). With a slight drying, the wild oat grasslands in the northern part of the Monument would be expected to shift to brome-dominated grasslands. The conversion of grasslands to desert may be accelerated if winds erode unprotected soils exposed during droughts. As the general area becomes drier, plant communities are expected to migrate northward or upward in elevation, at least those species that can. Depending on the strength and rapidity of the change, some elements of the flora may disappear. As precipitation levels and recharge decline, some springs would dry up, while others would diminish in flow, reducing riparian vegetation.

The amount and persistence of vegetation is expected to change. There would be less thatch generated, but, because winter moisture levels would be lower, less thatch would decompose. How this would affect the total amount of persistent biomass is unclear and would depend on the amount and pattern of precipitation as well as on the activities of kangaroo rats and other herbivores.

With a drier climate, there should be more drought years, more years where the introduced annual grasses do poorly, and more years where the grassland vegetation is dominated by native drought-adapted species with long-lived seeds. However, there may be an invasion of weedy exotic species now prevalent in southern California deserts such as *Brassica tournefortii* (Saharan mustard) and *Schismus* spp. (Mediterranean grass).

4.3.5 Impacts to Vegetation Common to All Action Alternatives

4.3.5.1 Impacts to Vegetation from Implementing the Vegetation Program

Implementation of the vegetation program would have minor to moderate positive impacts to vegetation. Up to 500 acres of vulnerable rare plant populations should benefit from protective fencing that will protect vegetation from livestock, lessen foot travel and equestrian use, and minimize OHV trespass. Restricting grazing within specific pastures (for example, those with California jewelflower [*Caulanthus californica*]) will benefit vegetation. The restoration and augmentation of 10 to 100 acres of rare plant habitat should help ensure the survival and health of targeted listed, BLM sensitive, and other rare plants. The multiplication of rare plant seed by growing off site will facilitate restoration of rare plant populations.

4.3.5.2 Impacts to Vegetation from Implementing Other Programs

Wildlife

Implementation of the wildlife program would have minor negative to moderate positive impacts to vegetation. Over the life of the plan, the restoration of approximately 1,000 acres of saltbush and 5 acres of riparian areas as wildlife habitat would benefit saltbush, riparian plants, and associated native vegetation. Although the number of acres targeted for restoration under all action alternative is less than that proposed under the No Action Alternative, it is a more realistic assessment of the amount of acres that BLM could reasonably restore during the specified time period and is based on experience with restoration since completion of the last management plan (BLM 1996). The continuation of current grazing regimes in vernal pool areas (some grazed, some not), may have negative impacts to vegetation. See under grazing alternatives below for additional details. Actions taken to control exotic animal species would help protect vulnerable riparian areas, populations of native bulbs, and other vegetation resources from soil damage from wild pigs.

Fire and Fuels Management

Implementation of the fire and fuels management program would have minor to major temporary localized effects, but fire management, overall, would have positive impacts to vegetation. Over a 10-year period, approximately 5,000 acres of native vegetation would be consumed by a series of small wildland fires. There is also the possibility of a large wildfire burning as much as 5,000 acres. The impacts to vegetation would depend on the fire location, periodicity, and intensity. Grassland communities would benefit from occasional burning, but shrub and woodland communities could be converted into nonnative-dominated grassland if fires burn hot or if the fire return interval is short. Saltbush stands growing within or adjacent to grasslands could be particularly vulnerable to damage by fire. Since most wildland fires occur during the dry season, the potential impacts to the Monument's rare plants would be to seeds on or close to the soil surface.

Air Quality

Actions and consequences are the same as those described under the No Action Alternative.

Soils

Implementation of the soils program would have minor to moderate positive impacts to vegetation. Conserving areas of sensitive soils will help protect vegetation, rare plants, biological crusts, and other vegetation resources. By taking actions to limit erosion, plant habitat will be preserved and there will be less negative impacts on plants from dust.

Water

Implementation of the water program would have minor to major positive impacts to vegetation. Protecting watersheds and surface and subsurface water sources will have a generalized benefit to native and other vegetation, and would be critical in maintaining the integrity of Soda Lake and the Monument's vernal pools. Fencing vulnerable springs and removing nonnative species will increase the native component of spring vegetation.

Geology and Paleontology

Implementation of the geology and paleontology program would have some temporary minor to moderate localized negative impacts, but overall would have positive impacts to vegetation. Protection of the Monument's geological formations and landforms would help protect vegetation, especially habitat in the vicinity of Soda Lake. Research activities associated with the Monument's paleontological and geological resources would temporarily disturb a small amount of habitat. Research in the Soda Lake area would have mitigation measures to minimize impacts to rare plants such as *Delphinium recurvatum* and *Lepidium jaredii* ssp. *jaredii*. Other proposed paleontological/geological resource actions are expected to have negligible or no impacts to vegetation. Nonnative plants may be introduced and spread by research equipment, vehicles, and personnel.

Cultural Resources

Implementation of the cultural resources program would have minor to major localized negative effects, but overall, would have positive impacts to vegetation. The one-half to one mile of proposed road re-alignments needed to protect cultural resources would result in a small loss of habitat, balanced by the restoration of the closed sections. Restricting roads near sensitive cultural sites to administrative use would help protect vegetation from dust and human impacts.

WSA/Lands with Wilderness Characteristics

The wilderness resource actions common to all action alternatives are expected to have major beneficial impacts to vegetation by protecting habitat in the Caliente Mountain WSA.

Livestock Grazing

Adjustments to grazing authorizations to meet specific target objectives are expected to benefit native vegetation by lessening the negative impacts of livestock on native plants. Use of the Conservation Target Table, monitoring studies, and other adaptive management tools are expected to result in better and more precise application of vegetation management tools and thus, minimize negative impacts to vegetation.

Recreation and Administrative Facilities

Implementation of the recreation program would have overall minor to moderate positive impacts to vegetation, but some areas may experience minor to major localized negative impacts from recreational activities. Education directed at the appreciation and conservation of natural resources would benefit vegetation, as would education to combat negative/impacting uses. The focus on providing visitors a natural landscape experience should also help benefit vegetation. Education targeting motorized recreational visitors would help instill appropriate behavior (good for vegetation resources). Providing potable water sources would increase local impacts to vegetation, since these areas would experience an increase in visitor use. Activities that would increase public visitation would be expected to increase impacts to vegetation. Impacts would be greatest if increased visitation is not coupled with an increase in management presence. The development of driving tours would be expected to increase dust impacts to

adjacent vegetation, although by building an appreciation of the natural landscape, it could have indirect beneficial impacts. The publication and dissemination of wildflower viewing information would have some localized impacts due to trampling and pick of plants, but would be expected to have an overall benefit to vegetation by supporting the public's appreciation for natural beauty and would help the public to incorporate a feeling of ownership for the Monument.

Travel Management

Impacts to vegetation common to all action alternatives would be similar to the No Action Alternative; however, mileage of roads would be different in the three alternatives.

Minerals

Actions and consequences are the same as those described under the No Action Alternative.

Lands and Realty

Actions and consequences are the same as those described under the No Action Alternative except that right-of-way actions would result in a loss or degradation of 5 to 30 acres of habitat via disturbance.

4.3.6 Impacts to Vegetation under Alternative 1

4.3.6.1 Impacts to Vegetation from Implementing the Vegetation Program

The hand and mechanical treatment of 10 to 100 acres of weeds over the life of the plan would have beneficial impacts to native plants by removing nonnative competitors and invasive weedy exotics.

4.3.6.2 Impacts to Vegetation from Implementing Other Programs

Wildlife

Implementation of the wildlife program would have minor to moderate positive or negative impacts to vegetation. The elimination of livestock grazing and controlled burns as management tools would have a variety of impacts to vegetation and make habitat management and restoration more difficult. See discussions under grazing and fire/fuels management below for additional details. Removing artificial water sources would focus native ungulate impacts on springs and seeps, which could have deleterious impacts on riparian vegetation, depending on animal use levels. Removing the diversion of water for artificial water sources would be of minor to major benefit to currently impacted springs.

Fire and Fuels Management

Implementation of the fire and fuels management program would have minor to major temporary localized effects, but fire management, overall, would have positive impacts to vegetation. Approximately 2 acres of disturbance associated with wildland fire suppression would temporarily damage vegetation and may create weedy areas, especially if weed seeds are accidentally introduced by equipment or personnel. Some temporary damage may occur if fire vehicles travel off road. Resource planning during fire suppression activities should minimize the effect on rare plants and other sensitive vegetation resources. The application of foam and fire retardant will introduce a small amount of chemicals such as ammonia fertilizers, phosphates, potassium salts, shampoo-like surfactants, and mineral oil (USFS 2008). Many of these compounds include important plant nutrients and their application tends to favor the growth of grasses (Larson and Duncan 1982). Twenty-five acres would be mowed to clear areas around Monument structures and facilities. Many of these areas tend to have a higher concentration of weedy

species than less disturbed sites and because mowing is usually done late in the season, there would be minimal impacts to native vegetation. Over the life of the plan, up to 5 acres of roadside Russian thistle, trees and shrubs will be trimmed. This would have negligible effect on the population of Russian thistle, but would benefit vegetation by eliminating a possible source of ignition along roads. Prescribed fires to achieve specific biological objectives would not be employed under Alternative 1. Restoration efforts would be hampered and it would be more difficult or take much longer to restore degraded plant habitat. Weed control would be more difficult without the use of fire as a tool and there would be no opportunity to occasionally burn off accumulated thatch as a means of promoting native forb establishment and growth.

Air Quality

Lowering dust production by closing roads during dry periods would have major localized positive impacts to vegetation by removing the negative impacts associated with dust. Also, use of gravel, paving, and chemical binders to reduce dust would benefit vegetation.

Soils

The soil resource actions proposed under Alternative 1 are expected to have negligible or no impacts to vegetation.

Water

Actions and consequences are those described under Impacts Common to All Action Alternatives.

Geology and Paleontology

Actions and consequences are basically those described under Impacts Common to All Action Alternatives.

Cultural Resources

Closing or restricting public access in areas of sensitive cultural resources would have major positive local benefit to vegetation by limiting human impacts in the vicinity of Painted Rock and the KCL basalt cone. A small amount of vegetation would be impacted during fence construction. Education activities would be expected to disturb vegetation at eight sites for a total of ½ acre. Temporary disturbance associated with the restoration and relocation of historical farming equipment and structures would impact a minor amount of vegetation, but would not result in a loss of habitat. The razing and removal of five unwanted structures would cause temporary disturbance, but would ultimately result in a slight increase in natural habitat. Other cultural resource actions proposed under Alternative 1 are expected to have negligible or no impacts to vegetation.

WSA/Lands with Wilderness Characteristics

The wilderness resource actions proposed under Alternative 1 are expected to have major beneficial impacts to vegetation by protecting 65,218 acres of habitat as lands with wilderness characteristics (in addition to the existing WSA). Due to restrictions associated with wilderness designation, some vegetation management actions may be more difficult to accomplish.

Livestock Grazing

Implementation of the limited Alternative 1 grazing program would have minor to major positive impacts to vegetation. Under some situations, the removal of grazing might have minor to moderate negative impacts to vegetation. Under Alternative 1, grazing would not be allowed on most of the Monument. The small portions of the pastures that are within the Temblor Range subregion, but primarily outside the Monument, would continue to be grazed under existing Section 15 leases. In all, only about 4,600 acres would be available for livestock grazing, assuming that precipitation is adequate, rangeland standards are met, and forage is available. Grazing would be by cattle or sheep and occur during the winter and spring seasons, when annual plants are green or, in some allotments, as forage is available. Because of the limited amount of acreage grazed under this alternative, livestock grazing is expected to have a limited impact to native vegetation and other vegetation resources. Areas impacted by previous livestock operations, such as corrals and around troughs, could be restored, resulting in a net increase in native vegetation and would remove potential sources of weedy nonnatives. A cessation of grazing would allow the natural restoration for those oaks whose understory is currently impacted by livestock. In some highly impacted sites (such as around troughs, corrals, and fencelines), there may be a temporary increase in non-native weeds since livestock would no longer be present to graze them down. Some initial disturbance would occur during the removal of unneeded infrastructure, but overall, native plants would benefit. The loss of grazing as a management tool would eliminate one economical source of habitat modification and may make it more difficult to achieve specific vegetation goals. Some plant species that prosper under a grazing regime, such as snakeweed and interior goldenbush, may decline in abundance. Wildfires may be more intense and affect larger areas of vegetation, without ability to use grazing as a means of reducing fine fuels.

Recreation and Administrative Facilities

Implementation of the recreation program would have minor to major positive impacts to vegetation. Under Alternative 1, the Primitive zone would encompass 83,202 acres. Because public access is limited to non-motorized and non-mechanized activities, this would afford the greatest protection to vegetation; however, it would make certain vegetation management tools more difficult to use. Restricting camping to developed facilities within the Frontcountry zone would be expected to benefit vegetation by concentrating visitor impacts to specific, easily monitored locations and eliminate many of the problems associated with dispersed camping. Establishing trails should help protect vegetation by directing visitor impacts away from sensitive resources.

Travel Management

Under Alternative 1, 269 miles of roads would be open to the public and 80 miles closed completely. Impacts to vegetation from roads would be reduced in geographic scope under this alternative.

Minerals

Actions and consequences are the same as those described under the No Action Alternative.

Lands and Realty

Actions and consequences are the same as those described under the No Action Alternative except for the following positive impacts: Proposed acquisitions would result in an additional 16,000 to 30,000 acres of habitat preserved under public ownership. The impact on specific vegetation resources would depend on what property is acquired. Removal of two communications sites may allow vegetation to reclaim the

small areas previously occupied by communications infrastructure. Other realty actions proposed under Alternative 1 are expected to have negligible or no impacts to vegetation.

4.3.7 Impacts to Vegetation under Alternative 2

4.3.7.1 Impacts to Vegetation from Implementing the Vegetation Program

Implementation of the vegetation program would have moderate to major positive impacts to vegetation. Restoration of 200 to 500 acres of native habitat per year would increase the amount of native plants. Some individual plants may be killed by restoration pre-treatment actions (burning, flaming, herbicides), but overall there would be a major increase in native plant populations. Although the number of acres targeted for restoration under the action alternatives is less than that proposed under the No Action Alternative, it is a more realistic assessment of the amount of acres that BLM could reasonably be expected to restore during the specified time period. The new estimate is based on BLM staff's recent experience gained with restoration since completion of the last management plan (BLM 1996). As such, the amount of habitat actually restored would be expected to be similar for the two alternatives. Prescribed fires to promote native vegetation should result in an average of 200 to 1,000 acres per year of improved habitat, similar to the amount of acres reported under the No Action Alternative (5,000 to 10,000 over the life of the plan). The alteration of 1 to 100 acres of roadside terrain to restore natural landscape water flow patterns would cause temporary disturbance and loss of plants, but ultimately result in improved and expanded saltbush populations. The installation of 1 to 5 miles of fencing will help protect vulnerable oak trees and allow for the restoration of understory leaf litter, mulch, and associated biota. Additional efforts to improve oak understory habitat by adding oak mulch, inoculum, jute matting, and other soil restoration components would increase the restoration rate. Restoration of 10 to 100 acres of crust habitat would involve some initial negative effects to native species in target sites, but overall, native plant species should benefit. Crust zones should also benefit solitary bees and other ground-nesting pollinators by providing good quality nesting sites. The treatment of 10 to 100 acres of weeds (average per year) should benefit native plants by removing nonnative competitors and invasive weedy exotics. Some native plants growing within and adjacent to target weed populations may be damaged or killed by weed control methods such as burning or the application of herbicides. Biological control organisms released to target a specific weed may have a minor effect on related native plant species; however, pre-release screening of potential control organisms minimizes the chance of host transfer. Overall, native plants should benefit by the removal of nonnative competitors and invasive weedy exotics.

4.3.7.2 Impacts to Vegetation from Implementing Other Programs

Wildlife

Implementation of the wildlife program would have minor to moderate negative impacts to vegetation, depending on the location and intensity of grazing. Under Alternative 2, approximately 60,000 acres would be grazed (2 years out of 10) for the purposes of managing core habitat for San Joaquin Valley listed species. The effects on vegetation would depend on the timing, intensity, and season of grazing. The highest impact to plants would be under a green season grazing regime and would most likely be worse at the 2 out of 10 year level. The two (20 percent) level is less intense that that during the BLM grazing study, which averaged five years out of six (83 percent), so negative impacts to vegetation are expected, overall, to be less. See discussion under grazing alternatives below for additional details. Some grazing may occur outside the core areas for the removal of standing biomass (introduced annual grasses) in the fall, prior to the onset of the rainy season. This is expected to improve native forb establishment and growth and would be monitored to determine the effectiveness of fall grazing as a management tool. Under Alternative 2, grazing to manage core species outside the core areas could also occur if needed to prevent target populations from disappearing from the Monument. The effects on vegetation would depend on the parameters of how grazing would be applied as a tool. Trials and evaluations of other types

of grazing than that employed in the recent past to manage vegetation are expected to have a net benefit to vegetation because it would help design vegetation treatments that would minimize the destructive effects of grazing, while still achieving the goal of maintaining healthy populations of listed animals.

Occasional prescribed fires on 1,000 acres in pronghorn habitat is expected to have an overall benefit to vegetation. Increasing native ungulate populations may place pressure on some vegetation resources, such as riparian areas, depending on where animals congregate.

Fire and Fuels Management

Impacts to vegetation from fire and fuels management under Alternative 2 would be the same as under Alternative 1, except more acreage would be affected. Under Alternative 2, approximately 4 acres of habitat disturbance per year would be associated with wildland fire suppression. Three hundred and fifty acres per year would be mowed to clear areas along roads and around Monument structures and facilities. Over the life of the plan, up to 10 acres of roadside Russian thistle, trees and shrubs would be trimmed. Prescribed fires targeting biological resource objectives (for example, restoration of native vegetation) would treat an average of 500 acres per year. Although firebreaks would disturb an average of 2.5 miles per year, much of this would utilize existing roads, so the actual impact to native habitat would be minimized. In addition, many of the areas targeted for prescribed burns were previously disturbed by farming. Overall, the prescribed burns would be of benefit to native plant species.

Air Quality

Actions and consequences are similar to those described under Alternative 1, although less beneficial, as roads would not be closed during the dry season to reduce dust.

Soils

Conserving soils by closing sensitive areas and problematical roads will benefit the local vegetation. Other soil resource actions proposed under Alternative 2 are expected to have negligible or no impacts to vegetation.

Water

Actions and consequences are those described under Impacts Common to All Action Alternatives.

Geology and Paleontology

Actions and consequences are basically those described under Impacts Common to All Action Alternatives. Because mechanized equipment could be used for research activities, there is a possibility of more habitat disturbance to occur than in Alternative 1, however, it would still be only a minor amount.

Cultural Resources

Closing or restricting public access in areas of sensitive cultural resources would help to protect vegetation by limiting human impacts. A small amount of vegetation would be impacted during fence construction. Tours and regulated self-guided visits are expected to result in a slight amount of vegetation disturbance via foot travel in the vicinity of Painted Rock and the KCL basalt cone. Education activities would be expected to disturb vegetation at eight sites for a total of ½ acre. The installation of signs would result in a negligible amount of disturbance to vegetation. Temporary disturbance associated with the restoration and relocation of historical farming equipment and structures would impact a minor amount of

vegetation, but would not result in a loss of habitat. The razing and removal of one to three unwanted structures would cause temporary disturbance, but would ultimately result in a slight increase in natural habitat. Other cultural resource actions proposed under Alternative 2 are expected to have negligible or no impacts to vegetation.

WSA/Lands with Wilderness Characteristics

The wilderness resource actions proposed under Alternative 2 are expected to be beneficial to vegetation by protecting 36,480 acres of habitat as lands with wilderness characteristics. Due to restrictions associated with wilderness designation, some vegetation management actions may be more difficult to accomplish.

Livestock Grazing

Implementation of the grazing program would have minor to moderate negative impacts to vegetation, depending on the location and intensity of grazing. Some localized sites may have major negative impacts. Under Alternative 2, about 55,000 acres would be available for grazing under Section 15 allotments and about 128,000 acres would be available for grazing to meet specific biological objectives under the vegetation management areas. Generally, the Section 15 pastures are in the Caliente and Temblor Ranges and the vegetation management pastures on the valley floor. It is anticipated that forage conditions would allow grazing on all Section 15 allotments on an average of 5 years out of 10. Based on past precipitation patterns, it is anticipated that grazing as a tool for managing vegetation might be needed on an average of 2 out of 10 years on about 55,000 acres to achieve desired objectives within core areas. Grazing would be mostly by cattle and probably occur during the winter and spring seasons, when annual plants are green, however, fall grazing might be employed in certain areas, especially for core mountain plover habitat. Grazing would continue on about 4,000 acres to maintain existing conditions for listed fairy shrimp populations, unless research indicates otherwise. About 2,000 acres could be grazed relative to possible administrative needs for the vegetation management program or because some smaller parcels of BLM lands are within larger private lands. The administrative acres would, most likely, be grazed by horses employed for livestock operations. The BLM lands found within larger private lands are not fenced and, thus, any grazing would not be controlled by BLM and the type of livestock is uncertain. Under Alternative 2, grazing would not occur on about 85,000 acres.

Under Alternative 2, there would be some impacts to native vegetation and other vegetation resources, but less than under the No Action Alternative, because less acreage overall would be grazed. Although there is more acreage available for the use of grazing as a vegetation management tool under Alternative 2, the use of livestock as a grazing tool would be used only occasionally in the core areas, and rarely outside the core areas, especially during the more vulnerable green season. In addition, because the core pastures might be grazed only when nonnative grasses reach undesirable levels (on an average, about 2 years out of 10), impacts to native vegetation would be lower. If monitoring determines that vegetation in the core areas are incurring unacceptable detrimental effects from livestock, modifications would be tried to lessen any negative impact on vegetation while still achieving population goals for the core target wildlife species. Impacts in the Section 15 leases would also be less than under the No Action Alternative since the grazing frequency would be lowered from 8 to 5 years out of 10. Native annual flora and shrubs in these pastures are expected to benefit from lowered grazing impacts.

Recreation and Administrative Facilities

Under Alternative 2, the Primitive zone would encompass 54,464 acres, which is less than under Alternative 1, but more than Alternative 3. Dispersed camping would be allowed in the Backcountry zone, which would be expected to impact vegetation, depending on the location of campsites and intensity

of use (sites with resource damage would be modified or closed, reducing long-term impacts). Establishing trails should help protect vegetation by directing visitor impacts away from sensitive resources.

Travel Management

Under Alternative 2, 278 miles of roads would be open to the public and 45 miles closed and allowed to rehabilitate. The 45 miles of closed roads would revegetate and benefit vegetation if active weed management actions are employed until native vegetation is reestablished. Impacts to vegetation from roads would be higher than under Alternative 1, but lower than present conditions.

Minerals

Actions and consequences are the same as those described under the No Action Alternative.

Lands and Realty

Actions and consequences are the same as those described under the No Action Alternative except for the following impacts: Proposed acquisitions would result in up to 30,000 additional acres of habitat preserved under public ownership. Because land acquisitions would be targeting specific biological targets, some rare plant populations (especially *Caulanthus californica*) and other vegetation resources would benefit by gaining public protection. The benefit to specific vegetation resources would depend on what property is acquired. Modification of two communications sites would not be expected to change impacts to vegetation. Other realty actions proposed under Alternative 2 are expected to have negligible or no impacts to vegetation.

4.3.8 Impacts to Vegetation under Alternative 3

4.3.8.1 Impacts to Vegetation from Implementing the Vegetation Program

Actions and consequences of the vegetation program under Alternative 3 are the same as under Alternative 2.

4.3.8.2 Impacts to Vegetation from Implementing Other Programs

Wildlife

Impacts under Alternative 3 would be similar to Alternative 2 except that much more acreage would be targeted for active vegetation management, primarily grazing, to create open habitat for the San Joaquin Valley listed species. This would increase the acreage of impacts to vegetation; the severity depending on the timing, intensity, and season of grazing. See discussion under grazing alternatives below for additional details as to the impacts of grazing on vegetation.

Fire and Fuels Management

Impacts to vegetation from wildland fire under Alternative 3 would be the same as under Alternative 2, except slightly more acreage would be affected. Under Alternative 3, approximately 5.5 acres of habitat disturbance per year would be associated with wildland fire suppression. Prescribed fires targeting biological resource objectives (for example, restoration of native vegetation) would treat an average of 750 acres per year. Firebreaks would disturb an average of 3.5 miles per year, much along existing roads.

Air Quality

Lowering dust production by surfacing roads would benefit vegetation by removing the negative impacts associated with dust.

Soils

Conserving soils by closing sensitive areas and problematical roads would benefit the local vegetation. Other soil resource actions proposed under Alternative 2 are expected to have negligible or no impacts to vegetation.

Water

Actions and consequences are those described under Common to All Action Alternatives.

Geology and Paleontology

Actions and consequences are basically those common to all action alternatives. Because mechanized equipment could be used for research activities, there is a possibility of more habitat disturbance to occur than in Alternative 1, however, it would still be only a minor amount.

Cultural Resources

Closing or restricting public access in areas of sensitive cultural resources would help to protect vegetation by limiting human impacts. A small amount of vegetation would be impacted during fence construction. Tours and/or regulated self-guided visits are expected to result in a slight amount of vegetation disturbance via foot travel in the vicinity of Painted Rock (tours only) and the KCL basalt cone. Education activities would be expected to disturb vegetation at two to four sites for a total of ½ acre. The installation of signs would result in a negligible amount of disturbance to vegetation. Temporary disturbance associated with the restoration and relocation of historical farming equipment and structures would impact a minor amount of vegetation, but would not result in a loss of habitat. The razing and removal of four to six unwanted structures would cause temporary disturbance, but would ultimately result in a slight increase in natural habitat. Other cultural resource actions proposed under Alternative 3 are expected to have negligible or no impacts to vegetation.

WSA/Lands with Wilderness Characteristics

The wilderness resource actions proposed under Alternative 3 would be the same as the No Action Alternative (the existing Caliente Mountain WSA, 17,984 acres, would continue to be protected at current levels).

Livestock Grazing

Under Alternative 3, grazing in the Section 15 allotments would occur an average of 8 years out of 10 (as in the No Action Alternative). In these areas, the grazing frequency would be higher than under Alternative 2 and, thus, impacts to native vegetation and other vegetation resources are expected to be higher as well. Areas outside the core area would be vulnerable to grazing for SJV core species objectives, to the possible detriment of native vegetation.

Recreation and Administrative Facilities

Impacts to vegetation from Alternative 3 are similar to those from Alternative 2 except that only 17,984 acres would be included in the Primitive zone.

Travel Management

Under Alternative 3, 322 miles of roads would be open to the public and 10 miles closed/rehabilitated. Impacts to vegetation from roads would be similar to the No Action Alternative, although the 10 miles of closed roads would revegetated and benefit vegetation resources if active weed management actions are employed until native vegetation is reestablished. Paving Soda Lake Road would eliminate dust and thereby benefit adjacent vegetation.

Minerals

Actions and consequences are the same as those described under the No Action Alternative except for actions using vibroseis equipment associated with geophysical exploration. Off-road travel with this type of equipment would crush vegetation, compress and disturb soils, and create trails that may encourage illegal OHV activity. Impacts would depend on the location and duration of the geophysical exploration.

Lands and Realty

Actions and consequences are the same as those described under Alternative 2.

4.3.9 Cumulative Impacts

4.3.9.1 Assessment Area

The assessment area varies depending on the vegetation resource, but, in general, includes the southern San Joaquin Valley and adjacent Coast Ranges, the Carrizo Plain, and the Cuyama Valley.

4.3.9.2 Past, Present, and Reasonably Foreseeable Future Actions within the Assessment Area

Development in the assessment area continues to degrade and eliminate natural vegetation; the trend is expected to accelerate as California's population expands, especially when coupled with the growth of energy-related development (oil, solar, wind, others). Natural vegetation will continue to be lost to irrigated agriculture, ranching, energy development, housing, and general impacts by human activities. As a result, the fragmentation and isolation of the remaining tracts of natural vegetation is expected to continue. However, lands within the Monument, along with adjacent CDFG, TNC, USFWS, and non-Monument BLM lands, will continue to be conserved and vegetation resources protected, offsetting some of these negative impacts.

The Monument is one of several recovery areas for federally protected species including California jewelflower, San Joaquin woolythreads, and Hoover's woolystars (recently delisted) and has important habitat for other rare plants (see Table 3.2-3, Additional Rare Plants in or near the Monument). Sensitive plant communities (valley sink scrub, vernal pools, and saltbush scrub) as present as well as other plant communities (see Table 3.2-2, Relationship between Vegetation Mapping Designations) currently more widespread, but diminishing in unprotected lands outside the Monument.

The recovery of listed plants and the conservation of other rare plant habitat would be enhanced by actions proposed in the RMP for the CPNM. Large, landscape-sized areas of native vegetation would be

preserved during a time when similar habitat is being lost elsewhere. In addition, lands protected by the Monument and adjacent public lands would continue to provide important habitat for pollinators.

Trespass of sheep and cattle into sensitive habitats within the Monument would add to habitat degradation for native vegetation and rare plants, however, this possibility would be minimized by proposed fencing and the acquisition of Monument inholdings.

4.4 Impact Analysis for Fire and Fuels Management

4.4.1 Assumptions Used for the Analysis

- Based on past years, it is estimated that on average about 500 acres of wildland fire burn in the CPNM each year. The pattern is often that one year there will be no fires, and the next there may be 1,000 to 2,000 acres burned.
- It is estimated that there is the potential for a large fire of up to 5,000 acres within the CPNM. Fires are limited by the road network and other natural barriers. On extreme weather days when many causal factors line up (such as wind, temperature, resource shortage), a larger fire could be possible, but it would be an extreme event.
- Dozer lines are on average 10 feet wide and scraped to mineral soil. For perspective, that means that approximately every 1 mile of dozer line equals 1 acre of disturbance.
- Hand lines are on average 2 to 3 feet wide and scraped to mineral soil. For perspective, that means that approximately every 1 mile of handline equals 0.3 acres of disturbance.

4.4.2 Incomplete Information

Predicting incidence and size of wildland fires is highly speculative and depends on many factors including weather conditions, fuel availability (which is tied to rainfall), the presence of ignition sources (both human and natural), as well as fire suppression resource availability based on other activity within the geographic area. For this reason, a wide range of acres burned per year is used in the analysis. The need for fuels treatment is also highly dependent on the amount of rainfall and the resulting effect on fuels build up.

4.4.3 Resources/Programs with No or Negligible Impacts on Fire and Fuels Management

The wildlife and vegetation programs will have no or negligible impacts on fire and fuels management. The main tool used to manage wildlife habitat, grazing, is covered under the grazing program impacts. Also, vegetation treatment for fuels reduction is covered under this section (fire and fuels). Any fencing alterations for meeting pronghorn objectives will have negligible effects on fire and fuels management. While removing fences increases the ease of conducting mobile attack, fences are easily cut during suppression activities, such that changes to fence location and miles will have little effect.

The soils, air quality, and water programs will have no or negligible impacts on fire and fuels management. While applying gravel or pavement to reduce fugitive dust would also make access easier for fire suppression resources, there would be negligible effects, since suppression vehicles are just as able to access areas on dirt roads during the fire season. Air quality impact management related to prescribed fire is managed by the state (see Chapter 3 Affected Environment).

The geology/paleontology and cultural resources programs would have no or negligible impacts on fire and fuels management. Cultural resource clearances are an SOP with all prescribed fire and fuels treatments. While each alternative proposes slight differences in the ease of access to various sites, the

overall effect of public visitation is not enough to result in appreciable differences to fire ignition risk in the CPNM. Overall effects of public use of the CPNM and its relation to the fire resource will be covered under the effects from recreation.

The visual resource program would have no or negligible impacts on fire and fuels management. Impacts of applying MIST in the Primitive area, which is also a Class I VRM, will be covered in the Wilderness Program section.

4.4.4 Impacts to Fire and Fuels Management under the No Action Alternative

4.4.4.1 Impacts to Fire and Fuels Management from Implementing the Fire and Fuels Management Program

Under the No Action Alternative, current objectives and guidelines in the Caliente Field Office Fire Management Plan would be employed throughout the CPNM. Active fire suppression tactics would be utilized to protect life, property, and sensitive cultural and natural resources, such as fire intolerant shrub species and the National Register District cultural properties. Active suppression could include the use of mobile attack, aerial attack, and dozers (outside of sensitive cultural site areas). Mobile attack would be favored over more soil disturbing methods, such as dozer lines, where possible. Fires on the valley floor burning in grassland areas away from sensitive cultural sites and fire intolerant shrub areas may be managed using a confine strategy, burning to the nearest roads. It is estimated that approximately 20 percent of fires could meet these conditions, with fire size averaging 1,000 acres. Based on this strategy, it is estimated that in an average year the following impacts would occur from wildland fire suppression activities:

- Construct 2 miles of dozer line (approximately 1 acre of soil disturbance). Some dozer line construction may be dozing existing roads that are somewhat grown over.
- Construct 6 miles of handline (approximately 1 acre of disturbance).
- During mobile attack, spray approximately 2 miles of foam line (no surface clearance).
- Dump 2 loads of fire retardant (5,000 gallons total).
- Limited off-road travel by command vehicles (sport utility vehicles [SUVs]) and engines.

Based on the many uncontrollable factors that determine the number of acres burned each year (such as weather, ignition sources, suppression resource availability), it is difficult to estimate the number of acres burned each year. Using this strategy it is estimated that approximately 500 acres per year would burn, on average. Fire size would tend to be smaller, as compared with the strategy proposed under Alternative 1, the same as Alternative 2, and slightly larger than proposed under Alternative 3. The proposed strategy under this alternative would reduce the risk of burning fire-sensitive resources, such as fire-intolerant saltbush. See other resource sections for more specifics on risks posed to cultural and natural resources under this alternative.

MIST would be utilized to the extent possible within the Caliente Mountain WSA. Under the No Action Alternative, MIST would be considered for use on 17,984 acres, which is less than Alternatives 1 and 2, and the same as Alternative 3. Utilization of MIST could extend the time needed to reach containment in some cases, such as when handline is constructed in favor of a dozer line. MIST may require less actual work on the ground, such as cold-trailing, where the fire edge is not lined, but monitored to ensure the fire is out. While these tactics may not require as much physical labor, they can be much more time-consuming and require more patrol. They can also pose a larger risk of an escape by having no containment line, if a hot spot is missed and later rekindles.

Fire suppression costs are estimated to be less than Alternative 1, since more aggressive suppression would result in smaller fires on average with less area to contain and patrol. Fires would be contained more quickly in most cases, enabling BLM fire commanders to release cooperating agency resources within the mutual aid time frame of 6 hours into initial attack, which would result in reduced suppression reimbursement costs, as compared with Alternative 1. Costs are estimated to be approximately the same as Alternatives 2 and 3, for the same reasons as above.

The No Action Alternative proposes the same amount of fuels treatment as Alternatives 2 and 3, which is more than proposed under Alternative 1. Up to 350 acres along major roadways, in recreation sites, and adjacent to buildings and other facilities would be mowed. This would reduce hazardous fuels in the areas of highest public use, which are also the areas with the highest ignition risk. Reduction of fuels would likely reduce the number of human caused ignitions and/or reduce the size and intensity of ignitions in these areas. The mowed areas, especially along roadways, also provide increased defensible space that can be utilized during suppression activities to provide a more secure fire control break due to a larger area of decreased fuels. Burning up to 10 acres of piled material, such as tree trimmings and/or tumbleweeds along roadways will also decrease fuel loadings and reduce ignition risk.

Prescribed burning would be used as a habitat management tool in this alternative, with on average, 1,000 acres burned every other year. The amount of burning would be based on vegetation conditions and the need to burn. See the Wildlife and Botany sections for specific effects of burning on these resources. Burned areas provide large areas of decreased fuels, which help break up the continuity of fuels in the landscape and could contribute to wildland fire suppression success. Each 1,000-acre prescribed burn would require the construction of approximately 5 miles of dozer line, which equals approximately 5 acres of surface disturbance. Less dozer line would be required if an existing road can be utilized as a control line.

4.4.4.2 Impacts to Fire and Fuels Management from Implementing Other Programs

WSA/Lands with Wilderness Characteristics

The No Action Alternative would manage the least amount of area for wilderness character, limited to the existing Caliente Mountain WSA. Management direction does allow for the use of motorized vehicles and mechanical transport and the construction of temporary roads in the case of emergency, such as fighting fire. As described above in the fire impacts section, MIST would be used to the extent possible in these areas. Use of MIST may extend the time needed for containment of wildland fires.

Management of the WSA would not affect the ability to implement prescribed burning to support wildlife habitat modification in core areas. It would also not affect the ability to implement fuels reduction activities along major travel corridors and around facilities and recreation sites.

Livestock Grazing

The main impact to fire and fuels management from livestock grazing is to decrease the amount of grass fuel available to burn. To better understand the effect on fire behavior from changes to the fuel loadings, the computer-based BEHAVE fire model was run for four different dry climate grass fuel models to display possible results on fire spread, flame length, and the ability of different fire suppression resources to fight the fire. Average summertime fuel and weather conditions were modeled for cured grass vegetation: 90 degrees, 3 percent fuel moisture of fine fuels, with three wind speeds (0, 5, and 10 miles per hour [mph]). The results are shown in Table 4.4-1 below:

Table 4.4-1. Fire Behavior Characteristics of Dry Climate Grass Fuel Models Burning in Hot/Dry Conditions

Fuel Model	GR1 Grass is short, patchy, and possibly grazed			GR2 Moderately coarse continuous grass, average depth about 1 ft			GR4 Moderately coarse continuous grass, average depth about 2 ft			GR7 Moderately coarse continuous grass, average depth about 3 ft		
Wind Speed	***ROS, ch/h***	***FL, ft***	***SUP****	***ROS, ch/h***	***FL, ft***	***SUP****	***ROS, ch/h***	***FL, ft***	***SUP****	***ROS, ch/h***	***FL, ft***	***SUP****
0 mph	1.2	0.6	Hand	2.6	1.4	Hand	5.3	2.7	Hand	9.8	6.4	Hand/ Equip
5 mph	27.3	2.6	Hand	65.5	6.3	Equip	131.5	11.8	Indirect	191.7	25.0	Indirect
10 mph	27.3	2.6	Hand	175	9.9	Indirect	351.9	18.6	Indirect	510.6	39.2	Indirect

ROS – Rate of spread in chains/hour (1 chain equals 66 feet)
FL – Flame length in feet
SUP – Suppression resources able to attack the fire:

- Hand – head of fire can generally be attacked by persons using hand tools. Handline should hold the fire.
- Equip – fire is too intense to attack with hand tools. Dozers, engines, or aircraft can be effective. Handline will generally not hold the fire.
- Indirect – fire is too intense and control efforts at the head of the fire will generally be ineffective. Indirect attack (building line farther out in front of the fire) will be necessary.

Fuel model Grass 1 (GR1) would represent natural conditions in particularly dry years or conditions following grazing. The Grass 2 (GR2) model would represent conditions under an average precipitation regime, before grazing. A wet precipitation year would be represented by the Grass 4 (GR4) model, with the Grass 7 (GR7) model limited to unusually wet years.

As the table shows, conditions such as that found in dry years, or following grazing, would generally lend themselves to fighting wildland fires with hand tools under all modeled wind conditions, up to 10 mph. Hand tools would also be effective against fires burning in grass types up to 3 feet in depth, if there is no wind present. Higher levels of wind at grass depths of only 1 foot quickly increase the fire intensity and would require mechanized equipment or indirect fire line tactics.

Under the No Action Alternative, grazing could be used on up to 170,052 acres of the CPNM. Grazing would be used as a vegetation management tool to reduce the amount and height of vegetative cover, according to pasture-specific prescriptions in the pasture matrix (Appendix M). Generally, the adaptive management guidelines for when grazing would be applied are correlated to the times when grass fuel levels would be at their highest levels. Overall, application of grazing under these conditions acts as a fuels reduction treatment and will decrease the fire behavior potential of the area and contribute to wildland fire suppression success under average weather conditions. Grazed areas would exhibit the less intense fire behavior more representative of the GR1 model. Grazed areas would also be more conducive to application of a confine strategy, as a less intense fire would be easier to hold at existing fire control lines, such as roads. In times of high winds, weather conditions override fuel conditions and lead to control problems with any fuel depth.

Recreation and Travel Management

Effects on fire and fuels management related to public use are mostly related to the risk of human-caused ignition based on expected numbers of visitors, the amount of area open to various activities, and the level of management presence provided under each alternative. Since recreation and travel are closely related, they are discussed together.

Under the No Action Alternative, the potential risk of human-caused ignitions would be increased over that predicted for Alternative 1 with the retention of dispersed vehicle camping. Dispersed vehicle camping in areas where there has not been fuel reduction and where managerial presence is less represents some of the highest risk of human-caused ignitions.

The current mix of road classifications would be retained under the No Action Alternative. This is the same as Alternative 3, and represents the greatest miles of road open to the public. Roadways can be areas of increased human-caused ignitions.

Similar to Alternative 2, the No Action Alternative represents an intermediate level of development of additional interpretive facilities and trailhead/staging areas. Visitor use would likely increase as facilities are developed, which could result in increased fire ignitions. The increase is not expected to be as much as is predicted for Alternative 3.

Lands and Realty

Construction by a commercial utility of power line could increase the risk of fire ignition in the area from arcing or downed power lines. There would be minimal impacts expected to fire ignition from the other minor rights-of-way proposed.

Since BLM already provides the direct protection responsibilities for all land (public and private) within the CPNM area, acquisition of private land within the CPNM would have no effect on BLM's fire protection responsibilities. However, acquisition of private land may provide more flexibility during suppression, as private property values will not be a factor determining values at risk and suppression priorities. Fire ignition potential may decrease if overall human activity on the acquired land decreases after acquisition, or increase if more activity is realized from recreation use that did not exist prior to acquisition. Acquisition of private inholdings may facilitate prescribed burning by creating larger blocks of contiguous public land and eliminating the need to avoid private parcels or to get landowner approval to burn.

4.4.5 Impacts to Fire and Fuels Management Common to All Action Alternatives

Minerals

Implementation of the minerals program would be the same under All Action Alternatives. The main impacts from the minerals program are risks of human-caused ignitions from work conducted at oil and gas production facilities. Basic SOPs require oilfield workers to have fire extinguishers and to take standard fire prevention precautions. Welding, especially on cross-country pipelines, represents one of the riskier activities. Use of "two-track," or basically unimproved roads, is also a concern during fire season due to the risk of dry vegetation being ignited through contact with hot vehicle undersides.

Considering all of these risks, there have not been any fires started from oilfield operations in the CPNM in recent history. Continued use of SOPs and fire prevention precautions should allow continued operation of mineral development without major effects and risks to the fire resource. Proposed cross-country seismic lines would represent little risk of fire ignition.

Oilfield developments do represent a hazard during fire suppression activities due to the presence of combustible gases and other potentially hazardous materials. Further expansion of oilfield operations would increase these hazards. Developed areas do represent areas of low fuels, due to the amount of activity, which would tend to provide potential fire control barriers (that is, ample roads to use as fire control lines).

4.4.6 Impacts to Fire and Fuels Management under Alternative 1

4.4.6.1 Impacts to Fire and Fuels Management from Implementing the Fire and Fuels Management Program

Under Alternative 1, a more "hands-off" approach to management would be taken across the CPNM. For wildland fire suppression, this means that active suppression tactics, such as using dozers and mobile attack, would be limited to situations where life and property were threatened, or in situations where current conditions would make it a safety hazard to employ a confine-and-contain strategy (where fires are basically suppressed when they reach the nearest existing fire barrier, such as a road or natural barrier). Based on this strategy, it is estimated that in an average year the following impacts would occur from wildland fire suppression activities:

- Construct 1 mile of dozer line (approximately 1 acre of soil disturbance). Some dozer line construction may be dozing existing roads that are somewhat grown over.
- Construct 3 miles of handline (approximately 1 acre of disturbance).
- During mobile attack, spray approximately 4 miles of foam line (no surface clearance).
- Dump 2 loads of fire retardant (5,000 gallons total).
- Limited off-road travel by command vehicles (SUVs) and engines.

Based on the many uncontrollable factors that determine the number of acres burned each year (such as weather, ignition sources, suppression resource availability), it is difficult to estimate the number of acres burned each year. However, by utilizing a less aggressive suppression strategy such as confine and contain whenever possible, there would likely be more acres burned by wildfire under Alternative 1 as compared to the other alternatives. Based on a current average of 500 acres burned per year, it is likely that burned acres could double to 1,000 acres or more on average each year. The risk of burning fire-sensitive resources, such as fire-intolerant saltbush, is greatest under this alternative. See other resource sections for more specifics on risks posed to cultural and natural resources under Alternative 1.

MIST would be utilized to the extent possible within the Caliente Mountain WSA and areas having wilderness character. Under Alternative 1, MIST would be considered for use on 83,202 acres, the most under any alternative. Utilization of MIST could extend the time needed to reach containment in some cases, such as when handline is constructed in favor of a dozer line. MIST may require less actual work on the ground, such as cold-trailing, where the fire edge is not lined, but monitored to ensure the fire is out. While these tactics may not require as much physical labor, they can be much more time-consuming and require more patrol. They can also pose a larger risk of an escape by having no containment line, if a hot spot is missed and later rekindles.

Based on the estimate of more acres burned by wildfire under Alternative 1, time needed for suppression would likely increase, as would suppression costs. With bigger fires come larger fire perimeters to control and patrol, which requires more time. It is likely that more fires would require suppression beyond initial attack. Local firefighting cooperators in the area, such as the U.S. Forest Service, State of California (CalFire), Kern County, and Santa Barbara County, operate under a mutual aid agreement where initial attack resources are not charged to the agency with the direct protection responsibilities (BLM for the CPNM area) for the first 6 hours of work. If the fire extends beyond initial attack, all charges starting at initial attack are charged, meaning fires which enter extended attack that still require aid from cooperators cost BLM more in suppression cost reimbursement.

Alternative 1 is the only alternative that allows for the option of managing natural ignitions within the Caliente Mountain WSA for resource benefit, a management option known as wildland fire use (WFU). Based on the past history of few lightning starts in the Caliente Mountains, it is estimated that the opportunity to utilize WFU would only occur 1 to 2 times within a decade. Based on the lighter fuels in the area, it is estimated that most fires would burn for one burning period, with fire intensity greatly reduced the first nighttime burning period. WFU events would likely last 3 to 4 days with low intensity fire burning 500 to 2,000 acres per event. In actuality, use of WFU tactics would not differ greatly from light-on-the-land tactics that would automatically be used within a WSA, as required by the WSA management guidelines.

Minimal amounts of fuels treatment activities (approximately 25 acres per year) are proposed under Alternative 1, limited to fuel reduction in the immediate vicinity of recreation improvements, structures, and other facilities. Up to 5 acres of tree trimmings or roadside weeds would also be piled and burned each year. As compared with the other alternatives, which provide fuel reduction along major road corridors and more extensive reduction around recreation sites, this alternative would have the least amount of fuel reduction in the most ignition-prone areas of the CPNM. Having higher fuel loadings in areas where the public use is the greatest would likely lead to more human-caused ignitions. Ignitions starting in these heavier fuels would be more likely to escape and lead to larger wildfires.

No prescribed burning is proposed under Alternative 1. Resource specialists would have to rely on other wildlife habitat modification tools to contribute to native species restoration goals. No expenses would be made to implement prescribed burns.

4.4.6.2 Impacts to Fire and Fuels Management from Implementing Other Programs

WSA/Lands with Wilderness Characteristics

Alternative 1 would manage the largest number of acres for wilderness characteristics of all the alternatives. Management direction does allow for the use of motorized vehicles and mechanical transport and the construction of temporary roads in the case of emergency, such as fighting fire. As described above in the fire impacts section, MIST would be used to the extent possible in these areas. Use of MIST may extend the time needed for containment of wildland fires.

Guidelines for areas having wilderness characteristics will not affect prescribed burning under Alternative 1, as no burning is proposed.

Livestock Grazing

Under Alternative 1, livestock grazing within the CPNM would be limited to a 4,587-acre area along the northern boundary of the CPNM that logistically is managed with other areas outside of the Monument. Grazing would not be used as a vegetation management tool. Therefore, in years of high precipitation and above-average vegetation growth, grazing would not decrease fuel loadings, which could lead to larger, more intense, faster moving wildfires (see the discussion of fire behavior under various grazed and ungrazed fuel models under the No Action Alternative). Wildfires would be more difficult to control and acres burned would likely increase. In dry years, elimination of grazing throughout much of the Monument would have little effect on potential fire behavior, due to low natural fuel loadings and their associated lower levels of fire behavior.

Recreation and Travel Management

Effects on fire and fuels management related to public use are mostly related to the risk of human-caused ignition based on expected numbers of visitors, the amount of area open to various activities, and the level of management presence provided under each alternative. Since recreation and travel are closely related, they will be discussed together.

Under Alternative 1, the potential risk of human-caused ignitions would be reduced by the restriction on dispersed vehicle camping. All vehicle camping would occur at developed sites, where there would be some fuel reduction treatment and more managerial presence. Dispersed camping would be limited to backpacking, which is thought to be a limited activity during the fire season due to high temperatures. The larger number of acres managed in the Primitive zone would also result in fewer miles of road open to the public, reducing another area of high ignition risk. Alternative 1 also proposes the least amount of development of additional interpretive facilities and trailhead/staging areas in all RMZs. It is thought that this will likely result in the smallest increase in visitor use in the future, which would also result in decreased human-caused ignition risk, as compared with the other Action Alternatives.

Lands and Realty

There would be minimal impacts expected to fire ignition from the minor rights-of-way proposed.

Since BLM already provides the direct protection responsibilities for all land (public and private) within the CPNM area, acquisition of private land within the CPNM will have no effect on BLM's fire protection responsibilities. However, acquisition of private land may provide more flexibility during suppression, as private property values will not be a factor determining values at risk and suppression priorities. Fire ignition potential may decrease if overall human activity on the acquired land decreases after acquisition, or increase if more activity is realized from recreation use that did not exist prior to acquisition. Acquisition of private inholdings may facilitate prescribed burning by creating larger blocks of contiguous public land and eliminating the need to avoid private parcels or to get landowner approval to burn.

4.4.7 Impacts to Fire and Fuels Management under Alternative 2

4.4.7.1 Impacts to Fire and Fuels Management from Implementing the Fire and Fuels Management Program

Under Alternative 2, current objectives and guidelines in the Caliente Field Office Fire Management Plan would be employed throughout the CPNM. Active fire suppression tactics would be utilized to protect life, property, and sensitive cultural and natural resources, such as fire intolerant shrub species and the National Register District cultural properties. Active suppression could include the use of mobile attack, aerial attack, and dozers (outside of sensitive cultural site areas). Mobile attack would be favored over more soil disturbing methods, such as dozer lines, where possible. Fires on the valley floor burning in grassland areas away from sensitive cultural sites and fire intolerant shrub areas may be managed using a confine strategy, burning to the nearest roads. It is estimated that approximately 20 percent of fires could meet these conditions, with fire size averaging 1,000 acres. Based on this strategy, it is estimated that in an average year the following impacts would occur from wildland fire suppression activities:

- Construct 2 miles of dozer line (approximately 1 acre of soil disturbance). Some dozer line construction may be dozing existing roads that are somewhat grown over.
- Construct 6 miles of handline (approximately 1 acre of disturbance).
- During mobile attack, spray approximately 2 miles of foam line (no surface clearance).

- Dump 2 loads of fire retardant (5,000 gallons total).
- Limited off-road travel by command vehicles (SUVs) and engines.

Based on the many uncontrollable factors that determine the number of acres burned each year (such as weather, ignition sources, suppression resource availability), it is difficult to estimate the number of acres burned each year. Using this strategy, it is estimated that approximately 500 acres per year would burn, on average. Fire size would tend to be smaller, as compared with the strategy proposed under Alternative 1, and slightly larger than proposed under Alternative 3. The proposed strategy under this alternative would reduce the risk of burning fire-sensitive resources, such as fire-intolerant saltbush. See other resource sections for more specifics on risks posed to cultural and natural resources under this alternative.

MIST would be utilized to the extent possible within the Caliente Mountain WSA and areas having wilderness character. Under Alternative 2, MIST would be considered for use on 54,464 acres, which is less than Alternative 1 and more than Alternative 3. Utilization of MIST could extend the time needed to reach containment in some cases, such as when handline is constructed in favor of a dozer line. MIST may require less actual work on the ground, such as cold-trailing, where the fire edge is not lined, but monitored to ensure the fire is out. While these tactics may not require as much physical labor, they can be much more time-consuming and require more patrol. They can also pose a larger risk of an escape by having no containment line, if a hot spot is missed and later rekindles.

Fire suppression costs are estimated to be less than Alternative 1, since more aggressive suppression would result in smaller fires on average with less area to contain and patrol. Fires would be contained more quickly in most cases, enabling BLM fire commanders to release cooperating agency resources within the mutual aid time frame of 6 hours into initial attack, which would result in reduced suppression reimbursement costs, as compared with Alternative 1. Costs are estimated to be approximately the same as Alternative 3, for the same reasons as above.

As compared with Alternative 1, more fuels treatment activities would be completed under this alternative. Up to 350 acres along major roadways, in recreation sites, and adjacent to buildings and other facilities would be mowed. This would reduce hazardous fuels in the areas of highest public use, which are also the areas with the highest ignition risk. Reduction of fuels would likely reduce the number of human-caused ignitions and/or reduce the size and intensity of ignitions in these areas. The mowed areas, especially along roadways, also provide increased defensible space that can be utilized during suppression activities to provide a more secure fire control break due to a larger area of decreased fuels. Burning up to 10 acres of piled material, such as tree trimmings and/or tumbleweeds along roadways, will also decrease fuel loadings and reduce ignition risk.

Prescribed burning would be used as a habitat management tool in this alternative, with on average, 1,000 acres burned every other year. The amount of burning would be based on vegetation conditions and the need to burn. See the Wildlife and Vegetation sections for specific effects of burning on these resources. Burned areas provide large areas of decreased fuels, which help break up the continuity of fuels in the landscape and could contribute to wildland fire suppression success. Each 1,000-acre prescribed burn would require the construction of approximately 5 miles of dozer line, which equals approximately 5 acres of surface disturbance. Less dozer line would be required if an existing road can be utilized as a control line.

4.4.7.2 Impacts to Fire and Fuels Management from Implementing Other Programs

WSA/Other Lands with Wilderness Characteristics

Alternative 2 would manage an intermediate number of acres for wilderness characteristics, as compared with the other alternatives. Management direction does allow for the use of motorized vehicles and mechanical transport and the construction of temporary roads in the case of emergency, such as fighting fire. As described above in the fire impacts section, MIST would be used to the extent possible in these areas. Use of MIST may extend the time needed for containment of wildland fires.

Guidelines for areas having wilderness characteristics allow for prescribed burning, but implementation may be more difficult and costly if control lines cannot be constructed using mechanized equipment (dozers). This would likely only affect prescribed burning in the Temblor Range area of wilderness character, as this is also a wildlife core area that could require some habitat modification. Management of the WSA or areas of wilderness character should not affect the ability to implement fuels reduction activities along major travel corridors and around facilities and recreation sites.

Livestock Grazing

Effects to fire and fuels management from livestock grazing under Alternative 2 would be very similar to the effects for the No Action Alternative. Although this alternative proposes slightly more acres available for livestock grazing, it reduces the actual application of livestock, so benefits from fuel reduction may be slightly less under this alternative.

Recreation and Travel Management

Effects to fire and fuels management related to public use are mostly related to the risk of human-caused ignition based on expected numbers of visitors, the amount of area open to various activities, and the level of management presence provided under each alternative. Since recreation and travel are closely related, they will be discussed together.

Under Alternative 2, the potential risk of human-caused ignitions would be increased over that predicted for Alternative 1 with the retention of dispersed vehicle camping. Dispersed vehicle camping in areas where there has not been fuel reduction and where managerial presence is less, represents some of the highest risk of human-caused ignitions.

Alternative 2 represents an intermediate level of road closure between Alternatives 1 and 3, based on the number of acres in Primitive areas. Reduction of roads open to the public would reduce potential for roadside ignitions.

Alternative 2 represents an intermediate level of development of additional interpretive facilities and trailhead/staging areas in all RMZs. Visitor use would likely increase as facilities are developed, which could result in increased fire ignitions.

Lands and Realty

Impacts from Alternative 2 would be basically the same as Alternative 1, with slightly less impacts from acquisition of fewer acres. Targeting acquisition of lands that would help meet priority habitat protection needs could facilitate the use of prescribed fire for restoration purposes in these areas that may need the most treatment.

4.4.8 Impacts to Fire and Fuels Management under Alternative 3

4.4.8.1 Impacts to Fire and Fuels Management from Implementing the Fire and Fuels Management Program

Under Alternative 3, active suppression action would be taken on all fires to minimize the acres of wildland fire burned within the CPNM. Active suppression could include the use of mobile attack, aerial attack, and dozers (outside of sensitive cultural site areas). Mobile attack would be favored over more soil disturbing methods, such as dozer lines, where possible. The goal would be to contain 90 percent of fires to 100 acres or less within the CPNM. Based on this strategy, it is estimated that in an average year the following impacts would occur from wildland fire suppression activities:

- Construct 3 miles of dozer line (approximately 1 acre of soil disturbance). Some dozer line construction may be dozing existing roads that are somewhat grown over.
- Construct 8 miles of handline (approximately 1 acre of disturbance).
- During mobile attack, spray approximately 2 miles of foam line (no surface clearance).
- Dump 4 loads of fire retardant (5,000 gallons total).
- Limited off-road travel by command vehicles (SUVs) and engines.

Based on the many uncontrollable factors that determine the number of acres burned each year (such as weather, ignition sources, suppression resource availability), it is difficult to estimate the number of acres burned each year. Using this strategy, it is estimated that approximately 400 acres per year would burn, on average. Fire size would tend to be smaller, as compared with the strategies proposed under Alternatives 1 and 2. The proposed strategy under Alternative 3 would reduce the risk of burning fire-sensitive resources, such as fire-intolerant saltbush. See other resource sections for more specifics on risks posed to cultural and natural resources under Alternative 3.

MIST would be utilized to the extent possible within the 17,984-acre Caliente Mountain WSA. This alternative proposes the least amount of MIST used. Utilization of MIST could extend the time needed to reach containment in some cases, such as when handline is constructed in favor of a dozer line. MIST may require less actual work on the ground, such as cold-trailing, where the fire edge is not lined, but monitored to ensure the fire is out. While these tactics may not require as much physical labor, they can be much more time-consuming and require more patrol. They can also pose a larger risk of an escape by having no containment line, if a hot spot is missed and later rekindles.

Fire suppression costs are estimated to be less than Alternative 1, since more aggressive suppression would result in smaller fires on average with less area to contain and patrol. Fires would be contained more quickly in most cases, enabling BLM fire commanders to release cooperating agency resources within the mutual aid time frame of 6 hours into initial attack, which would result in reduced suppression reimbursement costs, as compared with Alternative 1. Costs are estimated to be approximately the same as Alternative 2, for the same reasons as above.

Alternative 3 proposes the same amount and location of fuels treatment as proposed in Alternative 2. Impacts would therefore be the same as Alternative 2. As wildfire size would be kept somewhat smaller, this alternative proposes slightly more acres of prescribed burning, with up to 1,500 acres every other year. Effects would be similar to that for Alternative 2. Slightly more dozer line may need to be constructed to facilitate the slightly larger burns.

4.4.8.2 Impacts to Fire and Fuels Management from Implementing Other Programs

WSA/Lands with Wilderness Characteristics

Alternative 3 would manage the least amount of area for wilderness character, limited to the existing Caliente Mountain WSA. Management direction does allow for the use of motorized vehicles and mechanical transport and the construction of temporary roads in the case of emergency, such as fighting fire. As described above in the fire impacts section, MIST would be used to the extent possible in these areas. Use of MIST may extend the time needed for containment of wildland fires.

Management of the WSA would not affect the ability to implement prescribed burning to support wildlife habitat modification in core areas. It would also not affect the ability to implement fuels reduction activities along major travel corridors and around facilities and recreation sites.

Livestock Grazing

Effects to fire and fuels management from livestock grazing under Alternative 3 would be similar to Alternative 2 within vegetation management areas and similar to the No Action alternative within Section 15 allotments.

Recreation and Travel Management

Effects to fire and fuels management related to public use are mostly related to the risk of human-caused ignition based on expected numbers of visitors, the amount of area open to various activities, and the level of management presence provided under each alternative. Since recreation and travel are closely related, they will be discussed together.

Under Alternative 3, the potential risk of human-caused ignitions would be increased over that predicted for Alternative 1 with the retention of dispersed vehicle camping. Dispersed vehicle camping in areas where there has not been fuel reduction and where managerial presence is less, represents some of the highest risk of human-caused ignitions.

Under Alternative 3, the current mix of road classifications would be retained. As with the No Action Alternative, this represents the greatest miles of road open to the public. Alternative 3 also proposes the greatest amount of development of additional interpretive facilities and trailhead/staging areas in all RMZs. The recreational development under Alternative 3 would likely increase visitor use to the CPNM, as compared with the other alternatives, leading to an increased risk of human-caused ignitions. However, this increase may be moderated somewhat since most visitation would take place in the more developed areas where there is fuel reduction and more managerial presence.

Lands and Realty

Impacts would basically be the same as for Alternative 1.

4.4.9 Cumulative Impacts

4.4.9.1 Assessment Area

The assessment area for cumulative effects for fire and fuels management includes the CPNM area itself in addition to the adjacent areas within BLM's Direct Protection Area. Adjacent areas within the Direct Protection Area include the Chimineas Ranch, private land south of the CPNM to the Cuyama River, and the private land adjacent to the northwest boundary of the CPNM, which is bounded by Seven Mile Road.

The northern boundary would be the crest of the Temblor Mountains. BLM is responsible for fire suppression protection in this area.

4.4.9.2 Past, Present, and Reasonably Foreseeable Future Actions within the Assessment Area

Past actions that have affected fire and fuels management include historic farming and grazing practices that have lead to the replacement of a majority of native vegetation with non-native species. Past and present management practices have created a road network that is useful to fire suppression activities in the area.

Present actions on the CPNM were described in the Alternatives section. Management activities on the Chimineas Ranch are similar to that on the BLM land within the CPNM, including some grazing and vegetation clearance around structures. The private parcel between Seven Mile Road and the CPNM boundary under the BLM Direct Protection Area is fairly undeveloped, with only a few private developments with structures.

Future actions include native species restoration efforts that should increase the amount of native vegetation throughout the monument over time. It is likely that visitor use will increase over time on the CPNM as the area becomes better known. Future development of private land parcels within the CPNM could increase the amount of wildland urban interface in the area, although the difficulty of securing potable water in the area will likely limit the amount of private development. Plans are currently being finalized to relocate the Midway Fire Station from the Shafter area to the city of Taft by early 2009. This would move two fire engines and a water tender much closer to the CPNM and shorten response times to the CPNM by over an hour. Based on the long history of mutual aid within California, cooperation with adjoining fire suppression agencies will continue in the future.

4.4.9.3 Cumulative Impacts

The interaction of RMP actions together with other past, present, and reasonably foreseeable future actions were considered in analyzing cumulative impacts. Past conversion of native species to primarily non-native species has affected the overall fire regime, increasing the interval of fire return over natural conditions. Current fire suppression resources, including cooperating agencies, have provided adequate fire suppression protection, which is anticipated to continue in the future. The relocation of the Midway Fire Station to Taft will shorten suppression response times to the CPNM, which should increase fire suppression success. This will also facilitate having BLM personnel who are more familiar with the resource management concerns on scene earlier in the fire when planning suppression tactics. Overall, RMP actions, when considered with other past, present, and reasonably foreseeable future actions, are not anticipated to have a significant effect in terms of fire and fuels management.

4.5 Impact Analysis for Air Quality

The following resources/programs will have no or negligible impacts to air quality: wildlife (effects of various habitat management tools will be covered in the fire and grazing sections), vegetation, soils, water resources, geology and paleontology, cultural resources, visual resources, and lands and realty.

4.5.1 Impacts under the No Action Alternative

4.5.1.1 Impacts to Air Quality from Implementing the Air Quality Program

Under the No Action Alternative there are no specific actions proposed for implementation of the air quality program. All management activities would be done in conformance with applicable local, state, and federal regulations regarding air quality.

4.5.1.2 Impacts to Air Quality from Implementing Other Programs

Fire and Fuels Management

Prescribed burning would be regulated by the air pollution control district (APCD), with burning conducted when atmospheric conditions would promote adequate dispersion of pollutants. Due to the undeveloped nature of the surrounding area, there are limited sources of emissions. The proximity to the coastal region also promotes more wind flow through the area that helps disperse pollutants. The mountain ranges surrounding the CPNM help limit the drift of pollution from other developed areas into the CPNM, although transport of ozone has been monitored at the Carrizo Plains School monitoring site. Particulate matter is produced on dirt roads in the area. Effects are temporary and localized. Overall, implementation of the No Action Alternative would have negligible to minor effects to air quality in the region.

Minerals

Proposed actions for oil and gas development are the same for all alternatives, leading to the same impacts to air quality under all alternatives. Oil and gas operations can affect air quality through various air emissions, including: exhaust emissions from gasoline or diesel engines used to power the drill rigs; particulate matter from well pad construction and the use of dirt roads to access facilities; fugitive emissions, which are unintentional gas leaks from leaky fittings, seals, or pipes; and venting of gases during various well maintenance operations. The main pollutants from oil and gas operations are particulate matter (PM_{10} and $PM_{2.5}$), volatile organic compounds (VOCs), nitrogen oxides (NOx), and hydrogen sulfide. Ground level ozone is formed in the atmosphere through a reaction of VOCs and NOx in the presence of sunlight.

Oil and gas production in the CPNM is limited to valid existing rights that were in place prior to the Monument Proclamation. An estimate of well development on these leases plus private leases is up to 23 wells, and associated roads, facilities, and pipelines. Existing roads will be utilized to the extent possible. Due to the limited amount of oil and gas development proposed under All Action Alternatives, effects to air quality will be limited in amount and intensity and will have minor impacts.

BLM requires that the lessee/operator take on the responsibility for ensuring that all operations are properly permitted with the appropriate agencies, and that the operations are in compliance with all mobile and stationary source guidelines. Mitigation measures (BMPs) would include such items as dust control using application of water or pre-soaking and limiting traffic speed on unpaved roads. It would also include such items as use of low-emission construction equipment, use of low sulfur fuel, and/or use of the existing power transmission facilities, where available, rather than temporary power generators. The failure of the lessee/operator to follow the air quality rules would likely result in fines and could also lead to the loss of the BLM and air district authorizations.

4.5.2 Impacts to Air Quality Common to All Action Alternatives

4.5.2.1 Impacts to Air Quality from Implementing the Air Quality Program

All alternatives share the objectives of maintaining or improving air quality through conformance with applicable local, state, and federal air quality regulations; using alternative energy sources where feasible; and minimizing dust emissions on roads and with other earth-disturbing activities, which also minimizes the exposure to the spores that cause valley fever. These actions would all contribute to reduction of pollution and maintenance of good air quality in the CPNM.

4.5.2.2 Impacts to Air Quality from Implementing Other Programs

No impacts common to all alternatives were identified.

4.5.3 Impacts to Air Quality under Alternative 1

4.5.3.1 Impacts to Air Quality from Implementing the Air Quality Program

The main action proposed by the air quality program is the reduction of fugitive dust on main roads in the CPNM through the use of road aggregate or gravel base or the application of chemical binders or water for dust control. The use of aggregate or gravel would provide the most efficient method of dust control, as benefits would be realized for longer periods as opposed to the more temporary method of watering or chemical binders. The proposed actions would reduce particulate matter and improve air quality in the CPNM.

4.5.3.2 Impacts to Air Quality from Implementing Other Programs

Fire and Fuels Management

The fire and fuels management program primarily affects air quality through production of emissions from wildland and prescribed fire. The primary emissions resulting from the combustion of vegetation are particulate matter and VOCs. Particulate matter is also produced through the construction of firelines, especially dozer lines.

Under Alternative 1, prescribed burning operations are limited to burning up to 5 acres of piled vegetation each year. Burning would be conducted under weather conditions conducive to the dispersion of emissions, resulting in minor effects to air quality that would be limited in amount and duration.

Fire suppression tactics under Alternative 1 propose use of a confine strategy where possible, where fires are suppressed when they reach the nearest existing control line, such as a road. This less aggressive suppression tactic would likely result in more acres burned by wildfire as compared to the other alternatives. Large wildfires can produce large amounts of emissions that can be carried into surrounding communities and possibly affect public health. Due to the fast burning nature of grass fuels, fires would tend to be shorter in duration with less burnout time than compared with other heavier fuels such as thick brush, or timber, which would lessen the duration of unhealthy air effects.

The least amount of ground disturbing suppression tactics, such as dozer line construction, is proposed under Alternative 1. This would lead to less exposure to the spores that cause valley fever for both firefighting personnel and the public. Less particulate matter would also be produced from fire line construction.

All Other Resource/Public Use Programs

Various public and resource uses of the CPNM have the potential to affect air quality, primarily as they relate to the amount of miles driven within the Monument. Increased use of non-paved roads increases fugitive dust and the amount of particulate matter present in the air. Increased road usage also increases emissions related to fuel combustion by gasoline or diesel engines, including particulate matter, VOCs, and NOx.

Alternative 1 would likely result in the least amount of vehicular travel within the CPNM and therefore the lowest contribution of emissions from fugitive dust and fuel combustion. The least amount of grazing would be authorized, leading to the least amount of travel on dirt roads by permittees and BLM personnel to administer grazing authorizations. With the largest amount of area characterized in the Primitive recreation zone, Alternative 1 would result in the fewest number of miles of road open to the public. In addition, dispersed vehicle camping is not allowed under Alternative 1, further decreasing the likelihood of visitors driving onto spur roads to find suitable camping areas. Driving may be further reduced with the closure of Painted Rock to all public use, as some visitors interested in viewing the cultural site may not be as inclined to travel to the CPNM at all. Under Alternative 1, only street legal vehicles are allowed on roads within the CPNM, meaning that vehicles licensed by the state's OHV program (green or red sticker vehicles), would not be allowed on Monument roads. This would lead to the least amount of OHV activity under all the alternatives.

4.5.4 Impacts to Air Quality under Alternative 2

4.5.4.1 Impacts to Air Quality from Implementing the Air Quality Program

Impacts would be similar to Alternative 1, with similar actions proposed to reduce fugitive dust emission from roads. Additional minor emission reductions could be realized through implementation of the other proposed action under this alternative: to install solar panels to replace generators, where feasible. Elimination of gas or diesel fueled generators would provide a slight reduction in emissions of NOx and VOCs, which are precursors to ground level ozone.

4.5.4.2 Impacts to Air Quality from Implementing Other Programs

Fire and Fuels Management Program

Alternative 2 proposes the use of prescribed burning as a habitat management tool. It is estimated that on average a broadcast burn of about 1,000 acres would be conducted every other year, or as conditions warrant. Up to 10 acres of piled vegetation would also be burned each year. Burning would be conducted under the guidance of the APCD and under weather conditions conducive to the dispersion of emissions. It would likely take 1 to 2 days to burn 1,000 acres in the grass vegetation type. During the burning, air quality may be affected through emissions of particulate matter and VOCs. However, past burning in the area has shown that emissions disperse readily and no public health impacts have been reported. Minor effects to air quality from prescribed burning would be limited in amount and duration.

Fire suppression tactics under Alternative 1 propose a more aggressive strategy, where important resource and habitat features are actively protected through suppression actions. Acres burned by wildland fire are expected to be less than under Alternative 1. Large wildland fires could still produce emissions that could temporarily affect air quality for surrounding communities. Effects would still be limited in amount and duration due to the fast burning nature of grass fuels.

More aggressive suppression tactics would require construction of more fire line, both by dozer and by hand, which would increase particulate matter emissions over Alternative 1. This would also increase the

exposure to the spores that cause valley fever for both firefighting personnel and the public. Firefighters would be warned of these hazards during suppression operations and would take steps to minimize activity in areas where dust is still obviously airborne.

All Other Resource/Public Use Programs

Various public and resource uses of the CPNM have the potential to affect air quality primarily as they relate to the amount of miles driven within the Monument. Increased use of non-paved roads increases fugitive dust and the amount of particulate matter present in the air. Increased road usage also increases emissions related to fuel combustion by gasoline or diesel engines, including particulate matter, VOCs, and NOx.

Alternative 2 would likely result in an increased amount of vehicular travel within the CPNM and therefore a greater amount of potential emissions from fugitive dust and fuel combustion relative to Alternative 1. More land is available for grazing under Alternative 2, leading to continued use of dirt roads by permittees and BLM personnel to administer grazing authorizations. Fewer miles of road are open to the public under Alternative 2 than are available under existing management, and dispersed vehicle camping is allowed. Painted Rock is open for guided tours, as well as self-guided access part of the year, which could increase road travel to visit this popular attraction. Under Alternative 2, both street legal vehicles and vehicles licensed under the state's OHV program (green and red sticker vehicles) would continue to be allowed on open roads in the CPNM. This would result in a probable increase in OHV use within the CPNM, as compared with Alternative 1. While vehicle miles traveled would likely be greater under Alternative 2 as compared with Alternative 1, use is not expected to be so much that more than minor impacts to air quality are expected. Effects would be limited in intensity and duration and would nowhere approach vehicle emissions experienced in urban areas.

4.5.5 Impacts to Air Quality under Alternative 3

4.5.5.1 Impacts to Air Quality from Implementing the Air Quality Program

Impacts would be similar to Alternative 2, with slightly more reduction of particulate matter with the proposal to pave main roads and gravel secondary routes. Alternative 3 includes similar emission reductions through replacement of generators with solar panels, where feasible.

4.5.5.2 Impacts to Air Quality from Implementing Other Programs

Fire and Fuels Management

Alternative 3 proposes the greatest amount of prescribed burning as compared with the other alternatives. It is estimated that on average a broadcast burn of about 1,500 acres would be conducted every other year, or as conditions warrant. Up to 10 acres of piled vegetation would also be burned each year. Burning would be conducted under the guidance of the APCD and under weather conditions conducive to the dispersion of emissions. It would likely take 1 to 3 days to burn 1,500 acres in the grass vegetation type. During the burning, air quality may be affected through emissions of particulate matter and VOCs. However, past burning in the area has shown that emissions disperse readily and no public health impacts have been reported. Minor effects to air quality from prescribed burning would be limited in amount and duration.

Fire suppression tactics under Alternative 3 would be the most aggressive as compared to the other alternatives, with all ignitions actively suppressed. Acres burned by wildland fire are expected to be less than under Alternatives 1 and 2. Large wildland fires could still produce emissions that could temporarily

affect air quality for surrounding communities. Effects would still be limited in amount and duration due to the fast burning nature of grass fuels.

More aggressive suppression tactics would require construction of more fire line, both by dozer and by hand, which would increase particulate matter emissions over Alternatives 1 and 2. This would also increase the exposure to the spores that cause valley fever for both firefighting personnel and the public. Firefighters would be warned of these hazards during suppression operations and would take steps to minimize activity in areas where dust is still obviously airborne.

All Other Resource/Public Use Programs

Various public and resource uses of the CPNM have the potential to affect air quality primarily as they relate to the amount of miles driven within the Monument. Increased use of non-paved roads increases fugitive dust and the amount of particulate matter present in the air. Increased road usage also increases emissions related to fuel combustion by gasoline or diesel engines, including particulate matter, VOCs, and NOx.

Alternative 3 would result in similar effects to air quality from vehicle travel as Alternative 2. Slightly more miles of road are open to the public under Alternative 3, as compared with Alternative 2, so effects could be slightly higher. However, Alternative 3 has the objective to work with San Luis Obispo County to pave the main access road through the CPNM (Soda Lake Road), which would result in a decrease of fugitive dust in the Monument. Painted Rock is also not open to self-guided access under this alternative, so trips to this popular destination may be reduced, as compared with Alternative 2. Vehicle use for grazing is expected to be basically the same as Alternative 2. OHV access is also similar, with vehicles licensed under the State's OHV program (red and green sticker vehicles) allowed on open roads in the Monument. While vehicle miles traveled would likely be greater under Alternative 3 as compared with Alternative 1, use is expected to be such that minor to moderate localized impacts to air quality are expected. Effects would be limited in intensity and duration and would nowhere approach vehicle emissions experienced in urban areas.

4.5.6 Cumulative Impacts to Air Quality

4.5.6.1 Assessment Area

The assessment area for consideration of cumulative effects to air quality would be the air districts that the CPNM is located within. A small portion is within Kern County, which is in the San Joaquin Valley APCD. The majority of the CPNM area is within the San Luis Obispo APCD. The San Joaquin Valley APCD has some of the worst air pollution in the nation, especially when considering ozone and particulate matter. The San Joaquin Valley APCD is in non-attainment for the state air quality standard for 1-hour ozone levels; and the state and federal standards for 8-hour ozone levels, and PM_{10} and $PM_{2.5}$. San Luis Obispo County APCD has better overall air quality, due to the marine weather influence. The San Luis Obispo County APCD is in non-attainment status for the state standard for ozone and PM_{10}. Exceedances of the state 8-hour ozone standard have been measured at the Carrizo Plains School monitoring site (which is just northwest of the CPNM) a total of 52 times in 2006, 31 times in 2007, and 5 times in 2008, as of May. The annual air quality report for San Luis Obispo County attributes these ozone exceedances to transport pollution coming from the San Joaquin Valley APCD.

4.5.6.2 Past, Present, and Reasonably Foreseeable Future Actions within the Assessment Area and Cumulative Effects

It is likely that continued growth within both the San Luis Obispo County APCD and the San Joaquin Valley APCD will contribute to continued poor air quality in urbanized areas. Stringent regulations and state implementation plans aimed at reaching attainment of air quality standards will contribute to improved air quality; however, reaching attainment goals is likely several years in the future.

While air quality may remain bad in the surrounding San Joaquin Valley APCD and contribute to transport pollution, proposed management actions within the CPNM will have little effect on regional air quality conditions. Management activities that produce harmful emissions are limited in scope and duration. The undeveloped nature of the CPNM and surrounding areas contribute to low levels of pollution sources in the near vicinity. If pollution control measures are successful in decreasing harmful air pollution in the future, the CPNM would benefit from less transport pollution into the area.

4.6 Impact Analysis for Soils

4.6.1 Assumptions Used for the Analysis

Excess nonnative weedy biomass may help protect soils from erosion but may also deplete soil nutrients. Although some nonnative plant communities may have properties that protect soil from erosion (for example, dense cover of annual grasses during wet years), and some native animals (for example, giant kangaroo rat) engage in soil disturbance, it is assumed the healthiest soils for the Monument are those associated with ecologically functional native plant and animal communities, and actions promoting those communities will promote soil health.

Climate change may result in erratic weather patterns, beyond the wide range of variation already observed in the Monument, and will result in hotter, drier weather on average.

Surface disturbances would be restored or reclaimed to meet Rangeland Health standards on project completion.

4.6.2 Incomplete Information

As most actions occur across soil type boundaries and the soils are generally subject to similar impacts although to varying degree, information on specific characteristics of the Monument's soil types and their vulnerability to different impacts is generally not included in this analysis except when an action addresses a specific soil type, for example, clay dunes.

4.6.3 Resources/Programs with No or Negligible Impacts

No or negligible impacts to soils are expected from the Cultural Resources, Visual Resources, or WSA/Other Lands with Wilderness Characteristics programs, and they are not further discussed.

4.6.4 Impacts to Soils under the No Action Alternative

4.6.4.1 Impacts to Soils from Implementing the Soils Program

As detailed under impacts of the Action Alternatives, the No Action Alternative is comparatively passive and nonspecific in describing actions for protecting soil resources, and would be expected to have less beneficial impact.

4.6.4.2 Impacts to Soils from Implementing Other Programs

Biological Resources

Current management goals, objectives, and actions are largely shared with Alternatives 2 and 3, with an active, hands-on approach as compared to Alternative 1. The long-term impact of this program would be beneficial to soils by restoring a higher level of functioning to natural ecosystems within the Monument.

Fire and Fuels Management

Estimated acreages burned by wildfire (50,000) and prescribed fire (30,000) are much greater than under any of the action alternatives, with total acreage subject to fire twice that of Alternative 1 and four times that of Alternatives 2 and 3. Because the ratio of wildfire to prescribed burn (5:3) is greater than under Alternatives 2 (1:1) and 3 (1:3), this alternative would be expected to offer less control over the potentially negative impacts of fire on soils.

Air Quality

The No Action Alternative for air quality shares with the soils program the objective of minimizing dust (that is, wind erosion) but does not prescribe specific actions. Impacts would be beneficial.

Water

Objectives are similar to those in the action alternatives but with fewer specific actions, so positive effects on soils may be slightly less.

Geology and Paleontology

This alternative allows research but does not state protective parameters nor proactive monitoring or stabilization measures. Impacts to soils would be negligible to minor based on the small acreage associated with paleontological excavations.

Livestock Grazing

Livestock grazing would continue in the Section 15 allotments for use of forage and for vegetation management purposes in the remaining areas designated as available to grazing. The impacts would be somewhat higher than the action alternatives, but they would still be limited to the minor, widespread, short-term impacts allowable under the Standards for Rangeland Health

Recreation

Impacts would remain similar to present levels, with slight increases from additional use. Overall impacts would continue to be minor, with most use focused on existing roads and developed facilities.

Travel Management

Under existing management, the travel network would remain the same. Continued illegal vehicle use off of existing roads could cause moderate to major localized impacts to soils from rutting and compaction, although implementation of law enforcement actions and education programs may reduce these impacts over the long term.

Minerals

Minerals extraction is an intrinsically soils-disturbing activity. Given that valid leases, claims, and other minerals rights existing as of the date of the Monument Proclamation may see mineral development on the Monument's federal lands, and that these are regulated by higher level law and policy and there can be no additional requirements conflicting with rights already granted by a lease, the goals, objectives, and actions of all alternatives are geared toward bringing about management practices that will best protect the Monument's resources within these parameters. It is estimated that there would be 30 acres of disturbance to soils on the Carrizo Plain valley floor from the construction of well pads, roads, and facilities. An additional 115 acres would be disturbed from cross-country travel associated with geophysical exploration. In the Russell Ranch oilfield, it is estimated that there would be 6.5 acres of disturbance from new well pads and roads and an additional 25 acres from cross-country travel for geophysical exploration.

The overall impacts to soils within the Monument would be minor in flat to gentle sloping topography. The impacts may be minor to moderate within the steep slopes of the existing Russell Ranch oilfield. These impacts would be localized to project sites, and would be due to construction activities and associated upgrading or construction of roads; these activities may remove, mix, add, and compact soils within the project footprint. However, well pad placement, best management practices, and SOPs are included in BLM authorizations to minimize the amount of surface disturbance, avoid sensitive resources, minimize the need for new roads, promote the use of previously disturbed sites, reduce erosion, conserve topsoil, and enhance restoration success. Impacts from spills/contamination are expected to be very localized because all activities will be subject to spill prevention and control plans, and any contamination will be removed/mitigated as required in those plans.

Lands and Realty

The acquisition of inholdings would continue, benefiting soil management by bringing additional acreage under protective management. Authorizations for rights-of-way would include soil protection stipulations and result in minor localized impacts from surface disturbance for road construction/site expansion.

4.6.5 Impacts to Soils Common to All Action Alternatives

4.6.5.1 Impacts to Soils from Implementing the Soils Program

The proactive, specific management measures common to all action alternatives will benefit soils. Measures common to all three action alternatives include specifying conservation of sensitive soils such as clay dunes and biological crusts; restoring biological soil crusts; identifying, evaluating, and correcting erosion problems; managing land uses for appropriate erosion and sedimentation rates; limiting fugitive-dust pollution by reducing soil disturbance, and developing and implementing best management practices to reduce the threat of valley fever.

4.6.5.2 Impacts to Soils from Implementing Other Programs

Biological Resources

Vegetation Management and Native Plants Objectives/Actions

Assuming that healthy plant communities are based on and promote healthy soils, overall, the effects of vegetation management actions on soils are expected to be beneficial. Vegetation management actions may have moderate short-term, localized effects involving some soil loss or loss of soil productivity. Mechanical treatments, an action option common to all alternatives, would reduce vegetative cover and expose soil to localized short-term erosion in the treated area, and, if heavy equipment is used, soil would

undergo some localized compaction which could slow vegetation regrowth and lead to longer-term erosion.

Core Area Threatened and Endangered Animal Objectives/Actions

Managing the more open, desert-like habitat prescribed for core area species would potentially expose more soil to wind and water erosion. The effects of specific actions to achieve these conditions are discussed under vegetation management for each alternative. Also, encouraging giant kangaroo rat populations to thrive will promote the soil disturbance and vegetation clipping in which they naturally engage. While this exposes soils to erosion, it is assumed to have an overall beneficial effect, accomplishing open habitat structure and soil mixing, aeration, and other benefits, appropriate for other animals and plants that have evolved to share the ecosystem for which giant kangaroo rats are a keystone species.

Animal Population, Avian Species, and Nonnative Animal Objectives/Actions

Actions expected to have a positive impact on soils include protecting Kern primrose sphinx moth habitat from surface impact, protecting vernal pools and sag ponds for fairy shrimp and spadefoot toads, and protecting habitats for ground-roosting birds. Providing suitable open habitat for mountain plovers may increase moderate localized long-term vulnerability to erosion (see Vegetation Management). An action with positive effects on soil would be the control of nonnative feral pigs, whose rooting can increase rates of erosion, with localized, short to long-term, moderate to major effects.

Riparian, Soda Lake, Vernal Pool, and Sag Pond Objectives/Actions

Measures to exclude livestock from riparian areas, restore native vegetation, and limit the deleterious actions of feral pigs will have positive impacts toward stabilizing streambank soils and reducing erosion, compaction, and sedimentation. Protecting the ecological and hydrological functions of Soda Lake, vernal pools, and sag ponds should also have indirect positive effects on soils.

Fire and Fuels Management

Fire, especially wildfire, has the potential to create major, widespread, long-term negative impacts to soils. It can impact physical, chemical, hydrological, and microbial properties of soil, expose soil to accelerated erosion by destroying soil-holding vegetation in the short term, and change or destroy fire intolerant plant communities in the long term. Fire suppression activities such as construction of fire line (removing a swath of vegetation to limit the spread of a wildfire) can also impact soils via exposure to erosion, disturbance, and compaction if heavy equipment is used. Conversely, fire can also be used to manage vegetation, creating positive impacts for native plant and wildlife communities; and by reducing build-up of fuels it can be used to help prevent large-scale wildfires that might not only burn much larger areas but also may burn at higher and more destructive temperatures. Actions common to all alternatives include several directing that wildfire suppression be conducted with care to minimize damages to resources, and some are especially relevant to soil resources: “utilize existing natural and human made barriers (roads, trails) where feasible,” which would minimize negative impact to soils from constructing new fire line; “minimize the loss of fire intolerant saltbush vegetation,” protecting soils from erosion due to long-term vegetation loss; “park vehicles and set up suppression support facilities in areas that have already been impacted [or] outside the CPNM,” minimizing compaction of soils and exposure to erosion due to vegetation lost to clearing for facilities or crushing by vehicles.

Air Quality

Closure and reclamation of unnecessary roads is an air quality action that shares objectives with the soils program for minimizing erosion and exposure to spores that may result in valley fever, and is expected to have a beneficial effect on soils.

Water

Objectives and actions to maintain and improve water quality have positive effects on soils. They are largely targeted at preventing erosion of soils into water, including ensuring wetland, riparian, and spring sites meet proper functioning condition and fencing them as necessary; managing upland areas to maintain or improve hydrologic function and minimize adverse downslope impacts; and providing livestock watering away from springs and surface waters. These are the same for all alternatives.

Geology and Paleontology

Paleontological and geological resources intrinsically involve soils, and share with soils sensitive areas (for example, the clay dunes) and overlapping concerns. This program is expected to have beneficial effects to soils overall, as it includes measures to monitor and protect these resources from natural and human-caused disturbances, such as erosion, and to implement corrective actions such as stabilization, erosion protection, public education, and law enforcement. Research and data recovery activities that do not compromise the physical integrity of the resources may be permitted; these may involve negligible to minor, localized, short- to long-term soil disturbances. Research may also result in beneficial effects to soils by increasing knowledge, interest, and public awareness, leading to better stewardship.

Livestock Grazing

Potential impacts of livestock grazing on soil health include effects of reducing vegetative cover that helps protect soil from erosion; and effects of trampling that can result if domestic livestock are heavier, more numerous, and/or differently distributed than animals native to the ecosystem, including soil compaction, breakdown of sensitive landforms such as stream banks, and destruction of biological soil crusts. The Central California Standards for Rangeland Health include the basic standard “Soils exhibit functional biological and physical characteristics that are appropriate to soil type, climate, and land form,” and the specific soils indicators and guidelines that follow from this. Under all alternatives, livestock grazing would be assessed and adjusted according to the standards and the associated guidelines. This includes monitoring for adequate ground cover, litter, and plant vigor and reproduction, and monitoring for multiple forms of soil erosion, compaction, damage to biological soil crusts, and other impacts, and adjusting use levels accordingly such that any impacts to soil would be widespread but negligible to minor and short term. Soil protecting actions common to all alternatives also include managing grazing to ensure no conflict with other Monument programs, and monitoring compliance.

Recreation

Recreation use levels are currently relatively low for such a large area and are expected to increase moderately over current levels (projected increases over 20 years range from 10 percent under Alternative 1 to 50 percent under Alternative 3). Recreational uses allowed in the Monument, such as hiking, horseback riding, and mechanized/motorized travel on designated roads, have the potential to create negligible to moderate localized disturbance and compaction impacts to soils and biological soil crusts. (Note that under the Monument Proclamation, no off-road motorized or mechanized travel is allowed.) Periodic monitoring and adaptive corrective actions will have a beneficial effect, offsetting any increase in recreation use or concentration of recreation use in popular areas. Some potentially soil-disturbing

recreation activities are only allowed in certain RMZs, with the size of the zones varying by alternative (see analyses by alternative below).

Travel Management

Effects of travel management on soils are mostly localized to roads and their immediate vicinity. The soil of dirt roads is subject to devegetation, erosion, rutting, and compaction by vehicle use, particularly if steep or muddy. Drivers' attempts to pull off and park alongside the road, or to circumvent areas that become impassable due to mud, washouts, or erosion, may compound these impacts beyond the existing roadbed, and destroy biological soil crusts. Roads may channel water through erodible soils, potentially spreading impacts further. Actions common to all alternatives—closure of roads during wet periods and after washouts, and a road maintenance plan aimed at resource protection—are designed to reduce these potential impacts and to offer beneficial effects to soils. Actions to reduce illegal off-road travel will also benefit soils.

4.6.6 Impacts to Soils under Alternative 1

4.6.6.1 Impacts to Soils from Implementing the Soils Program

Alternative 1 does not have specific soils program actions in addition to those common to all three action alternatives. While expected to benefit soils, it takes the least active approach to soil protection and restoration.

4.6.6.2 Impacts to Soils from Implementing Other Programs

Biological Resources

Vegetation Management and Native Plants Objectives/Actions

Negative impacts of vegetation management actions on soils would be lowest under Alternative 1, where vegetation management actions would be much more limited than the other alternatives. Impacts of hand removal of vegetation, and mechanical removal using hand tools, would be negligible. However, Alternative 1 lacks protective and proactive actions with positive impacts on soils found in Alternatives 2 and 3.

Non-Core Threatened and Endangered Species, Avian Species, and Other Animal Objectives/Actions

In terms of impacts on soils, Alternative 1 differs from the other alternatives in its more passive approach to wildlife habitat management. This would result in a reduction of short-term impacts associated with treatments, but long-term benefits associated with restoration of native species could also be the lowest of the alternatives. (See above for effects.)

Nonnative Plants Objective/Actions

Alternative 1 calls for targeted removal of noxious weeds by hand or mechanical methods only, with no intervention for other nonnative plant species. Effects on soils would be negligible.

Fire and Fuels Management

The hands-off/natural processes approach of Alternative 1 allows for the most wildfire of all the action alternatives (40,000 acres per decade, with 90 percent of individual fires 1,000 acres in size). It does not allow any prescribed burning. Therefore, any positive effects of fire to soils would be the result of chance, whereas large-scale, moderate to major, short- to long-term negative impacts of wildfire could occur. The

likelihood of these negative effects is somewhat mitigated by the option of managing lightning-caused fires within the WSA as wildland use fires for resource benefit, and the strategy in other areas to confine fires when they reach the nearest control feature such as a road (these also are found in Alternative 2).

Air Quality

Any localized, moderate, long-term impacts on soils as a result of altering the natural soils of roadways with aggregate, gravel base, or chemical binder/dust suppressant would apply to main access roads throughout the Monument, potentially resulting in a more widespread impact than in Alternative 2. Impacts would still be minor and limited to the roads and immediately adjoining areas.

Geology and Paleontology

Actions under this alternative are overall protective of these resources and thus expected to benefit soils. Research and data recovery using hand tools may result in negligible, localized, short- to long-term soil disturbance.

Livestock Grazing

Under Alternative 1, all potential impacts of grazing would be eliminated except on less than two percent of the Monument where fences do not correlate with the Monument boundary. While this would prevent negative impacts of grazing, it would also preclude the positive impacts on soils that could result from using grazing as a vegetation management tool, under the assumption that actions promoting ecologically functional native biotic communities will tend to promote soil health in the long term. Removing livestock facilities such as fences and pipelines would potentially involve localized, minor, short-term impacts to soils if vehicles are used off road to transport materials or if buried pipelines are dug up.

Recreation

Under Alternative 1, a total of 83,202 acres (33 percent of the Monument) would be designated as Primitive zone, providing maximum protection against any impacts from activities allowed in the Backcountry and Frontcountry zones. Camping with vehicles would be allowed in developed campgrounds only, with the beneficial effect of preventing any disturbance and compaction impacts to soils and biological soil crusts that would result from user-selected dispersed camping sites in previously undisturbed areas. Backpacking would still be allowed, and rustic improvements at known dispersed camping areas in the Backcountry zone would have the further beneficial effect of encouraging camping at previously disturbed sites. As with the other alternatives, developing 3 to 5 trailheads, parking areas, interpretive sites, and roadside stops in the Frontcountry zone would result in moderate, localized, long-term disturbance and compaction of soils, which would be offset by the benefits of defining and localizing these impacts to the extent that they avert user-created pull-outs in previously undisturbed sites.

Travel Management

Under Alternative 1, 22 percent of roads would be designated Limited, 18 percent designated Closed, and 32 percent of acreage would be designated as a Closed Area to vehicle travel. Of the three alternatives, this provides the greatest long-term protection from potential soil disturbance, devegetation, compaction, and erosion by vehicles. Under this alternative, only street-licensed vehicles would be permitted on Monument roads, possibly reducing the likelihood of illegal off-road use by limiting vehicles with off-road capabilities, with long-term beneficial protective effects to off-road soils and biological soil crusts.

Minerals

Same as the No Action Alternative, except this alternative increases the potential for implementing actions with positive impacts on soils by calling for provision of BLM resources (funds, expertise), annual inspections, and prioritizing termination of idle leases and reclamation of "redundant/unnecessary" disturbed areas. It calls for obtaining any sand/gravel needed for Monument road maintenance or other uses from outside the Monument, which would displace any negative impacts outside the Monument while retaining the positive effects of using these materials to armor sensitive soils against erosion, compaction, rutting, gullying, or other impacts within the Monument. It also has actions to minimize disturbance from development on private minerals such as purchasing split estate mineral estate and acquiring private minerals from willing sellers. It limits authorization of geophysical exploration to activities with minimal potential to damage soils.

Lands and Realty

Alternative 1 takes an opportunistic approach to lands acquisition, which would bring more land under protective management. This alternative also prohibits new communication rights-of-way, preventing any potential localized short-term soil-disturbing impacts these would otherwise have.

4.6.7 Impacts to Soils under Alternative 2

4.6.7.1 Impacts to Soils from Implementing the Soils Program

The soils program's somewhat more aggressive approach in Alternative 2 promotes greater beneficial effects to soils than Alternative 1. This alternative specifies considering seasonal closures to areas of sensitive soils and to roads where excessive ruts occur.

4.6.7.2 Impacts to Soils from Implementing Other Programs

Biological Resources

Vegetation Management and Native Plants Objectives/Actions

See Impacts Common to All Action Alternatives. In additional vegetation management treatment options available only under Alternatives 2 and 3, prescribed fire would potentially impact physical, chemical, hydrological, and microbial properties of soil, as well as exposing soil to accelerated erosion in the short term; livestock grazing could result in localized soil compaction and destruction of biological soil crusts; and area spraying of herbicides could alter chemical properties of soil. These vegetation management impacts would range from minor to moderate and short-term to long-term, would be localized to treatment areas, and may result in long-term positive effects by helping establish healthy native biological communities and by reducing fuel loads and the likelihood of unplanned catastrophic wildfire with more widespread, uncontrolled effects.

Alternatives 2 and 3 also have proactive, protective measures with long-term, localized to widespread, positive impacts to soils. These include protection of target plant communities from fire and livestock grazing; restoration of degraded habitats such as previously cultivated fields; reestablishment of landscape water flow patterns, potentially reducing erosion; restoring oak communities, including active restoration of leaf littler mulch and soil functions and inoculating with healthy soil organisms; and protecting and restoring biological crusts. Overall, the effects of vegetation management actions on soils under Alternatives 2 and 3 are expected to be positive, with the potential for greater positive effects than the more passive approach under Alternative 1.

Nonnative Plants Objective/Actions

Alternatives 2 and 3 call for controlling the spread of other nonnative plants as well as noxious weeds, and allow for the use of grazing, mowing, and burning in addition to hand tools (see above for effects). Thus, direct, potentially negative effects of nonnative plant control could be more widespread and varied than under Alternative 1, but with corresponding greater overall benefits under the assumption that native plant communities promote healthy soils in the long term.

Fire and Fuels Management

This alternative is between Alternatives 1 and 3 in both number of acres of wildfire targeted to burn and number of acres targeted for prescribed fire. It predicts 10,000 acres of wildfire per decade (with individual fire size 100 acres 80 percent of the time), vs. 40,000 acres under Alternative 1 and 5,000 under Alternative 2. It targets another 10,000 acres for prescribed fire, vs. 0 acres in Alternative 1 and 5,000 acres in Alternative 3). Thus the total combined acreage (20,000) predicted to be exposed to fire is half that of Alternative 1, and the same as for Alternative 3 but with a higher ratio (1:1) of wildfire to prescribed fire. Thus, large-scale, moderate to major, short- to long-term negative impacts of wildfire to soils could occur under Alternative 2 but they would be smaller in scale than under Alternative 1; and similar negative impacts could occur as a result of prescribed fire, but they would be expected to be reduced in severity by the relatively controlled nature of fire application, and mitigated by the positive effects on natural communities for which the fire is prescribed (see the Biological Resources section of the impact analysis for soils). Alternative 2 calls for actively suppressing fires that threaten life, facilities, private property, and fire sensitive natural or cultural resources, using mobile attack in preference to more disturbing methods such as dozer line construction; and in other areas, applying a confine strategy with existing features, such as roads, serving as fire line. Minor to moderate, short- to long-term impacts to soils from disturbance, compaction, and vegetation loss due to fire suppression activities would therefore be more localized than under the other alternatives.

Air Quality

Any localized, moderate, long-term impacts on soils as a result of altering the natural soils of roadways with aggregate, gravel base, or chemical binder/dust suppressant would apply to main access roads throughout the Monument but with a focus on high-use areas, potentially resulting in less impact than both Alternatives 1 and 3. Gravelling will reduce off-road travel by vehicles trying to navigate wet/muddy areas.

Paleontology/Geology

Actions under Alternative 2 are overall protective of these resources and thus expected to benefit soils. Research and data recovery using hand or mechanized tools may result in negligible to minor, localized, short- to long-term soil disturbance.

Livestock Grazing

Under Alternative 2 livestock grazing would be used only as a vegetation management tool in some areas and would continue to be used to produce forage on the Section 15 allotments. This would result in the largest percentage of the Monument designated for grazing only for the purpose of vegetation management and experiencing the positive effects on soils of promoting ecologically functional native plant and animal communities. These could be minor to major, widespread, long-term positive effects, concurrent with the negligible to minor, widespread, short-term negative soil impacts that would be allowable under the Standards for Rangeland Health. Grazing would be allowed on about 20 percent of the Monument under Section 15 grazing allotments, as resource conditions allow (approximately 5 years out of 10). This could result in the negligible to minor impacts allowable under the Standards with or

without the concurrent beneficial effects of vegetation management. The lesser acreage where it has been determined that grazing would not promote management goals would not be grazed. In areas designated "available for livestock grazing" pending possible voluntary relinquishment of permitted use and evaluation for suitability for management via grazing, the proportions of positive and negative effects would be unknown until such evaluation.

Recreation

Under Alternative 2, a total of 54,464 acres (22 percent of the Monument) would be designated as Primitive zone and thus protected from any impacts from activities allowed in the Backcountry and Frontcountry zones. Under Alternatives 2 and 3, dispersed camping with vehicles would continue to be allowed, resulting in minor to moderate disturbance and compaction of soils and destruction of biological soil crusts, especially along roadways. Monitoring and corrective actions prescribed under these alternatives would help minimize these impacts. Rustic improvements at known dispersed camping areas in the Backcountry zone would reduce the impacts on soils by encouraging use in previously impacted areas. As with the other alternatives, developing trailheads, parking areas, interpretive sites, and roadside stops in the Frontcountry zone would result in moderate, localized, long-term disturbance and compaction of soils, which would be offset by the benefits of defining and localizing these impacts to the extent that they avert user-created pull-outs in previously undisturbed sites.

Travel Management

Under Alternative 2, 28 percent of roads would be designated Limited, 10 percent designated Closed, and 21 percent of acreage would be completely closed to vehicle travel. Alternative 2 offers long-term beneficial effects to soils by closing and rehabilitating roads, with less protection from potential soil disturbance, devegetation, compaction, and erosion by vehicles than Alternative 1, and more than Alternative 3.

Minerals

Identifying a site within the Monument for minor amounts (less than 10 yards per incident) of emergency/administrative sand/gravel extraction for road maintenance or other uses would have minor to moderate localized impacts depending on the extent of use. These impacts may be offset by the benefits to soils of maintaining roads and stabilizing problems that might otherwise develop, such as erosion, compaction, rutting, and gullying of vulnerable road soils and surrounding areas where drivers might attempt to leave the roadbed to circumvent impassable sections.

Like Alternative 1, but to a somewhat lesser extent, Alternative 2 promotes the implementation of actions with positive effects on soils. It calls for measures above and beyond those under existing federal standards. It requires protection of Monument resources for all new lease actions, based on lease stipulations, conditions of approval, and other requirements. Inspections to ensure compliance would occur with a goal of at least every other year, more often when problems are found. It shares with Alternative 1 prioritization of terminating idle leases and reclaiming disturbed areas. There are also provisions for purchasing split estate mineral estate and acquiring private minerals from willing sellers, and, like Alternative 1, it limits authorization of geophysical exploration to activities with minimal potential to damage soils.

Lands and Realty

Alternative 2's targeted approach to lands acquisition would potentially bring less land under protective management as compared to Alternative 1, but would still have positive impacts. By allowing new

communication rights-of-way to be considered on a case-by-case basis, it opens the possibility of localized short-term (assuming rehabilitation) soil disturbance resulting from their construction, which may be minimized by the provision that they only be considered in areas with existing facilities if this leads to use of sites with previously disturbed soils.

4.6.8 Impacts to Soils under Alternative 3

4.6.8.1 Impacts to Soils from Implementing the Soils Program

The soils program, as outlined in Alternative 3, is more specific and aggressive than both Alternatives 1 and 2 in directly addressing impacts to soils, and therefore would offer the most beneficial effects. It adds a specific threshold of 2-inch depth to the prescription for "excessive ruts" in Alternative 2, extends consideration of seasonal closure to other conditions of road damage or sedimentation, specifies elimination of causes and restoration where erosion problems occur, and calls for visitor education to protect soil resources.

4.6.8.2 Impacts to Soils from Implementing Other Programs

Biological Resources

Impacts would be the same as Alternative 2.

Fire and Fuels Management

Alternative 3 calls for the most active wildfire suppression, actively suppressing all wildfires, and the most active use of prescribed fire of all three action alternatives. The total acreage projected to be burned is the same as under Alternative 2 (and half that of Alternative 1) but with a lower ratio of wildfire to prescribed fire (1:3). Thus, this alternative offers the highest degree of control over the potentially negative impacts of fire on soils. Minor to moderate, short- to long-term impacts to soils of active fire suppression methods (for example, dozer line construction) would be greatest under this alternative but highly localized in contrast to the widespread wildfires they would prevent.

Air Quality

Alternative 3 calls for working with local government to secure funding for paving major travel routes and gravelling key secondary roads, resulting in greater and more widespread, moderate, long-term alteration of the natural soils of roadways and immediately adjoining locations than in Alternatives 1 and 2. The impact is still considered to be minor, since all of the impacts are on previously disturbed soils. Also, paving/gravelling will reduce off-road travel by vehicles trying to navigate wet/muddy areas.

Geology and Paleontology

Impacts would be the same as Alternative 2.

Livestock Grazing

The objective of Alternative 3 accommodates livestock use of forage in the Section 15 allotments as well as in areas used for vegetation management purposes. The differences at the implementation level, according to reasonably foreseeable applications of guidelines identified in the Conservation Target Table, would result in grazing 8 years out of 10 on approximately 20 percent of the Monument for purposes other than vegetation management, rather than 5 years out of 10 under Alternative 2. This could result in somewhat greater negative soil impacts but they would still be limited to the negligible to minor,

widespread, short-term impacts allowable under the Standards for Rangeland Health. Localized, negligible to moderate, short- to long-term impacts to soils could also result from creating, modifying, maintaining, or removing livestock facilities under Alternative 3. Impacts would be otherwise similar to those under Alternative 2.

Recreation

Impacts would be the same as Alternative 2 except only 17,984 acres (7 percent of the Monument) would be designated as Primitive zone, and a higher number of trailheads and interpretive sites would be provided, resulting in slightly higher impacts.

Travel Management

Under Alternative 3, 26 percent of roads would be designated Limited, 2 percent Closed, and 7 percent of acreage would be designated as a Closed Area to vehicle travel. Of the three alternatives, this provides the least protection from potential soil disturbance, devegetation, compaction, and erosion by vehicles, but still offers beneficial effects as compared to the No Action Alternative.

Minerals

Alternative 3 includes fewer, and less stringent, protective measures compared to Alternatives 1 and 2. Existing leases would be managed to standards required by law. Like Alternative 2, it requires protection of Monument resources for all new lease actions, based on lease stipulations, conditions of approval, and other requirements, but inspections to ensure compliance would occur with a goal of at least every 3 years, more often when problems are found. The standard for idle leases would be to plug or return to production after 5 years idle; two idle leases would be kept at a low level of priority for termination. Disturbed areas would be reclaimed only upon final abandonment/lease termination. There is provision for acquiring private minerals from willing sellers in conjunction with purchase of surface estate but not for split estate. Like Alternatives 1 and 2, it limits authorization of geophysical exploration to activities with minimal potential to damage soils, with the only difference being that the statement limiting vibroseis to existing roads is qualified by the phrase “to the maximum extent practicable.” Use of vibroseis equipment off of existing roads would cause soil compaction in those areas.

Lands and Realty

This alternative takes the same approach to land acquisition as Alternative 2. It allows new communications facilities and maintenance/expansion of existing facilities, potentially resulting in more soil undergoing localized impacts than under Alternative 2.

4.6.9 Cumulative Impacts to Soils

4.6.9.1 Assessment Area

The assessment area for cumulative impacts of the soils program is the Monument itself and adjoining lands to the north within the Carrizo Plain. In general, soils actions are not expected to affect lands outside the Monument boundaries, except in that by helping protect Monument soils from wind erosion they may protect air quality and reduce airborne spores that could cause valley fever in nearby areas.

Similarly, actions outside the Monument boundary are only expected to affect soils within the Monument to a minimal degree. It is physically possible that severe impacts to soils upslope from the Monument in California Valley could result in erosion processes such as gullying that would intrude onto the Monument, but no such impacts are known for the foreseeable future.

4.6.9.2 Past, Present, Reasonably Foreseeable Future Actions and Cumulative Impacts

Cumulative effects from Monument management will mostly involve restoration of soil function and will provide some offsetting impacts to other soil disturbing actions in the assessment area. Past actions prior to Monument designation have created some disturbance to soils. Cultivation of crops and heavier levels of livestock grazing have had moderate widespread impacts that persist into the present, but none so severe as to irreversibly destroy the functioning condition of soils or preclude recovery of native plant and animal communities. Past actions such as the creation of roads have resulted in more severe but much more localized impacts. Present and reasonably foreseeable future management actions within the Monument are designed to promote recovery of soils from past impacts and to minimize future impacts.

Areas of California Valley continue to be cultivated for dryland farming, and development of additional vacant lots in the community will lead to additional road grading and soil disturbance. Disturbance of previously uncultivated soils is believed to have the highest risk of spreading valley fever spores. The development of the California Valley Solar Plant would also lead to soil disturbance.

Climate change is predicted to bring about hotter, drier conditions in the foreseeable future. Many climate change models also predict infrequent but strong storm activity. This would increase the susceptibility of soils to erosion. Drier soils are more susceptible to wind erosion, and drier conditions on the CPNM are known to promote a lower density of vegetative cover and root mass that would otherwise help hold soils against wind and water erosion. Strong winds and rainstorms could then have severe erosive effects. Climate change could thus reduce the cumulative beneficial effects of management actions on soils over time.

4.7 Impact Analysis for Water Resources

4.7.1 Assumptions Used for the Analysis

Funding and personnel levels will be sufficient to conduct all resource monitoring prescribed under the alternatives.

Management activities and use authorizations will be conducted in accordance with Standards for Rangeland Health for riparian and water quality.

Climate change may result in erratic weather patterns, beyond the wide range of variation already observed in the Monument, and will result in hotter, drier weather on average.

Vegetation management techniques such as burning and chemicals would be conducted away from water sources to the extent possible, and in a manner that minimizes effects to water quality.

4.7.2 Incomplete Information

There is a lack of water quality data for Soda Lake or the intermittent and ephemeral streams within its watershed.

Information on the amount of groundwater in storage and trends in groundwater levels is lacking. Limited data are available for water quality in springs and for groundwater quality.

4.7.3 Resources/Programs with No or Negligible Impacts

No or negligible impacts to water resources are expected from Cultural Resources, Geology and Paleontology, Air Quality, Visual Resources, and WSA/Other Lands with Wilderness Characteristics; these programs are not further discussed.

4.7.4 Impacts to Water Resources under the No Action Alternative

4.7.4.1 Impacts to Water Resources from Implementing the Water Resources Program

Actions under this alternative would benefit water resources. The No Action Alternative is comparatively nonspecific in describing objectives and actions for protecting water resources and does not address groundwater, so would be expected to have a lesser degree of beneficial impact. However, based on the declaration of a federal reserve water right in the Monument Proclamation, actions would be implemented under this and all other alternatives to protect water resources.

4.7.4.2 Impacts to Water Resources from Implementing Other Programs

Biological Resources

Current management goals, objectives and actions are similar to those of Action Alternatives 2 and 3, including provisions for protection and restoration of springs, vernal pools, and riparian areas; use of herbicides where necessary for weed control; and maintenance of water sources for wildlife. See impacts discussions for Alternatives 2 and 3.

Fire and Fuels Management

Estimated acreages burned by wildfire and prescribed fire are greater than under the action alternatives, with total acreage subject to fire twice that of Alternative 1 and four times that of Alternatives 2 and 3, and with the ratio of wildfire to prescribed burn (5:3) greater than under Alternatives 2 and 3. This alternative would be expected to offer less protection from the negative impacts of fire on water quality.

Soils

Objectives are similar to those in the action alternatives but with fewer specific actions than Alternatives 2 and 3, so positive effects on water resources may be slightly less.

Livestock Grazing

Impacts to water resources would be similar to those described for all action alternatives, with the Central California Standards and Guidelines for Rangeland Health providing overarching protection.

Recreation

This alternative does not specifically address water resources, but Soda Lake and possibly others would presumably be included in the Interpretation action to “Convey an understanding and appreciation of the unique resources so that visitors may enjoy and protect them.” Building an understanding among visitors of water resource protection needs would reduce impacts to water resources over present levels.

Travel Management

Actions protecting soils from erosion, compaction, rutting, and other impacts indirectly affect water quality and hydrologic function in the watershed. Because some of the soil-benefitting actions common to

all action alternatives (evaluation of roads for closure, plans for road maintenance and for reducing illegal off-road use) are lacking, along with the provision that impacts to water quality be minimized through proper design, maintenance, or minor rerouting of roads, the No Action Alternative would have less beneficial effect on water resources as compared to the action alternatives. Sediment from use and maintenance of the existing road network would continue to have minor impacts on water resources.

Minerals

The continued development of the existing federal leases would have negligible impacts to water quality in the Cuyama River watershed from runoff from roads and well pads. State and BLM standard operating requirements include provisions for controlling erosion and other off site impacts from these developments. The potential water use associated with private mineral estate development is discussed under cumulative impacts.

Lands and Realty

This alternative is similar to the action alternatives in its approach to lands acquisition and could result in bringing more surface water and surrounding lands into public ownership, with beneficial effects of increasing water quantity in public ownership, and protecting water quality via bringing the water and surrounding lands under policies that would minimize pollution or sedimentation.

4.7.5 Impacts to Water Resources Common to All Action Alternatives

4.7.5.1 Impacts to Water Resources from Implementing the Water Resources Program

All goals and actions for this program are common to all action alternatives, and all are designed to benefit water resources. Goals and objectives for surface water are similar to actions planned under current management, but more specific; and groundwater quality and quantity are addressed by new goals and objectives. Actions in addition to those under current management (No Action Alternative) include several pertaining to groundwater: inventory and monitoring of existing groundwater wells, drilling groundwater monitoring wells, monitoring groundwater levels and quality, coordinating research with other entities and developing a hydrologic model for the Monument. Other actions not specified under current management for water resources are providing water for livestock /wildlife/administrative use from wells rather than springs as needed to protect the springs, monitoring and removing noxious weeds from wetlands, and using native plants for restoration in wetland areas. Both call for inventory and monitoring of springs, evaluation of the need for habitat protection, and protections by fencing as necessary. Effects of these actions will be beneficial; will range from short- to long-term; and will be localized, by nature of the resource.

4.7.5.2 Impacts to Water Resources from Implementing Other Programs

Biological Resources

Measures for protecting biological resources closely associated with surface water are expected to have positive effects on water resources. These include protecting vernal pools and sag ponds for fairy shrimp and spadefoot toads, protecting roosting habitat for shorebirds at Soda Lake, and all actions to protect and restore riparian areas including actions to identify and protect riparian areas appearing only in wet years. All actions under Soda Lake and Vernal Pool and Sag Pond objectives are directly beneficial to water resources, protecting water quality and quantity.

Fire and Fuels Management

Fire, especially wildfire, has the potential to create generally short-term but major negative impacts to water quality when ash, eroded soil from newly-exposed lands, and other materials enter surface water. Wildfire suppression actions are beneficial to water quality by limiting such sedimentation and water chemistry impacts, if the suppression actions themselves do not negatively impact water quality. Actions common to all alternatives include several directing that wildfire suppression be conducted to minimize damages to resources, including limiting the use of fire retardant drops on vernal pools and waterways, and limiting soil-disturbing activities (see impacts to soils).

Soils

Objectives and actions that benefit soils have positive effects on water quality whenever and wherever they help protect hydrologic function of soils and prevent erosion of soils into water. The hydrologic function of healthy soils includes absorbing, holding, and gradually releasing water rather than losing water to rapid run-off as can occur when soils are disturbed and compacted. Erosion of soil into surface water can result both in degraded water quality and changes in the shape and function of banks, channels, and other features that can affect hydrologic function, water temperature, and habitat quality for aquatic organisms. Maintaining soil resources in proper functioning condition; identifying, evaluating and correcting erosion problems; and managing landscapes for appropriate erosion and sedimentation rates are actions that should produce long-term beneficial effects for surface water quality and quantity.

Livestock Grazing

If livestock have access to surface water, potential impacts on water resources include fecal contamination; reducing vegetative cover that helps protect soil from erosion into the water source; soil compaction that can impact hydrologic function, including absorption of water and timely recharge of springs and streams; and direct breakdown of spring or stream banks by trampling. Similar but less direct impacts can affect water via runoff from nearby uplands. The Central California Standards for Rangeland Health include the water quality standard "*Surface and groundwater complies with objectives of the Clean Water Act and other applicable water quality requirements, including meeting the California State standards"* and specific water quality objectives and indicators for maintaining and restoring "the physical, biological and chemical integrity of water." Hydrologic function is addressed by the riparian standard and associated indicators, "*Riparian/wetland vegetation, structure and diversity, and stream channels and floodplains are functioning properly, and meeting regional and local management objectives."* Under all alternatives, livestock grazing will be assessed and adjusted according to these standards and the associated Guidelines, such that any impacts to water resources would be localized, negligible to minor, and short-term. Actions common to all alternatives that are protective of water resources also include managing grazing to ensure no conflict with other Monument programs, and monitoring compliance. Livestock consumption of water should have a negligible to minor impact on water quantity.

Recreation

Visitor education and interpretation actions under this program would be expected to have positive effects on water resources insofar as they address them, increasing understanding, appreciation, and stewardship. Alternatives 1, 2, and 3 all specify improving and expanding interpretive displays at Soda Lake Boardwalk and Soda Lake Overlook. Monitoring recreation impacts to natural resources and measures to correct them would also be expected to apply to water resources, which would reduce impacts from public use. As visitation numbers are low and not expected to rise steeply, developing potable water

sources at facilities such as campgrounds and the education center would have a negligible effect on groundwater quantity.

Travel Management

Travel management actions that benefit soils will also indirectly benefit water quality by reducing erosion in the watershed along with compaction and rutting that can change hydrologic function and the routing of drainages; see impacts for soils. One action addresses direct impacts: "Minimize impacts to water quality… through proper design, maintenance, or minor rerouting of roads." Travel management actions are expected to have positive effects on water resources overall and these effects do not differ appreciably among the action alternatives.

Minerals

While water is not addressed specifically, BLM goals, objectives and actions for all alternatives under the Minerals program are protective of "the objects of the Proclamation" (including Soda Lake) and other Monument resources and sensitive resource values. Some minerals extraction activities that may be proposed by lessees in the Monument may use water and would need to be evaluated for their potential to affect quantity and/or quality of groundwater resources. This is addressed under Cumulative Impacts.

Lands and Realty

Actions common to all alternatives do not have the direct potential to affect water resources, except in the event that any new rights-of-way granted and developed would have the potential to affect surface water, highly unlikely both because of the scarcity of surface water in the Monument and provisions for protecting these sensitive resources.

4.7.6 Impacts to Water Resources under Alternative 1

4.7.6.1 Impacts to Water Resources from Implementing the Water Resources Program

There are no separate action alternatives for this program. See Impacts Common to All Action Alternatives.

4.7.6.2 Impacts to Water Resources from Implementing Other Programs

Biological Resources

This alternative does not include actions in addition to those common to all alternatives that could potentially affect water resources.

Fire and Fuels Management

The "hands-off" / "natural processes" approach of this alternative allows for the most wildfire of all the action alternatives, at a predicted 40,000 acres per decade. If fire occurs near surface water sources this could result in major short-term impacts to water quality. Due to the scarcity of surface water in the Monument and the lack of flowing water, such impacts would be unlikely and, if they did occur, highly localized unless affecting a seasonally flowing stream during the wet season (however, localized impacts to scarce water sources could have widespread impacts to wildlife dependent on them). Although fire impacts could be considered to be a natural part of healthy ecosystem function, the presence of nonnative grasses in the Carrizo causes unnatural fuel levels and changes fire intensity. There would be no prescribed burning under this alternative.

Soils

This alternative does not include actions in addition to those common to all alternatives that could potentially affect water resources.

Livestock Grazing

Under Alternative 1, all potential impacts of grazing would be eliminated except on less than 2 percent of the Monument along slivers of land where fences do not correlate with the Monument boundary. This would result in negligible effects on water resources, and the lowest of all the alternatives.

Minerals

Impacts would the same as the No Action Alternative.

Lands and Realty

Impacts would the same as the No Action Alternative.

4.7.7 Impacts to Water Resources under Alternative 2

4.7.7.1 Impacts to Water Resources from Implementing the Water Resources Program

There are no separate action alternatives for this program. See Impacts Common to All Action Alternatives.

4.7.7.2 Impacts to Water Resources from Implementing Other Programs

Biological Resources

This alternative has an additional action addressing protection and restoration of vernal pool vegetation from livestock and human travel, which would be expected to also benefit water quality in vernal pools. New water developments for upland game birds could potentially have a negligible to minor, localized, long-term impact on the surface water or groundwater sources used. The same would be true of maintaining existing man-made water sources for pronghorn and tule elk, while maintaining natural critical water sources for pronghorn and tule elk would have a positive effect. Allowable vegetation management tools under this alternative include burning, grazing, and herbicides, which could impact water quality in the unlikely event they were used near surface water, and watering, which could impact groundwater quantity. These impacts would be localized, short-term, and probably negligible to minor. Active efforts to acquire privately held Soda Lake lands could result in beneficial effects for this unique water resource.

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Fire and Fuels Management

The total combined acreage of wildfire and prescribed fire predicted to be exposed to fire under Alternative 2 is half that of Alternative 1, and the same as for Alternative 3 but with a higher ratio (1:1) of wildfire to prescribed fire. Prescribed fire could help prevent wildfires that would affect surface water, under the assumption that they would be conducted with care to minimize impacts. This alternative also calls for actively suppressing fires that threaten sensitive natural resources. Thus localized, moderate to major, short-term negative impacts of wildfire to water quality would be less likely under this alternative than under Alternative 1, somewhat more likely than under Alternative 3, but rare under all three

alternatives due to the scarcity of surface water and the unlikelihood of fire during the wet season when ephemeral streams flow.

Soils

This alternative prescribes a more active approach to soils management than Alternative 1 and may be expected to have greater beneficial effects to water quality.

Livestock Grazing

Under Alternative 2, grazing would be used as a vegetation management tool only, except on the Section 15 allotments. An action specifying use of livestock facilities (for example, fences) to protect riparian areas reinforces the protection of water resources provided under all alternatives.

Minerals

Impacts would the same as the No Action Alternative.

Lands and Realty

This alternative's active approach to acquiring lands with important ecological characteristics, specifically including as examples Soda Lake and playas and habitat for spadefoot toads and fairy shrimp, would potentially bring more surface water and surrounding lands under protective management as compared to Alternative 1 and the No Action Alternative. This would have positive long-term effects in increasing water quantity in public ownership, and protecting water quality via bringing the water and surrounding lands under policies that would minimize pollution or sedimentation.

4.7.8 Impacts to Water Resources under Alternative 3

4.7.8.1 Impacts to Water Resources from Implementing the Water Resources Program

There are no separate action alternatives for this program. See Impacts Common to All Action Alternatives.

4.7.8.2 Impacts to Water Resources from Implementing Other Programs

Biological Resources

Objectives and actions potentially affecting water are the same as under Alternative 2 except that Alternative 3 calls for establishing new water sources for pronghorn and tule elk, with potential negligible to minor, localized, long-term effects on water quality and/or quantity depending on the water source used.

Fire and Fuels Management

Alternative 3 calls for actively suppressing all wildfires and the most active use of prescribed fire of all three alternatives. The total acreage projected to be burned is the same as under Alternative 2 but with a 1:3 ratio of wildfire to prescribed fire. Thus, this alternative offers the greatest protection from the rare event of negative impacts of fire on water quality in the Monument.

Soils

This alternative prescribes a more active, assertive approach to soils management than both Alternatives 1 and 2, and may be expected to have greater beneficial effects to water quality.

Livestock Grazing

Impacts of grazing to water quality would be similar to Alternative 2.

Minerals

Impacts would the same as the No Action Alternative.

Lands and Realty

Impacts would the same as Alternative 2

4.7.9 Cumulative Impacts to Water Resources

4.7.9.1 Assessment Area

The assessment area for cumulative impacts of the Water Resources program with reference to surface water is generally the Monument itself, as it lies mostly within a closed surface water basin with no drainage to outside the Monument boundaries. The main exceptions are the southwest aspect of the Caliente Range where water from the Monument drains into the Cuyama Valley, and the area north of the Monument (Including California Valley) where water from private lands drains into Soda Lake.

The Monument also lies within a closed groundwater basin; however, in contrast to surface water, drawdown of groundwater or changes in groundwater quality could potentially affect users of the same groundwater basin; for example, wells in California Valley could affect wells within the Monument and vice versa.

4.7.9.2 Past, Present, and Reasonably Foreseeable Future Actions/Cumulative Impacts

No BLM actions are planned that would increase groundwater use in the Monument beyond negligible amounts. Private mineral estate holders could propose to use steam injection within the Monument to facilitate extraction of viscous oil; typically this would use about 10,000 gallons of water per well per day. Water could potentially be pumped from the brackish groundwater layer of the Morales formation, which lies deeper than the layer used for drinking water in California Valley. BLM would evaluate any such proposal for potential impacts to groundwater quantity or quantity and associated impacts to other Monument resources. Currently available data on groundwater amounts and trends are insufficient to analyze potential effects and the RMP calls for establishment of a monitoring program.

Actions outside the Monument boundary involving both groundwater and surface water could affect water within the Monument. There are no perennial streams flowing to the Monument from the California Valley area which lies upslope to the northwest; although one stream does have pools of surface water throughout most years. Also, ephemeral drainages flowing during the wet season and flood events could potentially carry pollutants from the surface and impact water quality in Soda Lake, which is the low point of the basin. Concerns have been raised regarding unregulated trash dumping, both outside and within the Monument boundary, and that septic systems may be missing or inadequate for some homes. BLM would need to monitor water quality in Soda Lake and in Monument wells, as proposed in this plan, in order to assess these potential impacts.

Concerns have also been raised regarding potential impacts from California Valley to groundwater quantity in the Monument. Approximately 200 families currently live in California Valley, with about 60 moving in over the past 20 years; assuming the growth rate increases, 100 to 150 more families may move to California Valley in the next 20 years. While anecdotal evidence indicates little or no change in well levels over the past 20 years, actual data on amount and trends of groundwater are lacking. BLM acknowledges a need to establish monitoring of groundwater levels, as proposed in this plan, in order to assess this potential impact.

A new solar energy facility currently proposed in California Valley has raised public concerns that such a facility may use large quantities of water and may use chemicals or chemically-treated water for cleaning and use herbicides, potentially impacting water quality and/or groundwater quantity. An ephemeral stream crosses the property proposed for the facility and drains into Soda Lake. State regulations would allow only clean, fresh water to be released from the plant; however, any outflow of fresh water reaching Soda Lake could change its unique water chemistry. Without more information on actual plans and without data for groundwater levels and trends, BLM is not able to assess the possible impacts at this time and acknowledges the need for monitoring.

The hotter, drier conditions predicted as a result of climate change in the foreseeable future may cause springs to dry or become ephemeral instead of perennial; Soda Lake to evaporate more rapidly, with the unique chemical properties of its water becoming more concentrated; and groundwater levels to drop as recharge from precipitation declines. These potential changes make the need for the proposed management actions to conserve water resources even more acute. Actions prescribing assessment and monitoring will make it possible to track these changes over time.

4.8 Impacts of RMP Related to Global Climate Change

Secretary of the Interior Order No. 3226, signed on January 19, 2001 requires all Department of the Interior agencies to evaluate climate change impacts in management planning. The order states specifically that that “Each bureau and office of the Department will consider and analyze potential climate change impacts when undertaking long-range planning exercises, when setting priorities for scientific research and investigations, when developing multi-year management plans, and/or when making major decisions regarding the potential utilization of resources under the Department’s purview.”

For the purposes of this RMP, climate change analysis includes two components: (1) impacts of climate change on the resource conditions and effectiveness of implementing RMP objectives and actions; and (2) impacts from implementing objectives and actions in the RMP alternatives on climate change.

Regarding the first component, the primary tool that BLM will use to respond to climate change in implementing RMP objectives is the use of adaptive management techniques. This analysis assumes that global climate change will make the planning area warmer and drier during the projected 20 year plan implementation period. The adaptive management component of the plan would allow for of management actions to be adjusted in response to these changing local climate conditions. The body of information and predictive models for climate change is in its infancy regarding prediction of site specific impacts to areas such as the Carrizo, and the plan assumes that knowledge will advance quickly with the current emphasis on climate research and model development. In addition, as the RMP is implemented, Monument managers would place a continued emphasis on research (see Chapter 3 – Research section). Where appropriate, studies would include components to assess the impacts of changing climate. In the event that climate change made achievement of RMP objectives themselves infeasible, the plan would need to be amended accordingly. The impact analysis regarding specific resources (such as cultural, wildlife,

vegetation) discusses the possible effects of climate change on those resources, albeit at a general level based on the current availability of information.

Regarding item 2 above, the impacts of the RMP on climate change, impacts from several aspects of RMP implementation would be infeasible to measure and any estimates would be speculative and would not meet the "reasonably foreseeable" impact standard identified under NEPA for assessing possible environmental effects. It is acknowledged that activities such as oil and gas development, motorized recreation use, and livestock grazing are all associated with emissions that may contribute to climate change. The RMP analysis of impacts from plan implementation on climate change is limited to the following acknowledgements and assumptions:

4.8.1 Oil and Gas Development

Oil and gas development and exploration would continue to occur under all alternatives, both on existing leases and potentially on private mineral estate. Management of production levels is outside of the discretionary authority of BLM and the RMP. BLM's discretion is limited to imposing reasonable restrictions on the use of federal surface and existing lease authorities to ensure that the "objects of the Proclamation" are protected from unnecessary harm or degradation. Furthermore, continuation of production from existing leases on the CPNM would not necessarily increase oil and gas consumption. Consumption of oil and gas is driven by a variety of factors including energy costs, energy efficiency, availability of other energy sources, economics, demography, weather, or climate. If the existing leasing and possible development were not to occur on the Carrizo, consumption levels would be replaced by fuel switching, imports and other domestic production that could either increase or decrease greenhouse gas emissions.

4.8.2 Recreation Management

Each alternative provides for management activities that are anticipated to attract continued visitation to the Monument for motorized and non-motorized recreation activities. This access would result in continued greenhouse gas emissions as Monument visitation increases. However, visitor use levels are based on multiple factors, including travel cost, opportunities for substitute activities and locations, demand for specific settings and benefits, and other factors. As an example, increases could be attributable to Southern California visitors accessing the Monument as a substitute for more distant destinations to reduce fuel consumption.

4.8.3 Livestock Grazing

Livestock grazing includes the production of greenhouse gas (methane) and would continue at present or reduced levels from present management under each alternative. Alternative 1 would result in the lowest levels of livestock use within the Monument. However, it is assumed that livestock grazing reductions on the Monument would be offset by increases elsewhere in the region, since production is based primarily on public demand.

4.8.4 Fire and Fuels Management

Prescribed burns and wildfire would result in the release of greenhouse gasses. However, the regrowth of vegetation would result in renewed carbon storage, and a net balance of zero emissions.

4.8.5 Monument Administration/Management

BLM would continue to convert remaining administrative facilities to alternative renewable energy sources, and improving mileage of vehicles based on national fleet management policies (outside the scope of this RMP), resulting in a net reduction of greenhouse gas emissions.

4.8.6 Vegetation Management

Continued restoration of native plant communities would improve the carbon storage capability of Monument ecosystems in all alternatives.

4.9 Impact Analysis for Geology and Paleontology

4.9.1 Assumptions

- BLM would review all proposed ground disturbing undertakings and use authorizations on public land in the Monument to ensure no inadvertent impact to significant paleontological and geological formations/features pursuant to BLM Paleontological Program Manual 8270.
- It is a standard BLM policy to implement field inventory and identification of paleontological resources within a proposed project area when ground disturbance would occur in sensitive paleontological zones or localities.
- Any ground disturbing actions proposed on public land would include an evaluation of (1) the potential for presence of important paleontological resources, (2) the potential impacts to paleontological resources, and (3) the appropriate mitigating actions to protect important paleontological resources, including project avoidance, redesign, and if necessary, data recovery.
- BLM personnel and law enforcement would continue to have an on the ground presence

4.9.2 Incomplete Information

There has not been a complete on the ground inventory of paleontological resources in the Monument, but important vertebrate and invertebrate fossil formations occur in the Temblor and Caliente Ranges.

4.9.3 Resources/Programs with No Impacts

Because of standard paleontological program policy and review procedures as well as the flexibility of potential actions, impacts to important paleontological resources and geological features are not anticipated as a result of implementing management actions for the following resources: WSA/Other Lands with Wilderness Characteristics, Visual Resources, Air Quality, Water Resources, Wildlife, Vegetation, Livestock Grazing, Lands and Realty, and Travel Management.

4.9.4 Impacts to Geology and Paleontology under the No Action Alternative

4.9.4.1 Impacts to Geology/Paleontology from Implementing the Geology/Paleontology Program

Paleontological Resource Scientific Research

The opportunity for paleontological inventory would be available for an estimated one to two paleontological studies which would have negligible to no impact on the integrity of the fossil formations or localities as these resources would be preserved. Studies would benefit our knowledge of these sensitive fossil locations to be protected as recognized in the Monument Proclamation.

San Andreas Fault/Soda Lake/Geological Formation Research

Formal research using minimal and mechanized tools pertinent to the San Andreas Fault, Soda Lake, sag ponds, clay dunes, and volcanic formations in the Monument would continue at about the same level which would be conducted in a manner that would not compromise the values of these resources. Impacts would be negligible to no impact to the integrity of these features while studies would benefit knowledge of these resources to be protected pursuant to the Monument Proclamation.

4.9.4.2 Impacts to Geology/Paleontology from Other Programs

Fire and Fuels Management

With prescribed fire and fuels management, there would be negligible to no impact to important paleontological/geological features as in most cases these resources would be identified and avoided in advance of fire operations under all alternatives.

The emergency nature of wildfire can lessen management ability and priority to protect important paleontological/geological features. Surface and subsurface disturbing impacts to these resources from wildfires are largely associated with fire suppression activities. Suppression activities have a considerable potential to damage important paleontological/ geological features through hand and bulldozer construction of fire lines, clearing for helicopter pads, fire camps and related activities. Impacts to these resources would potentially range from minor to major. However, this action is beyond the scope of this plan and would be addressed through standard protocols for emergency response and through NEPA analysis in the fire rehabilitation plan.

Recreation

The continuation of existing geology guided public tours and self-guided tours to the San Andres Fault/Wallace Creek and other points of seismic/geological interest in the Monument would have negligible to no impact to these resources.

An unspecified number of visitors to geological feature and archaeological site (C06-1) would potentially cause negligible to moderate impacts to the site, mostly due to the inadvertent movement of site components or rocks associated with the geological formation.

Minerals

For the oil and gas resource program on the CPNM Valley floor and Russell Ranch area, the installation of exploratory wells and ancillary facilities such as spur roads, tank batteries, and development wells are anticipated to have negligible to no impact on the integrity of important paleontological/geological features as in most cases these resources would be avoided. Seismic operations would have no impact on the integrity of important paleontological/geological features.

4.9.5 Impacts to Geology and Paleontology Common to All Alternatives

Impacts to important paleontological resources and geological features are not anticipated for any of the alternatives for the following resources: WSA/Other Lands with Wilderness Characteristics, Visual Resources, Air Quality, Water Resources, Wildlife, Vegetation, Livestock Grazing, Lands and Realty, Travel Management, Fire and Fuels Management, and Minerals.

4.9.5.1 Impacts to Geology/Paleontology from Implementing the Geology/Paleontology Program

The action to conduct paleontological inventory on an estimated five to 15 percent of the federal land in the Monument would be beneficial as it would identify sensitive zones and localities of vertebrate and invertebrate fossils to monitor and protect in accordance to the Monument Proclamation.

The action to conduct three to four research and volunteer partnerships associated with the San Andreas Fault, Soda Lake, sag ponds, clay dunes and other areas of geological interest in the Monument would have the same impact and benefits as the No Action Alternative except there would be more research conducted.

4.9.5.2 Impacts to Geology/Paleontology from Other Programs

Recreation

The action to interpret fossils formations/localities, unique geological landforms and features in the Caliente and Temblor ranges would be beneficial for public enrichment and would result in negligible no impact to the resources.

4.9.6 Impacts to Geology and Paleontology under Alternative 1

Impacts to important paleontological resources and geological features are not anticipated from Alternative 1 for the following resources: WSA/Other Lands with Wilderness Characteristics, Visual Resources, Air Quality, Water Resources, Wildlife, Vegetation, Livestock Grazing, Lands and Realty, and Travel Management.

4.9.6.1 Impacts to Geology/Paleontology from Implementing the Geology/Paleontology Program

Paleontological research using minimal tools at an estimated four to six fossil bearing formations in the Monument would have no negative impact on the integrity of the fossil formations or localities but it would limit accepted research field strategies to accomplish the studies in reasonable time and cost. The studies would benefit our knowledge of these sensitive fossil zones to be protected as recognized in the Monument Proclamation.

Cooperative agreements, contracts or permits to identify fossil formations and sensitive localities being impacted from soil erosion or human caused disturbances and taking corrective action to mitigate the impacts would be beneficial for preserving important resources as recognized in the Monument Proclamation.

Research using minimal tools for excavation or coring at an estimated three to five locations in the Monument such as Soda Lake, San Andreas Fault, sag ponds, clay dunes and volcanic formations would have same impacts and restrictions as paleontological research noted above.

4.9.6.2 Impacts to Geology and Paleontology from Other Programs

Fire and Fuels Management

Prescribed fire and fuels management would have the same impacts as all other alternatives.

Because there is less dozer and hand line construction under this alternative, the potential for impacts to paleontological and geological features from fire suppression activities would be slightly lower than the other alternatives.

Recreation

Development of trails, trailheads interpretive overlooks in each of the RMZs would have negligible to no impact on important paleontological and geological features as these resources would be avoided.

Closure of archaeological site (C06-1) on KCL Ranch would eliminate public visitation to this popular geological feature. The benefits to closure would be the elimination of inadvertent impacts to an important archaeological site associated with the geological formation. Some unknown number of college students, geologists, and other interested parties would lose the opportunity to visit this geological point of interest. Unauthorized access and potential impacts would level off after a couple of years, once the public is aware of its closure via of education and signage. Potential installation of signage and road closure barrier would deter site access and result in negligible to no impact to cultural and geological features.

Continued use of natural history educational displays at Wallace Creek would be beneficial to geological resources by providing education and interpretive information for public enrichment. This action would avoid impact to natural history values being interpreted.

Minerals

Impact would be the same as the No Action Alternative.

4.9.7 Impacts to Geology and Paleontology under Alternative 2 (Preferred)

Impacts to important paleontological resources and geological features are not anticipated as a result of Alternative 2 for the following resources: WSA/Other Lands with Wilderness Characteristics, Visual Resources, Air Quality, Water Resources, Wildlife, Vegetation, Livestock Grazing, Lands and Realty, and Travel Management.

4.9.7.1 Impacts to Geology/Paleontology from Implementing the Geology/Paleontology Program

The combination of using hand tools and mechanized equipment which is a recognized research strategy at two to three locations to preserve significant fossils that may be lost to erosion or unauthorized collection would have negligible to no impact on the integrity of the fossil formations or localities. The benefits are the same as Alternative 1 but the research strategy is more efficient under this alternative.

The action to pursue an estimated three to four cooperative agreements, contracts or permits to identify fossil formations, sensitive localities and condition assessment of paleontological resources being impacted by soil erosion or human caused disturbances would have similar impacts and benefits as Alternative 1. However, this alternative would identify and address more areas needing attention. Corrective actions to mitigate the impacts would be beneficial for preserving important resources as recognized in the Monument Proclamation.

Research using a combination of hand tools and mechanized equipment which is a recognized research strategy for field investigation at an estimated three to five locations in the Monument such as Soda Lake, San Andreas Fault, sag ponds, clay dunes and volcanic formations would have negligible to no impact on the integrity of the geological features. The benefits are the same as Alternative 1 but the research strategy is more efficient under this alternative.

4.9.7.2 Impacts to Geology/Paleontology from Other Programs

Fire and Fuels Management

Prescribed fire and fuels management would have the same impacts as all other alternatives. However, under this alternative, there is higher potential for impacts to important paleontological and geological features than Alternative 1 but less potential for impact than Alternative 3 regarding proposed levels of line construction associated with fire suppression activities.

Recreation

The action of having public visitation and interpretation of geological and paleontological resources at an estimated two to three additional field locations in the Monument would have negligible to no impact to these natural resources. Benefits are public education and awareness of resources for protection.

The action to continue existing geology guided public tours and self-guided road tours to San Andres Fault/Wallace Creek and other points of geological interest would have negligible to no impact to these natural resources. Benefits are same as above.

Consideration to upgrade Wallace Creek interpretive trail program would have negligible to no impact to the San Andres Fault/Wallace Creek and would improve public appreciation of Monument geology.

Although there would be an increase in the number of trail heads / staging sites, number of miles of hiking / interpretive trails to support recreational activities, the potential for impacts to important paleontological and geological features would be the same as Altenative1.

The action to secure a permit to access geological feature and archaeological site (C06-1) situated atop the basalt hill on the KCL Ranch would potentially reduce public visitation by 25 percent to the cultural and geological feature. The permit conditions and educational information would eliminate inadvertent impacts to the geological feature and archaeological site. With permit conditions, anticipated impacts would range from negligible to no impact

Minerals

Impacts would be the same as under the No Action Alternative.

4.9.8 Impacts to Geology and Paleontology under Alternative 3

Impacts to important paleontological resources and geological features are not anticipated as a result of Alternative 3 for the following resources: WSA/Other Lands with Wilderness Characteristics, Visual Resources, Air Quality, Water Resources, Wildlife, Vegetation, Livestock Grazing, Lands and Realty, and Travel Management.

4.9.8.1 Impacts to Geology/Paleontology from Implementing the Geology/Paleontology Program

Implementing paleontological research actions would have the same benefits and potential for impacts as Alternative 2.

Implementing San Andreas Fault seismic/ Soda Lake/geological formation research actions would have the same benefits and potential for impacts as Alternative 2.

4.9.8.2 Impacts to Geology/Paleontology from Other Programs

Fire and Fuels Management

Prescribed fire and fuels management would have the same impacts as all other alternatives. However, under Alternative 3, there is a slightly higher potential for impacts to important paleontological and geological features relative to Alternatives 1 and 2 regarding fire suppression activities due to the proposal to use additional line construction for control.

Recreation

The action of having public visitation and interpretation of geological and paleontological resources at the same number of locations in the Monument would have the same impacts and benefits as Alternative 2. An upgrade of the Wallace Creek interpretive trail program would have the same benefits and impacts as Alternative 2.

Although there is an increase in the number of overlooks and interpretive sites, trail heads /staging areas, and miles of hiking under this alternative, impacts to important geological and paleontological would be the same as Alternative 2.

Minerals

Impacts would be the same as the No Action Alternative.

4.9.9 Cumulative Impacts to Geology and Paleontology from Implementing the Geology and Paleontology Program

4.9.9.1 Assessment Area

The assessment area is the southern portion of the California Coast Range Physiographic Province.

4.9.9.2 Past, Present, and Reasonably Foreseeable Future Actions and Cumulative Impacts

Implementing the Geology and Paleontology Program would have positive cumulative effects on these resources. Paleontological research would supplement the database for the region encircling the Monument as no formal field research has been conducted in the confines of the Monument, although important vertebrate and invertebrate formations are known within and adjacent to the Monument.

The unique geological formations in the Monument such as the San Andreas Fault are world renowned for their importance to scientific study as well as the public. Continued investigations of the San Andreas and other landforms in the Monument would complement existing and future research being conducted along other parts of the fault by the U.S. Geological Survey and university researchers. This would have a positive cumulative effect as it would help build a better understanding of geological structures, processes, and earthquake activity.

4.10 Impact Analysis for Cultural Resources

4.10.1 Assumptions for the Analysis

- BLM would review all proposed ground disturbing undertakings and use authorizations on public land pursuant to the State Protocol Agreement among the BLM California State Director, the California and Nevada State Historic Preservation Officers (SHPOs); Section 106 of the National Historic Preservation Act (NHPA); NEPA; and the American Indian Religious Freedom Act.

- Standard BLM policy would be followed to implement field inventory and identification of cultural resource sites within a proposed project area of potential effect for all ground disturbing undertakings.
- Any actions proposed on public land would include an evaluation of (1) the potential for presence of important cultural resources, (2) the potential impacts to cultural resources where project actions may cause surface disturbance or provide access to cultural resources, and (3) the appropriate mitigating actions to protect cultural resources, including project avoidance, redesign, and if necessary, data recovery.
- Avoiding impact, whenever possible, to National Register and traditional cultural properties as a standard management practice. This could involve avoidance of sites by means of project design or redesign, fencing, capping or other protective measures.
- BLM personnel and law enforcement would continue to have an on the ground presence to monitor/protect sites from illegal and inadvertent public impacts.
- Site protection priority would be focused on National Register and traditional cultural properties.
- National Register property or site/historic property/archaeological property/cultural property/traditional cultural property are synonymous by legal definition (key word is property). Cultural properties are either eligible or listed in the National Register of Historic Places.
- For the treatment of historic properties where preservation, rehabilitation, restoration, and reconstruction are involved, treatment would be pursuant to Secretary of the Interior Standards (36 CFR Part 68).

4.10.2 Incomplete Information

BLM has completed close to 10 percent cultural resource field inventory of public land in the Monument, which is relatively higher than other public land units. However, additional cultural inventory is needed to provide a comprehensive understanding of the types of cultural resources (prehistoric and historic) and the levels of cultural sensitivity within the upland and valley landscape zones.

Over 90 historic properties in the Monument have been determined eligible, listed, or nominated for inclusion to the National Register of Historic Places. Other cultural resources have not yet been evaluated for eligibility to the National Register.

With the exception of one excavation on the Washburn Ranch, there have been no other documented formal archaeological excavations carried out in the Monument.

4.10.3 Programs with No Effects on Cultural Resources

Because of standard cultural resource program review procedures and regulatory requirements as noted above under assumptions as well as the flexibility of potential actions, impacts to cultural resources are not anticipated as a result of implementing management actions under any alternatives for the following programs: WSA/Other Lands with Wilderness Characteristics, Visual Resources, Air Quality, Water Resources, and Geology/Paleontology.

4.10.4 Impacts to Cultural Resources under the No Action Alternative

4.10.4.1 Impacts to Cultural Resources from Implementing Cultural Resources Program

Native American access to Painted Rock would continue. No conservation by intervention would take place to reduce the rate of natural deterioration to rock art panels and individual motifs affected by natural

processes such as wind and water erosion. Lack of such conservation would potentially result in moderate to major impact to rock art.

Stabilization and rehabilitation of built facilities would continue at El Saucito Ranch, Washburn Ranch, and Selby Ranch.

There would be continued emphasis on the removal and relocation of historic machinery and equipment under this alternative to centralized locations such as the Traver Ranch, El Saucito Ranch, and Goodwin Education Center. This would preserve the equipment, but it would be removed from its historic context. Buildings or structures would continue to be removed if toppled or compromised to the point that physical integrity no longer exists, and the facility is a safety hazard. All structures would be documented before removal.

4.10.4.2 Impacts to Cultural Resources from Other Programs

Wildlife

Maintaining grazing in the vernal pool habitat and the introduction of pronghorn and elk would have the potential for negligible to no impact on cultural resources. Native Americans would look favorably upon the introduction of native animals associated with the traditional use of lands in the CPNM.

The implementation of prescribed burns, grass mowing, and use of herbicides to eradicate nonnative plants and to improve habitat would have no impact to cultural resources as standard cultural procedures would be implemented to ensure no impact to cultural resources. The use of herbicides would be the same as Alternative 3 with respect to Native Americans.

There would be potential negligible to moderate impact to cultural resources from livestock grazing to promote the expansion of listed species. However, standard cultural procedures would be implemented and the supplemental procedures for livestock grazing in the BLM/SHPO State Protocol would be applied to monitor and identify impacts. If impacts are identified, appropriate mitigation measures would be applied to protect cultural properties.

The construction of fence exclosures and other infrastructure would have no impact on cultural resources as standard cultural procedures and site avoidance measures would be applicable.

Vegetation

Procedures and the potential for impacts are the same as those discussed above regarding vegetation in the wildlife section.

Fire and Fuels Management

The intensity of impacts (negligible to major) to cultural properties from fire suppression would be the same as the other alternatives. However, the potential for impacts to the number of cultural properties that would be affected would be similar to alternative 2.

Livestock Grazing

Under this alternative grazing in the Monument would continue at similar to current levels. Thus, the potential for impact to cultural properties would continue and the impact intensity would range from negligible to moderate.

The Elk Canyon, Brumley, West Painted Rock, Selby, Tripod, Sulphur Spring, and Sand Canyon would be available for grazing. If grazed, there is the potential for negligible to moderate impacts to cultural properties in these pastures which are located in portions of the National Register District and National Historic Landmark (nominated area). The level and intensity of impact would be similar to that reflected in the above paragraph. As a preventative measure, sensitive cultural zones in the pastures would be excluded from grazing.

The Hill, Back Canyon, Goat Spring, KCL House, and Abbott Canyon pastures would be available for grazing. However, if grazed the potential and intensity of impacts to cultural properties would be the same as the previous paragraph for cultural properties and portions of the area nominated for inclusion to the National Historic Landmark.

The action of having grazing unavailable in the Painted Rock and Widow Women pastures would protect cultural properties including a core area of the National Register District.

The construction of a fence south of Painted Rock pasture as a protection measure would exclude cattle from encroaching 22 cultural properties within and adjacent to the National Register District, thereby eliminating the potential for impact to these cultural properties.

Fences within the Painted Rock pasture that are in a poor state of condition would potentially be removed if the historic feature does not meet National Register eligibility, thus resulting in no impact to cultural properties. If fence is eligible, appropriate mitigation would be implemented such as preservation in place or removal after detail recordation.

Continued grazing in the Old Adobe pasture north of Abbott Canyon would potentially result in negligible to moderate impact to sensitive cultural properties nominated for listing in the National Historic Landmark. However, mitigation measures to avoid two cultural properties would be implemented to ensure no impacts from grazing.

The action to build, maintain, modify, or remove fences, water systems, and roads would potentially impact cultural resources. However, projects where cultural properties are located would be safely avoided by means of project design, redesign, or capping to protect sites within existing roads or otherwise. Therefore, no impacts to cultural resources are anticipated under this action.

Recreation

Painted Rock (current visitor average of 3,700 per year) would be open to guided tours on a routine schedule to include an estimated 18 guided tours per year (18 tours x 25 people per tour on average), totaling to 450 visitors. Additionally, self-guided access and group tours with less than 20 visitors without a permit would continue (approximately 7.5 months/year), totaling to close to 3250 visitors. The overall visitor use average of 3,700 per year would increase gradually over the life of the RMP taking into account that there are peak years and lower visitation years in the Monument. The self-guided access to Painted Rock without a permit as well as the total number of visitors to the site annually increases the potential for negligible to minor impacts to the site. The lack of a permit system foregoes the opportunity to more directly educate the visitors, inform them of the fragile nature of rock art, and provide them the rules for preservation ethics when visiting the site. Information at the Interpretive Trail and the Goodwin Education Center addresses the rules and preservation ethics when visiting site but direct contact through a permit or guided access is much more effective.

The continued closure of the Painted Rock pasture to horses, dogs, non-motorized bikes, cache type activities, and discharge of firearms would minimize potential impacts to this sensitive area.

Resource information displays would be provided to educate visitors about Painted Rock, Wallace Creek, and El Saucito Ranch and Selby Ranch, resulting in an approved appreciation of these resources.

An unspecified number of visitors to archaeological site (C06-1) would potentially cause negligible to moderate impacts to the site, mostly due to the inadvertent movement of site components or rocks associated with the geological formation.

Minerals

Oil and Gas CPNM Valley Floor (Private Mineral Estate)

The installation of exploratory wells and ancillary facilities such as spur roads, tank batteries, and development wells are anticipated to disturb 30 acres of land in the valley floor which would be processed in a manner to avoid impact to cultural and traditional cultural properties through implementation of the BLM/SHPO State Protocol and compliance with Section 106 of the NHPA.

It is anticipated that seismic operations (115 miles) on the Carrizo Plain would be implemented primarily by means of drilled shot holes/explosives rather than use of the vibroseis truck to minimize ground surface disturbance. As with past seismic operations in the region, cultural resources would be safely avoided by moving source and receiver locations as necessary in a lateral direction away from cultural sites and infrequently by skipping over sensitive cultural areas where a site(s) may encompass a large amount of acreage making it difficult to laterally avoid site impact.

Oil and Gas CPNM-Russell Ranch Area (Existing Leases)

The installation of in-field development wells, exploratory wells and ancillary facilities such as spur roads and tank batteries would disturb an anticipated 6.5 acres of land in the Russell Ranch Unit area which would be processed in a manner to avoid impact to cultural and traditional cultural properties through implementation of the BLM/SHPO State Protocol and compliance with Section 106 of the NHPA.

It is anticipated that seismic operations (50 miles) in the Russell Ranch Unit area would be implemented primarily by means of drilled shot holes/explosives rather than using the vibroseis truck to minimize ground surface disturbance. Cultural resources would be safely avoided by moving source and receiver locations as necessary in a lateral direction away from cultural sites and infrequently by skipping over sensitive cultural areas where a site(s) may encompass a large amount of acreage.

Lands and Realty

Lands within the Monument would continue to be acquired as opportunities arise, resulting in positive benefits to the cultural resource program.

Authorizing new rights-of-way and modification of to a couple of permits to bring them in accordance with VRM classification would be processed in a manner to avoid impact with cultural resources and traditional cultural properties through implementation of the BLM/SHPO State Protocol.

4.10.5 Impacts to Cultural Resources from Actions Common to All Action Alternatives

Because of standard cultural resource program review procedures and regulatory requirements as noted above under assumptions as well as the flexibility of potential actions, impacts to cultural resources are not anticipated as a result of implementing management actions for WSA/Other Lands with Wilderness Characteristics, Visual Resources, Air Quality, Water Resources, and Geology/Paleontology.

4.10.5.1 Impacts to Cultural Resources from Implementing the Cultural Resources Program

With the allocation of 89 cultural properties for purposes of Conservation for Future Use, these sites would be protected from other uses such as public or experimental use. This allocation would result in no impacts to cultural resources.

Painted Rock would be allocated to Traditional and Public Use management categories thereby providing a balance between site protection and managed public visitation. Authorized public use of the site and protective measures would be carried out in manner that does not impact the integrity of this National Register property. Any potential protective barriers or delineated trails on site would be confined to disturbed soils within the alcove and the immediate area encircling the rock. There are minimal impacts from foot traffic by visitors to the site which tends to loosen the soils. However, subject traffic is confined within the site's interior/exterior trails that have been subjected in years past to livestock use (including corralling), and agricultural disking while the site was in private ownership. The resulting soil loosening by site visitors and the sporadic occurrence of surface sheet erosion results in minimal soil movement of previously disturbed soils. Native vegetation cover or trail protection such as geo-textile cloth could be used to stabilize soils.

The El Saucito Ranch, Washburn Ranch, and Selby Cow Camp would be allocated to the Public Use and Scientific Use categories. These three sites are eligible National Register properties and have received some level of stabilization or rehabilitation for preservation and public interpretive use. It is anticipated that public use and interpretive information would be confined to the ranch compound or adjacent ancillary facility. Potential scientific use of these three sites would consist of projects such as hand excavation of several units at each site. It is estimated that between 40 and 90 square feet would potentially be excavated at each of these sites over the life of this plan. The resulting impacts to cultural resources would be positive and effects would be resolved by the recovery of important information about the historic life-ways on the Carrizo Plain.

The remaining 86 cultural resource sites in the Monument and those that could be discovered during the life of the plan would be allocated to the appropriate use categories once sites have been formally evaluated for their potential National Register eligibility in accordance to the State Protocol between BLM/SHPO and after Native American consultation is implemented pursuant to Federal regulations.

The development of a protocol agreement in the Monument with the Native Americans to implement the statewide policy regarding traditional plant gathering and cultural practices would have no impact on cultural properties. However, the recovery and use of native plants used traditionally for domestic, medicinal and for ceremonial rites would be beneficial to the indigenous people and the trust responsibilities between the native people and BLM.

Implementation of intensive and mixed sample cultural resource inventories (no surface disturbance) on an additional 20 percent of 250,000 acres of the federal, state, and private land in the Monument would have no ground disturbing impacts on cultural properties. However, the action would be beneficial to cultural resources by identifying the location and condition of prehistoric and historic resources to be managed and protected pursuant to the Monument Proclamation and the BLM/SHPO State Protocol.

The development and implementation of a Cultural Resource Project Plan for restoring, rehabilitating, stabilizing, or reconstructing National Register eligible sites would be beneficial to the preservation of cultural properties as recognized in the Monument Proclamation and as part of the BLM/SHPO Historic Preservation Program.

The development and use of procedural agreements with Native Americans would be an on-going throughout the life of the plan and would consist of the actions such as:

1) Meetings with tribal governments, Native American Advisory Committee, and other Native people with cultural ties to the Monument would be an open and on-going process to enhance trust responsibilities.
2) Excavations and data collection would be implemented in fashion to avoid impacts with sites associated with the Native American Graves Protection and Repatriation Act (for example, burials and sacred objects).
3) Monitoring of archaeological sites of Native American origin, now totaling to 132 sites and others that would be discovered during the life of the plan, would be available for Native American monitoring pursuant to coordination between BLM and the Native Americans having cultural ties to the CPNM. The site stewardship effort would track the condition of sites being affected from natural and human causes for purposes of site preservation.

Cultural permits issued for research investigations of rock art where photography is proposed would be approved on a case by case basis resulting in no impacts to cultural resources and Native American values pursuant to the State Protocol between BLM/SHPO and Native American consultation.

4.10.5.2 Impacts to Cultural Resources from Other Programs

Wildlife

Maintaining two human-made historic structures for use by bats would have no impact to cultural properties as both sites are ineligible for National Register inclusion. Erecting two new bat roost structures as well as fencing and signage for the protection of the sphinx moth would have no impact on cultural resources as the standard cultural procedures and avoidance of cultural properties would be applicable.

Construction of two condor feeding station, fencing of riparian areas, and trails and pullouts at Soda Lake would have no impact on cultural resources as the procedures and potential for impact would be the same as the above paragraph regarding site avoidance.

Research and inventory of three to five large scale wildlife projects would result in no impact to cultural resources as research actions would avoid impacts to cultural properties.

Vegetation

The projected 500 acres to be fenced over the life of the plan would result in no impact to cultural resources as sites can easily be avoided through project design or realignment. Procedures in the BLM/SHPO State Protocol and compliance with Section 106 of the NHPA would be implemented in advance to ensure cultural properties are safely avoided.

The planting of rare plant seeds on 100 acres ten times over the life of the plan as a likely part of other restoration efforts on previously cultivated lands would not impact cultural resources as sites would be

avoided. However, seeding activities requiring earth disturbance on prehistoric resources previously cultivated would result in negligible to minor impact to an already disturbed site from past years of disking. In such case, the project would not impact the qualities that make the site National Register eligible. Standard cultural procedures and Section 106 of the NHPA would be applicable to resolve potential effects to the site.

The eradication of invasive nonnative plants on historic sites such as the tree of heaven would potentially occur at 25 percent of the 41 recorded historic sites in the Monument which would consist of approximately 10 sites. With regard to the eight multi-component sites consisting of historic and prehistoric elements, the eradication of plants would likely occur at one or two sites at most over the life of the plan. This action would be implemented pursuant to federal regulations and Native American consultation in a manner that would not impact the integrity of the historic landscape by introducing a combination of acceptable non-invasive nonnative plants and/or native plants, especially where sites of Native American origin are present on an historic site.

Fire and Fuels Management

The fire and fuels management program would have no anticipated impact to cultural resources properties, as the standard cultural resource procedures and site avoidance measures would be identified and employed in advance of fire operations under all alternatives.

The emergency nature of wildfire can lessen management ability and priority to protect cultural resources. Surface and subsurface disturbing impacts on cultural resources from wildfires are largely associated with fire suppression activities. Suppression activities have a considerable potential to damage prehistoric and historic sites through hand and bulldozer construction of fire lines, clearing for helicopter pads, fire camps and related activities. Fire camps and staging areas in or near known or unidentified prehistoric or historic sites may be subject to illegal collection of artifacts and displacement of cultural features. The use of fire retardant would have impacts on rock art images painted on the surface of outcroppings. For fire suppression activities, impacts to cultural properties would potentially range from minor to major. Built historic buildings and structures would potentially be impacted if not destroyed by fire burning over the facility.

The intensity of impacts to cultural properties from fire suppression would be the same for all alternatives. However, the potential for impacts to the number of cultural properties that would be affected would potentially increase under each alternative as there would be more miles of dozer and hand line construction, potentially more use of fire retardant, and an increase in the number of acres involved.

Livestock Grazing

The dispersed nature of livestock grazing creates difficulties in identifying areas of potential disturbance due to livestock. Locations where livestock congregate or trail across cultural resources, impacts could potentially occur by the displacement of artifacts and features as well as mixing of site deposits and disruption of context. Cattle congregating and rubbing could potentially damage standing historic structures and accelerate exfoliation of rock art panels. Livestock trampling or congregating at water sources and salt licks could denude vegetation cover and increase compaction, creating potentially indirect impacts on cultural resources by accelerating erosion and exposing artifacts to illegal surface collection and feature displacement. These impacts would potentially range from negligible to moderate and would be localized to individual sites. Mitigation through appropriate treatment such as soil stabilization or fencing to exclude cattle from sensitive areas would be applied as part of BLM/SHPO Supplemental Procedures for Grazing Permits/Leases.

Based on past and on-going inventory and monitoring of cultural resources in the Monument, it is anticipated under all alternatives there would be a range from negligible to moderate impacts to cultural resources in areas that are available to grazing.

The adjustment of boundary fences, modification of grazing authorizations and allotments boundaries are anticipated to have negligible to no impact to cultural resources. Fence adjustments would avoid impact with cultural properties pursuant to standard cultural procedures.

Recreation

The implementation of directional signs at major road intersections would not impact cultural properties as the standard cultural procedures, including advance field inventory and identification of eligible cultural properties, would be determined and avoided. Installation of signs within the Primitive zone would follow the same cultural process as noted above, thereby resulting in no impact to cultural properties. The development of potable water system at the Goodwin Education Center, Selby Campground, and KCL Campground would result in negligible to no impact to cultural properties. For KCL, this would involve project design and possibly realignment of the water line to avoid impact to cultural properties in the general vicinity.

The retrofit of facilities to full accessibility standards when historic buildings may be involved, the Secretary of the Interior Standards for rehabilitation and adaptive reuse of buildings would be applicable to avoid or resolve impacts.

Expansion of the visitor center in its existing location would have no impact on cultural properties.

The Traver Ranch and KCL Ranch would be allocated to Public Use. Both sites are ineligible for the National Register and therefore any additional development of the interpretive facilities at these two sites would have no impact on historic properties. However, the site is beneficial to cultural as it provides educational awareness of historic resources in the Monument. Any additional interpretive development at these two sites would be within the footprint of the ranch compound.

Implementation of restricted access to El Saucito Ranch interpretive and educational trail would be beneficial for the short and long term preservation of the historic ranch property. Use and maintenance of the access would have no impact on cultural resources.

Activities associated with inadvertent disturbance by recreational visitors, unauthorized OHV travel, vandalism, and illegal artifact collection would result in a loss of cultural resource information. As most public use activities are dispersed on the landscape and do not require permitting, discovered impacts would be mitigated on a case-by-case basis as they are discovered.

Travel Management

The primary cause of potential impact to cultural properties under travel management is ground disturbance activities with heavy equipment to maintain existing roads or the rehabilitation of roads to be closed. The intensity of potential impacts to cultural properties would range from minor to major should road grading or rehabilitation cut across a cultural property. Transportation use or driving over an extant road that crosses a cultural property could cause impacts ranging from negligible to no impact. However, secondary impacts from road erosion could cause impacts to cultural properties ranging from minor to major. With implementation of the standard cultural procedures to inventory, identity and avoid cultural properties, negligible to no impact to cultural properties are anticipated.

Trail maintenance where ground disturbance takes place would potentially impact cultural properties should the trail cross a site. Secondary impacts from trails to cultural properties would potentially occur from soil erosion or the illegal collection of artifacts or displacement of cultural features where a site is within or adjacent to the trail. However, with implementation of standard cultural procedures to avoid sites, negligible to no impacts are anticipated.

Under all alternatives, where cultural properties are known to be located on existing roads, subject segments of roads would be closed under this plan or mitigated to eliminate the potential for impact.

Under all alternatives, the level of road maintenance from Levels 1 to 4 would have varying potential of impacts to cultural properties. With Level 1 and 2, there would be minimal to no potential impacts to cultural properties. Level 3 maintenance (road grading) would have the greatest potential to impact cultural properties in the Monument as that is where most of the roads requiring grading on BLM are located. Is would be unlikely that there would be impact to cultural properties where Level 4 grading occurs as those primary roads such as Soda Lake Road are within a zone in the valley floor where the probability is low for the occurrence of cultural properties. However, under all alternatives, negligible to no impacts to cultural properties are anticipated as standard cultural procedures to inventory and avoid cultural resources would be applicable.

The potential for negligible to minor impacts to sites from existing administrative road use to sites in the Rock Art Historic District such as Saucito Rocks, Sulphur Spring, and Abbott Canyon or other National Register properties is estimated between one to five sites receiving some level of disturbance. It is estimated that approximately one mile of site avoidance would be employed by one or more mitigation measures such as road realignment, closure, capping, fencing, or some other form of protection. These mitigation actions would avoid impacts with cultural resources and provide long term site preservation benefits.

Implementation of emergency closure or access restrictions to National Register properties such as Painted Rock, El Saucito Ranch, and site C06-1 on the KCL Ranch would be beneficial for site protection. There would be no impacts to cultural resources as closures would be implemented off-site.

Minerals

Impacts would the same as under the No Action Alternative

Lands and Realty

The prohibition on commercial photography of the rock art images would deter commercial exploitation of the rock art images, protect traditional Native American values associated with the images, and deter commercial tourism to the site which would reduce the risk of site impacts (negligible to moderate) by not attracting more public visitation to rock art sites.

The acquisition of private or state lands would provide regulatory protection to cultural resources as well as further the protection of natural and cultural resources recognized in the Monument Proclamation.

4.10.6 Impacts to Cultural Resources from Alternative 1

Because of standard cultural resource program review procedures and regulatory requirements as noted above under assumptions, as well as the flexibility of potential actions, impacts to cultural resources are not anticipated as a result of implementing management actions for WSA/Other Lands with Wilderness Characteristics, Visual Resources, Air Quality, Water Resources, and Geology/Paleontology.

4.10.6.1 Impacts to Cultural Resources from Implementing Cultural Resources Program

Stabilizing, rehabilitating or restoring historic sites would preserve sites at different levels of intensity. Some sites would be managed in a state of arrested decay in-place resulting in the potential loss of structures over the next 30-50 years. Other sites would be rehabilitated for adaptive reuse or restored to its original likeness in building materials and construction methods. It is estimated that three to four historic sites would be treated for the benefit of cultural property preservation as well as public education and administrative uses.

Over the life of the plan, it is estimated that eight to ten rock art sites would be stabilized without treatment intervention of the rock art elements which would be beneficial for long preservation of these sites being affected by soil/water erosion and shrub abrasion effects on pictographs or rock art panels.

Allowing natural deterioration of rock art panels and motifs by not intervening with prudent conservation measures would within the lifetime of this plan lead to the potential loss of part or entire rock art panels, or individual motifs to approximately 80 percent of the rock art sites in the Monument (17 sites). Impacts of no intervention of conservation measures to preserve rock art would potentially lead to (moderate to major) partial loss of 17 of the 21 National Register rock art sites in the Monument.

The three to four National Register eligible ranching and farming facilities that would be stabilized, rehabilitated for adaptive reuse, or restored would be beneficial to cultural resources as representative examples of significant historic properties as recognized in the Monument Proclamation and useful for public education and administrative uses.

The action to remove historic machinery and equipment scattered within the Monument at an estimated 12 locations would result in potential negligible to moderate impacts to one to three historic properties which would require mitigation to resolve effects.

The action to potentially raze and remove an estimated four to five ranching and farming facilities from the Carrizo Plain and the Primitive RMZ would result in no impact to historic resources as these sites do not meet National Register eligibility.

4.10.6.2 Impacts to Cultural Resources from Other Programs

Wildlife

Fencing that may be applied or relocated would require standard practice of cultural resource inventory and record search in advance of project implementation. It is anticipated that fencing projects would be implemented in a manner to avoid cultural resources through project design or redesign. Action would be processed through implementation of the BLM/SHPO State Protocol and compliance with Section 106 of the NHPA to avoid potential impact to cultural and traditional cultural properties.

Removal of all artificial water features and livestock fences would potentially result in negligible to moderate impact to historic resources which meet National Register eligibility and therefore would require either site avoidance or mitigation to resolve impacts to an historic property. Otherwise if the site is National Register ineligible there would be no impact to historic properties.

Protecting nesting raptors at Painted Rock and Selby Rocks would be favorable for preserving species that are important in Native American cultural and traditional ways of life. However, the continued raptor nesting at these archaeological sites would potentially impact pictograph panels and individual motifs

resulting from bird excretions over the painted images. Impacts would range from negligible to moderate. Conservation measures could be implemented to protect the images from bird excretions pursuant to regulatory consultation and compliance.

Removal of trees and human built structures would result in potential impacts to National Register historic properties and associated landscapes unless resources are avoided or mitigated to resolve effects. Ineligible historic sites would result in no impact to historic properties.

Removal of non-historic guzzlers would result in no impact to historic properties. If a guzzler is historic (at least 50 years in age) there is a potential for impact to eligible properties. However, it is probable that these features would not meet National Register eligibility. If eligible property, it is most likely that it would be preserved in-place.

Vegetation

It is anticipated that the objective to control nonnative plants on ten 100 acre areas over the life of the plan would not impact National Register properties as the standard cultural procedures and site avoidance measures would be applicable.

Fire and Fuels Management

The intensity of impacts to cultural properties from fire suppression would be the same as the other alternatives. However, the potential for impacts to the number of cultural properties that would be affected would potentially be less under this alternative relative to Alternatives 2 and 3.

Livestock Grazing

With the cancellation of grazing authorizations and the designation of almost all Monument acreage as unavailable to grazing, potential impact to cultural and traditional cultural properties from grazing would be eliminated. Continued use of the grazing allotments along the Monument boundary would result in negligible to minor since the number of cultural resources sites found on these allotments would be low relative to other areas dropped from grazing.

The action to remove fences, gates, cattle guards, corrals, water pipelines, water tanks, and troughs would potentially impact historic properties. However, standard cultural procedures and compliance with Section 106 of the NHPA would allow for the avoidance and preservation of sites eligible for the National Register. Otherwise, mitigation such as data recovery or detail site recordation would be appropriate. It is anticipated that the majority of these built features would not be eligible as most have been upgraded over the years causing a loss of physical integrity. Hence, there would no impact to historic properties in most cases.

It is anticipated that the actions to maintain perimeter fences and to construct new fences to separate BLM lands from private land to prevent grazing on BLM lands would result in no impact to cultural properties as standard cultural procedures would be applicable and cultural properties would be avoided.

Recreation

Developments of 5-35 miles of trails and use of extant roads in the Primitive Zone is anticipated to have negligible to no impacts on cultural properties as sites would be avoided by project design or realignment to avoid impact to cultural properties or if necessary cultural resources would be capped with a protective cover such as soil to avoid impact.

An increase in the number of overlooks and interpretive sites by three to five within the Backcountry Zone would result in no impact to cultural properties as sites would be avoided by design or redesign. Where cultural resources might be interpreted, mitigation measures would be applied to ensure negligible to no disturbance of cultural properties.

The development of three to eight trail heads and staging areas in the Backcountry to support recreational activities would be selected to avoid impact to cultural properties.

Development of three to five miles of hiking / interpretive trails in the Backcountry would be selected at areas to avoid impact to cultural properties. Where cultural resources are being interpreted, mitigation measures would be applied to ensure negligible to no disturbance of cultural properties.

An increase in the number of overlooks and interpretive sites by three to eight sites within the Frontcountry zone is anticipated to have no impact to cultural resources as standard cultural procedures and avoidance measures would be applicable.

Development of one to three trail heads / staging sites in the Frontcountry to support recreational activities would result in no impact to cultural properties.

Development of one to five miles of hiking / interpretive trails in the Frontcountry would be subject to the same cultural procedures and potential for impact as discussed above. Where cultural resources are being interpreted, mitigation measures would be applied to ensure negligible to no disturbance of cultural properties.

Painted Rock would be closed to public access. Unauthorized access could increase over present levels and relative to the other alternatives as the site is generally easy to access from existing roads and "legitimate" users would not be present (which usually is a deterrent to unauthorized users). Site monitoring, patrol, and public education would serve to deter illegal activities that would potentially range from minor to moderate.

Closure of Painted Rock pasture to horses, dogs, non-motorized bikes, cache type activities, and discharge of firearms would reduce the potential of impact to 15 prehistoric sites in the National Register District. The potential for these unauthorized activities would be limited and impacts would likely be minor as deterred through site monitoring, ranger patrol and public education.

Closure of archaeological site (C06-1) on KCL Ranch would eliminate public visitation to this popular geological feature. The benefits to closure would be the elimination of inadvertent impacts to an important archaeological site associated with the geological formation. Some unknown number of college students, geologists and other interested parties would lose the opportunity to visit this geological point of interest. Unauthorized access and potential impacts would level off after a couple of years, once the public is aware of its closure via of education and signage. Potential installation of signage and road closure barrier would deter site access and result in no impact to cultural resources.

Development of cultural and natural history interpretive and education awareness information at approximately eight additional sites at field locations on-site or off-site locations would result in less than one-half acre of land disturbance. This action would avoid impact to all cultural and natural history values being interpreted. Benefits would be realized for the long term protection of cultural and natural history values through public education and awareness. Maintaining or enhancing the Goodwin Education Center or replacing it with a new facility would result in no impact to cultural or natural history values.

Continued use of cultural resource and natural history educational displays at locations such as Painted Rock, Wallace Creek, El Saucito Ranch, and Selby Ranch would be beneficial to cultural and geological resources by providing education and interpretive information for public enrichment. This action would avoid impact to all cultural and natural history values being interpreted.

Lands and Realty

The acquisition of private land surface would be beneficial for cultural resources as cultural sites would likely be located on the parcels. Acquisition of private mineral estate would afford BLM a better opportunity to protect and manage cultural resources on the subject parcels associated with exploration and extraction of fluid minerals. As public land, Federal laws would be applicable for protection of cultural resources. No impact to cultural properties under this action.

There would be no impact to cultural resources with the removal of two permitted sites when they expire.

4.10.7 Impacts to Cultural Resources from Alternative 2

Because of standard cultural resource program review procedures and regulatory requirements as noted above under assumptions as well as the flexibility of potential actions, impacts to cultural resources are not anticipated as a result of implementing management actions for WSA/Other Lands with Wilderness Characteristics, Visual Resources, Air Quality, Water Resources, and Geology/Paleontology.

4.10.7.1 Impacts to Cultural Resources from Implementing the Cultural Resources Program

It is estimated that, over the life of the plan, 21 recorded rock art sites and yet undiscovered rock art sites would be subject to either protective and or conservation treatment as appropriate on a case by case bases. Conservation and protective measures implemented would avoid site impacts and preserve Native American values associated with specific sites.

The reduction in natural and potential human disturbance to rock art sites by implementing measures such as dust abatement, installation of physical barriers, boardwalks, interpretive panels and other appropriate preservation measures to manage public access to sites would be beneficial for the long term preservation of these fragile rock art sites. Actions would be implemented in a manner that would not impact site integrity and Native American values associated with specific sites.

It is estimated that Native American access to Painted Rock would likely increase over the life of the plan to approximately 75 to 100 visitors per year which would result in no impacts to archaeological resources. It would be beneficial to the Native Americans as they would continue their traditional and cultural practices and ceremonial rites at the site.

Over the life of the plan, it is estimated that at least six locations where historic machinery and equipment are scattered in the Monument would be subject to removal from the landscape, especially targeting removal of items posing a safety hazard. It is anticipated that none of the six locations targeted for clean up would have impacts on National Register properties. At least six additional field locations would remain in place for public visitation and educational awareness. Less than one-half acre in total would be used to minimize the footprint for field interpretation and to avoid impact to cultural resources.

It is estimated that machinery and equipment from approximately four to six locations in the Monument would be relocated to existing facilities such the Traver Ranch and the Goodwin Education Center. This action would have no impact to cultural properties but would be beneficial for public interpretation.

It is estimated that one to three ranching and farming facilities would be razed and removed from the Carrizo Plain and areas within the Primitive RMZ. For the sites that do not meet National Register eligibility, there removal action would result in no impact to cultural properties.

It is estimated that four to six National Register eligible ranching and farming facilities would be stabilized, rehabilitated, or restored for public education, interpretation and or administrative adaptive reuse such as El Saucito, Washburn and Selby ranches. This action would be beneficial for cultural resources as representative examples of significant historic properties recognized in the Monument Proclamation and useful for public educational and administrative uses. Thus, this action would be accomplished in a manner that results in no impact to eligible cultural properties by meeting the Secretary of the Interior Standards for the Treatment of Historic Properties.

It is estimated that two to three historic buildings or structures ineligible for inclusion to the National Register would be saved and used for public education such as the Traver Ranch and KCL Ranch shed. This action would have no impact on National Register properties but beneficial for public interpretation.

4.10.7.2 Impacts to Cultural Resources from Other Programs

Wildlife

It is highly unlikely that cultural resources would be impacted in the non-core threatened and endangered species areas from the limited amount of prescribed burning, while dispersed livestock grazing 2 years out of 20 may have negligible to no impact to cultural resources. However, prescribed burning and grazing would be subject to cultural inventory and monitoring to reduce the potential for inadvertent impacts to cultural resources pursuant to the BLM/SHPO Protocol and livestock supplemental procedures.

Prescribed burns under the Pronghorn Objective and Nesting Site Habitat Objective would result in the same standard procedures and potential for impacts as Alternative 1 but to a lesser degree as a result of less acreage to be burned.

The modification of 60 miles of fencing and the removal or relocation of 32 miles of fencing would require the same standard cultural procedures as Alternative 1 but the potential for negligible to no impacts to cultural properties would be less but similar to Alternative 1.

With mowing of grass and installation of signs along Soda Lake Road edge, no impacts to cultural resources would be anticipated. Standard cultural procedures would be implemented.

Introduction of the tule elk and pronghorn would result in no impact to cultural resources. The Native Americans would consider the action beneficial to the herds that are native to the region and the association of these species with their traditional culture.

Removal of extant fences and relocation of fences back from Soda Lake Road under the Tule Elk Objective would follow the same standard cultural procedures and potential for impacts as Alternative 1.

Restricting public access to raptor nesting sites at Painted Rock, Selby Rocks, and other rock outcrops would result in no impact to cultural properties but beneficial for the added protection to cultural sites. Restricting public access atop Painted Rock would be respectful to Native American religious values associated with the site.

It is unlikely that cultural resources would be impacted by construction of five new wildlife guzzlers as such ground disturbing projects would be subject to cultural inventory and record search to ensure no

impacts occur to cultural resources pursuant to the BLM/SHPO State Protocol and in compliance with Section 106 of the NHPA. Projects would be designed or redesigned to avoid impacts to cultural resources.

Control of feral pigs by traps or other methods such as 10 acres of fencing in the vicinity of springs over the life of the plan would be beneficial to cultural resources as feral pigs have been known to disturb sites in the Monument by their extensive earth rooting activities. New fencing would avoid cultural resources and thus no impact to cultural properties.

Possible use of insecticides to remove nonnative honey bees that may exist at Painted Rock would be beneficial for the protection of rock art where it is being impacted by honey bees at the site. Native Americans would likely prefer the eradication of the bees at the site by means other than poison.

For the Upland Game Bird Objective, the projected acreage of prescribed burns is relatively low and therefore no anticipated impact to cultural resources would occur as standard cultural procedures would be implemented pursuant to the BLM/SHPO State Protocol.

Vegetation

The restoration of 200 to 500 acres per year of native plants by seeding, pretreatment burning and possibly herbicides would in most cases not impact cultural resources as sites would be avoided. However, seeding activities requiring earth disturbance on prehistoric resources previously cultivated would have the same impact and implementing procedures under all alternatives, except the potential for negligible to minor impact would be greater under this alternative as more acreage would be treated. The use of herbicides would result in no impact to cultural properties but over spray of herbicides on native plants could have potential impact on Native American traditional plant gatherers where plants are used for basket weaving. Standard cultural procedures would be applicable.

The prescribed burning of 200 to 1,000 per year to promote native species would not impact cultural resources as result of site avoidance and with implementation of the standard cultural procedures.

The restoration of 1 to 100 acres over the life of the plan to improve the natural water flows across the landscape is anticipated to have no impact on cultural resources as cultural properties would be safely avoided.

The one to five miles of fencing to be constructed to protect oak trees would be designed and if necessary realigned to avoid disturbance of cultural resource properties.

The 1 to 10 acres of oak understory habitat restored over the life of the plan would potentially impact cultural properties. However, through implementation of standard cultural procedures and inventory to identify sites, cultural properties would be avoided resulting in no impact to sites.

The 10-100 acres of crust restoration over the life of the plan by means of burning, inoculation with crust biota and possibly herbicides would not impact cultural properties due to project design to avoid National Register eligible sites.

Nonnative weed control of 10 to 100 acres per year by methods such as pulling, mowing, burning, and use of herbicides would have no impact to cultural properties as these sites would be safely avoided.

In some instances where nonnative plants would be removed from historic and prehistoric properties, there would be temporary impacts. The cutting or removal of nonnative trees from a historic property

would range from minor to moderate visual impact to the historic landscape on the short term. To mitigate impacts by the removal of nonnative plants such as the tree of heaven, consideration would be given to replace the tree with an acceptable native tree or non-invasive nonnative plant to restore the historic landscape, pursuant to standard cultural procedures and Section 106 of the NHPA.

With regard to eradication on nonnative plants on prehistoric sites, the impacts would range from minor to moderate. However, impact would be short term as the nonnative plant such as horehound would be replaced with a native plant to restore the site's natural setting, pursuant to Section 106 of the NHPA and Native American consultation.

Fire and Fuels Management

The intensity of impacts to cultural properties from fire suppression would be the same as the other alternatives. However, the potential for impacts to the number of cultural properties under this alternative would be more relative to Alternative 1 but less than Alternative 3.

Livestock Grazing

The actions to authorize grazing on the Section 15 allotments and vegetation management areas would provide for considerably more acres to be grazed than Alternative 1. Consequently, the potential for cultural properties to be impacted would be greater under this alternative and the intensity of impacts would be negligible to moderate.

The action to not have grazing on the Elk Canyon, Brumley, West Painted Rock, Tripod, Sulphur Spring, Sand Canyon, and Widow Women pastures provides protection to a number of cultural properties in these pastures and core areas of the National Register District and National Historic Landmark (nominated properties). This action results in no impact to cultural properties and provides further protection to Native American heritage resources.

The closure of the Painted Rock Exclusion Zone to livestock grazing would eliminate potential impacts to cultural properties from authorized grazing. The action provides protection to 22 prehistoric sites in the National Register District.

It is anticipated that livestock grazing may have some level of disturbance to one to three cultural properties in the National Register District which would range from negligible to moderate impact. Should the Section 15 pasture south of Painted Rock pasture be leased for grazing, construction of a fence as a protective measure would exclude cattle from encroaching on 22 cultural properties within and adjacent to the National Register District, thereby eliminating the potential impact from grazing.

Pastures where there is no reason to graze for vegetation management purposes and where cultural properties are located in the Hill, Back Canyon, Goat Spring, KCL, and Abbott Canyon pastures would provide protection to a number of cultural properties as well as prehistoric sites nominated for inclusion to the National Historic Landmark. Potential for impact and benefits are the same as the above paragraph.

Grazing in the Old Adobe pasture north of Abbott Canyon pasture would potentially result in negligible to moderate impact to sensitive cultural properties nominated for listing in the National Historic Landmark. With implementation to exclude grazing in this sensitive area, the potential for impact would be eliminated for two cultural properties.

The action to build, maintain, modify, or remove fences, water systems, and roads would potentially impact cultural resources. However, projects where cultural properties are located would be safely

avoided by means of project design, redesign, or capping to protect sites within existing roads or otherwise.

Recreation

The impacts to the Primitive zone would be the similar to Alternative 1, except there would be less miles of trail. Within the Backcountry zone, recreation modifications and improvements associated with dispersed camping areas would be implemented to avoid impacts with cultural properties.

An increase in the number of overlooks and interpretive sites in the Backcountry would have the same impacts as Alternative 1, except there would potentially be more sites interpreted.

Development of five to ten trail heads / staging sites to support recreational activities in the Backcountry would have the same potential for impact as Alternative 1, except there would be more trail head / staging areas.

With an increase of 5 to 10 miles of hiking / interpretive trails in the Backcountry, the potential for impacts to cultural properties would be the same as Alternative 1.

In the Frontcountry zone, although there is an increase the number of overlooks and interpretive sites under this alternative, the potential for impact to cultural properties would be the same as Alternative1.

With the increase in the number of trail heads / staging sites, number of miles of hiking / interpretive trails to support recreational activities in the Frontcountry, the potential for impacts to cultural properties would be the same as Alternative 1.

Visitation to Painted Rock is expected decrease initially based on the permit requirement, but would eventually start increasing based on additional public demands to approximately 3000 visitors annually. Impacts to Painted Rock would be negligible to none and likely the lowest of all of the alternatives due to the balance between site protection and reasonable public access. Minor to no disturbances to cultural soils loosening by foot traffic would be anticipated.

With closure of the Painted Rock Exclusion Zone to horses, dogs, non-motorized bikes, cache type activities, and discharge of firearms, it would reduce potential impacts and increase site protection from 15 to 22 prehistoric sites in the National Register District. The potential for these unauthorized activities would be limited and impacts would likely be minor.

Issuance of an estimated three to four Special Recreation Use Permits to Painted Rock annually would deter impacts to the site but minor disturbances such as loosening of cultural soils by foot traffic would be anticipated.

The action to secure a permit to access archaeological site (C06-1) situated atop the basalt hill on the KCL Ranch would potentially reduce public visitation by 25 percent to the cultural site and geological feature. The permit conditions and educational information would eliminate inadvertent impacts to archaeological components, although public visitation would potentially result in negligible to no impact to resources.

Impacts from public education and interpretation under Alternative 2 are the same as Alternative 1 except, as part of a comprehensive interpretive plan**,** BLM would analyze the feasibility of developing a new or expanded public interpretive/educational center in the Monument that would accommodate group uses and researchers. Considerations would include the expansion of the floor space at the Goodwin Education Center, reconstruction of the 1890s barn at El Saucito Ranch, or some other viable location in the

Monument. The potential expansion of the square footage of usable space at the Goodwin Education Center or the construction of a new facility would potentially disturb less than one-half acre of land and result in no impacts to cultural and natural history values.

Lands and Realty

Although there is less acreage of land acquisition than Alternative 1, efforts would be targeted towards lands with significant cultural or biological values, which would benefit the protection of cultural resources by placing them under public ownership.

The modification to bring permitted right-of-way sites up to VRM classification would result in no impact to cultural resources.

4.10.8 Impacts to Cultural Resources from Alternative 3

Because of standard cultural resource program review procedures and regulatory requirements as noted above under assumptions, as well as the flexibility of potential actions, impacts to cultural resources are not anticipated as a result of implementing management actions for WSA/Other Lands with Wilderness Characteristics, Visual Resources, Air Quality, Water Resources, and Geology/Paleontology.

4.10.8.1 Impacts to Cultural Resources from Implementing the Cultural Resources Program

For actions involving Native American access to Painted Rock, at-risk archaeological resources, and rock art protection, impacts would be the same as Alternative 2.

For ranching/farming machinery and equipment, the impacts to cultural resources would the same as Alternative 2.

Under this alternative, emphasis is placed on the stabilization of eligible National Register Properties while ineligible sites would be subject to removal when they pose a public safety hazard. It is estimated that from four to six ranching and farming facilities would be razed and removed from the Carrizo Plain and within the Primitive RMZ. The removal of subject cultural sites would result in no impact to National Register properties. However, BLM would lose the opportunity to use these historic facilities for public education and interpretive uses.

An estimated 4 to 10 National Register ranching and farming facilities (including El Saucito, Washburn, Selby, and others) would be stabilized in a state of arrested decay rather than rehabilitated, restored or reconstructed for public education, interpretation and or administrative adaptive reuse. This action would fall short of BLM's responsibility to preserve important historic resources as recognized in the Monument Proclamation and would not meet the intent of the BLM Historic Preservation Plan as associated with the State Protocol between BLM and the SHPO.

Under this action, historic buildings or structures ineligible for the National Register would not be saved or used for public education such as the KCL Ranch and Traver Ranch. This action would have no effect on National Register properties but BLM would lose the opportunity to use these facilities for educational and interpretative uses.

4.10.8.2 Impacts to Cultural Resources from Other Programs

Wildlife

Implementation of vegetation treatment by means of dispersed livestock grazing or limited burning of two years out of 20 would have similar impacts as Alternative 2 for cultural resources in the non-core threatened and endangered species areas. The standard cultural procedures as described in Alternative 2 would be applicable.

Prescribed burns under this alternative would be similar to Alternative 2 and therefore the cultural procedures and potential for impact are similar.

The potential for impacts to cultural resources from grass mowing and sign installations along Soda Lake Road edge is similar to Alternative 2.

The modification of 50 miles of fencing, removal and relocation of 12 miles or more of fencing, and realignment of 100 miles of fencing would require the same standard cultural procedures and potential for impacts to cultural properties as Alternative 2.

Introduction of the tule elk and pronghorn would result in the same procedures and potential for impact to cultural properties and Native American interest as Alternative 2.

It is anticipated that construction of 10 new water troughs in the pronghorn and elk habitats would increase the potential for impact to cultural resources. However, with implementation standard cultural procedures and measures to avoid cultural resources, no impacts to cultural properties would be anticipated.

Restricting public access to raptor nesting sites at Painted Rock, Selby Rocks and other rock outcrops would result in the same cultural procedures, impacts, and benefits as Alternative 2.

Control of feral pigs by traps or other methods such as four fence projects in the vicinity of springs over the life of the plan would have the same benefits and impacts as Alternative 2 regarding heritage properties.

The eradication of noxious weeds on 100 acres per year with herbicides and the application of 100 acres of prescribed burns for six out of 10 years would have negligible to no impact on cultural resources. However, the use of herbicides may result in over spray and potential impact to native plants used by Native American traditional plant gatherers for basket weaving.

For the Upland Game Bird Objective, the projected acreage of prescribed burns is relatively low and therefore no anticipated impact to cultural resources would occur as standard cultural procedures would be implemented pursuant to the BLM/SHPO State Protocol.

Vegetation

The actions and impacts to cultural resources from vegetation are the same as Alternative 2.

Fire and Fuels Management

The intensity of impacts to cultural properties from fire suppression would be the same as the other alternatives. However, the potential for impacts to the number of cultural properties that would be affected would potentially be more under Alternative 3 than Alternatives 1and 2.

Livestock Grazing

With implementation of the standard cultural operating procedures, the potential for impact to cultural and traditional properties as well as benefits to cultural preservation would essentially be the same as Alternative 2. However, the frequency of grazing within Section 15 allotments would be more often under this alternative.

Recreation

Primitive Zone**:** The potential for impact to cultural properties would be the same as Alternative 2, except there would be fewer miles of trails and signage.

Backcountry Zone**:** Although there is an increase in the number of overlooks and interpretive sites, trail heads /staging areas, and miles of hiking under this alternative, impacts to cultural properties would be the same as Alternative 2.

Frontcountry Zone**:** Although there is an increase in the number of overlooks and interpretive sites, trail heads / staging sites, and miles of hiking under this alternative, impacts to cultural properties would be the same as Alternative 2.

Visitation to Painted Rock is expected to decrease considerably due to access being restricted to guided tours only. However, with additional public demands, site visitation would eventually increase to 2,000 to 2,500 visitors annually. Impacts to Painted Rock would be negligible to none or similar to Alternative 2 as a result of fewer visitors and closely managed access. However, with elimination of the self guided access, unauthorized access would increase but not to the levels anticipated under Alternative 1, thus resulting in relatively fewer impacts than Alternative1 but more potential for impact than Alternative 2 from unauthorized access.

With closure of Painted Rock pasture to horses, dogs, non-motorized bikes, cache type activities, and discharge of firearms, the potential for impact to multiple cultural sites would be similar to Alternative 1.

Under this action, the existing structures and floor space at the Goodwin Education Center would be maintained or upgraded within the same footprint. For potential improvements to the El Saucito Ranch and Selby Barn for educational awareness, the action would be implemented in a manner that would not impact the historic integrity of these two cultural properties. There would be no impact to prehistoric resources.

The impacts to cultural resources would the same as Alternative 2 regarding the feasibility of potential expansion of the square footage of usable space at the Goodwin Education Center or the construction of a new facility such as the reconstruction of the 1890 barn at El Saucito Ranch.

In addition to maintaining the existing educational field locations such as Painted Rock, Wallace Creek, and El Saucito Ranch, a comprehensive interpretive plan would consider an estimated two to four additional field locations for educational use. This action would result in no impacts to cultural resources or natural history values at existing locations or any new field locations. New locations would be confined to less than one-half acre in total. Benefits would be realized in the long term protection of these resources through public education and awareness.

Lands and Realty

Land acquisition acreage and impacts would be the same as Alternative 2.

It is anticipated that the two new rights-of-way and modification of to a couple of permits to bring them in accordance with VRM classification would be processed in a manner to avoid impact with cultural resources and traditional cultural properties through implementation of the BLM/SHPO State Protocol.

4.10.9 Cumulative Impacts to Cultural Resources from Implementing the Cultural Resources Program

4.10.9.1 Assessment Area

For prehistoric and Native American resources, the assessment area is the ancestral territories of the Chumash, Yokuts, and Salinan people.

For historic resources, the assessment area is the central interior California agricultural and ranching areas.

4.10.9.2 Past, Present, and Reasonably Foreseeable Future Actions and Cumulative Effects

Prehistoric and Native American Resources

Within the assessment area, a number of prehistoric sites have suffered from looting and vandalism, although on federal and state lands in the region, the level of vandalism has been reduced greatly in recent years through protection and conservation efforts. There are limited legal requirements requiring protection of cultural sites on private lands, and consequently, protection levels are generally lower resulting in damage or loss of resources. There are exceptions where private landowners afford a high level of protection to known sites on their property

The continued implementation of rock art conservation in the Monument would have positive cumulative effects on the treatment and preservation of rock art sites in the central region of California if not the entire state, as similar site conditions and natural forces that threaten rock art in the Monument apply to other locations in California. Initial rock art conservation in the Monument was a collaborative effort between BLM and the Getty Conservation Institute, which established a baseline model for rock art conservation. That interest has been carried forward by ongoing conservation studies at Painted Rock by a graduate student at the UCLA/Getty Conservation Program. An extensive inventory of public lands in the Monument to identify rock art sites and condition assessment of images and the rock surface has been ongoing the past several years with archaeologists and rock art conservators. Recommendations for conservation of these fragile resources are being developed on a case by case site evaluation. The work in the Monument could establish a baseline for future conservation efforts in the Monument and likewise in the state.

From a cultural regional perspective, BLM has been active in maintaining an open dialogue with the Native Americans having cultural ties to the Monument including the Chumash, Yokuts, and Salinan people, concerning their interest in protecting and preserving the heritage of their cultures as well as traditional beliefs and practices. For example, they have in the past and would likely continue to show interest in the summer solstice ceremony, as well as the restoration and gathering of native plants that were used traditionally by their people for domestic, medicinal, and ceremonial rites. This has a positive cumulative effect on meeting BLM's obligations and trust responsibilities with the native people of the region.

With regard to the prehistory, studies conducted by BLM through the efforts of archaeologists over the past several years provide a comprehensive interpretation of an area that was not well understood archaeologically and ethnographically. This has a positive cumulative effect on the understanding of the prehistoric life-ways in the Central Interior Region of California and the preservation of this non-renewable resource. Complementary studies and protection efforts are ongoing on other lands in the region including the Los Padres National Forest.

Historic Resources

Most of the historic farms and ranch structures in central California are located on private lands. Many have been lost as they outlive their utility, and are allowed to decay or are razed – typically without any historic recordation. The Monument protects a large array of historic structures in the region and offsets the impacts from loss of the structures on private lands. Other buildings are being preserved on state lands such as the Chimineas Ranch (CDFG).

BLM has been active over the past several years in conducting field inventory of historic buildings, structures, and features in the Monument and implementing preservation of facilities through stabilization, restoration, or rehabilitation for adaptive reuse. The vernacular architecture that is typical in the Monument appears likely to have regional implications for building materials used, construction style, and methods of building historically in the back country of San Luis Obispo and Kern counties. The preservation of this historic model should serve others in their preservation efforts with like resources in the region.

From a historical perspective, very limited written history is available about the history of the Carrizo Plain and the geographic region. The ongoing compilation of historic records, photographs, and research for this region, coupled with field inventory of historic resources, would have a positive cumulative effect as work continues to establish a written documentation of the Carrizo and the encompassing region.

4.11 Impact Analysis for Visual Resources

4.11.1 Assumptions Used for the Analysis

- The expansive undeveloped vistas in south central California such as those within the CPNM will become more scarce and important to the public over the life of the RMP.
- Management of all resources and uses under the discretionary authority of BLM would be consistent with the visual resources objectives for the CPNM. All surface disturbing projects would have visual contrast rating as part of project and mitigating measures built in to minimize impacts
- Establishment of VRM classes would not in and of themselves result in reduced/increased visual impacts. Instead, the classes establish guidelines to mitigate/reduce impacts from implementation of actions and allowable uses in other resource programs.
- The level of visual impacts is a function of the impacting development itself, and its visibility to viewers from key observation points such as overlooks, travel corridors, trails, and residences.
- BLM authorized projects or activities would be avoided or mitigated if they would fail to meet visual resources objectives. Mitigation could include incorporation of design features or relocating projects to reduce visual impacts.
- The panoramic landscape of the valley floor makes it difficult to mitigate impacts of developments in this part of the Monument. The topographic screening in the Temblor and Caliente Ranges makes projects much less visually impacting in these areas.

4.11.2 Incomplete Information

The impact analysis is based on a general inventory of scenic resources within the planning area, and not a site-specific analysis of impacts to sensitive sites such as viewpoints and other public use locations.

4.11.3 Programs with Negligible or No Impacts to Visual Resources under Any of the Alternatives

No impacts to visual resources are expected from the programs for Air Quality, Soils, Water Resources, and WSA/Other Lands with Wilderness Characteristics. (Note: All WSA/wilderness character areas would be managed under VRM Class I in all alternatives, so the existing landscape character would be maintained or enhanced.)

4.11.4 Impacts to Visual Resources under the No Action Alternative

4.11.4.1 Impacts to Visual Resources from Implementing the Visual Resources Program

Under the No Action Alternative, most of the CPNM would be managed as VRM Class II except for the Caliente Mountain WSA, which would be managed as VRM Class I; a majority of the Temblor Mountain Range, which is classified as VRM Class III; and areas along the border of the Monument area that would be managed as VRM Class IV. This would be the least protective of the alternatives for visual resources of the Monument, particularly in the Class IV areas that allow for major modifications to the characteristic landscape. Based on the reasonably foreseeable demands for visually altering activities under the No Action Alternative in the RMP, impacts to the characteristic landscapes would be minor to moderate as discussed below.

4.11.4.2 Impacts to Visual Resources from Implementing Other Programs

Biological Resources

Proposed habitat improvements and vegetation treatments would result in minor impacts to visual resources. The construction of a plant propagation facility could cause impacts to visual resources depending on where it is placed. The operation would likely be placed at an administrative site so that it would cause minimal impacts. Erection of fences to protect vegetation would cause minor to moderate visual resources impacts as the fence lines would break up the natural landscapes line, color, and texture. Reintroduction of native species would enhance the natural landscape of the Monument, especially large ungulates such as the tule elk and pronghorn, which are easily viewed.

Fire and Fuels Management

Use of existing natural and human-made barriers for fire response (ridgetops, roads, and other barriers) will minimize the visual impacts from wildfire suppression. Short-term minor to moderate impacts would continue to occur (blackened landscapes) from prescribed burning and wildfires. Most of these impacts would not be visible after one growing season.

Geology/Paleontology

There would be a minor temporary visual resources impact with excavation for research. There would be temporary surface disturbance at excavation sites, but when the excavation or research was done it would be rehabilitated to its natural state.

Cultural Resources

The removal of four to six ranching and farming facilities within the Monument would increase the naturally appearing characteristic landscapes of the Monument. Although some reduction in structures would occur, historic structures would still contribute to the pastoral landscapes of the valley floor.

Livestock Grazing

Livestock would continue to use the CPNM at present levels, and existing range improvements would be maintained. This would continue maintaining the present visual qualities associated with livestock grazing. The visual landscape on the valley floor would continue to have the pastoral characteristic landscape qualities associated with grazing and support facilities, but those who desire a landscape with natural qualities would be impacted by these same facilities.

Recreation

Existing rustic facilities, including campgrounds, signing, and overlooks, would be maintained with impacts remaining at present levels. Most facilities are located in areas where they are part of historic ranches, or are not visible except to users, so impacts will be minimal.

Travel Management

The existing road system would be maintained at current standards, resulting in no new impacts. Additional safety, directional, and regulatory signing would result in minor visual impacts.

Minerals

Private Mineral Estate.

Exploration and development of private mineral estate would require surface disturbance to the valley floor including up to 18 acres of long-term disturbance for initial wells/tanks, 12 acres of temporary disturbance from unsuccessful wells and associated roads, and 115 acres of short-term disturbance from cross-country seismic lines. Activities would include up to approximately 6 exploration wells, 10 development wells, and 2 tank batteries. The seismic lines would result in minor to moderate temporary impacts to visual resource values and would only be visible until the first growing season after the disturbance (tire tracks and flattened vegetation where cross-country ATV use occurs). The development of wells and associated roads/structures would result in moderate to major visual impacts within foreground and middle ground viewing distances. Careful siting and design (such as paint colors) of these structures would reduce some of the contrast and impacts. However, the location of the developments on the wide expanse of the valley floor, which offers no topographic screening, would still make them highly visible as their forms will strongly contrast with natural landscape elements.

Of these existing oilfields, the majority are contained in one unit, in and adjacent to a local ranch. The area is currently classified as VRM Class III or VRM Class IV, even though most of this development is in areas not readily visible from roads the general public uses. All oilfield operators will be encouraged to apply best management practices (Appendix P) and recommendations in the Surface Operating Standards & Guidelines for Oil and Gas Exploration Development (The Gold Book) as part of ongoing maintenance and repair, including such actions as use of appropriate paint colors when repainting and placing new pipelines within road rights-of-way; therefore, the areas will be moving toward VRM Class II, as shown on Maps 2-2, 2-3, and 2-4. All new development would follow the best management practices and recommendations contained in the Gold Book.

Existing Federal Leases.

The development of up to 2 exploratory wells and 5 development wells and associated roads would result in up to 6.5 acres of new temporary to long-term surface disturbance. This would result in minor to moderate visual impacts to the foreground and middle ground zone as visible from Highway 166. The topography of the existing oil fields is such that it would allow for topographic screening and other mitigating measures to reduce the visibility of the developments to moderate levels of contrast. Up to 25 acres would have transitory disturbance from cross-country seismic exploration. This impact would be minor, localized (ATV tracks), and short-term and would not be visible after the first growing season following exploration.

Lands and Realty

The acquisition of additional lands from private inholders would enhance visual values by precluding construction of structures and other developments on the private land parcels. Additional authorization of rights-of-way for communication sites would result in moderate visual impacts. This is due to the low anticipated demand for such facilities within the Monument. The existing utility corridor would remain in place under this alternative. If developed, an additional transmission line(s) would result in major impacts to the characteristic open-landscape of the Carrizo, as there are no opportunities for mitigating the infrastructure through screening or design. There are currently no proposals for additional transmission lines.

4.11.5 Impacts to Visual Resources Common to All Action Alternatives

4.11.5.1 Impacts to Visual Resources from Implementing the Visual Resources Program

The retrofitting of existing facilities to meet current VRM classifications would improve the visual quality of the planning area. Facilities would be altered to meet or exceed the VRM class resulting in less developments being visible to the casual observer. For example, changing the color of a water tanks to earth-tone colors would make them less visible from a distance. This would improve the opportunities for visitors to have views of more naturally appearing and pastoral characteristic landscapes within the Monument.

Removal of old structures that are not used and not considered to be historic would improve the wide open views and naturally appearing landscapes of the Monument.

Retrofitting lighting would result in minor improvements to the night sky qualities of the Monument. Removing unneeded lights as well as placing shields on existing and new lights would reduce impacts to negligible levels as there would be less light traveling long distances and distracting from the night sky.

Any new development or activity on BLM-managed lands would need to meet VRM classifications. (See VRM maps for alternatives). Any new development within the Monument would have a contrast rating completed and would need to meet the classification rating of the zone where the project or activity is planned. This would benefit visual resources by ensuring that there is consistency throughout the zones in the level of visual intrusions.

Table 4.11-1. Acreage by VRM Class by Alternative

	Alternative 1	Alternative 2	Alternative 3	No Action (no specific acreages identified)
Class I	83,202	54,464	17,984	Yes, see description in alternative.
Class II	175,020	186,819	223,299	Yes, see description in alternative.
Class III	0	20,839	24,944	Yes, see description in alternative.
Class IV				Yes, see description in alternative.

4.11.5.2 Impacts to Visual Resources from Implementing Other Programs

Wildlife

Maintaining two human-made structures for bat habitat would not change any of the viewsheds on the Monument since the buildings already exist. Fencing and signing three miles of sphinx moth habitat would have a localized moderate impact on the viewshed immediately around the sphinx moth habitat. Constructing two supplemental feeding stations for the California condor will have a negligible impact on the visual resources since these feeding stations would be in remote areas of the Monument and would most likely only be seen by the people who are working with them. Limiting the development of trails, facilities, and visitors in certain areas around the shore of Soda Lake to protect roosting – shorebirds, cranes, curlews, waterfowl – will not allow for additional viewing opportunities, but will retain the visual integrity of the area. Fencing up to 10 miles of riparian area would result in both positive and negative visual impacts – there would be additional visual intrusions from the fencing, but also an enhancement of the characteristic vegetation in the riparian zone. Use of historic/rustic materials for the fence (split wooden posts) and specific placement criteria could reduce impacts to negligible levels.

Vegetation

The fencing of 500 acres would cause a minor to moderate impact to visual qualities.

Fire and Fuels Management

The wildfire burning of an average of 500 acres a year and the chance of a large fire of 5,000 acres would continue the present level of visual impacts from fires. Although fire scars are natural, they are seen as a major impact to the visual resources by many viewers. However, this impact is short-term and localized, and is not visible after the following growing season.

Geology and Paleontology

Placement of small interpretive displays would cause negligible visual intrusions.

Cultural Resources

Cultural resources management actions would include the possibility of road realignment, closure, or capping of roads and the addition of interpretation at Native American sites. These actions could cause some minor impact to visual resources. The road realignment, closure or capping could cause a minor impact depending on the location of the new alignment. Additional interpretation would cause a negligible impact on visual resources as displays could be designed in a way that would be small scale and low in profile.

WSA/Other Lands with Wilderness Characteristics

The conversion of roads to trails could cause a minor beneficial impact to visual resources because the disturbed area from the trail would be narrower than the road and causing less of a disturbance to the line, color, and texture of the landscape. The removal of unneeded structures would increase the naturalness of the characteristic landscape.

Livestock Grazing

Realigning the fence lines so that they are along the Monument boundary could cause minor to moderate visual impacts. However, the relocation would only be completed if it met visual resource class objectives.

Recreation

Placement of signs of additional directional, safety, and regulatory signing along roadways and other public use locations in the Monument would cause a minor impact to the visual resources of the Monument because the signs would be small and designed to not detract from the visual resources of the Monument. These signs would not be visible from a distance and would be placed mostly in areas that already contain developments. Retrofitting of existing facilities to meet standards for disabled access would have negligible impacts.

Lands and Realty

The 5 minor rights-of–way anticipated for BLM for administrative purposes and the 10 rights-of-way anticipated for scientific monitoring could have a negligible to minor impact because of the nature of the rights-of-way (small instruments, located away from popular public use areas). Land use permits such as filming permits will have a negligible impact because they would be short-term and would only be authorized on existing roads and developed sites.

The survey and monumenting of the Monument boundary would cause minor impact to visual resources because the boundary is in a location where it is not visible from the majority of visitors, and boundary signing would be small and inconspicuous.

4.11.6 Impacts to Visual Resources under Alternative 1

4.11.6.1 Impacts to Visual Resources from Implementing the Visual Resources Program

Alternative 1 calls for management of the 83,202-acre Primitive zone as VRM Class I, the 158,080-acre Backcountry zone as VRM Class II, and the 17,040-acre Frontcountry zone as VRM Class III. This alternative would provide the highest level of protection/restoration of the characteristic landscapes and visual resource values within the Monument. The retrofitting of existing facilities to meet VRM class objectives would enhance visual resource values.

4.11.6.2 Impacts to Visual Resources from Implementing Other Programs

Wildlife

The removal of artificial watering sources and livestock fence would enhance the natural landscape qualities of the Monument. Fencing and watering systems are the only visible human-made structures on parts of the Monument, and these would be restored to a naturally appearing landscape. Removing these would increase the chances of visitors having views with no human-made structures. The removal of

guzzlers would have a negligible impact on visual resources as the guzzlers are already in remote locations not normally seen by the public.

Vegetation

Removal of nonnative plants species would have minor short-term impacts from ground disturbance. In the long term, regrowth of native species would result in enhancement of visual values.

Fire and Fuels Management

This alternative would not involve prescribed fire use, so the visual impacts from burning itself would be reduced in frequency from present levels. Construction of dozer line during wildfire suppression could have a moderate to major localized impacts to visual resources, as this construction would take place under emergency operations with minimal priority given to visual resource protection. Dozer lines result in very visible change of the line, color, and texture of the landscape and are of a much longer duration than the actual fire itself.

The mowing of weeds to reduce fuels around buildings and along roadways would cause negligible impacts to visual resources considering most of the weed abatement would be concentrated around already disturbed areas.

Geology and Paleontology

The placement of small low-profile interpretive signs would cause negligible impacts. Paleontological resource scientific research would result in minor short-term localized impacts where excavations are conducted. Use of “minimum tool” requirements (that is, normally only hand tools would be used) would minimize impacts. Geological research related to the San Andreas Fault and other features would cause minor temporary visual impacts from excavation and/or coring efforts. There would be short-term surface disturbance that would be rehabilitated upon completion of the research.

Cultural Resources

The addition of interpretation and educational sites through the life of the plan could cause a minor visual impact, although any signing would be placed away from sensitive sites and view corridors. The removal of farm equipment to centralized locations and the demolition of non-historic ranch structures would result in the greatest reduction of structures from the landscape, increasing the natural appearance. This will enhance visual values for those seeking a more natural landscape, but will slightly reduce the pastoral farming landscape that is desirable to others. Historic structures eligible for the national register would still be retained. The four to five ranching and farming facilities that would be removed are primarily located within the Primitive zone where most visitors would be seeking views with natural qualities.

WSA/Other Lands with Wilderness Characteristics

This alternative results in the greatest acreage to be managed for wilderness character (which corresponds to VRM Class I). Associated actions to restore wilderness character would return the visual landscape to naturally appearing conditions.

Livestock Grazing

This alternative would remove livestock from the Monument. Livestock would not be present or visible within the area. Removal of unneeded fence, gates, cattle guards, corrals, water pipes, water tanks, and

water troughs would have a major impact on the visual landscape qualities. Many areas of the Monument would change in character from their present pastoral/ranching qualities to a more naturally appearing landscape with fewer human intrusions.

Recreation

In the Primitive zone, the development of 5 to 35 miles of trails could have a negligible to minor impact to visual resources, since most of the trails would be located on reclaimed roads. Some trails would be newly constructed, and would improve opportunities for visitors to view the scenic landscapes of the Primitive zone, while causing minor impacts to the characteristic landscape.

In the Backcountry zone, the increased number of overlooks and trailheads could cause a minor to moderate impact, but with proper design and placement there should only be localized impacts to the visual qualities immediately surrounding the developments.

In the Frontcountry zone, the increased number of overlooks and trailheads could cause a minor to moderate impact, but with proper design and placement there should only be a minor impact to the visual resources.

Travel Management

The closure of 81 miles of roads and rehabilitation or natural revegetation of these routes would result in a major long-term enhancement of the natural characteristic landscape by reducing the visual impacts associated with these roads, and allowing them to revert (or in some instances actively restoring them) to a naturally appearing condition.

Minerals

Impacts would be the same as the No Action alternative except that BLM would work with existing leaseholders to mitigate existing visual impacts from structures and other developments, and to accelerate abandonment / restoration of idle wells. This would result in minor improvements to visual resources, as most of the existing wells are not in major use areas of the Monument. Also, geophysical exploration would be the most limited among the alternatives, but restrictions would still need to enable private mineral estate holders to explore in a reasonable fashion.

Lands and Realty

The acquisition of 16,000 to 32,000 acres of private land would enhance visual resources by ensuring that the lands are not developed. The acquisition of 0 to 40,000 acres of mineral rights would enhance visual values eliminating possible oil and gas exploration and development on the acquired lands. The removal of two communication facilities upon lease expiration would result in negligible to minor enhancement of visual qualities, since numerous communication facilities would remain in place.

4.11.7 Impacts to Visual Resources under Alternative 2

4.11.7.1 Impacts to Visual Resources from Implementing the VRM Program

Note: VRM class boundaries correspond to RMZs. See Map 2-3, RMZs and Route Designations, Alternative 2.

Under Alternative 2, 54,464 acres would be managed as VRM Class I, 186,819 acres would be managed as VRM Class II, and 20,839 acres would be managed as VRM Class III. This alternative provides for a

high level of protection of visual resources while providing some flexibility for resource restoration projects and recreational facility development. Any developments within the Class III areas would be rustic and would blend in with the natural landscape but would cause a noticeable change in the natural landscape. Based on the projects proposed under this plan by BLM (discretionary projects), any visual impacts from this alternative would be minor. Retrofitting existing facilities so that they contrast less with the surrounding landscape would result in moderate positive impacts. Valid and existing rights would be maintained.

4.11.7.2 Impacts to Visual Resources from Implementing Other Programs

Biological Resources

Impacts would be the same as Alternative 1, except as described in the following paragraphs.

Prescribed burning for habitat protection would have a major but localized short-term impact on visual resources. Depending on the time of year the burn is completed, the impact may only last a few months. The removal of 20 miles existing fences would improve the natural qualities of the landscape. The introduction of additional pronghorn would have a positive impact on visual resources by placing additional viewable wildlife back into the landscape.

Planting of trees for nesting habitat would have minor impacts on visual resources as long as they are planted in naturally appearing groups (as opposed to straight lines) The construction of five new wildlife guzzlers would have a minor impact on the visual resources of the Monument. These structures would be placed in areas that are not visible to the general user of the Monument. Also these structures are mostly underground and only seen from a close distance. The fencing of springs would allow for native riparian vegetation to return, resulting in a positive impact. However, the fences themselves would detract from the viewsheds.

Vegetation

All of the actions under vegetation management would have negligible short-term impacts except the construction of 10 to 20 miles of fencing to protect oaks. The protection of the oaks would improve the visual qualities, but the fence lines themselves would reduce the naturalness of the landscape. These impacts would be mitigated by placing the fences along natural breaks in the landscape.

Fire and Fuels Management

Impacts would be the same as Alternative 1, except that additional hand and dozer lines could be constructed for suppression of wildfires. This would result in slightly higher visual impacts than Alternative 1. Dozer line impacts would take several years to rehabilitate. Construction of lines along abandoned roads and other previously disturbed areas would minimize impacts. Mowing weeds around buildings, facilities, and road would cause a negligible impact to visual resources as the mowing will be concentrated in already disturbed lands and would be a short-term disturbance. Burning piled materials could cause a minor short-term impact. The prescribed burning of 1,000 acres of grass every other year would have the moderate to major localized and short-term impacts until the next growing season.

Geology and Paleontology

Development of interpretive sites would be a minor impact and would be consistent with the VRM class where the interpretation is taking place. The expansion of the Wallace Creek interpretive trail could have a minor localized impact on the visual resources. The extension of the trail could cause a break in the line,

color, and texture of the landscape and the additional interpretive signs could also cause a minor impact for the same reasons as the extension of the trail. There would be a minor to moderate temporary visual impact from excavation for research. The allowable use of motorized/mechanized equipment would increase the impacts over Alternative 1, but they would still be localized and short-term in nature.

Cultural Resources

The installation of 1.5 miles of fence to protect Painted Rock and exclude livestock would have moderate localized impact to visual resources. The Painted Rock area is heavily visited and culturally significant and so is especially sensitive to landscape intrusions. Modification of the preliminary fence location proposed in the RMP (after site-specific contrast analysis) may reduce the impacts. The removal or relocation of certain farm equipment, removal of some structures, and the preservation of some equipment and structures on site would result in an opportunity for Monument users to view a mix of both natural landscapes and historic pastoral landscapes – midway between Alternative 1 (which favors natural landscape restoration) and Alternative III (which favors retention of remaining historic farm remnants). The addition of interpretation and educational displays at historic sites would cause a minor impact to visual resources, as they would be placed near existing developments

WSA/Other Lands with Wilderness Characteristics

Management and restoration of wilderness qualities on 54,464 acres would enhance visual resource values in the Class I VRM zone that corresponds to these areas.

Livestock Grazing

Impacts would be the same impacts as the No Action Alternative, except that livestock would be less visible on the valley floor. Also, some fences would be realigned over the life of the plan to follow natural terrain features, reducing the visual impacts from present levels.

Recreation

In the Primitive zone, impacts would the same impacts as Alternative 1, except that acreage of the Primitive zone would be reduced to 54,464 acres.

Impacts in the Backcountry zone would be the same as Alternative 1, except for the allowance of dispersed camping. This would continue the current minor visual impacts from dispersed use areas. If erosion, vegetation impacts, trash, or other negative impacts occur at dispersed camping locations, rehabilitation and possible closure would occur to mitigate/restore these impacts.

In the Frontcountry, a higher number of interpretive waysides and other visitor amenities would be constructed under this alternative (relative to Alternative 1). These facilities would cause minor to moderate visual impacts, but would be located in already developed areas and constructed with low-key rustic designs that blend with the elements of the characteristic landscape.

Travel Management

The closure of 45 miles of roads and rehabilitation or natural revegetation of these routes would result in a major long-term enhancement of the natural characteristic landscape by reducing the visual impacts associated with these roads, and allowing them to revert (or in some instances actively restoring them) to a naturally appearing condition

Minerals

Impacts would be the same as Alternative 1.

Lands and Realty

Land acquisition would be targeted in areas with biological and cultural resource values, resulting in less acreage acquired, and therefore less protection of visual resources than Alternative 1. There would still be a net benefit over present conditions, as acquired lands would be protected from development. The acquisition of mineral rights would benefit visual resources at a minor to major level, depending on whether viable minerals were found/developed if the area were not acquired. The addition of facilities to two communication structures would have a negligible impact due to the fact there are many other communication facilities in the close vicinity, and they would be placed on existing towers.

4.11.8 Impacts to Visual Resources under Alternative 3

4.11.8.1 Impacts to Visual Resources from Implementing the Visual Resources Program

Under this alternative, 17,984 acres would be managed as VRM Class 1, 223,299 acres as VRM Class II, and 24,944 acres as VRM Class III. This alternative provides for less stringent VRM classifications on certain parts of the Monument than the other alternatives (less acreage in Class I), but still affords a high level of visual resource protection that is in keeping with the goals of the Monument Proclamation. This alternative provides for higher flexibility in completing resource restoration projects and recreational facility development while meeting VRM standards.

4.11.8.2 Impacts to Visual Resources from Implementing Other Programs

Wildlife

Impacts would be the same as Alternative 2.

Fire and Fuels Management

Impacts would be the same as Alternative 2 except that additional hand and dozer lines could be constructed for more active suppression of wildfires. Also, up to 1,500 acres of grassland would be burned in alternate years, resulting in higher (but still short-term) impacts than the other alternatives.

Geology/Paleontology

Impacts would be the same as Alternative 2.

Cultural Resources

Impacts would be the same as Alternative 2, except that more emphasis would be placed on the preservation and restoration of historic farm machinery and ranch structures. This would enhance the visual qualities of a characteristic farming and ranching “sense of place” within the Monument. However, it would result in less restoration of the natural character and vast-undeveloped “sense of place” landscape.

WSA/Other Lands with Wilderness Characteristics

Impacts would be the same as Alternative 2, except that only the 17,984-acre Caliente WSA would be managed as VRM Class I.

Livestock Grazing

Impacts would be the same as Alternative 2, except that some additional livestock improvements would be placed in the Section 15 allotments. This would result in negligible visual impacts as most of these facilities/fences would be away from public use areas.

Recreation

Impacts would be the same as Alternative 2, except that additional interpretive signing, trails, overlooks, and other public use improvements would be placed in the Frontcountry and Backcountry zones. These would only increase the level of impact by a minor level, as most improvements would be located near existing developments such as roads, campgrounds, or other developments.

Travel Management

The closure of 10 miles of roads and rehabilitation or natural revegetation of these routes would result in a minor enhancement of the natural characteristic landscape by reducing the visual impacts associated with these roads, and allowing them to revert (or in some instances actively restoring) them to a naturally appearing condition

Minerals

Same as Alternative 1 except existing leaseholders and private mineral estate owners would be permitted to use vibroseis for exploration, primarily on existing roads, with some off-road use. This would result in higher impacts to visual resources than the other alternatives, but it would be a short-term impact.

Lands and Realty

Land acquisition impacts would be the same as Alternative 2. Up to two additional communication sites could be developed under this alternative. This would result in minor to moderate visual impacts depending on the location of the sites (which are typically on a prominent ridgetop). Any sites would need to be developed to meet the class requirements of the respective VRM zone, and therefore could not be developed in a manner that caused major non-conforming impacts.

4.11.9 Cumulative Impacts to Visual Resources

The assessment area for cumulative impacts is the foreground and middle ground visual zones (3 to 5 miles from public use areas within the Monument. This is the distance that developments normally cause the highest level of visual contrast and impact as they are readily viewed by the observer.

The largest existing visual impacts within the Monument are power lines at north and south ends. It is unknown if any new power lines would be needed in the region, but, if so, they would need to bypass the Monument to the north or south. This could result in moderate to major impacts along the edges of the Monument. The California Valley subdivision is visible from the northern part of the Monument and currently has approximately 100 homes. Over the life of the plan, 50 to 200 more homes could be constructed in the subdivision. This would result in a minor to moderate increase in visual impacts, since the existing homes already alter the landscape north of the Monument. Testing for a possible wind energy development is being initiated within the Temblor Range, and additional communication towers are likely to be placed on private lands in the Temblors to serve the Central Valley and California Valley. These

facilities could cause moderate to major visual impacts to the ridgeline of the Temblors which is visible from major use areas within the Monument.

4.12 Impact Analysis for Wilderness Study Area and Other Lands with Wilderness Character

4.12.1 Introduction

As outlined in Chapter 3, there are two types of wilderness-related management allocations discussed in this RMP. The first involves continued interim management of the 17,984-acre Caliente Mountain WSA. This area was analyzed in a previous EIS and must be managed under BLM's Interim Management Policy for Lands under Wilderness Review under all RMP alternatives to protect its wilderness values until Congress determines whether it should be designated as part of the National Wilderness Preservation System. Under all of the plan alternatives, no or negligible impacts would occur to the Caliente Mountain WSA based on the interim management policy requirements. The second component of the RMP involves the inventory of lands within the planning area for certain wilderness characteristics, and the associated land use allocations to manage any or all of these inventoried lands to protect wilderness characteristics during the life of the RMP. These lands would be managed under the guidance in Appendix H, Management of Lands with Wilderness Characteristics.

4.12.2 Assumptions Used for the Analysis

All BLM initiated or authorized actions in the Caliente Mountain WSA will follow the requirements and guidelines of BLM's Interim Management Policy for Lands under Wilderness Review (Wilderness Handbook 6310-1).

Activities outside the WSA and areas identified for management for wilderness character (AWC) will have no or negligible impacts on lands within these respective areas, unless explicitly noted in the discussion.

MIST would be used to manage all prescribed fires within the WSA or AWCs, resulting in negligible impacts to wilderness values. MIST would also be applied in wildfire suppression. Emergency response to wildfire could require the construction of dozer lines or other more impacting tactics, but the authorization and analysis of these actions is beyond the scope of this plan. Any suppression effort would be followed by a stabilization and rehabilitation program to mitigate impacts to wilderness character.

No BLM discretionary actions are proposed in any of the alternatives that would result in irreversible or irretrievable impacts to any of the lands inventoried and found to have wilderness characteristics. Therefore implementation of any of the alternatives would not preclude consideration of these lands for management as AWCs at a future time.

There is private mineral estate within the WSA and AWCs. The likelihood of oil and gas exploration or development in these areas is low and not considered to be "reasonably foreseeable" under the definition under NEPA at this time, so is not considered in this analysis. However, with changes in oil prices, the exploration of areas otherwise considered to be infeasible for development could change in the future.

4.12.3 Resources or Programs with No or Negligible Impacts to the WSA or AWCs

No or negligible impacts to WSA/AWCs are expected from any alternatives for Fire and Fuels Management, Soils, Water Resources, Air Quality, Wildlife, and Minerals.

4.12.4 Incomplete Information

Global climate change is expected to result in hotter and drier conditions within the WSA/AWCs. To the extent that this change is attributable to human causes, it will impact naturalness. Climate change will also affect opportunities for primitive and unconfined recreation to an unknown degree.

4.12.5 Impacts to WSA/AWCs under the No Action Alternative

4.12.5.1 Impacts to WSA/AWCs from Implementing the WSA/AWC Program

No impacts have been identified.

The 17,984-acre Caliente Mountain WSA would continue to be managed to so as not to impair the area's suitability for preservation as wilderness.

4.12.5.2 Impacts to WSA/AWCs from Implementing Other Programs

Under this alternative, no impacts are identified from Cultural Resources or Lands and Realty.

Vegetation

The removal of nonnative or noxious weeds would have a long-term positive impact by enhancing naturalness.

Visual Resources

Continued management of the Caliente Mountain WSA as VRM Class 1 would help ensure that any management activities do not impact the natural landscape qualities of the area.

Recreation

Continued public use of the Caliente Peak Trail would result in negligible impacts to the WSA's naturalness, and would continue to provide opportunities for primitive and unconfined recreation.

Livestock Grazing

Grazing is considered to be a compatible use in wilderness and WSAs as defined by the *Wilderness Act* of 1964 and the *Federal Land Policy and Management Act* of 1976. Operation of grazing leases within the Caliente Mountain WSA would continue at present levels, so impacts would be negligible/minor and mainly associated with reconstruction/maintenance of range improvements.

4.12.6 Impacts to WSA/AWCs Common to All Action Alternatives

4.12.6.1 Impacts to WSA/AWCs from Implementing the WSA/AWC Program

No impacts common to all alternatives were identified.

4.12.6.2 Impacts to WSA/AWCs from Implementing Other Programs

No impacts were identified from any action alternatives from the Livestock Grazing, Lands and Realty, or Vegetation programs.

Cultural Resources

Acquisition and restoration of the historic World War II lookout tower on Caliente Peak would result in a minor impact to naturalness within the WSA by retaining/stabilizing the structure.

Recreation

Cache activities could have a minor impact on wilderness qualities if the area(s) become more popular for these types of activities. It is anticipated that minimal activities would take place in the WSA or AWCs as they are more remote and difficult to access.

The placement of low-key directional signs for the safety of visitors would have a minor impact on wilderness character and would also enable visitors to safely enjoy the area.

Travel Management

Limited use roads located within the WSA/AWCs would be available for administrative purposes only when non-motorized access is not feasible for specific projects (repairs that require heavy tools/materials). This action would have a negligible to minor localized impact to the solitude and naturalness of the WSA/AWCs because there could be some motorized vehicle use in these areas. However, because this use would be limited in duration and would only occur on a maximum of three road segments, the impact would be minimal.

4.12.7 Impacts to WSA/AWCs under Alternative 1

4.12.7.1 Impacts to WSA/AWCs from Implementing the WSA/AWC Program

This alternative would place the greatest acreage of the planning area under management for wilderness character of all the alternatives. In addition to the existing 17,984-acre WSA, all lands inventoried and identified as having wilderness characteristics (approximately 65,218 acres) would be managed to protect or further restore these qualities. This would result in over 25 percent of the Monument being managed to protect wilderness character either as a WSA or AWC.

4.12.7.2 Impacts to WSA/AWCs from Implementing Other Programs

Vegetation

Impacts would be the same as the No Action Alternative (except for additional acreage).

Cultural Resources

The removal of non-eligible (for National Register) human-made structures would have a localized beneficial impact to wilderness character by improving naturalness.

Livestock Grazing

The removal of grazing from the WSA/AWCs would increase naturalness. Facilities such as fences and water troughs would be removed, reducing the imprint of humans.

Recreation

Note: The Primitive RMZ encompasses the same lands as the WSA and AWC(s) in all alternatives.

The development of 5 to 35 miles of trails within the Primitive zone could have a moderate impact on the wilderness. This action would increase the miles of trails and consequently increase the number of visitors to those areas. Currently most travel in the WSA is done by cross-country hiking, and the development of 5 to 35 miles of trails will make pedestrian travel much easier. Most of the trail segments would be closed vehicle routes rehabilitated and converted into non-mechanized trails. This would improve the naturalness and opportunities for primitive and unconfined recreation within the areas.

Lands and Realty

If the acquisition of lands happened within the Primitive zone, it could cause a minor to moderate impact on the wilderness values. Several inholdings are located in the Temblor Range AWC. If these areas were acquired, it would ensure that they are managed for wilderness character, and also eliminate the need to authorize reasonable access to inholders through other parts of the area.

Travel Management

This alternative would result in the closure and rehabilitation of the majority of the road network within the 65,218 acres to be managed for wilderness character (see Map 2-2, RMZs and Route Designations, Alternative 1). The roads to be closed are low-standard, mostly "two-track" routes that would revegetate on their own and revert to a natural appearance within several years, enhancing wilderness character.

4.12.8 Impacts to WSA/AWCs under Alternative 2

4.12.8.1 Impacts to WSA/AWCs from Implementing the WSA/AWC Program

This alternative would include management of areas surrounding the Caliente Mountain WSA (17,984 acres) and in the Temblor Range for wilderness characteristics (approximately 36,480 acres). These areas include the lands with the highest level of naturalness within the acreage inventoried for wilderness character.

4.12.8.2 Impacts to WSA/AWCs from Implementing Other Programs

Vegetation

Impacts would be the same as the No Action Alternative (except for additional acreage).

Cultural Resources

Impacts would be the same as Alternative 1.

Livestock Grazing

Impacts would be the same as the No Action Alternative.

Recreation

The development of 5 to 25 miles of trails within the Primitive RMZ could have a minor to moderate impact on wilderness character. The trails would primarily be made up of closed/rehabilitated roads. An increase the miles of trails and associated increase in the number of visitors to those areas would have minor impacts to solitude for some visitors, but would encourage others to access the area for those same values. Currently most travel in the WSA is done by cross-country hiking and development of trails it would provide additional opportunities for primitive and unconfined recreation.

Travel Management

This alternative would result in the closure and rehabilitation of the majority of the road network within the 36,480 acres to be managed for wilderness character (see Map 2-3, RMZs and Route Designations, Alternative 2). The roads to be closed are low-standard, mostly "two-track" routes that would revegetate naturally and revert to a natural appearance within several years, enhancing wilderness character.

4.12.9 Impacts to WSA/AWCs under Alternative 3

4.12.9.1 Impacts to WSA/AWCs from Implementing the WSA/AWC Program

Impacts would be the same as the No Action Alternative.

4.12.9.2 Impacts to WSA/AWCs from Implementing Other Programs

Impacts would be the same as the No Action Alternative except as discussed below.

Livestock Grazing

Additional minor facilities may be allowed to meet the objectives of this alternative, but they would need to be designed and located to meet VRM Class I criteria. This would result in negligible impacts to naturalness.

Recreation

The development of 5 to 15 miles of trails within the WSA could have a minor to moderate impact on wilderness character. An increase the miles of trails and associated increase in the number of visitors to those areas would have minor impacts to solitude for some visitors, but would encourage others to access the area for those same values. Currently most travel in the WSA is done by cross-country hiking and, if the Monument develops 5 to 15 miles of trails, it will make pedestrian travel much easier.

4.12.10 Cumulative Impacts to WSA/AWCs

4.12.10.1 Assessment Area

The assessment area for visual resources is the south central California Coast Range.

4.12.10.2 Past, Present, and Reasonably Foreseeable Future Actions and Cumulative Impacts

The largest acreage of federal land within the assessment area is the 1.75-million-acre Los Padres National Forest. This Forest also contains all of the designated wilderness within the region, which totals approximately 587,000 acres, or 34 percent of the National Forest acreage. A maximum of 32 percent of the BLM lands within the planning area would be managed for wilderness character (under Alternative 1).

Forest Service Wilderness Area	Acres
Santa Lucia Wilderness	20,412
Garcia Wilderness	14,100
Machesna Mountain Wilderness	19,880
Chumash Wilderness	38,150
Sespe Wilderness	219,700
Matilija	29,600
Dick Smith	67,800
San Rafael Wilderness	197,380
Silver Peak Wilderness	31,555
Ventana Wilderness	240,026

BLM is currently initiating the revision of a land use plan for Bureau-managed public lands within the region. Although the wilderness character inventory has not yet been completed for this plan, it is anticipated that little if any of the land within the assessment area would have wilderness characteristics. No other wilderness inventories are known to be ongoing within the assessment area.

4.13 Impact Analysis for Livestock Grazing

4.13.1 Introduction

Livestock grazing occurs for two purposes within the Monument: it is either managed as an allowable use, such as under a Section 15 grazing lease, which utilizes livestock forage, or it used as a vegetation management tool, such as under a free use grazing permit, which meets objectives other than the production of livestock forage. The impact analysis below describes impacts related to each type of livestock grazing. Although livestock grazing for vegetation management purposes is an action directed by biological programs, it is addressed here for continuity of the topic. Acres of impact for each action were determined by combining acreages listed in Appendix V- Pasture Management Table or the Grazing Implementation Tables, Appendices Q, R, S, or T, for the affected pastures or management units.

As described in the affected environment chapter, Section 15 lease holders must own or control private property that acts as the base to their livestock operation, this base property gives the lessee a priority over other grazing applicants, and this priority is attached to their private property, giving it some value above other non-base property lands. Additionally, private base property is usually intermingled with the BLM land in the grazing lease and thus can be impacted with actions on the grazing lease. Conversely, base property is not required to hold a free use grazing permit; thus, free use grazing permittees have no private property value associated with their grazing permit. Unless these permittees also have private lands that are intermingled with the BLM lands in their permit, they would not incur impacts to the use of their private lands from actions on the grazing permit. This analysis describes the separate types of impacts incurred by both types of livestock operations to provide a full disclosure of impacts to all grazing operations in the Monument. Impacts to livestock grazing in the region are described in Section 4.18, Impacts to Social and Economic Conditions.

4.13.2 Assumptions Used for the Analysis

- Livestock operators will have livestock when needed by BLM for vegetation management areas.
- Livestock management facilities will be functional when needed in vegetation management areas.
- Acreage under BLM control will remain stable for the life of the plan.

- BLM does not control livestock management in pastures where BLM is not the majority landowner. This situation occurs in a few pastures of both Section allotments and vegetation management areas and involves minor acreage of the Monument.
- Funding and staffing will allow implementation of required compliance monitoring and enforcement of terms and conditions on grazing authorizations.

4.13.3 Incomplete Information

Accurate acreages have not been tabulated for non-grazed areas, the amount of private lands within pastures, miles of water pipelines, and other detailed information that is not necessary for the current broad level of analysis.

Estimates of the number of years potentially grazed out of ten, based on past data for rainfall and resultant vegetation response, are not intended to be specific predictions of actual future grazing levels but a method for comparing potential grazing use between alternatives.

4.13.4 Programs That Will Not Impact Livestock Grazing

Actions to implement Air Quality, Water Resources, Geology and Paleontology, Cultural Resources, Visual Resources, Minerals, Recreation, Administrative Facilities, or Lands and Realty programs under all alternatives are expected to have negligible or no impacts to Livestock Grazing operations or opportunities under Section 15 or within vegetation management areas.

4.13.5 Impacts to Livestock Grazing under the No Action Alternative

4.13.5.1 Impacts to Livestock Grazing from Implementing the Livestock Grazing Program

BLM would authorize 6 Section 15 leases on 7 allotments, allowing grazing on 55,862 acres, supporting up to 7,897 animal unit months (AUMs) annually. This is a continuation of the current levels of permitted use in Section 15 allotments and has no impact on livestock grazing operations or opportunities.

BLM would authorize up to 9 free use grazing permits for vegetation management purposes on up to 114,190 acres, supporting up to 59,825 AUMs annually. This is a continuation of the potential levels of permitted use in vegetation management areas and has no impact to livestock grazing operations or opportunities.

Grazing on 170,052 acres would remain at levels and under conditions to meet rangeland health standards. This would result in a continuance of the good rangeland health conditions found in these areas and would not impact livestock grazing operations or opportunities.

Grazing, on 55,862 acres under Section 15 grazing allotments is expected to occur in 8 out of 10 years as resource conditions allow, under the specific livestock management guidelines identified in Appendix U that meet objectives for healthy, sustainable, biologically diverse ecosystems that contribute goods, services and other social and cultural needs for local communities and the region. These are established grazing areas with stable objectives and the amount of grazing out of ten years is expected based upon the natural fluctuations of annual rangelands within the region. These guidelines or terms and conditions have minor impacts to livestock grazing operations or opportunities.

Although not all of the facilities described below exist to support livestock grazing, they are mentioned here for ease of summarizing the topic. BLM, in conjunction with cooperators, would expect to maintain the approximately 500 miles of existing fence within and along the boundary, the approximately 90 miles

of existing underground water pipelines, the approximately 200 existing water troughs, and the approximately 150 existing water tanks within the Monument. Under this alternative, a small percentage of each would be removed or modified. An even smaller percentage of new features would be created under this alternative. Impacts to livestock operations are expected to continue to be minor. BLM requirements as to how, when, and at whose cost these facilities are maintained or modified continues to impact the daily logistics, continuity and cost benefit ratio of affected livestock operations.

4.13.5.2 Impacts to Livestock Grazing from Implementing Other Programs

Wildlife

Section 15 Allotments. Livestock grazing on Section 15 allotments is expected to continue at levels and under conditions and processes which allow stability of livestock operations over time under the specific livestock management guidelines identified in Appendix U applied to meet wildlife management objectives. *(Applicable guidelines: Dec-May season and utilization limits (20 percent max) or form class applied in saltbush scrub. Annual mulch of 500 lbs/acre or 700 lbs/acre with 2 inches green growth and 500 lbs/acre minimum, applied to meet species standard for rangeland health.)* Under these guidelines it is estimated that grazing would occur 8 years out of 10 based upon anticipated rainfall and the associated vegetation response. Any effects to current livestock operations or opportunities from wildlife management actions under the No Action Alternative are expected to be minor.

Vegetation Management Areas. No grazing would occur on 49,136 acres (all unavailable pastures plus those repeatedly ungrazed) within areas available for vegetation management under the guidelines established in the latest (2005) pasture matrix. Varying levels and locations of livestock grazing on 98,354 acres (all available pastures minus those repeatedly ungrazed) within vegetation management areas are expected to occur approximately 5 years out of 10 under the guidelines established in the latest (2005) pasture matrix (Appendix M) applied to meet wildlife objectives. *(Applicable guidelines: Annual mulch of 500 lbs/acre or 700 lbs/acre with 2 inches green growth and 500 lbs/acre minimum applied to meet wildlife habitat objectives. Pronghorn vegetation limits and season of use in certain pastures. Maintain grazing levels on fairy shrimp locations. Utilization limits (20 percent max.) applied on key perennials or form class.)* The extreme variability in resource conditions and the evolving status of knowledge of wildlife locations and wildlife habitat needs continues to reduce the opportunities for livestock grazing and the stability of livestock operations within vegetation management areas under the No Action Alternative.

Soils

Section 15 Allotments. Livestock grazing on Section 15 allotments is expected to continue at levels and under conditions and processes that allow stability of livestock operations over time under the specific livestock management guidelines identified in Appendix U applied to meet soils management objectives. *(Applicable guidelines: Annual mulch of 500 lbs/acre or 700 lbs/acre with 2 inches green growth and 500 lbs/acre minimum applied to meet soils standard for rangeland health.)* Under these guidelines it is estimated that grazing would occur 8 years out of 10 based upon anticipated rainfall and the associated vegetation response. Any effects to current livestock operations or opportunities from soils management actions under the No Action Alternative are expected to be minor.

Vegetation Management Areas. Actions to implement soils objectives within vegetation management areas under the No Action Alternative are expected to have negligible or no impacts to livestock grazing operations or opportunities.

Vegetation

Section 15 Allotments. Livestock grazing on Section 15 allotments is expected to continue at levels and under conditions and processes which allow stability of livestock operations over time under the specific livestock management guidelines identified in Appendix U applied to meet vegetation objectives. *(Applicable guidelines: Annual mulch of 500 lbs/acre or 700 lbs/acre with 2 inches green growth and 500 lbs/acre minimum applied to meet species standard for rangeland health. Utilization limits (50 percent max) on key perennials).* Under these guidelines, it is estimated that grazing would occur 8 years out of 10 based upon anticipated rainfall and the associated vegetation response. Any effects to current livestock operations or opportunities from vegetation management actions under the No Action Alternative are expected to be minor.

Vegetation Management Areas. No grazing would occur on 49,136 acres (all unavailable pastures plus those repeatedly ungrazed) within areas available for vegetation management under the guidelines established in the latest (2005) pasture matrix. Varying levels and locations of livestock grazing on approximately 98,354 acres (pastures available minus those repeatedly ungrazed) within vegetation management areas are expected to occur approximately 5 years out of 10 under the guidelines established in the latest (2005) pasture matrix (Appendix M) applied to meet vegetation objectives. *(Applicable guidelines: Annual mulch of 1,000 lbs/acre or 1,200lbs/acres with 2 inches green growth and 1,000 lbs/acre minimum applied to meet objectives for Poa, annual flora composition guidelines (no grazing if 60 percent native annuals), bunchgrass season of use (off March 31 for* Poa*)).* The extreme variability in resource conditions and the evolving status of our knowledge of plant species locations and population and community needs continues to reduce the opportunities for livestock grazing and the stability of livestock operations within vegetation management areas under the No Action Alternative by placing multiple and overlapping restrictions on pasture use.

Fire and Fuels Management

Wildland fire suppression or prescribed burning under this alternative imposes limited impacts to logistics of current livestock operations or opportunities. Certain pastures or portions of the allotments may become unusable for short durations, but usually on a small enough scale so that impacts to livestock management activity would be minor and localized. Over time, as burn areas potentially become more frequent or larger, logistical and operational impacts to livestock management efforts will become greater, although they should remain at moderate levels over the life of the plan.

WSA/Other Lands with Wilderness Characteristics

The current Caliente Mountain WSA covers a portion of two Section 15 grazing allotments. Maintaining this current designation provides low potential for future development of new or modified grazing infrastructure if needed for livestock management within those areas of the allotments. Maintenance of existing facilities can be restricted by minor to moderate amounts, although the Interim Management Policy For Lands Under Wilderness Review allows for access as necessary. Opportunities for future changes to livestock grazing management practices are also limited by access and development restrictions. Overall, actions to implement objectives for WSA/Other Lands with Wilderness Characteristics continue to provide a minor impact to livestock grazing operations and opportunities.

Travel Management

Open and limited access routes should provide adequate access to existing grazing infrastructure so as to cause only minor impacts to livestock grazing operations or opportunities in both Section 15 and vegetation management grazing allotments.

4.13.5.3 Conclusion

Overall, the No Action Alternative continues minor impacts to livestock grazing operations and opportunities within Section 15 allotments. Vegetation management operations continue to see growing limitations placed upon their grazing use and they incur more moderate impacts to individual operations and overall opportunities under this alternative. Further impacts to livestock grazing in the region are described in Section 4.18, Impacts to Social and Economic Conditions.

4.13.6 Impacts to Livestock Grazing Common to All Action Alternatives

4.13.6.1 Impacts to Livestock Grazing from Implementing the Livestock Grazing Program

BLM will assess all grazing allotments over the life of the plan. It is estimated all allotments will meet rangeland health standards and that none of these authorization will need adjustments to meet rangeland health standards.

BLM will establish monitoring of impacts to specific target objectives over the life of the plan, including within Section 15 allotments. It is anticipated that some adjustments to these grazing authorizations will occur as a result of this monitoring.

BLM will monitor compliance on all grazing authorizations and annual minor adjustments will result.

BLM will adjust the boundary fence in some locations over the life of the plan, modifying allotment boundaries and acreages as needed. Adjustments to grazing authorizations as a result of these adjustments are expected to be minor.

4.13.6.2 Impacts to Livestock Grazing from Implementing Other Programs

Wildlife

Section 15 Allotments. The application of the guidelines to implement objectives for core area threatened and endangered animals within Section 15 allotments *(Applicable guidelines: Biomass 1,000 lbs/acres and 500 lbs/acre minimum for San Joaquin Valley core with blunt-nosed leopard lizard)* would affect 2 pastures within 1 Section 15 allotment. This action will result in as much as 3 more years out of 10 of no grazing being initiated in these areas as compared to the No Action Alternative. Under these guidelines, it is estimated that grazing in these pastures would occur 5 years out of 10 based upon anticipated rainfall and the associated vegetation response. This effect is a major impact to the individual operation affected when one takes into consideration the limited grazing opportunities that exist in this environment and how these actions affect the rest of the livestock operation.

Vegetation Management Areas. The application of the guidelines on 58,275 acres to implement objectives for core area threatened and endangered animals within vegetation management allotments *(Applicable guidelines: Annual mulch of 1,600 lbs/acre and 1,000 lbs/acre with low giant kangaroo rat for San Joaquin Valley core, Biomass of 1,000 lbs/acre and 500 lbs/acre minimum for San Joaquin Valley core with blunt-nosed leopard lizard, summer-fall grazing to 2" vegetation height for mountain plover core)* provides for some level of grazing use of limited pastures within vegetation management areas. This grazing level, however, is less than what would be allowed under the No Action Alternative because livestock would not be applied until later, if at all, and removed earlier based on residual annual plant dry matter thresholds. It is also expected that livestock grazing for these purposes and under these guidelines would occur only 2 years out of 10. This represents a reduction of three more years out of ten when no grazing opportunities would be available for livestock operations in these areas as compared to the No

Action Alternative. This is a major impact to the individual operations that retain pastures for potential grazing use in vegetation management areas. The occasional grazing use that is allowed in combination with the limited number of pastures and multiple restrictions on use, make this source of forage unreliable for viable livestock operations.

Soils

Actions to implement soils objectives within all grazing areas common to all alternatives are expected to have negligible or no impacts to livestock grazing operations or opportunities.

Vegetation

Actions to implement vegetation objectives within all grazing areas common to all alternatives are expected to have negligible or no impacts to livestock grazing operations or opportunities.

Fire and Fuels Management

Actions to implement fire and fuels management objectives within all grazing areas common to all alternatives are expected to have negligible or no impacts to livestock grazing operations or opportunities.

WSA/Other Lands with Wilderness Characteristics

Impacts from actions to implement WSA/Other Lands with Wilderness Characteristics objectives within all grazing areas common to all alternatives are expected to be the same as described for the No Action Alternative.

Travel Management

Restricting access and/or maintenance on administrative access routes within Primitive RMZs that are also within Section 15 or vegetation management allotments, based on a minimum requirements assessment, would moderately impact these livestock grazing operations. Livestock operators need to access existing facilities and remote locations of the allotments for the periodic supervision of livestock and water supplies. Should it be determined that vehicle access or maintenance for these purposes is not a necessity, or that other access such as by horseback, is a reasonable alternative, these livestock grazing operations would experience moderate negative effects.

4.13.6.3 Conclusion

Overall impacts from actions common to all alternatives are negligible except for major impacts to individual livestock operations from the actions to implement core area threatened and endangered species objectives. Moderate negative effects could also be realized under these actions common to all depending on the level of implementation for access restrictions within Primitive RMZs. Further impacts to livestock grazing in the region are described in Section 4.18, Impacts to Social and Economic Conditions.

4.13.7 Impacts to Livestock Grazing under Alternative 1

4.13.7.1 Impacts to Livestock Grazing from Implementing the Livestock Grazing Program

BLM would cancel 2 Section 15 leases on 3 allotments, removing 51,275 acres and 6,958 AUMs from grazing availability. This reduction in previously reliable forage sources will severely impact the viability of at least 3 livestock operations that utilize public lands within the Monument. The severity of the

reduction will depend on the percentage of the operation's reliance upon the forage source or the source's importance to the operation's logistical or livestock management needs.

BLM would not authorize any livestock grazing for vegetation management purposes under this alternative. This would eliminate the possibility of even a limited or inconsistently available forage source for up to 8 livestock operations as compared to the No Action Alternative.

BLM would authorize 4 Section 15 leases on minor portions of 4 allotments, allowing grazing on 4,587 acres, supporting up to 939 AUMs annually. These minor authorizations would be a continuance of portions of authorizations under the No Action Alternative.

Grazing on 4,587 acres would remain at levels and under terms and conditions that meet rangeland health standards. This would result in a continuance of the good rangeland health conditions found in these areas under the No Action Alternative.

Grazing on 4,587 acres under Section 15 leases would remain at current levels and under current terms and conditions that meet objectives for healthy, sustainable, biologically diverse ecosystems that contribute goods, services and other social and cultural needs for local communities, the region, and the nation. This would be a continuance of the situation found under the No Action Alternative.

BLM would remove approximately 300 miles of fences, gates, cattleguards, and corrals under this alternative. BLM and cooperators will still maintain approximately 119 miles of perimeter fences. BLM would have to construct approximately 30 miles of new fence in order to separate BLM lands within pastures under private grazing control to prevent livestock from grazing on those intermingled BLM lands. Impacts to livestock operations are expected to continue to be minor for those bordering the Monument. Livestock operations with pastures that require construction of fences to segregate BLM land from private lands may incur more moderate impacts because the fences could cause the private lands within the pastures to become unusable. BLM requirements as to how, when, and at whose cost these facilities are maintained or modified would continue to impact the daily logistics, continuity and cost benefit ratio of affected livestock operations.

BLM would also remove or abandon approximately two-thirds of existing water facilities, or approximately 30 miles of water pipelines, 100 water tanks, and 120 water troughs, if it is determined that they were not needed for purposes other than livestock management. Impacts to livestock operations from this action are expected to be negligible.

4.13.7.2 Impacts to Livestock Grazing from Implementing Other Programs

The limited livestock grazing that is authorized under this alternative is controlled by decisions outside the Monument because the acreage within the Monument makes up from 3 to 41 percent of each of 9 pastures and is spread over 15 miles. Other program decisions within the Monument are expected to have negligible or no impacts to livestock grazing operations or opportunities within these Section 15 pastures.

4.13.7.3 Conclusion

Overall, this alternative provides a major impact to all individual livestock operations and opportunities either entirely or partially within the Monument. Further impacts to livestock grazing in the region are described in Section 4.18, Impacts to Social and Economic Conditions.

4.13.8 Impacts to Livestock Grazing under Alternative 2

4.13.8.1 Impacts to Livestock Grazing from Implementing the Livestock Grazing Program

BLM would authorize 6 Section 15 leases on 7 allotments, allowing grazing on 55,862 acres, supporting up to 7,897 AUMs annually. This reflects similar amounts of lands available for Section 15 grazing lease use as the No Action Alternative. However, the levels of permitted use on those lands depend upon the applicable livestock management guidelines and may vary annually from no use up to the levels of permitted use shown above. See the impacts described for livestock grazing within Section 15 areas from other biological resources below for further details.

BLM would authorize 9 free use grazing permits on up to 117,467 acres, supporting up to 61,464 AUMs annually. This reflects similar amounts of lands available for vegetation management as compared to the No Action Alternative; however, the levels of permitted use on those lands are now dependent upon biological needs detailed in the applicable livestock management guidelines and may vary annually from no use up to the levels of permitted use shown above. See the impacts described for livestock grazing within vegetation management areas from other biological resources below for further details.

It is anticipated that few or no relinquishments of permitted use would occur in Section 15 leases over the life of the plan, unless incentives are provided to the lessees to offset the impacts from the loss of grazing use (this would be outside of BLM's authority and therefore is outside the scope of this analysis). These relinquishments would result in zero to few re-allocations and changes to grazing authorizations.

Grazing on 173,329 acres would remain at levels and under conditions to meet rangeland health standards. This would result in a continuance of the good rangeland health conditions found in these areas under the No Action Alternative.

Grazing on 1,839 acres would occur within vegetation management areas in response to incidental needs of livestock operations while grazing for above biological objectives or within pastures where grazing use is not controlled by BLM. This minor acreage provides logistical support for livestock operations to continue to provide vegetation management actions that do not impact their overall operation. This is also a continuation of the situation under the No Action Alternative.

As under the No Action Alternative, BLM, in conjunction with cooperators, would expect to maintain the approximately 500 miles of existing fence within and along the boundary, the approximately 90 miles of existing underground water pipelines, the approximately 200 existing water troughs, and the approximately 150 existing water tanks within the Monument. Under this alternative a small percentage of each would be removed or modified. An even smaller percentage of new features would be created under this alternative. Impacts to livestock operations are expected to continue to be minor. BLM requirements as to how, when and at whose cost these facilities are maintained or modified continues to impact the daily logistics, continuity and cost benefit ratio of affected livestock operations.

4.13.8.2 Impacts to Livestock Grazing from Implementing Other Programs

Wildlife

Section 15 Allotments. Actions to implement wildlife objectives on 55,862 acres within Section 15 allotments areas under Alternative 2 (beyond the actions common to all alternatives) *(Applicable guidelines: possible new pronghorn fawning considerations, No grazing in elk cow ranges, continue past grazing for shrimp)* are expected to have negligible or no impacts to livestock grazing operations or opportunities.

Vegetation Management Areas. No grazing would occur on 84,881 acres under current guidelines to meet wildlife, vegetation, and other objectives identified in Conservation Target Table. This action is an increase of 35,745 acres placed into a currently ungrazed category from conditions under the No Action Alternative. This is a major impact to all livestock operations affected because it removes a large amount of land that could potentially be available for livestock use within vegetation management areas. Two individual operations on three allotments would have all opportunities for livestock grazing entirely removed under this alternative. The remaining operations and allotments would have areas available for some level of grazing severely limited even further by this action.

Actions to implement wildlife objectives within vegetation management allotments areas under Alternative 2 (beyond the actions common to all alternatives) *(Applicable guidelines: Non-core areas, fence modification and removals, possible new pronghorn fawning considerations, no grazing in elk cow ranges, continue past grazing for shrimp)* are expected to have minor impacts to livestock grazing operations or opportunities. Should known locations of key resources expand to new areas during the life of the plan, impacts to livestock grazing operations or opportunities could increase, removing more acreage available for grazing.

Vegetation

Section 15 Allotments. The application of the guidelines to implement vegetation objectives on 55,862 acres within Section 15 allotments *(Applicable guidelines: utilization rates for bunchgrasses, Annual mulch of 1,000 lbs/acre or 1,200 lbs/acre with 2 inches green growth and 700 lbs/acre minimum, season of use for target shrubs, potential restrictions for oaks)* is expected to result in loss of grazing opportunities in 3 more years out of 10 as compared to the No Action Alternative. Under these guidelines it is estimated that grazing would occur only 5 years out of 10 based upon anticipated rainfall and the associated vegetation response. Should grazing be initiated in any given year under the guidelines for this alternative, grazing will also occur for a shorter duration than under the No Action Alternative. This effect is a major impact to individual operations when consideration is given to what limited grazing opportunities exist in this environment. It also would affect other portions of their operations by causing those other areas to be used more, or upsetting the rotational use of pastures possibly making the entire operation unviable. The severity of the impact on any one operation from this reduction in use will depend on the percentage of the operation's reliance upon the forage source or the source's importance to the operation's logistical or livestock management needs.

Vegetation Management Areas. No grazing would occur on 84,881 acres under current guidelines to meet wildlife, vegetation, and other objectives identified in Conservation Target Table. This action is an increase of 35,745 acres placed into a currently ungrazed category from conditions under the No Action Alternative. This is a major impact to all livestock operations affected because it removes a large amount of land that could potentially be available for livestock use within vegetation management areas. Two individual operations on three allotments would have all opportunities for livestock grazing entirely removed under this alternative. The remaining operations and allotments would have areas available for some level of grazing severely limited even further by this action.

Grazing on 1,349 acres (pastures managed for vegetation resources; *Poa secunda*/soil pastures) within vegetation management areas would occur under the current guidelines to meet vegetation objectives identified in the Conservation Target Table. This potential grazing use, however, is extremely minor and coincides with a pasture that would be grazed for core area threatened and endangered animals objectives as well. Impacts to livestock grazing operations or opportunities from this action would be the same as those described for core area threatened and endangered animals actions in the Impacts for Common to All Action Alternatives section.

The application of the guidelines to implement vegetation objectives within vegetation management areas *(Applicable guidelines: season for* P. secunda *and* Nacella cernua*, No grazing* P. secunda *and recently cultivated, No spring grazing* P. secunda *with certain soils, No spring grazing* N. cernua *with certain soils, utilization rates for bunchgrasses, No grazing in exceptional expression years for annual flora, No spring grazing in certain soils for annual flora, season for target shrubs, No grazing valley alkali sink, No grazing* Lepedium jaredii, *No spring grazing for annual flora)* is expected to be a major impact on grazing operations and opportunities within these areas. The new and overlapping restrictions placed on potential grazing use to meet vegetation objectives will reduce the number of pastures available for some level of grazing by 50 percent as compared to the No Action Alternative. This effect is a major impact to individual livestock permittees who may have their entire operations displaced from the Monument.

Fire and Fuels Management

Impacts from actions to implement Fire and Fuels Management objectives within all grazing areas under this Alternative are expected to be the same as described for the No Action Alternative.

WSA/Other Lands with Wilderness Characteristics

Section 15 Allotments. This alternative greatly increases the area within 2 Section 15 grazing allotments that would be managed for wilderness characteristics. Impacts to livestock grazing operations and opportunities from actions to implement WSA/Other Lands with Wilderness Characteristics objectives within Section 15 allotments under this alternative are expected to be the same type as described for the No Action Alternative, but over a larger area.

Vegetation Management Areas. This alternative increases the area managed for wilderness characteristics to include 2 pastures of a vegetation management allotment. Impacts to livestock grazing operations and opportunities from actions to implement WSA/Other Lands with Wilderness Characteristics objectives within the vegetation management allotment under this alternative are expected to be the same type as described for the Section 15 allotments areas under the No Action Alternative, but now experienced in this allotment and by another permittee.

Travel Management

Impacts from actions to implement Travel Management objectives within all grazing areas under this Alternative are expected to be the same as described for the No Action Alternative.

4.13.8.3 Conclusion

Overall, this alternative causes major impacts to livestock grazing operations and opportunities within Section 15 allotments from actions to implement vegetation objectives. It also causes major impacts to livestock grazing operations and opportunities within vegetation management allotments from actions to implement both wildlife and vegetation objectives. Further impacts to livestock grazing in the region are described in Section 4.18, Impacts to Social and Economic Conditions.

4.13.9 Impacts to Livestock Grazing under Alternative 3

4.13.9.1 Impacts to Livestock Grazing from Implementing the Livestock Grazing Program

BLM would authorize 6 Section 15 leases on 7 allotments, allowing grazing on 55,862 acres, supporting up to 7,897 AUMs annually. This is a continuation of the current levels of permitted use in Section 15 leases as compared to the No Action Alternative.

BLM would authorize 9 free use grazing permits on up to 117,467 acres, supporting up to 61,464 AUMs annually. This reflects similar amounts of lands available for vegetation management as compared to the No Action Alternative, however, the levels of permitted use on those lands are now dependent upon biological needs detailed in the applicable livestock management guidelines and may vary annually from no use up to the levels of permitted use shown above. See the impacts described for livestock grazing within vegetation management areas from other biological resources below for further details.

Grazing on 173,329 acres would remain at levels and under conditions to meet rangeland health standards. This would result in a continuance of the good rangeland health conditions found in these areas under the No Action Alternative.

Grazing, on 55,862 acres under Section 15 grazing allotments, is expected to occur in 8 out of 10 years as resource conditions allow, under the specific livestock management guidelines identified in Appendix U that meet objectives for healthy, sustainable, biologically diverse ecosystems that contribute goods, services and other social and cultural needs for local communities, the region, and the nation. These are established grazing areas with stable objectives and the amount of grazing out of ten years is expected based upon the natural fluctuations of annual rangelands within the region. These guidelines or terms and conditions would not impact livestock grazing operations or opportunities.

Grazing on 1,839 acres would occur within vegetation management areas in response to the incidental needs of livestock operations while grazing for above biological objectives or within pastures where grazing use is not controlled by BLM. This minor acreage provides logistical support for livestock operations to continue to provide vegetation management actions that do not impact their overall operation. This is also a continuation of the situation under the No Action Alternative.

As under the No Action Alternative, BLM, in conjunction with cooperators, would expect to maintain the approximately 500 miles of existing fence within and along the boundary, the approximately 90 miles of existing underground water pipelines, the approximately 200 existing water troughs, and the approximately 150 existing water tanks within the Monument. Under this alternative a small percentage of each would be removed or modified. An even smaller percentage of new features would be created under this alternative. Impacts to livestock operations are expected to continue to be minor. BLM requirements as to how, when and at whose cost these facilities are maintained or modified continues to impact the daily logistics, continuity and cost benefit ratio of affected livestock operations.

4.13.9.2 Impacts to Livestock Grazing from Implementing Other Programs

Wildlife

Section 15 Allotments. Impacts from actions to implement wildlife objectives within Section 15 areas under this alternative are expected to be the same as described for the No Action Alternative.

Vegetation Management Areas. Impacts from actions to implement wildlife objectives within vegetation management areas under this alternative are expected to be the same as described for Alternative 2.

Vegetation

Section 15 Allotments. Impacts from actions to implement vegetation objectives within Section 15 areas under this alternative are expected to be the same as described for the No Action Alternative.

Vegetation Management Areas. Impacts from actions to implement vegetation objectives within vegetation management areas under this alternative are expected to be the same as described for Alternative 2.

Fire and Fuels Management

Impacts from actions to implement Fire and Fuels Management objectives within all grazing areas under this alternative are expected to be the same as described for the No Action Alternative.

WSA/Other Lands with Wilderness Characteristics

Impacts from actions to implement WSA/Other Lands with Wilderness Characteristics objectives within all grazing areas under this alternative are expected to be the same as described for the No Action Alternative.

Travel Management

Impacts from actions to implement Travel Management objectives within all grazing areas under this alternative are expected to be the same as described for the No Action Alternative.

4.13.9.3 Conclusion

Overall, this alternative continues minor impacts to livestock grazing operations and opportunities within Section 15 allotments. It also causes major impacts to livestock grazing operations and opportunities within vegetation management allotments from actions to implement both wildlife and vegetation objectives. Further impacts to livestock grazing in the region are described in Section 4.18, Impacts to Social and Economic Conditions.

4.13.10 Cumulative Impacts to Livestock Grazing

4.13.10.1 Assessment Area

The assessment area for livestock grazing is Kern and San Luis Obispo Counties.

4.13.10.2 Past, Present, and Reasonably Foreseeable Future Actions within the Assessment Area

Agricultural Statistics Service data for livestock inventories show that cattle inventories have decreased by 36 percent in San Luis Obispo County over the past two decades, from 121,000 head in 1988 to 77,000 head in 2007. The same indicator in Kern County shows inventories fluctuating over that period, with an average increase of 4.40 percent. Data for sheep inventories were available only through 1992; however, the trend for both counties during the four-year data period (1988 to 1992) was downward, with a 27 percent decrease in San Luis Obispo County and an 18 percent decrease in Kern County (USDA 2007). Based on these data, ranching and grazing operations in the region appear to have decreased overall in the two-decade period. Nonetheless, these operations continue to be an important local economic activity in the region and in the CPNM area and are expected to continue to be into the foreseeable future.

Restrictions and pressures on livestock grazing use of public lands continue to increase, making operations that rely on that source of forage less viable.

4.13.10.3 Cumulative Impacts

Although substantial to the individual livestock operations, the elimination of grazing from the Monument in Alternative 1 would result in a minor but continued reduction in acreage available for grazing, primarily in San Luis Obispo County.

Similarly, the other alternatives would continue to keep similar acreage within the Monument available for grazing, but under guidelines for grazing management that make it very unreliable or restricted so as to be difficult or impossible to be considered a viable part of a ranch operation. And although the situation under these alternatives would be a substantial impact to the operations that utilize the Monument resources or to opportunities for future users, it would result in only minor additive affects to the reduction in livestock levels within the county. Overall, the effects on a county or regional basis are expected to be minor. The primary affects (discussed above) would be on the operations that have traditionally used the Monument. Impacts to grazing operations in the area are also discussed under social and economic affects (Section 4.18).

4.14 Impact Analysis for Recreation (Including Administrative Facilities)

4.14.1 Assumptions Used in the Analysis

In general, it is assumed that recreational use would not increase at the same rate that it did from 2001 to 2007 because hunting opportunities will not likely expand at the same rate, and the novelty of a "new" Monument will level off. Nature and/or heritage-based recreation activities are likely to increase somewhat, based on national trends, expanded interpretive opportunities, and population increases in the region.

Increased travel costs/gas prices will not affect Monument use levels. The area is close to major population centers, and although some visitors may decrease visits to the Monument, others will choose it as a destination over more distant parks and Monuments.

Whether a management action has an impact on the recreation resource, and to what degree, is considered to be subjective based on the preferences of individual visitors. For consistency, it is assumed that an action could affect the recreation resource to a lesser or greater degree if it changes the amount of recreation use, changes the setting or opportunity, or changes the recreation experience for a recreation activity. For example, closing roads to motorized and mechanized use within the Primitive zone would change the recreation experience, enhancing opportunities for non-motorized activities and decreasing motorized recreational activities within the zone. Whether or not the impact is beneficial or adverse depends on the experience goals and activity preference of the user – so when words such as "enhance" or "detract" are used, they apply to a specific visitor use segment and not all recreation users.

4.14.2 Incomplete information

Monument use estimates are based primarily on anecdotal information and not formal visitor counts. Sources include field observations and visitor registers at the Goodwin Education Center. Estimates of future visitor use are based on past trends, future growth in the regional population, and demand levels for the types of opportunities offered at the Monument. These are general estimates that are sufficient for broad planning purposes.

4.14.3 Programs with No or Negligible Impacts on Recreation

There would be no or negligible impacts to the recreation under all alternatives through implementation of the soils, water, or air quality actions in the RMP.

Table 4.14-1. Monument Visitor Use Levels Projected under Each Alternative

	No Action	Alternative 1	Alternative 2	Alternative 3
Current	87,040 --	87,040 --	87,040 --	87,040 --
2018	106,000 22 percent	96,000 10 percent	103,000 18 percent	109,000 25 percent
2028	124,000 17 percent	103,000 8 percent	118,000 15 percent	131,000 20 percent

4.14.4 Impacts to Recreation under the No Action Alternative

4.14.4.1 Impacts to Recreation from the Recreation Management Program

There would be no RMZs in this alternative. Recreational opportunities would be similar to those currently offered. Acres and road miles and trails would be managed in a similar manner to that proposed in Alternative 3. Use levels are expected to grow to approximately 124,000 visitor days per year under this alternative – use levels would be higher than Alternatives 1 and 2 because management controls (such as permits for Painted Rock) would not be put into effect.

4.14.4.2 Impacts to Recreation from Other Programs

Lands and Realty

Lands would continue to be acquired from willing sellers within the Monument boundary. This would increase the acreage available for public recreation access within the Monument.

Fire and Fuels Management

The effects of wildfire in the National Monument would be the same under all alternatives. Impacts of wildfire to the recreation resource during, and immediately after a wildfire could be moderate to major in the short term, depending on the amount of time of public closure of areas. Due to the fuel types in Carrizo, long-term fire events with associated long-term public use closures are not expected. Also, these are emergency actions and are outside the scope of the plan. In the long term, wildfire is estimated to have a negligible impact on recreation since it would not change the recreation use. Prescribed burning in this alternative, as well as Alternatives 2 and 3 would have negligible impacts to recreation use. Some short-term closures of public use areas would occur, but efforts would be made to mitigate any impacts to the public (such as avoiding weekends, peak use periods)

Climate/Climate Change

Climate change models indicate that the planning area will become warmer and drier over the life of the RMP. This could impact recreation use by reducing the frequency and intensity of spring wildflower blooms and changing the use/populations of wildlife species that are major attractions for recreation visitors. The peak public use period is already primarily in the winter-spring months, but could be shortened by higher temperatures.

Wildlife

All actions would reflect current management and continue to restore and improve wildlife habitat. This would enhance wildlife viewing opportunities and otherwise have a negligible impact on recreation.

Vegetation

Actions implemented in this alternative would increase the health and nativeness of vegetation, but otherwise have a negligible impact on the recreation resource.

Minerals

Possible short- to long-term surface disturbance on private minerals with federal or private surface would be about 23 acres. Possible surface disturbance within existing oil and gas leases in the Russell Ranch Unit could be 6.5 acres. Both areas have potential to see larger amounts of transitory disturbance from geophysical activities but the presence of equipment would likely be only a few days or weeks, so there would be negligible impact from these activities. Reasonable restrictions would apply to minimize adverse impact on Monument resources. The visual impact of this disturbance is discussed in the Visual Resources section. Overall impact of oil and gas development on private mineral estate to the recreation resource could be moderate or major since it would be located on the valley floor, and this is the main area of Monument visitation, and it would change the remote natural, undeveloped setting that many visitors seek when they access the Monument. Impacts from continued development of the Russell Ranch unit would be minor. This area is away from the main public use areas in the Monument and receives minimal visitation.

Geology and Paleontology

This impact to the recreation resource would be minor. Additional excavations would increase the information on area paleontological and geological resources resulting in additional interpretive opportunities.

Cultural Resources

This alternative would represent current management and continue current levels of use at Painted Rock at approximately 3,700. Guide tours would continue as well as self-guided access and group tours with less than 20 individuals. Unrestricted access would continue at site C06-1. Public education would continue. Allowing increased use at Painted Rock and other cultural resource sites could eventually reduce the quality of the recreation experience, potentially having a minor impact on the recreation resource.

Travel Management

The transportation system road mileage and maintenance levels would remain the same having a negligible impact on the recreation resource.

WSA/Other Lands with Wilderness Characteristics

In this alternative, the 17984-acre Caliente Mountain WSA would be the only area managed for wilderness character. This would have a negligible impact on the recreation resource since it would incur no change in current use/management.

Visual Resources

This alternative includes the least restrictive VRM management zones of the alternatives and would allow for developments that create moderate contrasts with the characteristic landscape. Recreation opportunities could be impacted at moderate levels for those seeking settings with the highest level of naturalness.

Livestock Grazing

Grazing would continue at present levels resulting with no increase in impacts. Those visitors who are seeking a natural experience without the presence of livestock and associated developments (such as fences) would continue to be impacted at present levels.

4.14.5 Impacts to Recreation Common to All Action Alternatives

4.14.5.1 Impacts to Recreation from Implementing the Recreation Program

All of the action alternatives involve the establishing of "Primitive", "Backcountry", and "Frontcountry" RMZs. Management under the physical, social, and managerial parameters of each of these zones will impact the recreation experience. Within each zone, management is consistent between alternatives, with few exceptions that are described in each Alternative. The degree of impact to the recreation resource would change based on the acreage allocated to each zone in the three alternatives. The following descriptions highlight the recreation experiences / impacts that would occur in each zone. The acreage allocated to each zone varies greatly in the alternatives, especially between the Backcountry and Primitive zones, so this would affect the level of impacts.

Primitive Zone

In the Primitive zone, recreational motorized and mechanized use would not be allowed. Recreation access would occur on foot, or on horseback. Management intent is to attain a wilderness character that would include freedom of access, primitive and unconfined recreation, and/or opportunity for solitude, and to attain an undeveloped and natural condition. The recreation experience would be similar to that within a wilderness or wilderness study area. Management actions and facilities would be limited to those that protect resources or provide for visitor safety. Development could include trails and signs. The use of motorized or mechanized administrative use would be limited to administrative roads and only when deemed necessary. Use of hand tools for trail improvements/maintenance and restoration would be encouraged. Signs would be rustic in nature. On the landscape within the Primitive zone, there may be evidence of constructed features, such as power lines, roads, fencing, livestock, and buildings. While present, these features would be relatively low in number compared to the Backcountry and Frontcountry zones.

For continuity of discussion, the impacts for each zone are listed as common to all alternatives. However, the recreation uses and limitations within the Primitive zone are already in effect under interim management of the 17,984 acre Caliente Mountain WSA. So the "changes" in allowable uses would only occur in Alternatives 1 and 2, as the Primitive zone in Alternative 3 is limited to the Caliente Mountain WSA.

Vehicle users would be impacted by the amount of open roads that would be closed to motorized use. This restriction would impact hunters more than the other current recreation users because it would occur in the areas primarily used by hunters, and the roads to be closed are accessible primarily by 4-wheel drive, OHV, or bicycle. Vehicle camping would no longer be allowed in this zone and hunters would have to pack in their camping gear. The prohibition of vehicle or bicycle use is estimated to change the experience for hunting, effectively reducing opportunities based on the current use patterns. Motorized recreation opportunities would also decrease. The Primitive zone would also offer a remote, non-motorized / non-mechanized recreation opportunity, both on trails and cross-country. The opportunity for solitude and self-reliance would be high, enhancing the recreation resource for non-motorized / mechanized users seeking a wilderness experience.

Backcountry Zone

In Backcountry zones, motorized and non-motorized uses would be allowed. Road surface would be primarily natural, or gravel, having a "country-road" character. Rustic interpretive and directional signing, potable water, and other improvements could be constructed at recreation sites, trailheads and trails, and at designated dispersed vehicle camping areas (except in Alternative 1). The setting would be primarily an open rural landscape. Other human developments would be of a rural nature, including the presence of power lines, fencing, water troughs, corrals, and roads. Bicycles and all other non-motorized uses would continue to be allowed in this zone. A recreation enhancement fee may be considered. With the exception of overnight vehicle use, this zone would reflect current use opportunities and is estimated to have a negligible effect on the recreation experience. Overnight vehicle use would vary by alternative.

Frontcountry Zone

The Frontcountry zone would include the bulk of recreation and administrative facilities. This is the zone where most of the recreation and interpretive sites, the Goodwin Visitor Center, campgrounds and trail heads, administrative buildings, parking areas, and other types of support facilities would be located. Interpretive facilities and programs would be improved and/or expanded at existing sites and additional sites constructed. Additional development could include potable water, trails, trailheads, campsites, dispersed vehicle camping areas, parking areas, and other developments. Interpretive stops along roads, accompanied by a brochure and/or audio tour would be implemented. Guided tours to Painted Rock and/or El Saucito Ranch would be offered. The Goodwin Education Center would be expanded to increase capacity to provide educational and interpretive opportunities. All recreation uses would be allowable in the Frontcountry zones in all alternatives with the exception of Alternative 1, which would restrict overnight vehicle use to developed campgrounds. There may be other closures in sensitive sites or develop recreation areas. In all alternatives, the Painted Rock exclusion zone would establish the following prohibitions: horses, livestock, dogs, and the discharge of firearms. Painted Rock would be closed from dusk to dawn. The type of recreation experience within this zone would be the same between all three action alternatives, but the number of recreation/interpretive sites would vary between alternatives. Expanding the Goodwin Center would allow an increased capacity for interpretation, education, and research, potentially having a moderate impact (an increase) on recreation use opportunities. A recreation enhancement fee may be considered. There would likely be a minor impact for recreation users that enjoy Painted Rock because of the inconvenience of having to obtain a visitor use permit. Otherwise, there would be negligible impacts to the recreation resource in this zone in all three action alternatives.

Impacts of other objectives and actions common to all alternatives include those described in the following paragraphs.

Providing information about the Monument and current conditions and recreation opportunities would enhance recreation opportunities by informing visitors about the area and ensuring that they are prepared for the conditions they will encounter. Development of a driving/riding interpretive audio tour of the Monument would add information about Monument resources, thereby enhancing the recreation experience and possibly encourage behavior in a way that would have fewer negative resource impacts on the natural environment and cultural resources. This action could also increase the amount of use in the Backcountry zone, potentially having a minor impact on recreationists seeking a more remote experience. Low-impact commercial and organized group activities and events would be allowed and may include guided tours/hikes, trail rides, events, and other activities. Guided tours could reach out to users that would not otherwise visit a particular site or participate in a recreational activity on their own, thereby increasing the amount of recreational use as well as providing an opportunity to learn more about the

natural and heritage resources of the Monument. However, the anticipated amount of annual use is estimated to be about 1,000 to 2,000 new visitors/year, having a minor impact on the current numbers of users. Commercial or organized use could displace current recreational use at some of the primary attractions. Monitoring for visitor satisfaction and scheduling commercial use to off-peak times could mitigate most impacts on general recreation users. Events could also be scheduled during off-peak times, or communicated to general recreation users to minimize impact, having a minor effect on recreation use.

Competitive events would not be permitted within the Primitive zone. The impact from this limit would vary by alternative depending on the size of the Primitive zone; however, there is currently one competitive event permitted, and the anticipation of additional events is fairly low and can be mitigated in location, season, day of the week, and timing to avoid adverse resource impacts and recreation conflicts during peak seasons. This action is anticipated to have a negligible impact on the recreation resources.

Development of an education and outreach program that would target motorized recreational visitors to increase awareness of Monument resources and promote responsible behavior would provide resource information and offer ways to recreate responsibly as a motorized user. This would increase the likelihood that more motorized users would be exposed to appropriate behaviors that would protect or enhance resources. This action would likely have a minor impact on the motorized recreation users since it would not change the opportunity, and would protect their access from additional potential closures from resource damage associated with illegal use.

Retrofitting selected recreation/interpretive sites and facilities to meet universal accessibility standards and construction of new sites and facilities to meet universal accessibility standards would improve the quality of the recreation experience for users with disabilities. This would have a minor to moderate impact since most sites and facilities are already accessible. Development of new and maintenance of existing partnerships with community and recreation organizations and in gateway communities would result in a moderate impact on existing and future recreation users, increasing use, and expanding stewardship, volunteerism, and user ethics within the local communities.

Allowing new recreation uses, such as recreational caching, if determined to be compatible with other recreational uses and not in conflict with resource/heritage objectives, would open the Monument up to new recreational user groups. Burying a cache would not be allowed. Above-ground cache activities would be prohibited in heritage and other sensitive sites to limit foot traffic and risk to these sensitive resources. This activity would not likely conflict with existing recreation uses or settings. Use would be estimated at less than 500 visitors/year and result in a negligible impact on the recreation resource. Providing a natural and cultural resource interpretive plan for visitors and the public would result in several actions that inform and educate the public, possibly deter potentially destructive behavior, and instill a sense of stewardship and commitment to the protection of the Monument. This would likely enhance recreation use since and would probably not impact the current recreational uses or activities.

4.14.5.2 Impacts to Recreation from Other Programs

Lands and Realty

Establishing a right-of-way along the periphery of the Monument and developing 5 to 30 acres in various locations for scientific monitoring, access to private land, and other actions could have a negligible impact on the recreation resource since it is a small amount of development and similar development already exists.

Wildlife

The implementation of management actions to retain and maintain threatened and endangered and sensitive species to the Monument, as well as other actions to enhance or protect wildlife populations could increase recreation users seeking a learning or educational component to their experience, potentially having a moderate impact on numbers and types of recreational users.

Vegetation

Fencing less than 500 acres to protect rare plant populations from grazing or human activity and/or planting 10 to 100 acres with rare plant seeds would have a negligible impact on the recreation resource with no measurable change.

Geology and Paleontology

Impacts would be the same as the No Action Alternative.

Cultural Resources

It is estimated that one-half to one mile of site avoidance would be employed to protect resources sites from impact and estimating to have a negligible impact on recreation. Emergency closure or access restrictions to preserve National Register properties could occur, especially at sites, such as Painted Rock, El Saucito Ranch, and/or on site C06-1 on the KCL Ranch. This could result in an estimated minor impact on recreational use at these popular sites because it would impact a small number of visitors. Issuing restrictions or permits, however, could mitigate some of the impact on these recreation users.

Travel Management

Temporary closures of roads during wet periods and after washouts could have an effect on all recreationists depending on the road locations. Depending on the scale of the road closures, visitors would be precluded from accessing parts of the Monument. However, these impacts would be short-term. Actions to reduce illegal off-road use would have a positive on recreation users, since it could improve the quality of the recreation experience and enhance/protect opportunities for visitors who follow the requirements for no off-road travel established under the Monument Proclamation.

Visual Resources

Retrofitting existing facilities to reduce visual impacts would enhance the recreation experience by reducing the visibility of human intrusions in the Monument.

Table 4.14-2. Acreage by Management Zone in Each Alternative

	Primitive			Backcountry			Frontcountry		
	ALT 1	ALT 2	ALT 3	ALT 1	ALT 2	ALT 3	ALT 1	ALT 2	ALT 3
Acreage	83,202	54,464	17984	158,080	186,819	223,299	11,585	15,384	24,944
Additional Interp. Facilities	0	0	0	2-5	3-15	5-20	3-8	10-20	15-25
Dispersed Vehicle Camping	NO	NO	NO	NO	YES	YES	NO	NO	NO
Trail Heads/ Staging areas	0	0	0	2-5	5-10	5-15	1-3	5-10	8-15
Miles of new Trails	5-35	5-25	5-15	3-5	5-10	8-15	1-5	2-8	3-10

4.14.6 Impacts to Recreation from Alternative 1

4.14.6.1 Impacts to Recreation from Implementing the Recreation Program

Visitor use levels would increase to approximately 103,000 annually, the lowest among the alternatives. This is based on the limitations within this alternative that would affect current use patterns/users (for example, no Painted Rock visitation, no dispersed camping).

Primitive Zone

This zone would include a total of 83,202 acres (the existing WSA (17,984 acres) plus an additional 65,218 acres). This alternative includes the largest acreage in a non-motorized/mechanized zone and has the largest opportunity for non-motorized recreation. This alternative would result in the greatest change in management of the recreation settings on the Monument, therefore having a major overall impact on recreational use, both in numbers of recreation users and allowable uses within this zone. Roads within this zone would be closed to vehicle use (approximately 5 to 35 miles would be converted to trails). The impacts of these actions would be felt primarily by hunters through the loss of vehicle, OHV, or bicycle access and vehicle camping, resulting in a decline in hunting in this alternative. This alternative also provides the greatest amount of non-motorized acreage available for hiking, horseback riding, and backpacking, as well as those seeking opportunities for solitude or a primitive and unconfined wilderness experience.

Backcountry Zone

The Backcountry zone would include 158,080 acres in this alternative. Only in this alternative would overnight vehicle use (that is, vehicle camping) be prohibited within the Backcountry zone along roads. Site improvements and signage would be rustic in nature. This is the smallest amount of acreage provided in this zone in this alternative (about 30,000 less than in alternative 2). In this alternative there would be fewer miles of road compared with Alternative 2. The greatest impact in this alternative would likely be felt by hunters due to the loss of ability to camp with their vehicles. Existing campgrounds within the Monument are not large enough to accommodate the number of hunters during peak seasons. The elimination of dispersed camping areas would likely result in a displacement of a majority of camping to outside of the Monument and could lead to a major displacement of current hunters. It could also result in increased illegal camping. Opportunities for non-motorized recreation use are the greatest in this alternative.

Construction of about three to five interpretive overlooks or sites, three to eight trailheads or recreation staging sites, and/or three to five miles of hiking or interpretive trails would be implemented. This could have a minor impact on recreational day use resulting in a slight increase in use through enhancement of interpretive opportunities.

Competitive events and activities would not be allowed in this zone. This could have a minor impact on the recreation resource due to the low demand for competitive events. This action, however, would displace current permittees.

Frontcountry Zone

The acreage within this zone would be 11,585 acres, compared with 15,384 in Alternative 2 and 24,944 in Alternative 3. This is the zone where most of the recreation developments are provided and highest use occurs. However, improvements (such as interpretive overlooks) would be provided at a lesser scale than in Alternative 2 or 3. Development could include three to eight overlooks and interpretive sites, one to three trailheads or recreational staging areas, and/or one to five miles of hiking/interpretive trail. This

zone would include the Goodwin Visitor Center, KCL and Selby campgrounds, and the bulk of existing developed recreation opportunities currently available to the general recreation user. Prohibition of camping in the Backcountry zone would likely result in an overflowing campground occupancy during peak times of the year, especially during hunting season. It could also lead to illegal overnight camping within this zone, along the road and/or at day use sites.

Alternatives 2 and 3 propose an expansion of the Frontcountry zone and propose to develop more recreation/interpretive sites. In comparison, Alternative 1 would offer the fewest number of developed recreation/interpretive opportunities compared to Alternatives 2 or 3, possibly resulting in the fewest number of day users, resulting in a moderate impact on the recreation resource.

Competitive events and activities would not be allowed in this zone. This could have a minor impact on the recreation resource due to the low demand for competitive events.

4.14.6.2 Impacts to Recreation from Other Programs

Lands and Realty

Attempt to acquire 16,000 to 32,000 acres of land and/or mineral estate. Prohibit construction of new communication sites and remove two existing sites as authorizations expire. The acquisition of land would have a moderate impact in expanding recreation access opportunities.

Fire and Fuels Management

Impacts would be the same as the No Action Alternative.

Wildlife

This alternative would allow for natural fluctuations of species including pronghorn, elk, and other wildlife, although actions would be taken if populations drop below certain levels. Many of these species are of viewing interest to recreation visitors. Impacts could be minor to moderate depending on the level of population fluctuations.

Vegetation

The removal of up to 100 acres of nonnative plant species would enhance opportunities for those who are pursuing nature study of the flora of the Monument. However, compared to Alternatives 2 and 3, the least amount of native plant restoration is proposed.

Minerals

Impacts would be the same as the No Action Alternative.

Geology and Paleontology

Inventory and public education would continue in this alternative; however, visitation to some sites would not be encouraged. Visits to Wallace Creek, public and self-guided tours and other interpretation would continue. Overall, impacts would be negligible.

Cultural Resources

Painted Rock would be closed to general public access. Painted Rock is a primary attraction and closure is anticipated to affect 3,700 visitors annually. This loss of access to a primary attraction on the Monument would have a major impact for visitors interested in cultural resources. Archaeological site C06-1 on Basalt Hill on KCL Ranch would be closed to public visitation and would impact an unknown number of visitors, including college-age students, geologists, and other interested individuals and groups. This is likely to have a minor impact on recreation as it removes this site from available visitation for a small percentage of interested visitors. About 8 to 10 rock art sites would be allowed to naturally deteriorate, likely to result in the loss of the resource and subsequent loss to the public. This is likely to have a negligible impact on recreation use; however, the loss would result in a loss of an irreplaceable resource and reduce the quality of the experience for many interested visitors and stakeholders.

The proposal to interpret up to eight additional cultural and natural history sites would increase the availability of information about the resources on-site and would result in an increase in quality and/or recreation use.

On at least 12 locations, historic machinery and equipment would be removed. On about eight locations, machinery and equipment would be relocation to two or three sites, such as El Saucito Ranch. Approximately four or five locations would be preserved a historic landscape exhibits. These actions would impact recreation visitors depending on the nature of their interests. For those interested in viewing the cultural landscape, there would be a minor to moderate reduction in opportunities, since the character of the historic resource would remain in some locations. For those who are seeking natural landscapes, the reduction of human impacts would enhance their experience. Within the Primitive zone, buildings and other facilities on four or five ranches and farms would be razed and removed on non-National Register eligible sites. Removal of structures within the Primitive recreation zone would enhance the “wilderness” character of this zone and would likely result in an improved wilderness experience. Facilities on three or four National Register ranches and farms would be stabilized, rehabilitated, or restored for public education/interpretation or for administrative uses, increasing the potential opportunity for increased recreation participation and education, and likely to enhance recreation opportunities.

Travel Management

In Alternative 1, 269 miles of roads would be open to recreation motorized vehicle use. Three miles identified in the Road Designation Table under “Limited” would be open to the public recreation motorized use seasonally. About 175 miles identified under “Limited or Closed” would not be available for public motorized use. Of these, up to 35 miles may be converted to trail, up to 46 that could be rehabilitated to a natural landscape, and the remaining would be available only for administrative use. The number of miles of roads open to public recreation motorized use in this alternative would be about 4 percent less than in Alternative 2 and about 19 percent less than in Alternative 3. The number of miles of roads closed to public recreation motorized use in Alternative 1 would be about 6 percent and 40 percent greater than in Alternative 2 and Alternative 3, respectively. Alternative 1 would have the fewest number of motorized recreational opportunities than any other alternative, with a slight reduction compared with Alternative 2 and a large reduction when compared to Alternative 3.

In addition to changes in the numbers of miles of roads is the proposal in this alternative to allow only street-licensed vehicles in this Alternative. This would eliminate the use of all unlicensed OHVs and green and red sticker vehicles. This would impact primarily the hunting community since use of these types of vehicles is primarily associated with hunting. This restriction combined with the number of miles of road closure would likely result is the largest decrease in motorized recreation use, and particularly hunting, potentially having a major impact on this recreation opportunity.

Allowing only street-licensed vehicles and prohibiting most other OHVs, and closing roads, would also offer the greatest amount of opportunity for non-motorized recreational activities, possibly resulting in an increase in non-motorized recreation uses, potentially having a moderate to major impact on this recreational activity.

WSA/Other Lands with Wilderness Characteristics

In Alternative 1, the proposal is to retain the 17,984-acre WSA and manage the 65,218 additional acres identified in the Primitive Zone so as not to impair their natural character and to remove many human developments, such as fences, some roads, and other structures, except for structures associated with private minerals, in which the federal estate has no control. The impacts associated with these actions would be similar to that identified under Recreation within the Primitive zone.

Visual Resources

This alternative includes the most restrictive VRM zones. Recreation opportunities would be enhanced for those seeking settings with the highest level of naturalness.

Livestock Grazing

Grazing would not be permitted under this alternative and the developments associated with livestock grazing removed. This would improve the natural appearance of the area and enhance the setting for visitors who are seeking a natural experience.

4.14.7 Impacts to Recreation under Alternative 2

4.14.7.1 Impacts to Recreation from Implementing the Recreation Program

Use levels are expected to grow to approximately 118,000 visitor days per year under this alternative – use levels would be higher than Alternative 1 and less than Alternative 3. Some management controls (such as permits for Painted Rock, possible elimination of varmint hunting) could be put into place and effect use levels.

Primitive Zone

This zone would include a total of 54,464 acres. This includes the 17,984 acre WSA, plus 36,480 additional acres to the east of the WSA and on the north side, also in the Temblor Range. This zone has fewer acres and would include fewer road closures than in Alternative 1 and more than in Alternative 3. It would include the development of approximately 5 to 25 miles of trails, primarily due to road closures. In addition, many existing human constructed features, such as roads, fences, buildings, would be removed and restored to a natural state, as indicated in the wilderness section. The changes in acreages and roads would likely have a localized impact to hunters and motorized users that frequent these two specific areas and likely to result in a minor impact on this use. In contrast, the opportunities for non-motorized/non-mechanized recreational uses would be reduced from Alternative 1, but would remain greater than Alternative 3, potentially having a minor impact on these recreation users, particularly in the activities of horseback riding, hiking, and backpacking, as well as those seeking opportunities for solitude or a primitive and unconfined wilderness experience.

Backcountry Zone

This zone would have 186,819 acres (about 15 percent more acreage than in Alternative 1 and 18 percent less than in Alternative 3). This alternative would allow dispersed vehicle camping and monitor for resource impacts, which could lead to low-amenity, improvements, restrictions, or closures. All improvements would be rustic in nature. Five to 10 trailheads or recreation staging sites as well as 5 to 10 miles of hiking/interpretive trails could be developed. With more motorized recreation opportunity and particularly with allowing dispersed vehicle camping, this alternative would better reflect the current recreational uses, potentially having a minor impact on motorized recreation users due to loss of the roads and the two additional areas in the Primitive zone. Compared to Alternative 1, however, there would likely be a much higher level of participation in hunting and other motorized recreation activities. Impact on non-motorized recreation activities would likely be negligible due to the availability of primitive areas, expansive roadless acreage within this zone, and the availability of overnight camping. When compared to Alternative 1, however, non-motorized opportunities would be reduced in this alternative.

Low-impact competitive events and activities would be allowed with support facilities. Competitive events could not include the release of nonnative or captive-held native species. This would likely have a negligible impact on the recreation resource due to current and anticipated low demand. This action, however, could reduce the quality of the experience for current permittees, or displace them to outside of the Monument.

Frontcountry Zone

This zone would have 15,384 acres and would extend almost the full length of the Monument along Soda Lake Road. This alternative includes more acres and more road miles than in Alternative 1 and fewer than in Alternative 3. There would be an increased opportunity to develop up to 20 overlooks and/or interpretive sites, up to 10 trail heads or recreation staging areas, and/or up to 8 miles of hiking/interpretive trails. Development would consider areas that already have some ground disturbance, and would likely result in less than 50 acres involving new construction in undisturbed areas. New developments and new opportunities for recreationists could improve the overall experience and offer information about new recreation opportunities.

Low-impact competitive events and activities would be allowed with support facilities. Competitive events could not include the release of nonnative or captive-held native species. This would likely have a minor impact on the recreation resource due to low demand. It could reduce the quality of the experience for current permittees, or displace them to outside of the Monument.

This alternative would prohibit campfires within the Painted Rock exclusion zone and allow for approved Native American ceremonial uses of fire. This would have a negligible impact on current recreational use since it would not impact the quality of existing recreation uses and would not reduce recreation use.

All Zones

If enacted, the recommendation to the California Fish and Game Commission to eliminate “varmint” hunting (that is, non-game animals such as coyotes) would have a minor to moderate impact on the hunting experience. This type of hunting is usually a secondary activity to the primary game hunting pursuits of Monument hunters, and should not affect the majority of these users.

4.14.7.2 Impacts to Recreation from Implementing Other Programs

Lands and Realty

Impacts to the recreation resource would be similar to Alternative 1, except less private land acreage may be acquired, since acquisitions would be targeted to areas with important wildlife or cultural values. This would be a negligible impact.

Wildlife

The majority of actions proposed in this alternative are geared toward enhancing the populations of native wildlife, wildlife habitat, and native plants and reducing the presence of nonnative animals, plants, and artificial structures. These actions would enhance recreation opportunities for those viewing wildlife, for hunters and visitors, and especially for wildflower enthusiasts, since the burning and grazing activities could continue to enhance these viewing opportunities over Alternative 1.

Vegetation

Native plant restoration objectives would be 200 to 500 acres per year with seeding and pretreatment by burning, flaming, and/or herbicides. Up to 100 acres would be disturbed to restore the natural flow patterns of water in order to increase native shrub communities, such as saltbush. Nonnative plant removal would increase significantly over Alternative 1 with up to 100 acres of removal per year. These actions would improve native species composition and extent and would attract plant and wildflower enthusiasts. The impacts would enhance recreation opportunities for these visitors.

Minerals

Impacts would be the same as the No Action Alternative.

Geology and Paleontology

Inventory and public education would continue in this alternative at existing interpretative field locations. In addition, up to three additional interpretive sites would be considered. Expansion of the interpretive program at Wallace Creek would be considered in this alternative. Other aspects of interpretation and management would be the same as in Alternative 1. The small scale of expansion should have a small impact on the type of recreational use and/or numbers of users.

Cultural Resources

In this alternative, Painted Rock would remain open to the public and would allow about 18 guided tours of 25 people/tour per year (about 450 visitors). A permitting system would also be implemented for self-guided access for about 8 months/year. Supervised group tours would also be allowed, resulting in an estimated 400 visitors/year. Implementing these protective measures to this significant archaeological site is estimated at reducing total annual visitation to the site by about 30 percent of current use. In this alternative, Rock Art Historic District, from Painted Rock to Selby Rock, would prohibit livestock grazing, horses, dogs, bicycles, and cache activities (excluding the Selby Road and Caliente Mountain Road) and would protect an estimated 22 prehistoric sites in the Painted Rock Exclusion Zone. An estimated 1.5 miles of fencing may be installed to protect archaeological sites in the Rock Art Historic District for protection from human disturbance. Allowing visitation to Painted Rock with restrictions would result in a similar experience to that currently available even with an estimated 30 percent reduction in total numbers of visitors. Better site protection through restrictions may impose and inconvenience to a small number of recreation users; however, the quality of the experience would

increase due to increased protection of the resource. These actions should have a negligible impact on the recreation resource.

A permit would be required to access archaeological site C06-1 on Basalt Hill on KCL Ranch. This action would monitor numbers of visitors and serve as an avenue to provide information that would encourage better protective measures during their visit. This may reduce the numbers of current visitors by about 25 percent; however, current use is low, and it would not change the existing experience drastically, thereby estimating a negligible impact on recreation.

Rock art protection measures would be implemented in this alternative. Measures could include dust abatement on roads and trails, installation of physical barriers and improvement of interpretive information to better inform and manage the ways visitors access these resources. These measures would serve to enhance the recreation experience through better protection, better information, and better visitor facilities. Adding up to eight cultural and natural history interpretive sites would be the same as in Alternative 1, and could result in enhancements to recreation opportunities.

On about six locations, historic machinery and equipment would be removed. This is about half of that proposed in Alternative 1. On about six locations, it would remain and would be open for public visitation. In addition, four to six sites would be relocated to existing areas, such as Traver Ranch and the Goodwin Educational Center for interpretation and educational awareness. These actions would likely have a minor impact on recreation since the character of the historic resource would remain in some locations, while naturalness would be increased in other locations.

In this alternative, the proposal to raze buildings and other facilities within the Primitive zone is estimated at one to three instead of four to five as in Alternative 1. Facilities on four to six National Register ranches and farms would be stabilized, rehabilitated, or restored for public education or administrative use, as compared to three or four as in Alternative 1. In this alternative, additional buildings or structures considered to be ineligible for inclusion to the National Register may also be utilized for public education. Also, interpretive programs and facilities may be utilized, such as signs, kiosks, and/or brochures pertinent to the specific ranches. Alternative 2 is similar to Alternative 1 in the removal of building and facilities in the Primitive zone and in stabilizing National Register farms/ranches having the same impact (negligible) on recreation. Offering an expansion of visitor programs on historic sites through the use of existing and/or re-designed structures and placement of signs would expand existing programming and opportunities.

Travel Management

The number of road miles open for public use in Alternative 2 would be about 4 percent more than Alternative 1 and about 19 percent less than in Alternative 3. Please see that section for actual road mile descriptions. Unlike Alternative 1, however, this alternative would allow the use of non-highway licensed vehicles registered through the green or red sticker state OHV program, including off-road motorcycles, four wheelers, and other OHVs. Implementing these two programs would allow near current level recreational motorized use, albeit fewer opportunities than in Alternative 3. The anticipated impact in this alternative to the recreation resource is anticipated to be negligible.

WSA/Other Lands with Wilderness Characteristics

In this alternative, the 17,984-acre WSA would be managed as well as an additional 36,480 acres identified in the Primitive zone. The impacts associated with these actions would be similar to that identified under Recreation within the Primitive zone.

Visual Resources

This alternative would result in impacts similar to Alternative 1, except less acreage would be managed under VRM Class I criteria, allowing for slightly higher impacts to natural recreation settings.

Livestock Grazing

Grazing would continue at reduced levels resulting with a negligible change in impacts. Those visitors who are seeking a natural experience without the presence of livestock and associated developments (such as fences) would continue to be impacted at present levels.

4.14.8 Impact to Recreation under Alternative 3

4.14.8.1 Impacts to Recreation from Implementing the Recreation Management Program

Visitor use levels would increase to approximately 131,000 annually, the highest among the alternatives. This is because Alternative 3 includes fewer limitations on visitor use and more facility enhancements (such as interpretive sites) than the other alternatives. The projected use increase is still expected to be moderate, rising from 87,000 presently to 131,000 during a 20-year period.

Primitive Zone

The WSA (17,984 acres) would be the only acreage in the Primitive zone under this alternative. This allocation would result in no change from current management. It is, however, the smallest amount of acreage in this zone compared to Alternative 1 and 2. Five to 15 miles of trails could be constructed. This Alternative would have a comparatively reduced opportunity for non-motorized, wilderness experiences and would also have a reduced impact on motorized/mechanized users. The impact to the recreation resource would be estimated to be negligible.

Backcountry

This zone would have 223,299 acres, the largest amount of acreage when compared to the other two alternatives. As in Alternative 2, it would allow dispersed camping with monitoring for resource impacts and include possible rustic improvement or restrictions. Five to 15 trailheads or recreation staging site as well as 5 to 20 interpretive sites and/or 8 to 15 miles of hiking/interpretive trails could be developed. This would be about a 30 percent increase when compared to Alternative 2. Of the three action alternatives, this alternative would place the most recreational facilities within this zone and could facilitate a higher quality experience for visitors who prefer basic amenities such as overlooks and trailhead facilities. The amount of change from current use, however, would also be the lowest of the three alternatives and would likely result in a negligible impact to the recreation resource.

Competitive events would not change from the current level, having a negligible impact on recreation.

Frontcountry Zone

This zone would include 24,944 acres (the largest of the action alternatives) and extend the full length of Soda Lake Road and loop around the Elkhorn Road. About 15 to 25 interpretive, 8 to 15 trail head and/or recreation staging sites, and/or 3 to 10 miles of hiking/interpretive trail could be developed (about 30 percent more development than in Alternative 2). New developments and new opportunities for recreationists could improve the overall experience and offer information about new recreation opportunities, with an estimated moderate impact on current recreation use.

Competitive events would not change from the current level, having a negligible impact on recreation. Recreation use within the Painted Rock exclusion zone would be the same as currently allowed having a negligible impact on recreation.

4.14.8.2 Impacts on Recreation from Other Programs

Lands and Realty

Impacts would be the same as Alternative 2.

Fire and Fuels Management

Impacts would be the same as the No Action Alternative.

Wildlife

Impacts would be the same as Alternative 2.

Vegetation

This alternative is the same as Alternative 2.

Minerals

Impacts would be the same as the No Action Alternative.

Geology and Paleontology

This alternative is the same as Alternative 2.

Cultural Resources

This alternative would provide seven more annual tours than Alternative 2, but self-guided permits would not be issued. This would result in a reduced total visitor estimate of about 700, compared with Alternative 2, and a 30 percent reduction from current visitation. Proposed management for archaeological resources at risk, rock art protection measures, and proposals for ranching and farming machinery are the same as in Alternative 2. Two to four additional locations would be considered for educational purposes, in addition to Painted Rock, Wallace Creek, El Saucito Ranch, and Selby Ranch. Facilities on four to ten National Register ranches and farms would be stabilized in a state of arrested decay rather than rehabilitated and utilized. In addition, El Saucito, Washburn, KCL, and Selby, as well as other historic sites, would be stabilized rather than restored or rehabilitated. Additional buildings or structures would not be saved and possibly used for public education. The stabilization of sites rather than rehabilitation is the largest difference between this alternative and Alternative 2. The actions proposed in this alternative are likely most similar to the existing condition when compared to the other action alternatives and should result in a negligible impact on recreation.

Travel Management

This alternative would include the largest number of miles of roads available for public motorized use with about 25 percent more than in Alternative 1 and 19 percent more than in Alternative 2. This allocation would have the least impact on recreation when compared with current use (10 miles of roads

closed). The impacts to existing use would be negligible since none of the closed roads access major attractions/recreation opportunities.

WSA/Other Lands with Wilderness Characteristics

There would be no impact.

Visual Resources

This alternative would result in impacts similar to Alternatives 1 and 2, except less acreage would be managed under VRM Class I criteria, allowing for slightly higher impacts to natural recreation settings.

Livestock Grazing

This is the same as Alternative 2.

4.14.9 Cumulative Impacts on Recreation

4.14.9.1 Assessment Area

The assessment area for cumulative recreation impacts includes inland San Luis Obispo and inland Santa Barbara County, and Western Kern County. Within this region, the 1.75-million-acre Los Padres National Forest is the largest recreation provider. Although the National Forest has different settings than the National Monument, opportunities are available for similar dispersed activities. BLM also manages lands outside the Carrizo within the assessment area. Finally, CDFG manages the Chimineas and American Ranch areas.

4.14.9.2 Past, Present, and Reasonably Foreseeable Future Actions within the Assessment Area and Cumulative Impacts

There are no known actions within the assessment area that would have major cumulative impacts to the recreation opportunities within the region. Due to high fire incidence in recent years, the Forest Service has closed parts of the Los Padres National Forest for public safety purposes. These closures have resulted in displacement of visitors, and been temporary in nature. CDFG is completing management plans for the Chimineas and American ranches. Public access to these areas is currently limited, so the plan outcomes will not affect recreation opportunities – although increased opportunities for hunting and wildlife viewing could result from plan implementation. The Bakersfield RMP currently being written will direct the management of recreation on BLM lands outside of the National Monument. This plan will consider the provision of opportunities that are not available within the Monument, such as OHV use. However, due to the presence of sensitive species habitat, this plan could result in some additional areas being limited or closed to access.

The population of the region is expected to increase, resulting in corresponding increases in demand for outdoor recreation opportunities. However, the nature of the Monument and surrounding areas is such that a corresponding increase in demand for use of the lands is not expected – visitors pursuing many "traditional" recreation activities will continue to access the coast and Sierra Nevada, while a narrower group of visitors will be attracted to the natural and cultural features of the inland coast range.

4.15 Impact Analysis for Travel Management

4.15.1 Introduction

The transportation system is managed to support various resource management goals such as access for recreation visitors, permittees, right-of-way holders, and for agency resource management projects. Because of the administrative/support nature of the program, impacts must be considered in relation to the transportation system itself, but also on the various users of the system who can be affected by reduction and changes in the road network, and constraints on the use of the network. The impacts to the various users of the network receive limited discussion in this section and are described in more detail under impacts from transportation on the respective resources/programs (such as recreation, grazing).

4.15.2 Assumptions Used for the Analysis

Any discretionary management actions proposed in the alternatives would involve the use of existing roads (with possible minor re-routes and short spurs) and not involve construction of extensive new routes. New roads would only be constructed to provide for access for valid existing rights (for example, private land inholders, private mineral estate, and existing mineral leases).

Any new rights-of-way would be issued with requirements for maintenance of associated roads, resulting in negligible impacts to the transportation system.

4.15.3 Incomplete Information

A route-specific maintenance level plan has not been completed. Road maintenance levels discussed in the RMP are for general planning purposes.

Traffic volume data is not available for county roads or BLM roads accessing the Monument. However, all of these routes receive relatively low vehicle use and are not expected to have capacity issues over the life of the RMP.

4.15.4 Programs with No Impacts to Travel Management

Geology/paleontology, biological resources, and livestock grazing programs would have no impacts to travel management under any alternatives. Best management practices would be employed in all alternatives to protect water resources, resulting in no or negligible impacts to travel management.

4.15.5 Impacts on Travel Management under the No Action Alternative

4.15.5.1 Impacts on Travel Management from Implementing the Travel Management Program

The existing road network would continue to be open and maintained at the present level resulting in no impacts.

4.15.5.2 Impacts on Travel Management from Other Programs

Fire and Fuels Management

Prescribed burning and wildfire suppression would have a minor impact on travel management as control lines and tracks from fire equipment may encourage vehicle users to travel off of the existing road network. Proper signing, enforcement, and rehabilitation would minimize this impact.

Air Quality

The air quality program contains objectives to reduce dust emissions from roads using best available management practices. This could result in minor impacts to the methods/timing of road maintenance activities.

Cultural Resources

The rerouting or capping of roads that traverse cultural sites could cause a negligible impact to the transportation network.

WSA/Other Lands with Wilderness Characteristics

No impacts were identified.

Recreation

The impact to the transportation network from the No Action Alternative would be minor, resulting from increased use of area roads over the life of the plan.

Lands and Realty

Acquisitions could increase the road mileage in the transportation system.

Minerals

The development of up to 0.5 miles of road on existing leases would cause negligible impacts. The temporary disturbance from up to 50 miles of seismic lines associated with exploration on existing leases could encourage unauthorized off-road travel if OHV users follow tracks from ATVs associated with the activity. The Russell Ranch area receives relatively low public use, so this impact would be minor. The development of three miles of road associated with private mineral estate would have a negligible impact on the transportation system as the right-of-way holder would be required to pay for maintenance. Up to 230 miles of off-road travel for seismic line placement could cause minor to major impacts to the transportation network if the temporary OHV tracks encourage unauthorized users to travel off road. The valley floor is a popular public use area, so the temporary tracks would be visible to the public.

4.15.6 Impacts to Travel Management Common to All Action Alternatives

4.15.6.1 Impacts on Travel Management from Implementing the Travel Management Program

The development of a comprehensive travel information program that includes road/trail signing, brochures, and web based information on route conditions and vehicle limitations would reduce impacts to the transportation system. Wet-period closures would reduce road damage from rutting. Painted Rock Road will be closed during the seasonal Painted Rock closure (3/1 to 7/15) as well as several times a year due to rain. Other roads such as Caliente Ridge Road could also be closed due to weather but not as often as Painted Rock Road. These closures could have a negligible to minor impact on use of the travel network depending on the amount of rain the Monument received in a year. In an average year, the road to Painted Rock could be closed from 10 to 20 days and Caliente Ridge Road would only be closed when traveling on it would be extremely dangerous (possibly 1 time a year).

4.15.6.2 Impacts to Travel Management from Implementing Other Programs

Air Quality

The minimization of dust emissions on roads would cause minor to moderate impacts to the travel management program. The nature of the unimproved road network in the Monument is such that dust is generated during much of the year from the majority of the roads.

Recreation

The implementation of a sign plan would benefit the transportation network as the increase of directional signage would focus vehicles on routes that are designed for their use. The development of multiple driving tours within the Monument would increase use of certain roads resulting in a minor to moderate impact to the maintenance or the travel network.

4.15.7 Impacts to Travel Management under Alternative 1

4.15.7.1 Impacts to Travel Management from Implementing the Travel Management Program

Table 4.15-1. Road and Area Designations, Alternative 1

Road Designations		Area Designations	
Open Roads (open to the public)	269	Open	0 Acres
Limited Roads	97	Limited	175,120 Acres
Closed Roads	81	Closed	83,200 Acres
Trails	7		

Alternative 1 includes the least number of open roads of the alternatives. The miles of closed roads are primarily due to the allocation very large Primitive RMZ. The mileage reduction of the road network will have minor to moderate impacts on the transportation system. Road maintenance needs would be reduced only slightly, as most of the closed roads already receive minimal maintenance. The reduced travel network would also make vehicle access more difficult in certain areas of the Monument. Impacts of this are discussed in each resource program. Alternative 1 would only allow street legal vehicles on the BLM road network. This would reduce use of the road network and cause less wear and tear on the roads.

4.15.7.2 Impacts to Travel Management from Implementing Other Programs

Fire and Fuels Management

See Impacts Common to All Action Alternatives.

Air Quality

The seasonal closure of roads without dust suppression additives could cause a major impact through reduction of the travel network during dry periods. Most roads within the Monument generate some level of localized dust, so depending on how the program would be implemented (focus on roads near residences/developed facilities only, or a broader closure), impacts could be moderate to major.

WSA/Other Lands with Wilderness Characteristics

Several limited use administrative routes would remain open in areas managed for wilderness character. Access to these routes would be restricted to those users who have a demonstrated need that cannot be

accommodated by non-mechanized access (for example, hauling in equipment). This would reduce use of these road corridors.

Recreation

The development of 5 to 35 miles of trails could have a moderate impact on the travel network as it would more than double the number of miles of trails in the Monument. The elimination of dispersed vehicle camping could cause a reduction in use and maintenance needs to the travel network. Additional recreation /educational opportunities (such as interpretive signs, trail heads, overlooks) sites would increase the number of travelers on certain roads

Minerals

Impacts would be the same as the No Action Alternative.

Lands and Realty

The acquisition of private inholdings could cause a minor to moderate impact by changing the size of the transportation system from roads associated with the private lands. An assessment regarding whether the roads should remain open, limited, or closed would be conducted upon acquisition.

4.15.8 Impacts to Travel Management under Alternative 2

4.15.8.1 Impacts to Travel Management from Implementing the Travel Management Program

Table 4.15-2. Road and Area Designations, Alternative 2

Road Designations		Area Designations	
Open Roads (open to the public)	278	Open	0 Acres
Limited Use Roads	124	Limited	207,658 Acres
Closed Roads	45	Closed	54,464 Acres
Foot Trails	7		

This alternative includes more miles of open roads, more miles of limited use roads, and less closed roads as compared to Alternative 1. The increase in limited use mileage could have a minor to moderate impact to the travel network because there would be fewer miles open to public motorized use. The majority of these limited use roads would be open to public non-motorized use. Both street legal and registered OHVs would be allowed on designated roads, as is currently allowed within the Monument. Most of the Frontcountry roads would e maintained at a level 3 with BLM working with the county to maintain the paved portion of Soda Lake as a level 4 road.

4.15.8.2 Impacts to Travel Management from Implementing Other Programs

Fire and Fuels Management

See Impacts Common to All Action Alternatives.

Air Quality

The use of aggregate, gravel base, or a chemical binder on high use roads especially around rock art sites would cause a moderate impact to the transportation network. Maintenance costs would increase, but the quality of the travel routes would also be improved for users.

Cultural Resources

See Impacts Common to All Action Alternatives.

WSA/Other Lands with Wilderness Characteristics

Impacts would the same as Alternative 1, except that less acreage/road mileage would be affected.

Recreation

The development of 5 to 25 miles of trails could have a moderate impact on the travel network as it would more than double the number of miles of trails in the Monument. Dispersed camping would continue to be allowed along roadways. If modifications are made to the dispersed camping areas, there could be an increase in use of the more developed dispersed camping areas resulting in a minor impact to the roads that lead to

Minerals

Impacts would be the same as the No Action Alternative.

Lands and Realty

Impacts would be the same as Alternative 1 but with less acreage acquired and fewer miles of roads to reassess.

4.15.9 Impacts to Travel Management under Alternative 3

4.15.9.1 Impacts to Travel Management from Implementing the Travel Management Program

Table 4.15-3. Road and Area Designations, Alternative 3

Road Designations		Area Designation	
Open Roads (open to public)	322	Open	O Acres
Limited Use Roads	115	Limited	248,243 Acres
Closed Roads	10	Closed	17,984 Acres
Trails	7		

Alternative 3 would retain the most miles of roads open to public motorized use of the action alternatives. This would also have the fewest number of roads that will be closed and rehabilitated. This could cause a moderate impact to the travel network because there would be more roads to manage and maintained for motorized vehicles.

4.15.9.2 Impacts to Travel Management from Implementing Other Programs

Air Quality

Paving major travel routes (both BLM routes and working with the county to pave routes under their jurisdiction) and graveling the key secondary routes would change the character of parts of the travel network. Indirect impacts would include increases in vehicle speeds on paved and graded gravel route segments.

Soils

The seasonal closure of all roads when they develop a 2-inch rut could cause a major impact on the travel network during wet periods as it would result in closure on many roads within the Monument.

Cultural Resources

See Impacts Common to all Action Alternatives.

WSA/Other Lands with Wilderness Characteristics

Impacts would be the same as the No Action Alternative (no impacts).

Recreation

Impacts would be the same as Alternative 2 except 5 to 15 miles of new trail would be developed, resulting in a slightly smaller expansion of the trail system.

Lands and Realty

Impacts would be the same as Alternative 2.

4.15.10 Cumulative Impacts to Travel Management

4.15.10.1 Assessment Area

The assessment area includes the planning area and state highway corridors that provide access (State Highways 58 and 166).

4.15.10.2 Past, Present, and Reasonably Foreseeable Future Uses and Cumulative Impacts

California State Highway 58 serves as the primary access route into the northern part of the Monument and is a two-lane paved road with average daily traffic volume of 1,850 cars (CalTrans District 5 Segment Data Sheet). State Highway 166 is a two-lane paved highway with an average daily traffic of an estimated 2,600 cars (CalTrans District 5 Segment Data Sheet), and provides the primary access into the southern part of the Monument.

Neither of these highways is near their peak traffic capacity. Highway 58 has a peak vehicle to capacity ratio of 11 to17 percent and Highway 166 has a vehicle to capacity ratio of 22 to 42 percent. Neither of these roads is expected to reach their capacity during the life of this plan. The increased uses of the Monument anticipated under the plan alternatives would add minor traffic volume increases to these routes. Also, no off-Monument developments are projected that would result in capacity issues on the BLM or county roads in the assessment area.

4.16 Impact Analysis for Minerals

4.16.1 Assumptions Used for the Analysis

- An existing oil and gas lease grants the lessee the “right and privilege to drill for, mine, extract, remove and dispose of all oil and gas deposits” in the leased lands, subject to the terms and conditions incorporated in the lease (BLM Form 3100-11, Lease for Oil and Gas). The Secretary of the Interior has the authority and responsibility to protect the environment within federal oil and gas leases; therefore, restrictions are imposed on the lease terms. Provisions in leases that expressly provide

BLM the authority to deny or restrict development, in whole or in part, depend on an opinion provided by the USFWS regarding impacts to endangered or threatened species or to habitats of plants and animals that are listed or proposed for listing. If the USFWS concludes that the development likely would jeopardize the continued existence of any endangered or threatened plant or animal species, then the development may be denied in whole or in part.

- For purposes of this analysis, it is assumed that all of the wells would disturb previously undisturbed habitat.
- The projected minerals impacts are associated with existing federal oil and gas leases, and with privately owned mineral estate underlying federal surface ownership within parts of the Monument. There will be no new federal oil and gas leases within the CPNM (per the Monument Proclamation), and all mineral uses are managed as valid existing rights.
- It is unlikely that there will be any development of private mineral estate other than oil and gas (for example, gypsite, phosphate).
- Existing operations in the Russell Ranch Unit (comprised of multiple federal and private leases) will continue at approximately the same level until the field is eventually depleted and permanently plugged.
- All operations will be conducted in full accordance with all requirements of the Bureau of Land Management and the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources.
- Oil and gas operations on lands where the federal government owns the minerals but not the surface (split estate) will follow strict requirements to ensure that there is no undue harm or degradation to the objects of the Proclamation.
- It is likely that all private oil and gas development will occur on lands where BLM manages the surface (vs. private surface ownership within the Monument). This is based on the premise that most of the lands with potential for oil and gas resources are in areas where BLM owns the surface.
- Although there is a possibility that the private mineral estate will change ownership and be placed in "non-development" status, that scenario was not considered to be a reasonably foreseeable outcome for the purposes of this impact analysis. If acquisition of all or parts of the private mineral estate were to occur, the impacts from private mineral estate exploration and development would be reduced or eliminated accordingly.
- The oil and gas operators within the CPNM will be required to implement and follow best management practices to the maximum extent practicable. For examples of best management practices, see: http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices.html.
- The amount of disturbance due to oil and gas development under all of the alternatives is not expected to vary. The existing federal oil and gas operators and private minerals owners have certain "grandfathered" rights that include the right to use as much of the surface land as is reasonably necessary to explore for, develop, and produce the oil and gas from their lease. With private minerals underlying federal surface, the mineral owners have the right to use the federal surface, but BLM maintains the right to specify reasonable restrictions such as timing and location.
- Other minerals: There will not be any non-oil and gas mineral development on federal surface other than a small borrow pit for "emergency / administrative use only" of less than 10 yards per incident (such as road washout).

4.16.2 Incomplete Information

- The total acreage already disturbed due to existing oil and gas operations is unknown. This includes all well pads, roads, and facilities locations. Although a total of 27 miles of existing oil field roads is estimated, the average road widths and state of maintenance are not known.
- The eventual likelihood of private minerals development is unknown. If private minerals are developed, the magnitude of the disturbance and how much would occur on BLM surface vs. private surface is also unknown. To be conservative, the analysis assumes all such development will be on BLM land where BLM would be able to specify surface requirements.
- The potential for developing a borrow pit on non-federal land for administrative uses such as building roads is unknown. If a new pit were to be proposed, it would be subject to *Endangered Species Act*, NEPA, *California Environmental Quality Act*, and/or SHPO requirements, in addition to any local or county ordinances that were applicable.

4.16.3 Impacts on Minerals Common to All Alternatives (Including No Action Alternative)

4.16.3.1 Impacts on Minerals from Implementing the Minerals Program

The following tables show the level of impacts expected under all alternatives. The impacts are broken down into two areas, the valley floor private mineral estate and Russell Ranch Unit (RRU) federal oil and gas unit areas. These potential developments were projected separately based on several differences. The RRU area contains existing producing federal and private oil and gas leases located on the periphery of the Monument. The RRU area is separated topographically from the Carrizo Plain itself. There was already oil field development within this area prior to National Monument designation, and the analysis assumes that this development will continue at a similar level. In contrast, the private mineral estate within the Carrizo Plain itself has not been successfully developed, even though many exploratory wells have been drilled. Also, the existing leases and private mineral estate development are managed under differing legal requirements. However, both areas would be subject to high levels of environmental analysis, and protective stipulations/conditions of approval would be implemented for any surface disturbing actions.

Valley Floor Area

The valley floor area contains only one small federal oil and gas lease, and that lease is in the process of being relinquished, so any development that occurs would be on private mineral estate. Although the minerals that would be developed are privately owned, BLM owns/manages all or virtually all of the surface in the area. As the surface owner of split estate, BLM is required to recognize the rights of the private mineral owner to "reasonable" access. BLM must allow access, but is also required to protect the objects of the Proclamation. This would be accomplished by requiring compliance with NEPA, the *Endangered Species Act*, and cultural resource protection laws. See Table 4.16-1.

Table 4.16-1. Surface Disturbance – Valley Floor Area

Surface-Disturbing Activity	Number	Acres			
		Perm	Temp	Transient	Total
Cross-Country Seismic Lines	230 miles			115	115
Exploration Wells, incl. roads	6 wells	6	12		18
Dev. Wells Drilled, incl. roads	10 wells	10			10
Tank Batteries	2	2			2
Surface Disturbance (acres)		***18***	***12***	***115***	***145***

There is projected to be a total of up to 18 acres of permanent disturbance (longer than 2 to 3 years), 12 acres of temporary disturbance (less than 2 years), and 115 acres of transient disturbance (such as one or two passes of a vehicle off-road that may be visible until the following season) in the valley floor area. This covers the possibility that there will be a fairly significant amount of geophysical work, several exploratory wells, and a few successful producing wells. As mentioned previously, if there is a medium to large discovery that requires more than a dozen (approximately) wells for development, it would be beyond the scope of this analysis.

The numbers in Table 4.16-1 were based on the assumptions in Table 4.16-2.

Table 4.16-2. Surface Disturbance – Valley Floor Area Assumptions

Description	Number	Unit Surface Disturbance (acres)	Total Surface Disturbance (acres)
Exploratory wells Well pads Roads (1 mile of road per well, 20' wide – Assumes no turnouts and cut and fill due to hilly terrain, which would have effectively increased the width)	2-6 wells 2–6 pads 6 roads x 1 mi./road = 6 mi.	0.5 acre/well 2.5 acre/road[1]	1–3 (1 perm, 2 temp) 15 (5 perm, 10 temp) (Assumes 4 of the 6 exploratory wells are dry, and therefore dist. is temporary)
Development wells Well pads Roads (20' wide, 1,000' long) Facilities	5-10 wells 5–10 pads 10 roads x 1,000'/road = 2 mi.	0.5 acre/well 2.5 acre/mi. x 2 mi. = 5 acres[1] (0.5 acre/road) 1 acre/facility	5 (5 perm) 5 (5 perm) 2 (2 perm)
Seismic (2 tracks, each 24" wide) All receiver lines run on foot	230 miles	0.5 acre/mi[2]	115 (115 transient)
Total valley floor, private minerals			***18 perm, 12 temp, 115 trans***

[1] 20' wide is approx. 2.5 acres per mile [2] 2 x 24" wide is approx. 0.5 acres/mile

Russell Ranch Unit Area

The Russell Ranch Unit area straddles the southwestern boundary of the CPNM. Most of the field is outside the CPNM, but a portion is within the CPNM. Most of the field is in the Russell Ranch Unit, a group of federal and non-federal leases that are operated by a single operator. It is an old field, long past its prime production levels, with an average production of less than five barrels of oil per day per well in 2008. See Table 4.16-3.

This field has been producing oil and gas since the late 1940s. There are approximately 45 wells within the Monument boundary – 15 producing and 30 shut-in. Approximately half of the producing wells are federal. Current federal production within the Monument is approximately 1,200 to 1,500 barrels of oil per month. It is likely that within the next 20 years, many of the wells that are currently shut-in will be plugged and the well pads and other disturbed areas that are no longer needed for production would be reclaimed. Even though it is quite likely that the amount of area reclaimed will exceed the amount of new disturbance, it was not taken into account when projecting new disturbance.

Table 4.16-3. Surface Disturbance – Russell Ranch Unit Area (Existing Leases)

		Acres			
Surface Disturbing Activity	**Number**	**Perm**	**Temp**	**Transient**	**Total**
In-Field Dev. Wells Drilled, incl. roads	5 wells	4			4
Tank Batteries	0	0			0
Exploration Wells, incl. roads	2 wells	1.25	1.25		1.75
Cross-Country Seismic Lines	50 miles			25	25
Surface Disturbance (acres)		***5.25***	***1.25***	***25***	***31.5***

There is one other producing field within the CPNM, the Morales Canyon field. This field is not expected to undergo any new development within the life of this RMP (20 years). It is possible, but not definite, that the field will be abandoned and reclaimed by then.

Even though there has been no new development in this area for more than a decade, there is still a possibility of minor amounts of infield development, and possibly even a couple of exploratory wells. This new development would be possible because of the sharp increase in oil and gas prices that make geophysical exploration much more economic, and the additional highly refined data can be used to more accurately define likely prospects. There is a projected total of up to 5.25 acres of new permanent disturbance (longer than 2-3 years), 1.25 acres of temporary disturbance (less than 2 years), and 25 acres of transient disturbance (such as one or two passes of a vehicle off-road) in the Russell Ranch Unit area.

The numbers in Table 4.16-3 were based on the assumptions in Table 4.16-4.

Table 4.16-4. Surface Disturbance – Russell Ranch Unit Area (Existing Leases) Assumptions

Description	Number	Unit Surface Disturbance (acres)	Total Surface Disturbance (acres)
Exploratory Wells Well Pads Roads (0.25 miles per well, 25' wide. Assumes turnouts and cut and fill due to hilly terrain, which would effectively increase the width to 25')	1-2 wells 1–2 pads 2 roads x 0.25 mi./road = 0.5 miles	0.5 acre/well 3 acres/mile[1] x 0.5 miles = 1.5 acres, or 0.75 acre per road	1 (0.5 perm, 0.5 temp) 1.5 (0.75 perm, 0.75 temp) (Assumes 1 of the 2 exploratory wells is dry, and therefore dist. is temporary)
Development wells Well Pads Roads (25' wide, 500' long) Facilities	2-5 wells 2-5 pads 5 x 500'/road = 0.5 mi. No new facil.	0.5 acre/well 3 acre/mile x 0.5 mile = 1.5 acre, or 0.3 acre/road	2.5 (2.5 perm) 1.5 (1.5 perm)
Seismic (2 tracks, each 24" wide) All receiver lines run on foot	50 miles	0.5 acre/mi	25 (25 transient)
Total Existing Leases RRU Area			***5.25 perm, 1.25 temp, 25 trans***

[1] 25' wide is approx. 3 acres per mile [2] 2 x 24" wide is approx. 0.5 acres per mile

There is projected to be a total of up to 23.25 acres of permanent disturbance (longer than 2 to 3 years), 13.25 acres of temporary disturbance (less than 2 years), and 140 acres of transient disturbance (such as one or two passes of a vehicle off-road) in the entire CPNM. The vast majority of this disturbance, 140 acres out of a total of 177 acres, is classified as transient. Within several months, or one rainy season, it would be difficult to view the disturbance. See Table 4.16-5.

Table 4.16-5. Overall RFD for Oil and Gas at CPNM (Combined Total of Federal Leases and Private Mineral Estate)

		Acres			
Surface Disturbing Activity	**Number**	**Perm**	**Temp**	**Transient**	**Total**
In-Field Dev. Wells Drilled	15 wells	14			14
Tank Batteries	2	2			2
Exploration Wells, incl. roads	8 wells	7.25	13.25		20.5
Cross-Country Seismic Lines	280 miles			140	140
Surface Disturbance (acres)		***23.25***	***13.25***	***140***	***176.5***

Additional protective stipulations and best management practices have been incorporated into the plan to minimize any impacts from exploration and development including:

In order to minimize disturbance, there will be no vibroseis trucks except on existing roads (Alternative 3 allows for off-road use of vibroseis if other means are not feasible. This is expected to be minimal because there are currently no known areas where shot holes would not work). All shot holes will be drilled using small two-track or similar ATVs. If helicopters are used to move the small drilling units, there will be much less transient disturbance, but use of helicopters is not anticipated unless site specific environmental analysis shows that they are necessary to prevent significant impacts.

The wells would potentially be too shallow and too widespread for multiple wells to be drilled from a single pad. However, operators would be encouraged to place multiple wells on single well pads where feasible, and production pipelines would be required to follow existing roads. All other activities would be required to remain on existing roads and previously disturbed areas to the maximum extent practical. This would minimize the level of additional surface disturbance.

If significant water for steam injection were to be required, it would require either drilling of a water well, numerous trips by water trucks, or construction of a pipeline from sources outside of the Monument. Little is known about the quantity and quality of water that would be available from an onsite well, so it is possible that a well would not be feasible. If a pipeline is needed, it would be required to be laid within the disturbed area of existing roads, thereby creating no additional surface disturbance.

Training for operators regarding CPNM management goals and sensitive resource values would be conducted and best management practices to protect these values would be recommended. This would reduce the potential for inadvertent impacts to CPNM resources from operators who are unfamiliar with the sensitive values of the area.

In conjunction with operators, existing disturbed areas (roads, well pads, and others) would be reviewed and reclamation of those areas determined to be redundant would be required. This would reduce the number of roads and well pads from current levels.

Roads, well pads, and facilities would be designed to impact and fragment the least acreage practicable. New facilities would be designed to maintain natural drainage and runoff patterns, reduce visual impacts, and reduce hazards to wildlife, especially California condors. These design requirements would add additional costs to oil and gas developers, but the overall cost increase would be minor. Fewer roads would likely result in slightly more travel time in the field for oil and gas operators, but all wells and facilities would still have adequate access.

Best management practices would be followed to the maximum extent practicable. Examples include: (1) place pipelines along roads and consolidate facilities when feasible; (2) select appropriate paint colors to minimize visual impacts and otherwise meet visual resource management goals; and (3) timely interim reclamation - reduction of footprint of operations after initial drilling. Each of these best management practices would likely result in increased cost to the operators, but the overall cost increase would be minor.

Other Minerals (Solids)

A potential site for emergency/administrative sand/gravel extraction (minor amounts, less than 10 yards per incident) for road maintenance or other uses would be identified in all alternatives except Alternative 1. This site is expected to be very small, less than ¼ acre. It would be selected only in an area where there were no objects of the Proclamation that would be negatively affected, in an area where visual and other issues would be minimal. The difference under the various alternatives would be minimal, and whether or not a site is identified, it would have minimal impact for the reasons stated above.

4.16.3.2 Impacts on Minerals from Implementing Other Programs

In general, impacts from other programs on the Minerals program would be minor. There would be no or negligible impacts from fire and fuels management, vegetation management, geology and paleontology, WSA/other lands with wilderness character, recreation, or travel management. The rights granted to the oil and gas operators, whether on federal leases or private mineral estate, are largely non-discretionary. The restrictions imposed by BLM and other regulatory authorities are also largely non-discretionary, and compliance with all applicable laws and regulations is mandatory. The only program area that would have more than minor impacts on mineral development would be the management of biological resources.

The following paragraphs describe the impacts that would be expected under all alternatives.

Wildlife

Compliance with the *Endangered Species Act* and other wildlife related laws and regulations would frequently cause delays, often substantial (more than a year) and could add significant costs to exploration and development (as much as tens or hundreds of thousands of dollars, or even more). Operators could be restricted in where they would be allowed to conduct surface disturbing activities, and potentially could be prohibited altogether if a proposed action resulted in a jeopardy opinion from USFWS. Prohibitions against using vibroseis trucks off-road in geophysical exploration could also result in significant additional cost to the operators.

Air Quality

Operators are highly regulated by the local APCDs, and strict compliance with those regulations is costly, and frequently operations must be delayed or even cancelled if the APCD regulations cannot be followed.

However, these regulations are required for all developments by the state, and the RMP management requirements would not add to them (so there would be no RMP impacts).

Soils

Operations must be conducted in a way that minimizes erosion and other types of damage from rain or other running water. This is SOP and the RMP requirements would not impact operations.

Water

The Monument Proclamation requires that BLM protect the surface and groundwater resources within the Monument, subject to valid existing rights. Therefore, surface and groundwater must be protected from new operations. Standard oilfield procedures require that all groundwater is protected by cemented casing, and all surface facility settings (such as tanks, pumps, heater-treaters) are required to have a sufficiently impermeable berm that would contain the fluids in the largest tanks in the event of a catastrophic failure, therefore the requirements of the RMP would not add to the costs of operations. If development of private mineral estate required the drilling of new wells for water extraction, a site specific environmental analysis would need to be conducted to determine if this could be done without impacting Monument water resources. As discussed above, if impacts are anticipated, trucking or piping of water may be required, causing additional cost to operators.

Cultural Resources

All activities must comply with laws to protect cultural and Native American interests. This includes a site specific review at the time the activity is proposed. If an object with cultural value may be affected by a proposed action, the operator must comply with BLM requirements that may include moving or delaying the activity.

Visual Resources

In all alternatives, operators would be required to comply with VRM objectives to the extent possible while still allowing for reasonable development. This may include, but is not limited to, siting, color choice, landscape screening, following natural contours, and other best management practices. Oil developments could occur in VRM Class II zones, and this could require operators to implement substantial mitigating measures to developments to meet VRM classifications.

Livestock Grazing

In general, oil and gas is compatible with livestock grazing. However, oil or gas operators may be required to install fencing around pumping units or other equipment, install cattle guards, or take other protective measures. The cost would be borne either by the operator or the grazing lessee, depending on various factors such as who was authorized to use the land first.

Lands and Realty

Operators frequently have to obtain rights-of-way for certain proposed operations. This may result in a delay in authorization to proceed. Other impacts such as land tenure adjustment may affect operations, but the specifics (such as exchanging or purchasing private mineral estate within the Valley floor) are unknown and highly speculative at this time. Also, any acquisition would include reimbursement at appraised values.

4.16.4 Impacts on Minerals under Alternative 1

4.16.4.1 Impacts on Minerals from Implementing the Minerals Program

This alternative results in the quickest reclamation, but also is the most expensive for both operators and BLM, compared to the other alternatives. More BLM inspections would mean that problems would potentially be caught earlier, lessening the chance that they become more substantial. With more BLM (or outside) funding (for example, with matching funds), operators could be encouraged to reclaim or visually improve unsightly facilities sooner than required. For example, uneconomic wells would be plugged sooner, facilities could be upgraded/modified to be less visually obtrusive, and other disturbances would be reclaimed earlier by placing them higher on a company's priority list. If portions of the private mineral estate are acquired, that land would be off limits to any new oilfield disturbance. Whether or not acquiring a portion of the private mineral estate would cause a reduction to the reasonably foreseeable development (RFD), and if so, how much that would be, is difficult to determine. If most or all of the private mineral estate in the valley floor were acquired, the amount of development would be significantly less than projected in the RFD. In addition, if most or all of the private mineral estate is acquired, then any oil and gas reserves within that area will never be developed, resulting in an equivalent amount of additional oil and gas having to be imported from other areas to offset the loss. Ultimately, any oil and gas reserves in the United States that are not produced will result in an equivalent amount being imported from foreign sources. The actual sources of the oil and the ultimate area of end use could not be determined since oil is a world commodity and the amount of reserves being placed "off limits to development" at the CPNM would be relatively insignificant when compared to national and world use.

4.16.4.2 Impacts on Minerals from Other Programs

The impacts would be the same as those under all alternatives; see Section 4.16.3 above.

4.16.5 Impacts on Minerals under Alternative 2

4.16.5.1 Impacts on Minerals from Implementing the Minerals Program

Under this alternative, most of the impacts would be the same as under Alternative 1. Onsite inspections by petroleum engineering technicians would potentially be less frequent than under Alternative 1, but would still be more frequent than required under BLM's national guidelines. This would result in more rapid discovery of operations that are out of compliance. Reclamation would be accelerated, but not to the same extent as under Alternative 1. This alternative would be less expensive for operators than Alternative 1, and therefore could result in more voluntary compliance and assistance from operators. This alternative would also be less expensive for BLM to implement. For solid minerals, a potential site for emergency / administrative sand/gravel extraction (minor amounts, less than 10 yards per incident) for road maintenance or other uses would be identified. This site would be a very small open pit, less than ¼ acre. This would result in less cost to BLM than Alternative 1 which requires all materials to come from off site.

4.16.5.2 Impacts on Minerals from Other Programs

Impacts would be the same as under all alternatives; see Section 4.16.3 above.

4.16.6 Impacts on Minerals under Alternative 3

4.16.6.1 Impacts on Minerals from Implementing the Minerals Program

Under Alternative 3, the impacts from existing and new developments would be the greatest, but they would still be subject to standard restrictions and mitigation requirements. Geophysical impacts could be

slightly greater because vibroseis trucks would potentially be allowed off-road in some areas (visible tracks, crushing of plants and soil) if the data could not be gathered otherwise. There is a minimal chance of an appreciable impact. This alternative would have the longest timeframe for restoration of disturbed sites of existing operations.

4.16.6.2 Impacts on Minerals from Other Programs

Impacts would be the same as under all alternatives; see Section 4.16.3 above.

4.16.7 Cumulative Impacts on Minerals

4.16.7.1 Assessment Area

The assessment area is the CPNM and eastern San Luis Obispo/western Kern Counties.

4.16.7.2 Past, Present, and Reasonably Foreseeable Future Actions within the Assessment Area

There have been hundreds of wells drilled in the CPNM in the past few decades, along with construction of more than a hundred miles of roads. All of the dry holes have been plugged and reclaimed, and most are no longer visible. Many of the roads have also been reclaimed and are no longer visible. The remaining 27 miles of oilfield roads are in various states of maintenance. The level of present and RFD within the National Monument is a fraction of a percentage point of overall development in the assessment area. Immediately outside the CPNM, lies the largest oilfield in the lower 48 states. It contains tens of thousands of producing wells, with 2,000 or more wells being drilled each year. It is unknown whether the level of drilling will increase or decrease in the region over the life of the RMP. In any event, the level of activity outside of the CPNM will be several orders of magnitude greater than within the CPNM.

4.16.7.3 Cumulative Impacts

Production of oil within the National Monument would add negligible levels to overall production within the region, even if new reserves are developed within the Monument based on the increased value of oil.

4.17 Impact Analysis for Lands and Realty

4.17.1 Introduction

Lands and realty actions are implemented to support various resource management goals such as land acquisitions to protect habitat. They also authorize public uses such as rights-of-ways across BLM lands. Because of the administrative/support nature of the program, impacts are not discussed in relation to the realty program itself, but instead to the outcomes of the program including land tenure (ownership) changes, and the opportunities and constraints on those seeking land use authorizations within the Monument. For example, areas defined in the RMP as having restrictions for issuing land use authorizations would limit opportunities for facilities such as utilities and communication sites. In addition, various management prescriptions from other programs could place constraints on BLM's ability to authorize land uses. For example, areas managed for wilderness character would likely have more restrictive stipulations regarding rights-of-ways.

4.17.2 Assumptions Used for the Analysis

The Lands and Realty program would continue to be a support function of other resource programs. Consequently, effects to the program would be based on the goals and objectives of other resource programs.

Land acquisitions will depend upon having willing sellers and available funding.

Population increases in the region will result in related increases in public demand for rights-of-way, communication sites and other land use authorizations on public and private lands in the area.

BLM has limited discretion in restricting certain right-of-way authorizations. For example, the agency must provide reasonable access to private mineral estate, and to private landowners whose lands are surrounded by BLM managed lands.

BLM would manage all land use authorizations, such as rights-of-way, in a way that minimizes impacts on the natural and cultural resources of the Monument, and other public uses.

Site-specific impacts caused by development of facilities in designated corridors or development of communication sites would be assessed in accordance with NEPA using an environmental assessment or EIS process prior to approval by BLM, and mitigation measures would be required as part of the authorization process.

4.17.3 Incomplete Information

Land use authorizations will depend upon future demand and have been estimated based on past requests and expected trends. The actual number in any given year may vary considerably from the averages presented here.

4.17.4 Programs with No or Negligible Impacts

The following programs will not impact implementation of Lands and Realty actions: Fire and Fuels Management and Livestock Grazing. Rights-of-way authorizations would include standard stipulations to protect cultural resources, biological resources (including threatened and endangered species), livestock grazing improvements, and other public land resource values.

4.17.5 Impacts on Lands and Realty under the No Action Alternative

4.17.5.1 Impacts on Lands and Realty from Implementation of the Lands and Realty Program

Lands

Under the No Action Alternative, BLM would continue to acquire lands and interests in lands to increase the amount of protected land for objects identified under the Monument Proclamation. Over the life of the plan, BLM could acquire approximately 16,000 to 32,000 acres of land through purchase, exchange, donation, or friendly condemnation. Zero to 40,000 acres of privately owned mineral estate may be acquired from willing sellers.

Land tenure adjustments would focus on acquisition non-federal lands within the Monument and generally would generally be driven by availability of lands. High priority would be given to acquisition of lands with important biological and cultural resources, especially for those resources that currently have limited acreage in public ownership.

In addition, BLM may pursue acquisition of non-federal mineral estate underlying federal surface holdings, which would reduce the need for land use authorizations for surface uses in areas that are not federal minerals. As a result of acquiring the mineral estate, BLM would have management jurisdiction over both surface and subsurface uses, and better meet overall Monument objectives.

Realty (Rights-of-Way and Permits)

BLM would authorize actions that are consistent with the Monument objectives. Up to two new communication sites could be authorized. The existing two sites could be expanded. This would occur based on increased demand for services in California Valley that may require a larger building or addition to a tower.

New applications that are inconsistent with the Monument Proclamation would not be authorized. *Recreation and Public Purposes Act* patent applications, Desert Land Entry, and Indian Allotment applications are considered inconsistent with the objectives and would be rejected. The demand for these authorizations is minimal, so impacts would be negligible.

Land use authorizations for major utility rights-of-way, such as high-voltage transmission lines, would be restricted to current corridors. Other rights-of-way, such as distribution lines to in-holdings, could be granted in the corridors as well; however, BLM would maintain the ability to authorize uses such as these outside the designated corridors.

4.17.5.2 Impacts on Lands and Realty from Implementing Other Programs

Lands

No or negligible impacts to land tenure adjustments would be anticipated under Alternative 1 from any of the other resources or resource uses. The acquisition program would continue to support the goals of these programs

Realty (Rights-of-Way and Permits)

Land use authorizations would likely be approved with best management practices that maintain values consistent with Monument objectives. In this manner, the authorizations could be constructed, but would be designed or implemented with minimal or moderate impact to the applicant. There may be instances when BLM would not authorize or renew rights-of-way or permits that are not consistent with Monument objectives. Based on the demand for these authorizations, impacts are expected to be minimal.

Minerals

BLM is required by law to recognize the “valid existing rights” of the private mineral owners that existed prior to the Monument Proclamation. This includes the right to access, explore for, and develop the private mineral estate. BLM also has the right to impose reasonable restrictions on the use of federal surface to ensure that the objects of the Proclamation are protected from unnecessary harm or degradation.

BLM would require that diligent efforts be made to use existing roads, rights-of-way, and to minimize disturbance to Monument resources wherever possible. All pipelines, whether production or for water supply, would be required to be run in road rights-of-way, thereby creating no additional disturbance. Refer to Minerals section for more information on minerals development. These requirements would

impact the owners of mineral resources, but would be considered reasonable to prevent unnecessary and undue degradation to the objects of the Monument Proclamation.

Visual Resources

Much of the Monument would be managed under VRM Class II, with areas of Class III in the Temblors and Class IV along the CPNM boundary. This would require some design modifications on right-of-way authorizations to minimize visual impacts, but would not preclude any authorizations.

Wilderness Study Area

The Caliente WSA would continue to be managed under BLM's Interim Management Policy for Lands under Wilderness Review, resulting in no impacts over present conditions.

4.17.6 Impacts to Lands and Realty Common to All Action Alternatives

4.17.6.1 Impacts on Lands and Realty from Implementing the Lands and Realty Program

Lands

Under actions common to all alternatives, no lands would be transferred out of federal ownership, per the Monument Proclamation, unless an exchange would further the protective purposes of the Monument. This would protect the existing public resources of the Monument, so there would be no impacts.

Many of the remaining small private parcels within the Monument have title defects. BLM is prohibited from acquiring property with title problems such as unprobated estates, unlocatable partial owners, or community property questions. The use of "friendly condemnation" on parcels with willing sellers but with title problems would eliminate such title problems while still providing the known landowners with a market value payment for their land. The cost for the landowner to cure such title defects through court action is usually greater than the value of the property. Using friendly condemnation would further the purposes of the Monument, while benefiting known landowners who are willing sellers by clearing title and allowing them to be compensated for their property.

Rights-of-Way and Permits

The Monument would be a right-of-way avoidance area, so new right-of-way proponents would have to demonstrate a need for use of Monument lands and in most cases would likely be rejected and need to find alternate off-Monument locations. This may increase the expenses for the project proponents.

Up to five minor right-of-way reservations to BLM may occur for administrative purposes. Less than ten rights-of-way are anticipated for scientific monitoring instruments, weather stations, and similar uses, and for accessing private or state lands. These rights-of-way are expected to result in from 5 to 30 acres to total new disturbance. Approximately ten rights-of-way are expected to be relinquished over the life of the plan. The facilities/surface disturbance (approximately 5 to 30 acres) associated with these rights-of-way would be reclaimed.

Excluding any new utilities in the existing corridor may increase utility or power lines to be authorized along the periphery of the Monument, this may increase expenses to the proponents.

Land use permits, such as filming permits, are expected to range from zero to five per year. Not exceeding forty permits over the life of the plan. All permits would include stipulations that require the permittees to follow terms and conditions so no or negligible impacts would occur on the Monument.

Surveying and monumenting exterior boundary and other boundaries within the Monument may result in less than one acre of disturbance, and would reduce the potential for trespass and associated impacts to Monument resources.

4.17.6.2 Impacts to Lands and Realty from Implementing Other Programs

Land use authorizations would likely be approved with SOPs that maintain values consistent with Monument objectives. In this manner, the authorizations could be constructed, but would be designed or implemented with minimal or moderate impact to the applicant. There may be instances when BLM would not authorize or renew rights-of-way or permits that are not consistent with Monument objectives.

4.17.7 Impacts to Lands and Realty under Alternative 1

4.17.7.1 Impacts to Lands and Realty from Implementing the Lands and Realty Program

Lands

Over the life of the plan, BLM would acquire approximately 16,000 to 32,000 acres of land through purchase, exchange, donation, or friendly condemnation. Zero to 40,000 acres of privately owned mineral estate may be acquired from willing sellers. More land within the Monument boundaries would be managed by BLM in the future, reducing the potential and scale for incompatible land uses.

Rights-of-Way and Permits

No new communication sites would be authorized. Approximately two sites would be removed as authorizations expire. Applications for new communication sites would be accommodated where possible on alternative off-Monument public land. However, these alternative locations may not serve the site-specific needs of the proponents to offer service to areas such as California Valley, so could cause moderate to major impacts to services to the local community if alternate sites do not provide adequate coverage.

4.17.7.2 Impacts to Lands and Realty from Implementing Other Programs

SOPs to protect Monument values would be employed. This would result in impacts similar to the No Action Alternative.

Visual Resources

83,302 acres would be managed as VRM Class I, 158,080 as VRM Class II and 17,040 as VRM Class III. Most rights-of-way and permits for inholder access would be in Class II areas. This may require modifications/limitations on development, therefore increasing the costs to the applicant.

WSA/Other Lands with Wilderness Characteristics

There are 83,302 acres in the lands with wilderness character and the Primitive recreation zone. Issuance of rights-of-way or permits for inholder access in this zone would require additional stipulations, but does not preclude issuance. Impacts could include added cost, additional mitigation measures, or denial of the right-of-way if alternatives exist that would not impact the wilderness character area.

Minerals

Impacts would be the same as the No Action Alternative.

4.17.8 Impacts to Lands and Realty under Alternative 2

4.17.8.1 Impacts to Lands and Realty from Implementing the Lands and Realty Program

Lands

This alternative would result in the acquisition of less acreage than Alternative 1, but acquired lands would be targeted towards meeting priority habitat protection needs.

Rights-of-Way Permits

No new communication sites would be authorized. Approximately two sites could be modified to allow for additional facilities in accordance with VRM classifications. This would allow for limited expansion/improvement of service to on-Monument locations, and reduced impacts over Alternative 1. There may still be minor impacts since new sites would not be made available.

4.17.8.2 Impacts to Lands and Realty from Implementing Other Programs

Visual Resources

BLM would manage 54,464 acres as VRM Class I, 186,819 as VRM Class II, and 20,839 as VRM Class III. Most rights-of-way and permits for inholder access would be in the VRM Class II areas. This could require modifications/limitations on development, increasing costs to the applicants. New communication facilities would need to meet Class II criteria which could limit location, height, and require other modifications to reduce visual impact.

WSA/Other Lands with Wilderness Characteristics

There are 54,464 acres of land managed as WSA and for wilderness characteristics. BLM would still allow reasonable access, but applicants would need to demonstrate the need for motorized access and additional stipulations for right-of-way or permit issuance may be required. Additional stipulations may include reroute or relocating the access area, this may have minimal to moderate impact to the applicant.

Minerals

Impacts would be the same as the No Action Alternative.

4.17.9 Impacts to Lands and Realty under Alternative 3

4.17.9.1 Impacts to Lands and Realty from Implementing the Lands and Realty Program

Lands

This alternative would have the same results as Alternative 2.

Rights-of-Way and Permits

Up to two new communication sites could be authorized. The existing two sites could be modified for expansion in accordance with VRM classifications. This is the least restrictive of the alternatives and

would have negligible impacts on applicants' ability to construct, expand, or modify communication facilities.

4.17.9.2 Impacts to Lands and Realty from Implementing Other Programs

Visual Resources

BLM would manage 17,984 acres as VRM Class I, 223,299 as VRM Class II, and 24,944 as VRM Class III. The impacts are similar to Alternative 2. Most rights-of-way and permits for inholder access would be in the Class II Zone. This could require modifications/limitations on development, increasing costs to the applicants. New communication sites would need to meet Class II criteria which could limit location, height, and require other modifications to reduce visual impact, therefore increasing the costs to the applicant.

WSA/Other Lands with Wilderness Characteristics

Impacts would be the same as the No Action Alternative.

Minerals

Impacts would be the same as the No Action Alternative.

4.17.10 Cumulative Impacts to Lands and Realty

4.17.10.1 Assessment Area

The assessment area is Kern and San Luis Obispo Counties.

4.17.10.2 Past, Present, and Reasonably Foreseeable Future Actions within the Assessment Area and Cumulative Impacts

Land Acquisition

Kern County contains 5,229,490 acres, of which 1,078,180 acres or approximately 20 percent are publicly owned. San Luis Obispo County contains 2,122,454 acres, of which 463,433 acres or 22 percent are publicly owned. The vast majority of this land is made up of federal public domain lands, and not acquired from private owners. It is anticipated that up to 32,000 acres of surface estate and 40,000 acres of mineral estate could be acquired and transferred into public ownership within the Monument over the life of this plan. Additional acquisitions of properties for conservation purposes by other agencies and non-profit organizations will occur in the region over the life of the plan. Although acreages of these potential acquisitions are unknown, the cumulative impacts to such factors as county tax revenues, and private land development opportunities is expected to be negligible based on the large proportion of private land within each county. Beneficial cumulative impacts will occur based on the protection of additional open space-wildlife corridors.

Land Use Authorizations

The designation of Carrizo a right-of-way avoidance area and the extinguishing of the utility corridor designation within the Monument will require utilities, communication sites and other developments to seek alternate sites outside the CPNM. Therefore, although the RMP will not affect the number of sites, it would affect their location.

Wind and solar companies have shown a great interest in BLM and private lands in Western Kern County/San Luis Obispo Counties. Specific proposed developments in area include a solar plant in California Valley north of the Monument, and wind energy interest in the Temblor range on private lands within the Monument. Several applications are currently pending with the State of California's Energy Commission. If approved, ancillary facilities may be needed across BLM lands. Even if rights-of-way do not cross the National Monument, it could become increasingly "ringed" by such facilities.

4.18 Impacts to Social and Economic Conditions

4.18.1 Introduction

The overall character of the Monument is greatly influenced by the quality of its resources, and as discussed in Chapter 3, there is a correlation between the management of these resources and their value within the social and economic environment in which the Monument exists. The regional, local, and cultural community uses and benefits from the substantial "resource capital" represented by the Monument.

4.18.2 Assessment Area and Social and Economic Context

The assessment area analyzed in this chapter focuses on the CPNM and the several cities and communities in the surrounding 10-mile radius, discussed in Chapter 3 as the Carrizo Trade Area. It also includes San Luis Obispo and Kern counties, within which the CPNM is located, and Santa Barbara, Ventura counties, which border the CPNM.

The social and economic context of the CPNM includes not only the communities of place listed above, but also the communities of interest, those with the greatest potential to be impacted by management of the Monument and its resources. Communities of interest and primary stakeholders considered herein are Native American peoples, leaseholders, Monument visitors, private land and mineral estates owners, ranchers and farmers, and Monument residents. The social and economic condition of minorities and minority populations, low-income populations and Native American populations in the region and local community were also considered in Chapter 3. Potential social and economic impacts to these groups are considered in this analysis, and are discussed herein where applicable.

As discussed in Chapter 3, potential economic activity in the four counties and trade area surrounding the CPNM encompass non-market values, as well as market and commodity values. Non-market values associated with the CPNM directly and indirectly benefit and positively influence the local and regional economy. Those values considered in Chapter 3 were land and income enhancement values, Monument visitor use patterns, biological, cultural and physical resources, recreational resources, and hunting. Impacts to these sources of economic activity are considered where applicable herein.

Market and commodity values are those that yield direct economic benefits. Chapter 3 discussed the following market and commodity values: land use and development, mineral estates, agriculture (including grazing fees and contributions), and local government revenues, including payments in lieu of taxes (PILT) paid by federal agencies to local governments, and possessory interest tax paid to California counties in which public lands are located; these taxes are based on the value of livestock grazing, mining and other permits and leases.

The impacts discussions that follow recognize the inter-relationships between the resource management and resource use categories, as well as those between the affected region, communities of interest, and economic and social values relevant to the CPNM. Many of the social and economic impacts will overlap with discussions of resources and resource uses considered in detail within their respective discussions

(for example, Recreation, Livestock Grazing, Cultural Resources, Minerals) elsewhere in this chapter. Therefore, discussions are limited to the applicable resource category to the greatest extent possible to avoid repetition while still acknowledging the potential for overlapping interests and impacts. Where applicable, this analysis will refer the reader to the appropriate categorical discussions for more information.

The analysis has identified no disproportionate impacts from implementation of any of the plan alternatives on minority or low income populations. Therefore, environmental justice impacts to these populations are not discussed in this analysis.

4.18.3 Assumptions and Incomplete Information

Scope of Analysis and Measures of Assessment Area Economic Activity

The scope of this analysis is limited to the social and economic impacts of the respective management resource and use goals, objectives and actions. It is based on a variety of sources, cited and described in Chapter 3, which included existing and, where available, projected, demographic data for population, age, race/ethnicity, household size and income, labor and employment, education levels, and economic conditions within the assessment area. It is also based on Monument-specific data and documentation, as well as resource-specific documentation. These are also cited in Chapter 3. Finally, research conducted for Chapter 3 also referenced social and economic trends nationally, statewide, and regionally.

Assumptions

Social and Economic Conditions in the Assessment Area

Based on information established in Chapter 3, the following assumptions are made regarding social and economic trends in the assessment area:

- Based on existing conditions and trends, population will increase steadily over the life of the plan. Individual communities within the assessment area may experience short-term population decreases but are expected to trend upwards over the life of the plan and beyond, based on existing conditions.
- Based on current estimated age of population, the median age within the assessment area is expected to increase over the life of the plan.
- The proportion of the population that is comprised of persons identifying themselves as “white” will continue to predominate. The percentage of persons identifying themselves as “Hispanic or Latino” will continue to grow and will maintain a strong representation in the regional demographic.
- Median household income and per capita incomes will continue to increase steadily, with the most affluent households in Ventura County, followed by Santa Barbara County. Since 2000, the percentage of families below poverty level has remained largely stable, a trend that is expected to continue based on existing conditions. The trend for Kern County has been to exceed the national average based on the years surveyed in Chapter 3, while other counties have remained at or below national averages.

Monument Visitor and Use Patterns

1) The RFD for Recreation indicates that of the 87,040 visitors to the CPNM in 2007, about 50 percent are nature or heritage based, approximately 30 to 40 percent are hunters, 5 percent are equestrian and 5 percent are mountain bikers. Data regarding visitors’ place of residence are limited to those who visit the Goodwin Educational Center and signed the visitor’s register. Based on available

information, approximately 35 percent were from the Central Coast region of California, and about 18 percent were from Bakersfield and the Central Valley. Therefore, it is conservatively assumed in this analysis that approximately 60 percent of visitors are from either the Central Coast or the Central Valley, and are therefore considered residents of the assessment area.

2) For purposes of this analysis, it is assumed that most hunters are primarily interested in big game, and varmint hunting is a secondary activity. It is further assumed that approximately 60 percent of those who come to the Monument to hunt are from the assessment area, and 40 percent visit the region from elsewhere.

3) It is assumed that visitors to the Monument for the purpose of scientific research will steadily increase over the life of the plan. (Also see Incomplete Information.)

Other

The distribution of BLM expenditures in surrounding communities has been estimated at approximately 50 percent to San Luis Obispo County and 50 percent to Kern County, and their associated cities and communities. These expenditures are modest and are expected to continue in future years.

Incomplete Information

No formal data are available regarding recreation and research use levels in the CPNM. Visitation levels, visitor place of residence, and use patterns described under Assumptions were estimated from visitor center registers and observation by field personnel.

4.18.4 Impacts to Social and Economic Conditions from the No Action Alternative

4.18.4.1 Wildlife

The No Action Alternative would generally be expected to result in similar impacts to social and economic conditions in the region and to communities of interest as those occurring under current conditions, which are generally based on protection of Monument resources as set forth in the Monument Proclamation and the existing Carrizo Plain National Area (CPNA) Plan. The No Action Alternative sets forth a variety of measures to protect Monument resources, which combine active management actions along with others that rely primarily on natural processes, the outcomes of which may vary based on future conditions. Therefore, the potential social and economic conditions resulting from the No Action Alternative are generally expected to be similar to existing conditions in the short-term.

4.18.4.2 Vegetation

Potential social and economic impacts associated with vegetation management under the No Action Alternative are expected to be similar to those of wildlife management, or generally similar to those that currently exist or would be expected to occur in the short-term.

4.18.4.3 Fire and Fuels Management

The No Action Alternative uses existing fire management protocol as prescribed in the CPNA. It is similar to the three action alternatives in terms of its focus on protecting Monument resources, human life, and private property. It also provides for increasing the availability and dependability of water sources for wildfire suppression. In terms of the level of assurance to surrounding communities, it is most similar to Alternative 1. In terms of potential for disruption of activities within the Monument for shorter periods due to fire management activities, it is similar to Alternatives 2 and 3 and would be expected to have similar impacts to social and economic conditions in the region and to the communities of interest, and

non-market and market/commodity values discussed herein. In the overall, impacts associated with fire management on the CPNM are expected to be minor and generally beneficial with regard to social and economic conditions.

4.18.4.4 Air Quality

The No Action Alternative requires conformance with existing local, state, and federal air quality and visibility requirements and PM_{10} dust control rules. This alternative is generally expected to result in impacts similar to those under existing conditions and to result in no adverse impacts to social and economic conditions in the region.

4.18.4.5 Soils

As with air quality, potential impacts to social and economic conditions from the No Action Alternative are expected to be negligible, with no adverse impacts but with no measurable improvement.

4.18.4.6 Water

The No Action Alternative for water resources is intended primarily to maintain and enhance natural hydrologic processes. It does not explicitly provide for replacement of water sources for use by livestock, wildlife, or administrative use. The potential under the No Action Alternative for natural water sources to continue to provide for the needs of these users is considered in Chapter 4.7, Water Resources. There would be no new impacts to the social and economic conditions of the region, communities of interest, non-market values, or market and commodity values beyond those already occurring or which would be expected to occur in future based on existing management. Given increasing concerns over the availability of water, it is likely that a more active approach to water management, such as is set forth in the action alternatives, will be of greater overall benefit to the social and economic context within which the CPNM exists.

4.18.4.7 Geology and Paleontology

The No Action Alternative would continue current management practices, which involve limited field monitoring and patrol, would authorize continuation of current formal field research in selected areas, and would maintain public interpretation and education resources at the Goodwin Educational Center and at other sites where such resources are currently available. These practices would not result in either adverse or beneficial impacts to social and economic conditions other than those already occurring. However, the protection of the values represented by these resources, and the expansion of educational opportunities to the scientific community as well as the public by means of the more active management practices proposed under the various action alternatives, especially Alternatives 2 and 3, may be expected to result in a greater level of positive impacts.

4.18.4.8 Cultural Resources

The No Action Alternative would continue current management practices; therefore, no additional adverse or beneficial impacts to social and economic conditions are therefore expected to result from their continued implementation other than those already occurring or expected in future as a result of current management. As with other sensitive and unique Monument resources, cultural resources and Native American interests are expected to derive greater benefit from the enhancements and augmented provisions for their protection and public and academic access and education, such as those set forth in the action alternatives, primarily Alternatives 2 and 3. Social and economic conditions in the region, for communities of interest such as Native American groups and Monument visitors, and for the non-market

values that these resources represent are also expected to receive positive benefits from implementation of an action alternative that allows for an expanded range of management practices.

4.18.4.9 Visual Resources

Although most of the Monument would continue to be managed as VRM Classes II and III, the No Action Alternative provides for management of some areas along the border of the Monument as VRM Class IV, which allows for the highest level of impact to the natural landscape of all the VRM class designations. Class IV provides for "management activities and uses requiring major modifications to the natural landscape." All of the action alternatives limit VRM class designations to III or lower, varying primarily in terms of the amount of acreage allocated to each VRM class.

The visual resources of the CPNM may arguably be considered a regional asset and their protection, along with that of other unique and highly valued Monument resources, has been established as a factor in the region's quality of life and associated economic indicators such as land and income values. Open lands and scenic vistas characteristic of the Monument were cited during the public scoping process and are considered an integral component of the non-market values cited in Chapter 3. Therefore, reducing the level of impacts to the existing landscape below Class IV and by other means as described in the action alternatives would be expected to have a beneficial effect on the social and economic conditions of the aforementioned communities of place, communities of interest, and non-market values.

4.18.4.10 WSA/Lands with Wilderness Characteristics

The No Action alternative is identical to Alternative 3 (see Section 4.7.6.11); therefore, potential impacts would be the same for both alternatives.

4.18.4.11 Livestock Grazing

Existing social and economic conditions associated with livestock grazing in the CPNM are described in Chapter 3. Detailed impacts to livestock operations and opportunities within the Monument are described in Section 4.13, Livestock Grazing. Potential future impacts based on continuing existing management practices would be expected to be similar, although as with Alternatives 2 and 3 actual revenues may vary based on fluctuations in AUM fees and future increases in local government assessment rates, and conversion of grazing lands to other uses or removal from availability based on range conditions.

The No Action Alternative is most similar to Alternative 3 in terms of provision of Section 15 grazing lands and projected revenues to BLM and local governments; it is also likely to be most similar in terms of impacts to ranchers who lease or access public lands in the CPNM for livestock grazing. It exceeds Alternative 2 in terms in that it provides for Section 15 grazing allotments to occur at greater frequency over 10 years, and is therefore expected to result in higher projected revenues than would Alternative 2. The No Action Alternative would support approximately 2.6% fewer AUMs from free use grazing permits than would Alternatives 2 and 3.

4.18.4.12 Recreation

Potential social and economic impacts from the recreational goals, objectives, and actions under current management would be expected to continue under the No Action Alternative. Based on California Tourism figures (California Tourism, 2006), in Kern County leisure guests average daily expenditures of $68.50. This figure is higher in San Luis Obispo and Santa Barbara counties, at $86.70 and $95.20 per day, respectively. No data were available for Ventura County. To conservatively estimate the potential regional economic impacts of CPNM visitorship, an average of the three-county expenditure figures, or

$83.47 per day, has been used. Based on the assumption that approximately 40 percent of visitors to the CPNM come from outside the region and would require travel-related services, such as food and lodging, at current levels (87,040 annual visitors), it is estimated that CPNM visitors from outside the region generate average daily expenditures approximately $2.9 million in the assessment area on annual basis (based on a one-day stay per visitor in the region). Based on BLM estimates of future use, under the No Action Alternative these revenues would be expected to increase to approximately $3.35 million by year 2018, and $4.1 million by year 2028. Local governments would collect a portion of these revenues in the form of sales and transient occupancy taxes.

Based on the factors shown above and projected recreation use levels under each alternative, the No Action Alternative has potential to generate higher recreation-related revenues than either Alternative 1 or 2. However, it does not provide for targeted marketing to potential Monument users, as do the action alternatives, which could generate additional revenues for local jurisdictions, nor does it actively provide for the enhancement of recreational facilities to the extent that the action alternatives do so.

4.18.4.13 Administrative Facilities

No explicit objectives or actions are included in existing management plans regarding administrative facilities. Based on continued management of these facilities in their existing state, no new adverse or beneficial impacts are anticipated. None of the action alternatives are expected to result in more than minor impacts to social and economic conditions.

4.18.4.14 Travel Management

Road miles per route designation category are the same as those for Alternative 3. No other designations are established for this alternative. Each of the action alternatives provides for a progressively greater level of management involvement; potential impacts associated with this management category are not expected to result in more than minor impacts to social and economic conditions under any of the action alternatives.

4.18.4.15 Minerals

There would be no adverse or beneficial impacts beyond those already occurring.

4.18.4.16 Lands and Realty

The No Action Alternative is the same as Alternative 1 in terms of land acquisitions and the same as Alternative 3 in terms of rights-of-way and permits. Impacts are therefore expected to be same.

4.18.5 Impacts to Social and Economic Conditions Common to All Action Alternatives

Impacts to social and economic conditions in the assessment area could result from a wide range of management decisions. The following discussion analyzes those potential impacts from management goals, objectives, and actions for each resource and resource use category that are common to each of the action alternatives.

4.18.5.1 Wildlife

As discussed in Chapter 3, the CPNM is integral to the local and regional social and economic context. The preservation and enhancement of the quality of the natural resources, including wildlife and associated habitat, that are found within the Monument are therefore important contributing factors to the

social and economic wellbeing of the region. All of the alternatives continue to provide for management practices that implement mandated protection of threatened and endangered species and habitat, support biodiversity and focus on increasing native and indigenous species. Protection of these resources enhances the region's quality of life in a variety of ways. Secondary benefits may include the enhancement of regional and local land use and income values, two factors that have been shown to benefit from proximity to publicly managed lands, as well as attracting tourists to the region, thereby generating revenues to local jurisdictions (also please see Section 4.7.3.12, which discusses social and economic impacts associated with Recreation).

The various alternatives also contribute to the regional coordination of land use and wildlife conservation efforts, and provide confidence regarding how these relationships are managed. Furthermore, the preservation of the Monument's biological resources and their value to regional conservation efforts provide greater certainty and clarity to resource managers and the local economies in terms of land use planning and other economic activity within their communities.

The communities of interest with greatest potential to be directly benefited by the management of wildlife resources include Native American peoples, which have a stated concern with an interest in the preservation of Monument resources, as well as Monument visitors and research guests. As shown in Chapter 3, estimated Monument visitorship increased by about 44.4 percent between 2003 and year 2007. Based on public scoping feedback, management actions that protect and enhance wildlife within the CPNM are likely to result in a continuation of this pattern since they preserve these valued natural assets and the overall character of the Monument. While changes in the *level* of visitorship may not be directly attributable to wildlife management actions, nonetheless, inasmuch as the Monument continues to foster important and increasingly valued opportunities to view wildlife in natural surroundings, visitor interest is expected to increase steadily. In the overall, impacts to visitor use patterns from wildlife management actions are expected to be beneficial.

Recreation users within the CPNM may experience seasonally or otherwise restricted access as deemed necessary by changing conditions and AM protocol, in certain areas where human disturbance has the potential to adversely impact wildlife or bird populations, or to damage habitat. These restrictions are not expected to result in more than minor impacts to recreational users as they experience the CPNM. Based on the growing popularity of wildlife-watching as a recreational activity in the U.S. and in California, and given the relatively minor nature of the access restrictions, in-common management actions for these alternatives are likely to result in negligible impacts, if any, to economic activity generated by recreation users in the Monument.

All alternatives contain actions intended to manage nonnative wildlife populations, and include hunting as a viable management tool to implement these actions. It is expected that this activity will continue to result in beneficial economic impacts in the region, which may include trip and other hunting-related expenditures.

4.18.5.2 Vegetation

Impacts to the local and regional community from management actions for all alternatives associated with vegetation management would be similar to those for wildlife management such that impacts would be positively impact quality of life in the region, and would maintain and enhance the character of the Monument. The overall focus on vegetation management policies common to all alternatives to ensure the maintenance of habitat quality for San Joaquin Valley and other native species is expected to continue to result in beneficial impacts to the region.

All alternatives provide for the removal of invasive nonnative plants so as to protect historic and pre-historic sites, and to replace them with appropriate native plants. These actions benefit Native American groups, as well as visitors to the Monument, by ensuring that impacts to sensitive cultural resources and their influence on the social context of the Monument are protected from potential adverse impacts from vegetation management policies.

The in-common vegetation management actions are likely to result in beneficial impacts to non-market values such as land values and income enhancement, as well as most directly to the biological resources that are the focus of these actions. Projected Monument visitor use patterns are assumed based on a variety of factors. Vegetation management policies may contribute to these factors, to the extent that these policies improve overall habitat value and enhance opportunities for such recreation activities such as wildlife and wildflower viewing and bird watching.

4.18.5.3 Fire and Fuels Management

Fire and fuels management of the CPNM is an important means of protecting and preserving Monument resources, as well as directly and indirectly protecting the economic well being of the region. While wildfires can be destructive and costly and their spread poses a threat to human life and property, fuel load conditions within the CPNM are such that the threat of an extreme (long-term and/or intense) fire event is considered unlikely. Similar to the current management protocol, the action alternatives place preservation of human life as the primary and overarching fire and fuels management objective, followed by fuel and wildfire management and stabilization efforts to protect resources. Management practices are also designed to continue to manage fuel loads and decrease the magnitude of wildfires should they occur. Such practices also reduce potential economic outlay on the part of local communities as a result of demand on local and regional fire protection personnel and equipment.

Wildfires may impact air quality in the region, which may result in indirect social and economic impacts to quality of life. Management policies and practices designed to manage the spread of wildfires are intended to reduce these impacts.

Impacts associated with the proposed management objectives and actions are expected to be minor to moderate over the short-term, and to result in an overall benefit to the communities of place surrounding the CPNM.

All alternatives recognize the importance of educating firefighters regarding the locations of sensitive cultural resources in order to protect them from wildfires. All alternatives provide for establishment of fire lines within the CPNM, each to a varying extent, as well as for hand or mechanized removal of vegetation adjacent to buildings and within recreation sites. All alternatives advocate for an increased understanding of historic fire management techniques used by Native peoples to inform current practice.

To a very limited extent, fire management activities may impact access to recreational uses by Monument visitors. Any such restrictions would be short-lived and generally minor, except in extreme cases. In the overall, however, management activities associated with fire management are expected to result in positive impacts to the social and economic conditions of the region, communities of interest, and non-market values, and no adverse impacts to commodity and market values.

4.18.5.4 Air Quality

The maintenance and improvement of air quality to meet federal and state standards, minimize dust emissions, and minimize exposure to spores that can result in Valley Fever are common to all alternatives. Impacts are expected to be minor in the short-term, that is to say, small or no measurable change from

impacts that occur under current management, but may provide for cumulatively considerable beneficial impacts over the long-term. The maintenance and improvement of air quality improves conditions that may affect sensitive cultural, biological, and physical resources. The in-common management goals and objectives for all action alternatives would benefit the social and economic context of the locality and region in which the CPNM is located directly and indirectly by enhancing quality of life, including the protection of valued visual resources such as clear night skies and scenic vistas.

4.18.5.5 Soils

Potential impacts from soils management common to all alternatives are similar in nature to those for air quality. In general they provide indirect benefit by serving to protect Monument resources, especially biological and cultural, and thereby enhance social and economic benefits tied to quality of life. Soils management practices common to all alternatives directly benefit non-market values associated with biological and physical resources by contributing to the stability of the soil base and protecting hydrological values of watersheds as well as preventing erosion throughout the Monument. Soils management practices may also indirectly protects cultural resources. Potential change from impacts associated with current management practices is expected to be minor in the short-term, but may yield cumulatively considerable beneficial impacts in the long-term with the stabilization and improvement in soil health and associated indirect benefits to the social and economic context.

4.18.5.6 Water Resources

Maintenance and protection of water quality and the continued availability of water to fulfill the Monument Proclamation are at the heart of the goals and objectives established in the RMP, along with compliance with the *Clean Water Act* and protection of hydrologic values in upland areas and preservation of riparian zone and floodplain functions. These policies benefit the social and economic fabric of the region in that they provide for a greater likelihood that the Monument's resources and surrounding region quality of life will be preserved and enhanced.

Biological and physical resources receive direct benefit and these impacts may be moderate in the short-term to major over the long-term given the proposed removal of invasive nonnatives and use of native plants in wetland areas. Measures that ensure adequate water supplies, as well as those that are intended to protect the hydrologic functions of Soda Lake and other Monument watersheds, may be seen as protecting and preserving the overall character and resources of the Monument and localized and regional social and economic context they benefit.

There are No Action Alternatives for water resources, therefore all goals and objectives are alike for proposed management of these resources, and no further discussion of social and economic impacts associated with water resources is included herein.

4.18.5.7 Geology and Paleontology

As with the management of other unique and valuable Monument resources, goals, objectives, and actions in common to all alternatives for the management of paleontological and geological resources are expected to benefit the region. These resources are tied to the regional quality of life and the preservation of the CPNM's character. The in-common measures focus on inventorying and otherwise studying the unique paleontological and geological resources, which may result in increased visitorship to the Monument, and thus to the region. Researchers as well as students and laypersons with these interests stand to benefit from increased information and understanding of these valuable resources that will become available over the mid- and long-term.

The subject paleontological and geological resources constitute non-market values, which would be beneficially impacted by the policies common to all alternatives for these resources. Other non-market values, such as land value and income enhancement, have potential to experience indirect short and long-term benefit from measures that identify, study and protect Monument resources, and which focus attention on the value of the information they yield. Monument visitorship is expected to increase over the life of the Plan, and visitors may be attracted based on a variety of resource management practices, of which the management of paleontological and geological resources is a part.

4.18.5.8 Cultural Resources

The in-common goals, objectives and actions of all action alternatives are extensive and are intended to protect and preserve known cultural sites in the Monument, as well as to ensure that management practices continue to support and provide a context for traditional Native American cultural practices. As with other such resource-enhancement policies, these are expected to result in beneficial quality-of-life impacts to communities of place surrounding the Monument. Such practices would also directly benefit local and regional Native American residents as well as Native groups that are directly involved in coordinating with BLM regarding the long-term management of the Monument. Management policies speak directly to Native American interests in terms of cultural and traditional use practices, as well as to the preservation of sites that are of great significance to the Native peoples who are historically and culturally associated with the Monument. Other practices, such as those intended to enhance dialogue and engender increased Native American participation in planning and consultation, and to encourage research and interpretive collaborations with the scientific and educational community are expected to result in beneficial social and perhaps even economic impacts to these groups.

Practices that provide for the preservation of existing sites and the potential for acquisition of new sites should private lands become available within the CPNM stand to benefit not only Native American groups but also academic and recreational visitors.

The protection and preservation of cultural resources is of direct benefit to the resources themselves. Recreational uses may be impacted through increased access restrictions to sites such as Painted Rock and others, and OHV and other recreational uses will be closely monitored to prevent unauthorized entry into the Rock Art Historic District and to prevent impacts to sensitive sites from direct and indirect impacts associated with these uses.

4.18.5.9 Visual Resources

The existing visual resources of the CPNM, including panoramic vistas of open lands and mountains, as well as the characteristic dark, starry night skies, have been acknowledged as valuable and unique Monument resources. In-common management practices for all alternatives provide for their continued protection and enhancement. Proposed actions include coordinating with surrounding communities to limit impacts of light sources that may impact the Monument. In the overall, protection of these resources, which are highly valued as part of the local and regional visual character, is expected to continue to be a positive impact.

The various alternatives establish VRM class designations that correspond with RMZ boundaries. On a scale of I to IV, with IV providing for major modifications to the natural landscape, none of the alternatives designate lands at higher than VRM Class III. The acreage of each zone is discussed under Visual Resources for each of the alternatives. Changes from existing conditions are likely to be minor to moderate in the short-term, and are expected to provide for long-term, potentially major benefit by ensuring that existing facilities and proposed projects that may impact visual resources meet VRM class

objectives, by planning for improvements to existing and inclusion of new scenic vista points, and by minimizing outdoor lighting to the greatest extent feasible.

In general, the proposed VRM zone designations would result in a predominance of lands within the CPNM designated as VRM Class II. This zone designation is intended to ensure that the existing character of the landscape is retained, with a low level of change. VRM Class I lands are proposed for the second highest percentage, on average for all alternatives. Class I lands are intended to "preserve the existing character of the landscape" and allow for "natural ecological changes and only limited types of management activities and uses." The Class III designation limits the level of change to the characteristic landscape to no more than moderate. Alternatives' designations for Class III lands range between 4 percent under Alternative 1 to 11 percent in Alternative 3.

Preservation of these resources is expected to enhance revenue streams to local and regional economies by attracting recreational visitors, including hikers, bikers, amateur photographers, hunters, and those interested in wildlife and wildflower viewing.

4.18.5.10 WSA/Other Lands with Wilderness Characteristics

Management of the Caliente Mountain WSA to preserve its wilderness qualities would continue to enhance quality of life in the region by protecting the wild and pristine character of the Monument. New impacts to communities of place are expected to be negligible, and no adverse impacts are expected. Local and regional communities would likely continue to benefit from the resource value associated with the wilderness character of the WSA and other areas of the CPNM with wilderness characteristics, and the attraction these hold to visitors to the region. Potential beneficial impacts to the regional land use and development-planning context include additional clarity regarding the management of regional resources.

4.18.5.11 Livestock Grazing

While livestock grazing has historically been an important factor in the region's economic framework, as discussed in Chapter 3, based on livestock inventories as a marker, these operations appear to have diminished in the region over recent decades. Nonetheless, they continue to constitute an important economic activity in the region as well as within the CPNM.

As discussed below, the livestock grazing goals, objectives, and actions common to all project alternatives are expected to result in negligible adverse changes or impacts to non-market values. The impacts associated with the implementation of the grazing management programs are generally beneficial especially for the management of biological resources important to conservation efforts and the character of the Monument. Livestock grazing goals are intended to protect habitat for threatened and endangered species, as well as species iconic to the character of the Monument. While the management provisions will result in lower potential revenue streams to the public from this use, they will significantly enhance one of the key and characteristic landscapes of the Monument. Although it is difficult to accurately anticipate future societal values, continued urbanization in the assessment area, the southern California region and even statewide will make the Monument resources more valuable for both thoughtful use and resource protection.

As regional land use planning progresses in the area of influence surrounding the Monument, coherent urban development in the surrounding communities will be better coordinated with agriculture and wildlife needs. With the exception of Alternative 1, the reductions in commercial grazing expected from the various alternatives represent a generally minor impact in available livestock grazing in the assessment area. Therefore, while management goals modestly reduce available livestock grazing area in

the region, they are also expected to enhance the health of the resources through a program of AM that includes livestock grazing.

The livestock grazing provisions for Alternatives 2 and 3 are expected to have a net beneficial impact on Monument visitorship. Greater diversity in the quality and character of habitat in the Monument will also increase wildlife diversity, which is a major draw to the Monument. The alternatives also call for the use of adaptive management, which will include the increased integration of the iconic pronghorn antelope into the Monument grasslands. Through these alternatives, the Monument continues to foster expanded and increasingly important and valued opportunities to view wildlife in natural surroundings, and visitor interest is expected to increase steadily.

4.18.5.12 Recreation

Recreational goals and objectives common to all action alternatives are expected to attract additional recreational visitors to the Monument who may also spend tourism dollars in surrounding communities, thereby potentially benefiting local and regional economies. Proposed target marketing may enhance these opportunities, as well as providing gateway communities an opportunity to benefit from a coordinated marketing effort with BLM.

As established in Chapter 3, tourism is a significant revenue generator. Total direct travel accounted for over $1.1 billion in spending in Kern County and over $1 billion in San Luis Obispo County in 2006. In Santa Barbara County these expenditures topped $1.4 billion, and were over $1.2 billion in Ventura County. In all four counties, these figures represented a consistently upward trend since 1992, with receipts increasing over 50 percent per county during this period. These expenditures included accommodations, food and beverage services, and recreation and travel costs.

As noted under the No Action Alternative, it is estimated that, currently, CPNM visitors from outside the region generate approximately $2.9 million in the assessment area annually, based on a per-capita average daily expenditure derived from California Tourism data. As noted in Chapter 4.14, Recreation, it is assumed that recreational use and Monument visitorship will generally increase for each alternative over the period of the Plan. Over the range of action alternatives, these increases are projected at between 10 and 25 percent by year 2018, and at between an additional 8 and 20 percent by year 2028. Based on these projects, under the various alternatives, annual expenditures by CPNM-visitors to the region figures would range from an estimated $3.2 to $3.6 million by year 2018, and from $3.5 to $4.4 million in year 2028. Local governments would receive a portion of these revenues as sales and transient occupancy tax revenues.

Approximately one-half of visitors to the CPNM are estimated to be nature or heritage-based users who come to bird watch, hike, or view wildflowers. It is estimated that hunting accounts for approximately 30 to 40 percent of recreational uses in the Monument, and is a use most appropriately suited to the Backcountry zone, although hunting may also occur in the Primitive and to some extent, in the Frontcountry zone. No differentiation is currently available with respect to whether varmint or big game hunting is predominant; however, this analysis assumes that more hunters pursue big game species with varmint hunting being a secondary activity. The enhancement of recreational facilities common to all alternatives is expected to benefit all recreational users in the Monument. Impacts are expected to be range from minor to moderate for this group. The potential implementation of fee programs for camping and selected other activities may provide additional opportunities for BLM cooperation with gateway communities in the form of fee management agreements to off-set the costs of provision of public safety (police and fire) and emergency medical services, as well as for visitor and recreation services.

Organized user groups, such as mountain biking, hiking, and hunting clubs have proven to be valuable partnerships that promote responsible use, volunteerism and self-policing, and educate users about the Monument's valuable natural and cultural resources. The maintenance of existing and formation of new user groups, providing an additional link between the surrounding community and the Monument, is common to all alternatives. Other in-common actions seek to maintain existing and develop new partnerships with communities that serve as "gateways" to the CPNM to explore the establishment of Monument-related visitor services or facilities in those communities (also see Chapter 3.12 for a discussion of the regional context and relationship between the CPNM and these gateway communities). As shown above, these initiatives have potential to result in social and economic benefits to the communities of place as well as providing identification to residents and visitors between these communities and the CPNM and its resources.

The in-common management practices provide for baseline improvements to recreational facilities, which each alternative differentiates based on the relative amount of acreage allotted to each RMZ (Primitive, Backcountry, and Frontcountry) for trail mileages, availability of dispersed camping, trailheads and staging areas, and number of new interpretive facilities. The alternatives consider the physical, social, and managerial setting of each RMZ. Monument visitors will benefit from enhanced opportunities to experience the level of involvement and personal responsibility appropriate to each zone.

Potential impacts in the Primitive zone are expected to be beneficial and minor, limited to a few additional signs. In the Backcountry, impacts include the development of a potable water system in high use areas, where feasible, which is expected to be beneficial, and to result in minor to moderate impacts to visitors. A fee may be considered for overnight camping, as authorized by the *Federal Lands Recreation Enhancement Act* (BLM 2008); whether and at what rate fees will be charged would be based results of a fee study program involving public feedback. As part of the Act, fees would be primarily reinvested back to the CPNM, thereby positively impacting visitors and other communities of interest over the long-term. Backcountry visitors may also have access to improved mapping to all for self-guided driving/riding tours in this zone.

In the Frontcountry zone, where most of the CPNM's facilities are located, a variety of improvements are proposed under all alternatives. These include potable water systems at high use areas where feasible, including at the Goodwin Education Center and at two campgrounds, development of self-guided riding/driving tours, retrofitting to universal accessibility where feasible, expansion of the visitor center by 50 to 200 percent, and implementation of a fee program at KCL and Selby campgrounds. In the overall these changes are expected to result in beneficial impacts to Monument visitors, the extent of which would range from moderate to major over the short and long term.

Communities of interest, including private land and mineral estates owners, ranchers and farmers are expected to be impacted to a negligible or minor degree. No changes would occur on private lands, and the in common goals do not explicitly change or restrict access to such uses as grazing or mineral extraction.

The common goals, objectives, and actions hold the continued protection of the Monument's resources as primary, while providing for the varied recreational uses appropriate to each management zone. Impacts to biological, cultural, and physical resources from recreation will continue to be managed with a view to their preservation. To the extent that enhanced recreational opportunities provide Monument visitors with a greater awareness, knowledge, and appreciation of these resources, while preserving the quality of Monument's value within the local and regional ecosystem and cultural context, impacts are expected to be positive. Such impacts are not quantifiable but have potential to be major over the long-term.

4.18.5.13 Administrative Facilities

These goals, objectives, and actions may have an indirect positive benefit on the locality and region to the extent that they support that provision and enhancement of administrative facilities supports the overall protection of Monument resources and character. To some extent these facilities may arguably be considered a localized community resource. Should additional short-term housing be provided for future employees or visiting researchers, this may reduce potential revenues that local communities might otherwise receive, although changes in this regard over existing conditions are expected to be negligible.

Local contractors may also benefit from construction of new and retrofitting of existing structures and facilities. Currently, BLM estimates that it expends approximately $150,000 to $200,000 annually in local communities for supplies, fuel, and local contractors' work. Under the various alternatives, these expenditures are expected to increase annually. Local and county governments will also realize sales tax revenues from purchases made within their jurisdictions (Hurl/Wick 2008).

Monument residents comprise a relatively small number of people, and BLM employees and out of area project participants would be the main users of these facilities. In particular, visiting researchers would benefit from enhanced facilities and the possibility of additional accommodations provided on-site.

The use of sustainable building techniques and materials and alternative energy sources in future construction or retrofitting, which would eliminate the need for existing transmission lines, would be expected to enhance scenic vistas and serve to overall benefit biological and cultural resources within the Monument.

In the overall the management of these facilities is expected to have a minor impact on the regional social and/or economic context. Impacts are the same under all the action alternatives, therefore, no further discussion of these impacts are included herein.

4.18.5.14 Travel Management

The proposed travel management practices common to all alternatives are intended to ensure the protection of valuable Monument resources, to provide adequate travelways for visitors, administrative use, and private landowners without redundant use. Benefits would primarily be those associated with protection of Monument resources, and access to visitors and local contractors, ranchers and others with business on Monument lands. Impacts to local and regional communities of place are expected to be negligible.

Monument visitors may experience impacts related to road closures/conversion to trails, particularly for recreational users in Primitive zone lands. These impacts may prove beneficial by reducing the potential for human/vehicle interaction and enhancing the experience of these lands in their natural state. Visitors may also experience seasonal road closures, specifically between the visitor's center and Painted Rock. All alternatives provide for adequate access routes into and through the Monument and any inconvenience or other potentially adverse impacts to visitors are expected to be offset by the potential for decreased impacts to sensitive biological and cultural resources, air quality, and the overall quality of the Monument experience.

Native American groups would be allowed access to sacred and sensitive sites and would benefit from travel management policies that are intended to limit impacts to natural and cultural resources. Adequate travel routes would be provided to allow private land and mineral estates owners to access their holdings within the Monument, as would those needing access for authorized agricultural uses, including grazing

permit and leaseholders. Impacts to these groups are therefore expected to be minor in the short-term and long-term.

All alternatives provide for enhanced signage, brochures, and other educational outreach to assist recreational visitors, including hunters, in acclimating to new or modified access routes and the underlying reasons for road closures.

4.18.5.15 Minerals

As noted in Chapter 3, based on production figures, local economies have historically been tied to varying extents to mineral extraction, predominated by oil and gas. Kern County is home to the 5 largest oil fields in California and 4 of the 6 largest fields in the 48 contiguous states. Oil production has played a lesser but still important role in the economic history of San Luis Obispo County. Oil production on CPNM lands accounts for approximately 2,000 barrels per month, as compared with approximately 3 million barrels per month from wells in the Midway-Sunset Oilfield (approximately 3 miles to the north of the CPNM) (Prude 2008).

The proposed in-common management practices of oil and gas leases on the Monument are focused on protecting Monument resources and ensuring that the "valid existing rights" of private land and mineral estates owners are upheld. Current management requires the use of existing roads and rights-of-way where practical to minimize disturbance, and requires that such activities obtain authorized take permits where development has potential to disturb previously undisturbed habitat. Management of existing oil and gas leases on Monument lands will not adversely impact existing operations. Impacts to local economies are therefore expected to be negligible to minor in this regard.

Mineral estates leaseholders and owners of sub-surface mineral estates may be subject to increased expenses to the extent that management practices have the potential to require additional regulatory requirements and associated technical studies, and/or costs where aligning new pipeline routes within road rights-of-way may require additional infrastructure. Costs of such requirements would be dependent on the nature and scope of such studies or sizing of infrastructure, as well as the scope of the proposed development. Under current policy, and as proposed under those proposed for all alternatives, BLM can impose reasonable restrictions on the use of federal surface lands to protect objects of the Monument Proclamation. These potential impacts are further considered under Chapter 4.16, Minerals.

In the overall, proposed management of these resources is expected to result in minor to moderate impacts to mineral estates lessees and owners over the short term.

Biological, cultural, and physical resources may be impacted to the extent that the in-common management practices associated with all alternatives focus not only on maintaining existing valid rights of mineral estates holders but also on a variety of actions aimed at protecting Monument resources, including site inspections and operations staff education regarding best management practices, and ensuring timely and adequate site restoration when resource retrieval is complete. Potential impacts to these resources may range from minor to moderate in the short term, as compared with existing management, and may range from moderate to major in the long term as management over the life of the plan serves to ensure the protection of these resources in the future, including the restoration and possible enhancement of resource recovery sites.

4.18.5.16 Lands and Realty

The proposed land tenure common to all alternatives include policies aimed towards the retention of existing Monument lands, and acquisition from willing sellers of privately held lands and/or mineral

estates, are intended to facilitate and enhance the overall protection of Monument resources. Acquisition of private lands by BLM is expected to result in generally neutral impacts to local government revenues by converting private property to public lands and from property tax revenues to PILT.

Realty actions and utility corridor policies are intended to protect Monument resources, and are also likely to benefit surrounding communities. Limitations placed on CPNM lands that would otherwise have potential for consideration for utility and communications corridors may in future place additional pressure on local communities to provide lands and or rights-of-way easements for these uses to serve existing and future development within their jurisdictions. However, currently (2008) BLM is not aware of any reasonably foreseeable new needs for such corridors.

Owners of private lands and/or mineral estates in the Monument who choose to transfer ownership to BLM will reap direct economic benefits through revenues from the sale of those lands. The level of these benefits is dependent of the amount and value/sales price of acreage transferred and other terms of those transactions.

The continued acquisition of private lands for public use has the potential to directly benefit Monument visitors by providing increased opportunities for the use and enjoyment of Monument resources. Further, such acquisitions, which are for the stated purpose of protection or enhancement of values identified within the Monument Proclamation, would benefit Native American groups, which have a particular interest in the preservation of those values. Impacts to these groups are expected to range from minor to moderate in the short-term, depending on the alternative that is implemented.

Land and income values, as noted above, would be expected to be positively impacted by an overall increase in publicly managed lands in the region that could result from the proposed land tenure management policies. The proposed land tenure alternatives hold in common goals that are intended to further protection of the CPNM's natural assets, including threatened, endangered, and rare animal and plant species, cultural resources, and geological features. Therefore, impacts to these resources are expected to be positive along a continuum from minor to moderate in the short term, ranging to major over the long term as the positive cumulative effects to the ecosystem within the CPNM and the regional context (such as the Recovery Plan) are felt.

Private mineral estates and privately owned agricultural lands in the Monument will be impacted to the extent that their owners wish to entertain selling sub-surface holdings to BLM. Such sales would be on a "willing-seller" basis only. Although a sale would result in immediate income to the seller, the potential future income from production of minerals would be eliminated. The net effect to the mineral owner would probably be neutral, since the sales price of the mineral estate would be based on an appraisal of the value of the potential minerals production. The use of "friendly condemnation" authority, if secured by BLM, would enable willing-seller landowners with clouded property titles to sell properties to BLM without expensive title-clearing legal fees. This would benefit these specific owners.

4.18.6 Impacts to Social and Economic Conditions from Alternative 1

4.18.6.1 Wildlife

In general, the management practices unique to Alternative 1 provide for the least active level of human intervention into the natural processes affecting wildlife species in the CPNM of all the action alternatives. This alternative depends to the greatest extent of all alternatives on natural conditions to determine outcomes to affected species. In general, this alternative has the greatest potential to result in conditions that may adversely impact the region's quality of life, and other social and economic conditions that are associated with the quality of Monument resources as discussed in Chapter 3. These

impacts would be minor to moderate, as the alternative has mechanisms built in to provide a safety net if populations decline below certain levels.

4.18.6.2 Vegetation

Impacts from the Vegetation program under Alternative 1 are closely associated with those for Wildlife management since vegetative resources largely determine the quality of habitat. Alternative 1 relies largely on natural conditions and other than those for riparian habitat that it shares with the other alternatives, includes no active restoration objectives or actions. Impacts to social and economic conditions for this alternative are expected to be similar to those discussed under Wildlife management, above.

4.18.6.3 Fire and Fuels Management

Alternative 1 utilizes a "natural processes" approach to fire management; therefore, it does not provide for prescribed burning and minimizes mechanized fire line construction to the greatest extent feasible. Removal of vegetation from recreational areas and around buildings is minimal as compared with either of the other two action alternatives (25 acres as compared with 350 acres under Alternatives 2 and 3).

Potential impacts associated with this alternative include diminished air quality for longer periods during which a wildfire is allowed to burn, based on individual wildland fire targets: 1,000 acres/90 percent of the time for Alternative 1 as compared with 100 acres/80 percent and 100 acres/90 percent in Alternatives 2 and 3 respectively). However, as discussed previously, current conditions on the CPNM are such that a long-burning, intense wildfire is unlikely

Impacts to biological, cultural, and physical resources will vary depending on fire conditions within the CPNM. Fire is a natural tool to maintain ecological balance, which is supported and utilized by Alternative 1. Monument visitor use patterns may also be impacted to some extent. Routine fire management techniques under this alternative are less likely to impact visitors than the more active and extensive activities prescribed under Alternatives 2 and 3, such as periodic prescribed burns. In the event of a wildfire under this alternative, less active fire suppression techniques and larger target burn areas may result in greater impacts to recreation areas, including but not limited to the Caliente WSA, that would require area closures or restricted visitor access. In the aftermath of fire events, the quality of a visitor experience would vary based on the state of restoration of the natural environment. Impacts to all visitors, including recreational tourists and hunters, would be similar.

In the overall, impacts to the social and economic conditions as a result of fire management practices under Alternative 1 are expected to be minor.

4.18.6.4 Air Quality

As discussed above, the proposed in-common management practices for all alternatives are expected to result in overall beneficial social and economic impacts (direct and indirect) to surrounding communities by implementing measures to maintain and improve air quality. Alternative 1 also provides for reducing fugitive dust on roads throughout the Monument. This action will result in additional cumulative benefits to the region.

Impacts to communities of interest would include positive incremental improvements to air quality on the Monument. Monument visitors, residents, land and mineral estates owners and others using Monument resources, such as ranchers, may be required to find alternate access routes due to the potential for seasonal road closures. Longer term road closures would require provision of alternative access routes for

frequent travelers within the CPNM, as discussed in Chapter 4.15, Travel Management, but would not be expected to result in economic impacts to such activities as resource recovery or grazing.

Should local contractors be hired to haul aggregate or perform road maintenance, this would generate some economic activity, albeit limited. Overall impacts are expected to be negligible to minor.

Reduction of fugitive dust has potential to provide for additional protection from degradation of sensitive resources, especially cultural sites, by use of dust suppressants on main roads within the Monument. Unlike Alternative 2, however, this alternative does not explicitly focus on dust suppression on roads that access or pass high use recreation areas, high public use areas, or near rock art sites.

4.18.6.5 Soils

Alternative 1 proposes an assessment/inventory of soils within the CPNM to assure proper functioning condition. Non-market values such as biological and physical resources would be positively impacted to the extent that the assessment/inventory contributes to an understanding of what is necessary to maintain rangeland health standards to continue to support biological functions and values on the CPNM. Recreational resources and facilities, tourism, and hunting activities may be impacted to a limited extent if access restrictions are necessary during survey periods; such impacts are expected to be negligible to minor and short-lived.

Potential indirect benefits to land values and incomes in the region include those that accrue from a greater understanding of the condition of soils on the CPNM and their ability to support biological functions and values. Monument visitor use patterns are unlikely to be impacted, except temporarily where access restrictions during survey periods may be required.

Impacts to public mineral estates would depend on inventory results and actions needed to protect/restore soils. Based on determinations provided by the inventory, there is potential for grazing fees and contributions to be impacted should grazing lease lands be removed from grazing availability based on rangeland health standards; this is further discussed in Chapter 4.13, Livestock Grazing.

4.18.6.6 Geology and Paleontology

Under Alternative 1, the CPNM would continue to be managed as a resource area benefiting the public and scientific community through access and education about the Monument's unique paleontological and geological features. Alternative 1 is somewhat more limiting in this regard than the other two action alternatives. However, groups that have a particular focus on preservation of the Monument's paleontological and geological resources would receive beneficial impacts from the objectives and actions set forth under this alternative. Visitors may be restricted or discouraged from entering sensitive areas; however, it expected that such limitations would be offset by the provision of enhanced information made available through the Goodwin Education Center as well as other facilities within the Monument. Further, the protection afforded sensitive resources within access-restricted/discouraged areas may arguably be seen as of benefit to all communities of interest. Scientific research would be expected to yield additional information and lead to a better understanding of the CPNM's valuable paleontological and geological resources.

No adverse impacts are expected to occur to lessees, or to ranchers and farmers; however, the expanded level of research and study over the CPNM may yield information that could conceivably impact the availability of grazing lands. Overall, such impacts, should they occur, are expected to be minor.

Paleontological and geological resources are non-market values that will receive beneficial impacts both through the increase in protection of sites containing these resources and the potential for expanded knowledge and greater understanding of their significance. The enhancement of educational and interpretive displays and facilities should serve to enhance the experience of recreational and tourist visitors to the CPNM.

4.18.6.7 Cultural Resources

Alternative 1 would impact the social condition of the CPNM by prohibiting visitor access to Painted Rock, one of the most well-known of the archaeological sites and a major visitor destination within the Monument. As with all alternatives, however, Native American access would continue. This alternative would stabilize rock art sites where feasible, but would not intervene in the natural deterioration of rock art sites, focusing rather on recordation to preserve site information. These practices could result in the eventual loss of these resources, which are of particular import to Native Americans as well as to the educational community, Monument visitors, and the region. In general this alternative is more restrictive in terms of public access to a variety of archaeological and historical resources than is Alternative 2. While Monument visitorship is expected to increase steadily over the life of the plan, nonetheless the practices set forth in Alternative 1 have potential to impact visitor interest, thereby impacting benefits to local economies.

4.18.6.8Visual Resources

As discussed under the in-common goals, objectives, and actions for Visual Resources, the locale and region surrounding the CPNM derive considerable benefit from the existing visual character of the Monument. Alternative 1 provides for 62.5 percent of lands within the CPNM to be designated VRM Class II, which limits to “low” the degree to which management practices can result in changes to that character. Approximately one-third of lands in the CPNM would be designated VRM Class II, wherein changes to the existing character must be minimal. This alternative would benefit the region by protecting those resources. Local and regional economies are also expected to benefit from the potential for this alternative to attract recreational and other visitors to the CPNM and surrounding localities.

The protection of visual resources within the CPNM also benefits communities of interest whose primary relationship to the Monument is closely tied to retention of its existing natural and visual character and protection of natural resources. These include Native Americans, Monument visitors, and Monument residents.

This alternative would encourage leaseholders and others with existing rights-of-way to perform retrofits (including repainting existing facilities) to comply with Class II objectives. These communities of interest would also be encouraged to consider the location and design of new facilities to minimize contrast with the existing landscape. It should be noted that existing facility retrofits are not mandated improvements; cost would be based on the extent that lessees’ chose to make such improvements, and it is anticipated that such impacts would be limited to no more than moderate in terms of costs to lessees. The potential costs of such design would be considered as part of the required environmental analysis for any new development on lessee’s lands.

The protection of the unique and valued scenic vistas of the CPNM and its regional context, in which the open space and undeveloped character of the CPNM plays an integral role, has been shown to be important in the enhancement of land and income values within the region. Alternative 1 allocates approximately 95 percent of lands towards the two least intensive VRM class designations, and thereby limits impacts to these viewsheds. The preservation of open space and less intense changes to the characteristic landscape of the Monument also correlate with a level of management activities that

advocate for the protection of biological, cultural, and physical resources. The combined effect of these actions is expected to attract recreational users and enhance their experience of the CPNM, thus further benefiting local and regional economies.

4.18.6.9 WSA/Other Lands with Wilderness Characteristics

Alternative 1 provides for management of additional lands having wilderness characteristics beyond those in the Caliente Mountain WSA, as well as the restoration activities and conversion of limited use roads for administrative use or non-mechanized trails. The regional social and economic context would be expected to benefit based on the resource value of the wilderness characteristics associated with the CPNM, in terms of the region's attraction for visitors, potential to generate tourism and recreational dollars, and land values and income enhancement associated with publicly managed lands.

The proposed management of an additional 65,215 acres with the goal of maintaining their natural character, as well as restoration and conversion of roads, as described above, would be expected to provide recreational users and other Monument visitors with additional opportunities to experience the remote character of the Monument and its resources. Some visitors who pursue motorized recreation activities would be impacted negatively, as discussed in Recreation, Section 4.14.

The preservation of these lands also directly benefits the biological, cultural, and physical resources they contain and the regional ecosystem of which they are a part. No adverse impacts are anticipated to non-market values such as hunting, which is considered an allowable use within the lands to be managed for wilderness characteristics.

4.18.6.10 Livestock Grazing

Alternative 1 reduces Section 15 grazing allotments from existing levels by about 88.9 percent, with a corresponding reduction in the number of authorized AUMs (8,466 to 939). No livestock grazing for vegetation management is authorized under Alternative 1. The implementation of this alternative would therefore have a major impact on the availability of public lands in the CPNM for livestock grazing, and would reduce public and private revenue streams associated with this use. This alternative would also result in a net loss in available grazing lands on a regional basis, although the majority of grazing occurs on private lands so this impact is expected to be minimal. A moderate to major impact would occur to the permittees who use the allotments to support their livestock operations.

The following estimates the economic impacts to Section 15 livestock grazing fees and contributions based on Alternative 1.

Section 15 Grazing Fees

As noted in Chapter 3, BLM calculates federal grazing fees in March of each year; fees are adjusted annually based on a variety of factors. Based on the 2007 grazing fee rate of $1.35 per AUM, fees for 939 Section 15 AUMs in the CPNM would be approximately $1,268, as compared with $11,656 under existing conditions.

BLM shares grazing receipts from Section 15 grazing leases equally with local governments where they are collected. Data showing grazing receipts collected in Kern and San Luis Obispo counties in recent years are discussed in Chapter 3. It should be noted that fees are for all BLM Section 15 grazing leases within the respective counties, including lands in the CPNM. Therefore, while it is difficult to determine the potential impacts associated with Alternative 1 to each county on a separate basis, nonetheless, the

reduction in grazing fees under Alternative 1 would translate to a net decrease in grazing fees to the county in which the allotments are reduced.

Grazing Permit and Real Estate Value

The 2006 rate assessed on private lands in the state of California, which was used in Chapter 3 to estimate the current value of Section 15 grazing leases in the CPNM, is $15.40 per AUM. Based on this rate, the value of Section 15 leases in the CPNM would be $14,451 under Alternative 1. This compares with $132,964 under current management.

By comparison, the value of Section 15 leases under Alternatives 2 and 3 would be $121,614, or 6.7 percent less than those authorized under existing management.

Free Use Grazing Permit Contributions

As discussed in Chapter 3, there are no direct fees for free use grazing permits within the CPNM; permittees voluntarily contribute to the Carrizo Grazing Facility fund. Fund contributions vary annually, based on actual available pastureland and regional conditions, and since FY 2004 have ranged between $0 and $5,585. No livestock grazing for vegetation management is authorized under Alternative 1.

4.18.6.11 Recreation

Alternative 1 provides for management of 83,202 acres as Primitive, 158,080 acres as Backcountry, and 11,585 acres as Frontcountry. It provides for between 9 and 45 miles of new trails over the three RMZs. In the Primitive zone, new trails would be primarily the result of road closures resulting from the increased Primitive zone acreage. Alternative 1 provides for camping within developed campgrounds only but does not allow for dispersed camping except for backpacking where visitors travel over one-half mile from their vehicle.

In addition to the in-common goals, objectives and alternatives discussed in Section 4.18.6.12, Alternative 1 provides for additional management objectives and actions both Monument-wide and within each discrete RMZ. These are intended to enhance recreational opportunities in the CPNM while balancing the need to protect sensitive Monument resources, and would be expected to attract visitors to the region, generating public and private revenue streams. BLM estimates indicate that Monument visitorship is expected to increase from current levels by approximately 10 percent by year 2018, and another 8 percent by year 2028. Based on average daily expenditures by leisure guests for San Luis Obispo, Kern, and Santa Barbara counties, and assuming that about 40 percent of these guests come from outside the region, visitorship to the CPNM has potential to generate expenditures in the region estimated at approximately $3.2 million in 2018 and approximately $3.4 million in 2028.

Alternative 1 differs from the other action alternatives by focusing camping within developed areas rather than allowing for dispersed camping. As discussed in section 4.18.6.12, each of the alternatives varies in terms of the respective RMZ acreages and provision of trail miles and other facilities. Even with its explicit camping restrictions, this alternative provides Monument visitors with a variety of opportunities to experience the CPNM's character and resources while providing for the protection of those resources. This alternative would impact those visitors who prefer to camp away from developed sites, especially hunters. These impacts are discussed in Recreation, Section 4.14.

4.18.6.12 Travel Management

As discussed in Section 4.18.5, the action alternatives differ primarily in terms of acreages allotted to the various road and use area designations. Alternative 1 allocates slightly fewer road miles to open roads, and approximately 44 percent more closed roads than does Alternative 2. It would result in approximately 35 percent more acres of closed areas than would Alternative 2. Overall, these differences are negligible to minor, and are not expected to affect visitor interest in the Monument. Access to private lands would not be impacted.

4.18.6.13 Minerals

Alternative 1 would result in slightly to moderately higher costs for existing oil and gas operators compared to the other action alternatives, due to requirements for more rapid restoration/abandonment of wells and increased expenditures to modify or eliminate "non-conforming" operations, many of which are old, unsightly, and have little or no economic value. Private mineral estate owners could incur somewhat higher costs than the other alternatives in exploration and development. Otherwise, impacts would be the same as those discussed in common to all alternatives.

4.18.6.14 Lands and Realty

Under this alternative, BLM would seek to increase holdings for the protection of Monument resources, converting privately owned lands from willing sellers to public lands. These actions would generate revenues to the particular communities of interest from whom lands were acquired, such as private land and/or mineral estates owners. Impacts to communities of interest such as Native American groups, Monument visitors, and residents would be expected to be positive through the increased protection of resources and availability/potential access to public lands. These actions would also provide beneficial impacts to the region's quality of life and thereby for potential land and income value enhancement. Impacts to local government revenues are expected to be neutral, since they receive revenues from lands within their jurisdictions, whether privately or publicly owned, through property taxes or payments in lieu of taxes.

4.18.7 Impacts to Social and Economic Conditions from Alternative 2

4.18.7.1 Wildlife

The Wildlife program actions proposed under Alternative 2 provide for a range of activities to monitor, maintain, restore, and enhance wildlife habitat and protect at-risk animal populations. This alternative has potential to result in primarily if not exclusively beneficial impacts to the quality of life and associated non-market values such as land values and income enhancement, benefits generally associated with active and adaptive management practices such as those prescribed under Alternative 2,. The region, communities of interest, and non-market values that are most directly associated with or interested in the health of the CPNM and its biological resources, such as Native Americans, Monument visitors, and recreational resources, including tourism, would be primarily and largely positively impacted. Impacts to grazing and associated private and public revenues would be expected to be benefited to a greater extent that under Alternative 1, as discussed below.

4.18.7.2 Vegetation

Impacts to social and economic conditions for vegetation management are expected to be similar to those for wildlife management in terms of enhancing regional and local quality of life and associated non-market and market values, as well as the interests of stakeholders affected by the health of CPNM natural

resources. Impacts are therefore expected to be largely beneficial, and would be the same under Alternative 3.

4.18.7.3 Fire and Fuels Management

Of the action alternatives, Alternative 2 provides for the most varied range of wildland fire management practices, combining natural fire management with a menu of options to actively suppress fires that threaten sensitive resources. It includes prescribed burns for vegetation management (as does Alternative 3), applies confine strategies (as does Alternative 1), and is the only alternative that provides for confine strategies for fires on the valley floor that are burning away from sensitive cultural sites and fire-intolerant shrub area (this represents no change from current fire management practices). As with all alternatives, active suppression is called for where fires threaten life or private property; however, Alternative 2 includes active suppression to ensure the safety of facilities on the CPNM. It therefore stands to indirectly benefit communities of place to a greater degree than Alternative 1 to the extent that active protection of sensitive resources enhances quality of life in the region, and therefore provides a positive impact to local economies. Potential for economic loss due to fire is also lessened, as compared with Alternative 1. Air quality impacts, which also affect quality of life, although generally for limited periods associated with an actual fire event), may be lower since this alternative provides for prescribed burns which would be conducted during periods when air quality impacts would be minimal.

As compared with Alternative 1, Native Americans and others with a particular interest in the active protection of sensitive Monument resources would see a greater degree of positive impact from the management practices set forth in Alternative 2. The same may be said for Monument visitors. However, more active practices may also mean slightly more disruption to visitors, wherein prescribed burns could result in reduced access for limited periods of time. Monument residents may be the most impacted in terms of active fire management activities that have potential to disrupt travel or access, although all alternatives provide for some level of activity and Alternative 2 is expected to result in a greater level of overall safety, as well as health, of the Monument resources over the life of the Plan and in the long term. Those with private lands or mineral estates holdings, or those using the Monument for authorized purposes, such as ranchers or others with grazing permits, have potential to be impacted due to restricted access during periods of fire management activity, although it is assumed that access to private lands would be allowed providing that human and livestock safety could be assured. Livestock grazing would likely be enhanced over the life of the plan wherein fire is used to manage invasive nonnative species and provide for a restored grassland habitat environment.

4.18.7.4 Air Quality

As with other alternatives, the maintenance and improvement of regional air quality is an important component of quality of life for the communities surrounding the CPNM. Alternative 2 provides for a relatively wide range of actions to ensure the overall improvement of air quality which surpass those of Alternative 1 by using alternative energy sources where feasible and implementing best management practices on construction of BLM projects. It is comparable to Alternative 3 in terms of the use of alternative energy sources. It appears to provide the most potentially beneficial management actions for air quality within the region, although improvements would be negligible on a regional basis, since the Monument currently generates very minor and localized air quality impacts primarily associated with dust from unpaved roads.

Local economies would benefit in the event that BLM hires local contractors to install solar panels or install new/rehab existing windmills, and if components for these uses are purchased locally or regionally. Such impacts would be minor but beneficial. Under Alternative 2, BLM expenditures for *all* purchases

and contracts in surrounding communities for Monument management are estimated at between approximately $300,000 and $400,000 annually.

Alternative 2 is explicit in its focus on minimizing fugitive dust impacts from main BLM-owned/maintained roadways in the CPNM to high recreation and public use areas and sensitive cultural sites containing rock art. These measures are expected to benefit the experience of communities of interest such as Monument visitors and residents, private land and mineral estates holders, and those using Monument lands to access lease areas (grazing).

The use of alternative energy sources and implementation of best management practices for BLM projects on the Monument would result in additional minor cumulative benefits to the region's air quality, which would be expected to support and enhance land values and income. Impacts to biological, cultural, and physical resources are also expected to be generally beneficial; these are further discussed in their respective impacts assessments elsewhere in Chapter 4. Road closures and their impacts on visitors and recreational uses are discussed in Chapter 4.18.7.12, Impacts on Social and Economic Conditions from Travel Management. Overall, visitors and recreational uses are expected to benefit from this alternative's management of air quality impacts, in the short term and beyond the life of this plan, as such impacts would be cumulative. Alternative 2 is expected to provide a moderately greater level of benefit to non-market values than Alternative 1, due to the inclusion of best management practices in Alternative 2.

4.18.7.5 Soils

As with the other action alternatives, impacts to communities of place would be limited to positive effects on the biological functions and values of the Monument's natural resources, and the indirect quality-of-life enhancement associated with those effects. Impacts to Native Americans, Monument visitors, and residents associated with this alternative would be beneficial in terms of the potential to understand and enhance the biological functions and values of the Monument's resources. Monument visitors and residents may be inconvenienced by the potential for temporary road closures. Visitors to recreational use areas may experience restrictions to the extent that such areas are underlain by sensitive soils or biological soil crusts and are determined to be subject to closures or other measures to minimize impacts.

Alternative 2 is explicitly more aggressive in its approach to soil restoration and user education than is Alternative 1, but incorporates less intensive management than Alternative 3. Potential direct economic impacts of this alternative to ranchers and farmers, should they occur, would likely be greater than Alternative 1, and similar to or slightly less than Alternative 3.

4.18.7.6 Geology and Paleontology

Alternative 2 takes a more pro-active approach to the study, documentation, and preservation for public education of paleontological resources. The provisions for this alternative may be argued to contribute to the maintenance and improvement of the region's quality of life. The value and character of the surrounding region will also be enhanced by the added social and scientific value and character of the Monument and its resources. Monument visitors would also benefit from the opportunity to view significant paleontological finds that may be recovered based on the actions included in this alternative. Potential impacts to lease and permit holders would be at a level similar to Alternative 1.

The protection of paleontological and geological resources in the CPNM is expected to have an indirect but overall positive influence on the land values and income enhancement in the region, as has been discussed in the context of other such unique and highly-valued resources as the San Andreas Fault zone, which is a major visitor attraction. The objectives and actions set forth in Alternative 1 will have a direct beneficial impact on the non-market values that are under discussion (for example, paleontological and

geological resources). Benefits will accrue through increasing the protection of sites containing those resources and the potential for increased knowledge and greater understanding of their significance.

The enhancement of educational and interpretive displays and facilities should serve to enhance the experience of recreational and tourist visitors to the CPNM. Access restrictions within sensitive areas are expected to be relatively minor and to be offset by the benefits of resource protection and provision of the aforementioned enhanced displays and facilities. No adverse impacts to revenue streams from recreational users to the region or the Monument are expected, nor are adverse impacts to hunting as a recreational activity, or economic activity generated by this activity.

4.18.7.7 Cultural Resources

Alternative 2 provides for the greatest range of measures to balance public access and education with preservation and where feasible, restoration of archaeological and historic sites and artifacts. Painted Rock would continue to be accessible on a seasonal basis for guided tours, with self-guided permits during off-season or for larger groups, based on ongoing assessment of visitor impacts to the site's integrity. Rock art sites would be actively preserved, and restored where feasible. Historic ranching and farming machinery, equipment, and structures would be retained throughout the landscape. Overall, this alternative would be expected to provide the greatest level of access to visitors while protecting sensitive archaeological sites and artifacts. It offers opportunities for a more direct experience with and understanding of Native American heritage and culture to a wider audience than does Alternative 1. It has a greater likelihood than does Alternative 1 of ensuring the long-term protection of resources that would both enhance the region's quality of life and attract visitors to the region, thereby providing positive economic benefit to surrounding communities.

4.18.7.8 Visual Resources

Impacts associated with this alternative would be similar to those under Alternative 1, varying primarily in terms of relative percentages of overall land designated as VRM Class I and II. Lands classified as VRM Class I occupy slightly less acreage than Alternative 1 (21.2 percent as compared with 32.9 percent), while Class II lands occupy slightly more (72.8 percent as compared with 62.5 percent). Overall, impacts are expected to be positive with regard to land and income value enhancement potential, along with the beneficial impacts to local economies of revenue streams generated by visitors attracted to the region and the CPNM.

Alternative 2 also encourages lessees to retrofit or consider design of new structures to meet both Class II and Class III objectives. The potential economic impact of this objective would be spread over a greater number of lessees rather than increasing the potential financial burden on any one lessee. There would be no adverse social or economic impacts to other communities of interest.

Impacts to non-market values are expected to be similar to those associated with Alternative 1. All the action alternatives are generally less intense than existing conditions from the standpoint of management activities in that they designate all lands at no more than a VRM Class III level.

4.18.7.9 WSA/Other Lands with Wilderness Characteristics

As compared with Alternative 1, Alternative 2 proposes the management of 36,480 acres in the Caliente Mountain Additions and the Temblor unit to maintain their natural character. Impacts associated with this alternative would otherwise be similar to those under Alternative 1. No adverse impacts to communities of place, communities of interest, non-market values, or market and commodity values are anticipated.

Positive benefits would also result from the management of these lands for wilderness characteristics, which are also similar to those discussed for Alternative 1.

4.18.7.10 Livestock Grazing

Under Alternative 2, Section 15 grazing allotments use levels would be reduced by approximately 6.7 percent from existing conditions, and would result in allocation of approximately 7,897 Section 15 AUMs in the CPNM. Approximately 117,467 acres, or 61,464 AUMs, would be authorized for free use livestock grazing under Alternative 2. Further, these allotments are assumed to be available 5 out of 10 years, as compared with 8 out of 10 years under the No Action Alternative and Alternative 3. While the implementation of this alternative would therefore have a minor impact on the availability of public lands in the CPNM for livestock grazing, as well as to regionally available grazing lands, these impacts would exceed, albeit slightly, those of the No Action Alternative and Alternative 3. Alternative 2 would also be expected to result in minor reductions in public and private revenue streams associated with Section 15 grazing allotments over the short and longer term.

The following summarizes the estimated economic impacts to Section 15 livestock grazing fees and contributions under Alternative 2, as well as those for free use grazing.

Section 15 Grazing Fees

Based on 7,897 Section 15 AUMs in the CPNM, grazing fees are estimated at $10,661 as compared with $11,656 under existing conditions. Over a 10-year period, this would yield approximately $53,305 in grazing fees, as compared to $85,288 under Alternative 3 and the No Project Alternative. Grazing fee receipts to Kern and/or San Luis Obispo counties over the long-term would also be expected to decrease from existing conditions and to be less than those anticipated from Alternative 3, based on the location of the grazing allotments.

Grazing Permit and Real Estate Value

Based on the 2006 California assessment rate, the value of Section 15 leases in the CPNM under Alternative 2 would be $121,614. This compares with $132,964 under current management.

Free Use Grazing Permit Contributions

Alternative 2 allocates approximately 117,467 acres in the CPNM to vegetation management grazing allotments. This is an approximately 2.1 percent increase over existing conditions. However, grazing of these areas is expected to be less than in the past, and only occur in certain years as needed for vegetation management. Contributions would vary widely based on range and other conditions within a year; in any event, the impact of these contribution changes is likely to be minor over the life of the plan.

4.18.7.11 Recreation

Alternative 2 allocates 54,464 acres to the Primitive zone, 186,819 acres to the Backcountry zone, and 15,384 acres to the Frontcountry zone. It provides for between 12 and 43 miles of new trails over all zones. Dispersed camping is allowed only in the Backcountry.

BLM estimates that Monument visitorship would increase under Alternative 2 approximately 18 percent by year 2018, and another 15 percent by year 2028. Based on assumptions for average daily expenditures in the region for leisure travel discussed previously, these increases would result in approximately $3.4 million in annual CPNM-visitor-related expenditures in the region by year 2018, and $3.9 million by year

2028. Monument visitors will have access to an expanded range of recreational activities and facilities, including those focused on interpretation and education.

Alternative 2 recommends the elimination of varmint hunting. It should be noted that this is a recommended action and the actual decision is within the jurisdiction of the California Fish and Game Commission. The basis for the recommended action is to reduce the risk of listed species from accidental shootings. Elimination of varmint hunting would impact those individuals for whom this recreational activity is their primary reason for visiting the Monument. As has been noted, it is assumed that most of those who hunt in the Monument are primarily interested in big game hunting and that varmint hunting is a secondary pursuit. Approximately 60 percent of those who hunt are local or regional residents. This accounts for a relatively small proportion of total Monument visitors and is not expected to result in more than minor economic impacts regionally; nonetheless, it constitutes a social impact to this group. These impacts may be considered to be offset when weighed alongside the long-term protection of these species and the overall value of these resources within the CPNM and to the region.

Alternative 2 provides for dispersed camping in currently designated areas based on monitoring, as well as a hierarchy of corrective actions (from least to most restrictive) that are designed to ensure the protection of cultural and paleontological sites and special status species. It also provides for adaptive management techniques to ensure that recreational activities such as camping do not interfere with the protection of these resources and preserves the approved Native American ceremonial use of fire within the Painted Rock Exclusion Zone.

Alternative 2 allows for low-impact, non-motorized competitive activities such as are consistent with the Monument Proclamation. Such activities may provide a minor but positive economic effect on local concessionaires or other vendors, and associated local government tax revenues.

4.18.7.12 Travel Management

Impacts under this alternative would be midway between those under Alternatives 1 and 3. The most notable differences are acreages allotted to closed areas: about 34. 5 percent less than under Alternative 1, and about 67.0 percent greater than those under Alternative 3. Overall, none of the alternatives is expected to result in more than minor impacts to access to Monument resources, and all are expected to provide a greater level of protection for those resources while enhancing the experience of the Monument as a relatively undisturbed wilderness environment. The exception would be to those recreation visitors who use parts of the travel network that would be closed. The impacts are expected to be minor and are discussed in Section 4.14.

4.18.7.13 Minerals

Alternative 2 places additional inspection and restoration provisions on existing mineral leases to protect Monument resources. The cost to meet these requirements would be minor. This alternative is expected to minimize adverse impacts to Monument resources and to communities of interest such as Monument visitors and residents, to the greatest extent feasible while providing for the valid existing rights of lessees and private mineral estates holders. Economic impacts to the region are expected to be minimal, since as previously discussed oil and gas production on the CPNM accounts for a very small percentage of the region’s production.

4.18.7.14 Lands and Realty

Conversion of lands from private to public ownership would be slightly less under Alternative 2 than under Alternative 1, but would focus on meeting priority habitat protection needs, thereby increasing

high-value habitat lands in the region. The potential benefit to sensitive cultural and biological resources would be enhanced, since acquisition efforts would be targeted toward areas harboring such resources that currently have limited public ownership acreage. This alternative would be expected to result in beneficial impacts to the Monument's value as part of the San Joaquin Valley recovery plan and to enhance linkages between the Carrizo Plan and the San Joaquin Valley. Native American groups and Monument visitors would be beneficially impacted to the extent that land acquisitions facilitate greater protection of sensitive cultural and biological resources and allow for expanded educational and cultural opportunities. Regional quality of life and land use and development planning processes would also be beneficially impacted. As with Alternative 1, local government revenues would not be impacted (impacts would be neutral).

4.18.8 Impacts to Social and Economic Conditions from Alternative 3

4.18.8.1 Wildlife

As noted under 4.18.7.1, impacts under this alternative would be generally similar to those under Alternative 2. To the extent that management practices associated with this alternative provide for more aggressive protection and enhancement of habitat quality and certain animal populations, impacts to the region's quality of life, and benefits to communities of interest and non-market values may also be enhanced.

4.18.8.2 Vegetation

These impacts would be the same as those expected under Alternative 2.

4.18.8.3 Fire and Fuels Management

Alternative 3 is focused on the active suppression end of the continuum in terms of wildfire management, calling for suppression of all fires on the CPNM. As with Alternative 2, it utilizes prescribed burns to return fire to the ecosystem, manage invasive vegetation species, and reduce fuel loads. This alternative calls for a target of less wildfire acres burned per decade than either of the other alternatives (5,000 acres as compared with 40,000 acres under Alternative 1, and 10,000 under Alternative 2). It provides a similar level of assurance to the social and economic wellbeing of the regional and local communities of place as does Alternative 2.

This alternative also actively protects sensitive cultural and biological resources, as well as private property within the Monument (same as Alternatives 1 and 2). It does not explicitly provide for protection of Monument facilities, as does Alternative 2, but such protection is implicit in by means of the total wildfire suppression actions it sets forth.

Alternative 3 would have a similar or slightly greater impact (as compared with Alternative 2) to non-market values in terms of protection of resources and the effect of such protection on land values and income enhancement potential. It may have a slightly greater potential to disrupt visitorship and recreational activities for short periods of time in favor of actively managing fire and fuels. Impacts to air quality are also likely to be reduced under this alternative. It provides for protection of all resources, as does Alternative 2, but does so with a smaller range of tools.

As discussed under Communities of Interest, this alternative may provide the greatest level of assurance to market and commodity values in terms of fire protection through its policy of more aggressive wildfire suppression. It is expected to provide for potentially the greatest assurance of protection for private property, including livestock, of all alternatives.

4.18.8.4 Air Quality

Impacts to regional communities would be similar to those of Alternative 2 in terms of enhanced quality of life through measures set forth in Alternative 3 to improve and maintain air quality. Local economies would benefit if aggregate materials and other supplies are purchased there, and if local contractors are hired. BLM would coordinate with the respective counties to secure funding for paving those roads administratively controlled by the county.

As a basis of comparison, expenditures associated with *all* purchases and contracted services for Alternative 3 (including but not limited to air quality) are expected to range from $375,000 to $500,000 per year, not accounting for inflation over the life of the plan, and based on current practice would be an approximately 50 percent/50 percent split between San Luis Obispo and Kern Counties. This is an approximately 50 percent increase over Alternative 1 and 25 percent more than Alternative 2 in terms of overall expenditures.

In the longer term, the overall character of the Monument could conceivably be altered by the presence of paved roads, although these would consist of main roads only. Such roadways would be expected to improve access to Monument resources for these communities of interest.

4.18.8.5 Soils

Impacts to communities of place and communities of interest under Alternative 3 would be similar to those under Alternative 2, and would be generally beneficial. Additional actions under Alternative 3, such as eliminating causes of erosion and complete restoration, may require seasonal or more long-term closures of or access restrictions to recreational use areas, and more extensive seasonal road closures. While all of these would depend on a variety of factors including rainfall, temperature, and wind conditions, and human-caused conditions such as traffic, recreational and research visitation, and grazing, they may also affect those activities and the communities of interest represented by them. The impacts associated with the implementation of the soils management program are generally beneficial for the management of biological resources that are considered important to conservation efforts and the character of the Monument. From an economic standpoint, the objectives and actions associated with Alternative 3 are expected to result in negligible to minor adverse changes or impacts to communities of interest, especially in light of the aforementioned beneficial impacts to biological and other sensitive Monument resources.

There is a clear correlation between the health of biological resources such as native vegetation and the habitat it provides for wildlife species within the Monument, and the health of the underlying soils. Paleontological resources and hydrologic functions and values, which may be impacted by erosion and other natural processes that deplete or transport soils, are also affected. These non-market values will be beneficially impacted from the objectives and actions set forth in Alternative 3.

4.18.8.6 Geology and Paleontology

Objectives and actions for Alternative 3 are the same those for Alternative 2. Potential impacts are therefore expected to the same for both alternatives.

4.18.8.7 Cultural Resources

Alternative 3 is the same as Alternative 2 in many respects, and similar in most others. It provides guided tours to Painted Rock on a year-round basis but does not allow self-guided tours. It would stabilize but not attempt restoration of historic ranching and farming buildings and structures. Alternative 3 would be

expected to result in impacts to social and economic conditions in the region and to communities of interest and non-market values that are comparable to those under Alternative 2.

4.18.8.8 Visual Resources

Impacts to social and economic conditions associated with the Visual Resources program actions under Alternative 3 will generally be similar to those of Alternative 2, in that these alternatives set forth the same objectives and actions. The only differences are those related to acreages of the respective VRM classes. By way of comparison, Alternative 3 allocates approximately 9.5 percent more lands to VRM Class II lands (this is a 20 percent increase over Alternative 1), and 5.0 percent more to VRM Class III lands (a 6.4 percent increase over Alternative 1).

Alternative 3 allocates substantially less acreage than either of the other alternatives to the Class I VRM (6.6 percent as compared with 21.2 percent under Alternative 2, and 32.9 percent under Alternative 1). Class I lands are those that allow for the least perceptible level of change to the existing landscape. However, the predominance of Class II lands, which provide for no more than minor impacts to the character of the existing landscape either by modifications or management activities, is expected to have a generally positive or neutral impact on communities of place, communities of interest, non-market values and market and commodity values. Potential impacts to leaseholders would be most similar to those under Alternative 2.

4.18.8.9 WSA/Other Lands with Wilderness Characteristics

This alternative incorporates the goals, objectives, and actions common to all alternatives by managing the 17,094-acre Caliente Mountain WSA to maintain the area's suitability for preservation as wilderness. Therefore, social and economic impacts associated with this alternative would be those common to all alternatives.

4.18.8.10 Livestock Grazing

It is assumed that Section 15 grazing allotments would occur 8 out of 10 years, as compared with 5 out of 10 years under Alternative 2. Therefore, impacts to Section 15 livestock grazing and associated fees and contributions would be the same on an annual basis as Alternative 2 and the No Action Alternative. However, this alternative would generate more Section 15 grazing revenues over a 10-year period, and over the long term, than would Alternative 2, and the same as under the No Action Alternative. Impacts associated with free use grazing would be the same as those of Alternative 2.

4.18.8.11 Recreation

Alternative 3 has the potential to generate the highest increases in Monument visitorship over the life of the plan. By year 2018, it is expected to generate a 25 percent increase, and another 20 percent by year 2028. Based on these increases and average daily visitor expenditures (combined) for Kern, San Luis Obispo, and Santa Barbara Counties, under this alternative Monument visitors may be expected to generate approximately $3.6 million in annual revenues within the assessment area, and approximately $4.4 million in year 2028.

Alternative 3 allocates only 17,984 acres to the Primitive zone, limiting new facilities within this zone to new trails and directional signage. It allocates 223,299 acres to the Backcountry zone, and 29,944 acres to the Frontcountry zone. It provides between 15 and 40 miles of new trails, and as does Alternative 2, allows dispersed camping in the Backcountry zone. Unlike Alternative 2, this alternative does not allow

competitive activities or recommend the elimination of varmint hunting or the potential impacts associated with each of these activities.

4.18.8.12 Travel Management

Alternative 3 would result in the least road-miles of closed roads of any of the action alternatives (10 as compared with 81 and 45 under Alternatives 1 and 2, respectively) and the fewest acres of closed areas. Alternative 3 would be expected to provide the greatest level of vehicle access within the Monument, but is not expected to result in more than minor impacts to the visitor experience within the CPNM and no adverse impacts to other communities of interest or non-market values.

4.18.8.13 Minerals

Impacts to existing oil and gas lessees from cost of development for this alternative would be the least impacting, either positively or adversely, of all the action alternatives. Alternative 3 neither provides additional resources at BLM expense, nor does it require compliance beyond existing federal legislative standards. Impacts to Monument resources and other communities of interest, such as visitors and residents, are expected to be negligible to minor.

4.18.8.14 Lands and Realty

Impacts under Alternative 3 are the same as under Alternative 2.

4.18.9 Cumulative Impacts to Social and Economic Conditions

4.18.9.1 Assessment Area

The assessment area for this discussion is set forth in the Introduction to Chapter 4.7 and is the same as that which has been considered for the No Action and each of the action alternatives.

4.18.8.2 Past, Present, and Reasonably Foreseeable Future Actions

Past, present, and reasonably foreseeable future actions within the assessment area are those discussed in affected environment (existing conditions) discussions in Chapter 3 for each of the resource management and resource use categories. They also include the RFDs for each of these categories discussed throughout this chapter. In general, continued development of lands within the San Joaquin Valley and southern California are expected to increase the scarcity and value of large undeveloped open spaces and intact habitat of the Monument.

4.18.8.3 Cumulative Impacts

The proposed management of the CPNM will result in cumulative social and economic impacts to the assessment area from implementation of any of the action alternatives. Commodity values such as livestock grazing and oil and gas production are important economic activities within the region. However, while management of these activities on lands within the Monument will impact individual lessees and operators over the life of the plan and in the long term, these activities represent a very small proportion of those that occur elsewhere in the region. These cumulative impacts are expected to be minor.

The primary social and economic impacts of Monument management over the life of the plan and beyond will be those associated with the unique and irreplaceable non-market values of the CPNM and their contribution to the region and state-wide. The level at which each alternative protects these resources has

been analyzed within this section and elsewhere within Chapter 4. Cumulative effects associated with resource management decisions also include preservation of open space and scenic vistas, which, along with the aforementioned biological, cultural, and physical resources, will affect the overall character of the Monument over the life of the plan and in the long term. The value of the Monument as a wild and relatively undeveloped expanse of lands proximate to the highly urbanized Central Coast and set within the Central Valley region, and within easy driving distance of major urban centers in southern and north-central California, cannot be understated. The cumulative and beneficial impacts associated with the protection of these resources are expected to be major over the long term, in contrast to ever-increasing development pressures in the surrounding region and statewide.

Based on state and national trends, tourism, including eco and cultural tourism and active recreation such as hiking, biking, and camping, is expected to continue to grow and generate increased revenues nationally and in the state. Management practices set forth in the action alternatives will exert influence over the potential for the Monument to maintain and enhance its status as an important regional and state tourist attraction. The preservation and protection of the aforementioned non-market values has been cited throughout this document as crucial to the Monument's attractiveness to tourists.